BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL,

PRINCIPAL BENCH, NEW DELHI

ORIGINAL APPLICATION NO 270 OF 2025

News Item titled "Containers from sunken ship likely to drift towards Alapuzha, Kollam Coast in 48 Hours" appearing in Hindu dt 25th May 2025

INDEX

VOL-III

S.NO.	PARTICULARS	PAGE NO.
8.	**ANNEXURE R9-VII** The Order dated 19.06.2025 passed by the Hon'ble Kerala High Court in *Shri T.N. Prathapan vs Union of India & Ors* [WP (PIL) 50 of 2025]	**1575-1580**
9.	**ANNEXURE R9-VIII** Order dated 15.07.2025 passed by the Hon'ble Kerala High Court in *Shri T.N Prathapan vs Union of India & Ors* [WP (PIL) 50 of 2025]	**1581-1584**
10.	**ANNEXURE R9 – IX** The Admiralty Plaint as filed	**1585-1972**
11.	**ANNEXURE R9 – X** The Order of arrest dated 07.07.2025 passed in the Admiralty Suit	**1973-1980**
12.	**ANNEXURE R9 – XI** The Order of arrest dated 25.09.2025 passed in the Admiralty Suit	**1981-2062**
13.	**ANNEXURE R9 – XII (colly)** Vessel certificates	**2063-2085**
14.	**ANNEXURE R9 – XIII** The dangerous cargo manifest dated 24.05.2025 for the Vessel	**2086-2093**
15.	**ANNEXURE R9 – XIV** A copy of the BMC Report dated 10.10.2025	**2094-2133**
16.	**ANNEXURE R9 – XV** A copy of the BMC report dated 22.06.2025	**2134-2144**
17.	Proof of service	**2145**

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New Delhi
Dated: 06.01.2026

ANNEXURE R9-VII

IN THE HIGH COURT OF KERALA AT ERNAKULAM

PRESENT

THE HONOURABLE THE CHIEF JUSTICE MR. NITIN JAMDAR

&

THE HONOURABLE MR.JUSTICE BASANT BALAJI

Thursday, the 19th day of June 2025 / 29th Jyaishta, 1947

WP(PIL) NO. 50 OF 2025(S)

PETITIONER:

MR. T.N. PRATHAPAN, AGED 65 YEARS, FORMER MEMBER OF PARLIAMENT, CHAIRMAN, KERALA FISHERMEN COORDINATION COMMITTEE, RESIDING AT THOTTUNGAL HOUSE, PO. TALIKULAM, THRISSUR, KERALA, PIN - 680 569.

RESPONDENTS:

1. **UNION OF INDIA, REPRESENTED BY THE SECRETARY, MINISTRY OF SHIPPING, NEW DELHI, PIN - 110 001.**
2. **MINISTRY OF DEFENCE, REPRESENTED BY ITS SECRETARY, ROOM NO.305, B WING, SENA BHAWAN, NEW DELHI, PIN - 110 001.**
3. **THE DIRECTOR GENERAL OF SHIPPING, JAHAZ BHAVAN, BALLARD ESTATE, MUMBAI, PIN - 400 001.**
4. **INDIAN COAST GUARD, REPRESENTED BY THE DIRECTOR GENERAL, HEADQUARTERS, NATIONAL STADIUM COMPLEX, PURANA QUILA ROAD, NEW DELHI, PIN - 110 001.**
5. **DIRECTOR, DIRECTORATE OF FISHERIES AND ENVIRONMENT, COAST GUARD HEADQUARTERS, NEW DELHI, PIN - 110 001.**
6. **STATE OF KERALA, REPRESENTED BY THE CHIEF SECRETARY, SECRETARIAT, THIRUVANANTHAPURAM, PIN - 695 001.**
7. **KERALA STATE POLLUTION CONTROL BOARD, REPRESENTED BY ITS MEMBER SECRETARY, PATTOM P.O, THIRUVANANTHAPURAM, PIN - 695 004.**
8. **STATE DISASTER MANAGEMENT AUTHORITY, REPRESENTED BY ITS MEMBER SECRETARY, VIKAS BHAVAN, P.O, OBSERVATORY HILLS, OPPOSITE KANAKAKKUNNU PALACE, NANTHANCODU, THIRUVANANTHAPURAM, PIN - 695 033.**
9. **DIRECTOR, DEPARTMENT OF FISHERIES, DIRECTORATE OF FISHERIES, THIRUVANANTHAPURAM, PIN - 695 033.**
10. **INSPECTOR GENERAL OF POLICE, KERALA COASTAL POLICE, KERALA COASTAL POLICE HEADQUARTERS, SHANMUGHAM ROAD, MARINE DRIVE, ERNAKULAM, PIN - 682 031.**
11. **VIZHINJAM INTERNATIONAL SEAPORT LTD., REPRESENTED BY ITS MANAGING DIRECTOR, LEVEL 5, 3RD FLOOR TRANS TOWERS, VAZHUTHACAUD, THIRUVANANTHAPURAM, PIN - 695 014.**
12. **MEDITERRANEAN SHIPPING COMPANY, THROUGH ITS AUTHORIZED NODAL OFFICER - MR. JACOB GEORGE, MSC HOUSE, ANDHERI – KURLA ROAD, ANDHERI EAST, MUMBAI, MAHARASHTRA, INDIA. EMAIL:comm@mscindia.com, PIN - 400 059.**

Writ petition (Public Interest Litigation) praying inter alia that in the circumstances stated in the affidavit filed along with the WP(PIL) the High Court be pleased to

A) direct the Respondents No.1, 3 and 6 to release interim financial assistance to the fishermen victims

B) direct the Respondents No. 4, 6 and 7 to take steps to remove all the wastes, chemicals and parts of the ship and clean up the environment without any further delay.

In accordance with law after affording an opportunity of being heard, in the interest of justice, equity and good conscience.

This petition coming again on for admission upon perusing the petition and the affidavit filed in support of WP(PIL), this Court's order dated 12/06/2025 and upon hearing the arguments of M/S. V.HARISH, C.R.REKHESH SHARMA & RAJAN VISHNURAJ, Advocates for the petitioner, SMT.O.M. SHALINA, DEPUTY SOLICITOR GENERAL OF INDIA & SRI.T.V.VINU, Advocate for R1 to R4, SRI.K.GOPALAKRISHNA KURUP, ADVOCATE GENERAL & SRI.N.MANOJ KUMAR, STATE ATTORNEY for R5, R6, R9 & R10, SRI.T.NAVEEN, STANDING COUNSEL for R7, SRI.VIPIN P. VARGHESE, STANDING COUNSEL for R11, M/S. SANTHOSH MATHEW & PRASANTH S.PRATHAP, SENIOR ADVOCATES along with M/S. PRANOY K. KOTTARAM, SIVARAMAN P.L, ATHUL BABU, SREENAND UDAYAN & RUCHIR GOENKA, Advocates for R12 and of ADV.SRI.ARJUN SREEDHAR, AMICUS CURIAE, the court passed the following:

P.T.O.

NITIN JAMDAR, C.J. & BASANT BALAJI, J.

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W.P(PIL)Nos.50 & 60 of 2025

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Dated this the 19th day of June 2025

ORDER

Nitin Jamdar, C.J.

Heard Mr.V.Harish, learned counsel for the Petitioner in W.P(PIL)No.50 of 2025, Mr.K.Gopalakrishna Kurup, learned Advocate General, Mr.T.V.Vinu, learned counsel representing Ms.O.M.Shalina, learned DSGI, Mr.Arjun Sreedhar, learned Amicus Curiae, Mr.T.Naveen, learned Standing Counsel for Respondent No.7 in W.P(PIL)No.50 of 2025, Mr.Vipin P.Varghese, learned Standing Counsel for Respondent No.11 in W.P(PIL)No.50 of 2025, Mr.Prasanth S.Prathap, learned Senior Advocate, Mr.Santhosh Mathew, learned Senior Advocate, Mr.Pranoy K.Kottaram and Mr.Ruchir Goenka, learned counsel appearing for Respondent No.12 in W.P(PIL)No.50 of 2025.

2. We have perused the counter-affidavit filed by the State. The State has enumerated the steps proposed to be taken under the Environment (Protection) Act, 1986 (Act 29 of 1986) and has pointed out that the Special Secretary, the Department of Environment, has been appointed as the Principal Impact Assessment Officer. It is also pointed out that the Minister for Fisheries had convened a meeting with the stakeholders, and the Fisheries Department has forwarded a loss assessment report to the Special Secretary to the Government. It is also pointed out that the Director General of Shipping

has directed the State Authorities to submit the interim claim, which has been forwarded to the Director General of Shipping.

3. As regards the admiralty jurisdiction, it is stated that the State has decided to file an Admiralty Suit in the Kerala High Court, including the arrest of the sister vessel as per Section 5 of the Admiralty (Jurisdiction and settlement of Maritime Claims) Act, 2017, the Act 22 of 2017. Section 4(1)(u) of the Act 22 of 2017 needs to be noted. It reads thus:

> *"**4. Maritime claim**.—(1) The High Court may exercise jurisdiction to hear and determine any question on a maritime claim against any vessel arising out of any—*
>
> ****
>
> *(u) damage or threat of damage caused by the vessel to the environment, coastline or related interests; measures taken to prevent, minimise, or remove such damage; compensation for such damage; costs of reasonable measures for the restoration of the environment actually undertaken or to be undertaken; loss incurred or likely to be incurred by third parties in connection with such damage; or any other damage, costs, or loss of a similar nature to those identified in this clause;"*

If the State decides to move under the above clause to claim damages, it does so also on behalf of the people and the environment. The Act also enables the plaintiff to move for urgent steps for the arrest of the sister ship.

4. However, by Government Order dated 30 May 2025, the Principal Secretary of the Disaster Management Department of the State has constituted a Committee for the negotiation of compensation for pollution damage caused

by MSC ELSA-3 and the consequent cost. The compensations and costs pertain to the restoration of the coastline and marine environment, as well as the costs and expenses incurred for the removal of the wreck, and the economic loss suffered by fishermen and recreational areas along the coast of Kerala. This negotiating committee comprises of government officers. As accepted by the learned Advocate, the object of the negotiations will be to enter into a binding agreement in respect of the quantum of damages with the Respondent No. 12 company. Thus, these negotiations will result in a binding agreement on damages related to the same subject matter under Section 4(1)(u) of the Act.

5. If that is the position, various concerns be raised by the Petitioners. It could be argued that negotiations concerning substantial environmental damage should not be conducted behind closed doors without public disclosure or procedural safeguards. Questions could be raised about the transparency and fairness of the negotiations. It could be argued that since the harm affects the public directly, the process of settlement cannot remain confidential or hidden from public view and that the public has a right to know the basis of the negotiations, the extent of the damage assessed, the terms being proposed, and the principles on which the settlement is being structured. Secondly, whether such a binding settlement between the State and the Respondent-Company could affect the claims in the proposed Admiralty Suit. There could be a risk that once an agreement is signed, it may affect subsequent legal steps, even if the terms are not adequate or fair. On the other

hand, a settlement can also take place in Court after a suit is filed. If the settlement takes place in Court, the Court could examine the contents ensuring full transparency as terms would be in the public domain.

6. Therefore, according to us, once the State has committed to invoke the admiralty jurisdiction of this Court under Section 4(1)(u) and other provisions of the Act 22 of 2017, to avoid any complications and considering the above concerns and that the matter would be now be considered in detail, it would be appropriate that at present the State defers the negotiations by the special committee of government Officers.

7. At the joint request, post on 2 July 2025 at 1.45 pm. In the meanwhile, issue notice to the unserved Respondents, returnable on 2 July 2025. The Respondents will file their counters.

Sd/-
NITIN JAMDAR,
CHIEF JUSTICE

Sd/-
BASANT BALAJI,
JUDGE

vgd/-

IN THE HIGH COURT OF KERALA AT ERNAKULAM

PRESENT

THE HONOURABLE THE CHIEF JUSTICE MR. NITIN JAMDAR

&

THE HONOURABLE MR.JUSTICE BASANT BALAJI

Tuesday, the 15th day of July 2025 / 24th Ashadha, 1947

WP(PIL) NO. 50 OF 2025(S)

PETITIONER:

MR. T.N. PRATHAPAN, AGED 65 YEARS, FORMER MEMBER OF PARLIAMENT,

CHAIRMAN, KERALA FISHERMEN COORDINATION COMMITTEE,

RESIDING AT THOTTUNGAL HOUSE, PO. TALIKULAM, THRISSUR,

KERALA, PIN - 680 569.

RESPONDENTS:

1. **UNION OF INDIA, REPRESENTED BY THE SECRETARY,MINISTRY OF SHIPPING, NEW DELHI, PIN - 110 001.**
2. **MINISTRY OF DEFENCE, REPRESENTED BY ITS SECRETARY,ROOM NO.305, B WING, SENA BHAWAN, NEW DELHI, PIN - 110 001.**
3. **THE DIRECTOR GENERAL OF SHIPPING, JAHAZ BHAVAN, BALLARD ESTATE, MUMBAI, PIN - 400 001.**
4. **INDIAN COAST GUARD, REPRESENTED BY THE DIRECTOR GENERAL, HEADQUARTERS, NATIONAL STADIUM COMPLEX, PURANA QUILA ROAD, NEW DELHI, PIN - 110 001.**
5. **DIRECTOR, DIRECTORATE OF FISHERIES AND ENVIRONMENT, COAST GUARD HEADQUARTERS, NEW DELHI, PIN - 110 001.**
6. **STATE OF KERALA, REPRESENTED BY THE CHIEF SECRETARY, SECRETARIAT, THIRUVANANTHAPURAM, PIN - 695 001.**
7. **KERALA STATE POLLUTION CONTROL BOARD, REPRESENTED BY ITS MEMBERSECRETARY, PATTOM P.O, THIRUVANANTHAPURAM, PIN - 695 004.**
8. **STATE DISASTER MANAGEMENT AUTHORITY, REPRESENTED BY ITS MEMBER SECRETARY,VIKAS BHAVAN, P.O, OBSERVATORY HILLS, OPPOSITE KANAKAKKUNNU PALACE, NANTHANCODU, THIRUVANANTHAPURAM, PIN - 695 033.**
9. **DIRECTOR, DEPARTMENT OF FISHERIES, DIRECTORATE OF FISHERIES, THIRUVANANTHAPURAM, PIN - 695 033.**
10. **INSPECTOR GENERAL OF POLICE, KERALA COASTAL POLICE, KERALA COASTAL POLICE HEADQUARTERS, SHANMUGHAM ROAD, MARINE DRIVE, ERNAKULAM, PIN - 682 031.**
11. **VIZHINJAM INTERNATIONAL SEAPORT LTD., (*AMENDED) REPRESENTED BY ITS MANAGING DIRECTOR,LEVEL 5, 3RD FLOOR TRANS TOWERS, VAZHUTHACAUD, THIRUVANANTHAPURAM, PIN - 695 014.**
    ***R11 IS AMENDED AS : "ADANI VIZHINJAM PORT PVT LIMITED, HAVING ITS REGISTERED OFFICE AT ADANI CORPORATE HOUSE, SHANTIGRAM, NR. VAISHNO DEVI CIRCLE, S.G HIGHWAY, KHODIYAR, AHMEDABAD, GUJARAT - 382 421 AND BRANCH OFFICE PORT OPERATION BUILDING, MULLUR ROAD, MULLUR, THIRUVANANTHAPURAM, KERALA - 695 521, REPRESENTED BY ITS CEO, PRADEEP JAYARAMAN" AS PER ORDER DATED 02/07/2025 IN IA 3/2025 IN WP(PIL) 50/2025.**

12. MEDITERRANEAN SHIPPING COMPANY, THROUGH ITS AUTHORIZED NODAL OFFICER - MR. JACOB GEORGE,MSC HOUSE, ANDHERI – KURLA ROAD, ANDHERI EAST, MUMBAI, MAHARASHTRA, INDIA.EMAIL:comm@mscindia.com, PIN - 400 059.
ADDITIONAL R13 IMPLEADED
13. SHO, FORT KOCHI COASTAL POLICE STATION, FORTKOCHI P.O, KOCHI - 682 001. *ADDL.R13 IS IMPLEADED AS PER ORDER DATED 02/07/2025 IN IA 1/2025 IN WP(PIL) 50/2025
ADDITIONAL R14 TO R17 IMPLEADED
14. WAN HAI LINES LTD, 10TH FLOOR, 136, SUNG CHIANG ROAD, TAIPEI, TAIWAN REPRESENTED BY ITS PRESIDENT.
15. WAN HAI LINES (SINGAPORE) PTE LTD, 9 ANSON ROAD, #10-01 SINGAPORE 079906, REPRESENTED BY ITS AUTHORIZED OFFICER.
16. WAN HAI LINES (INDIA) PVT. LTD., A-102 AND 103, THE QUBE, NEAR TO INTERNATIONAL AIRPORT, MAROL VILLAGE, ANDHERI EAST, MUMBAI - 400059, REPRESENTED BY ITS AUTHORIZED OFFICER
17. MERCANTILE MARINE DEPARTMENT, WILLINGDON ISLAND, KOCHI, KERALA 682009, REPRESENTED BY ITS PRINCIPAL OFFICER.
ADDL.R14 TO R17 ARE IMPLEADED AS PER ORDER DATED 02/07/2025 IN IA 4/2025 IN WP(PIL) 50/2025.

Writ petition (Public Interest Litigation) praying inter alia that in the circumstances stated in the affidavit filed along with the WP(PIL) the High Court be pleased to

A) direct the Respondents No.1, 3 and 6 to release interim financial assistance to the fishermen victims

B) direct the Respondents No. 4, 6 and 7 to take steps to remove all the wastes, chemicals and parts of the ship and clean up the environment without any further delay.

In accordance with law after affording an opportunity of being heard, in the interest of justice, equity and good conscience.

This petition coming again on for admission upon perusing the petition and the affidavit filed in support of WP(PIL), this Court's order dated 02/07/2025 and upon hearing the arguments of M/S. V.HARISH, C.R.REKHESH SHARMA & RAJAN VISHNURAJ, Advocates for the petitioner, SMT.O.M. SHALINA, DEPUTY SOLICITOR GENERAL OF INDIA for R1 to R4, SRI.K.GOPALAKRISHNA KURUP, ADVOCATE GENERAL, SRI.N.MANOJ KUMAR, STATE ATTORNEY & SMT.PARVATHY K, GOVERNMENT PLEADER for R5, R6, R9 & R10, SRI.T.NAVEEN, STANDING COUNSEL for R7, M/S. ROSHEN.D.ALEXANDER, TINA ALEX THOMAS, HARIMOHAN & KOCHURANI JAMES, Advocates for R11, M/S. SANTHOSH MATHEW & PRASANTH S.PRATHAP, SENIOR ADVOCATES along with M/S. PRANOY K. KOTTARAM, SIVARAMAN P.L, ATHUL BABU & SREENAND UDAYAN, Advocates for R12, M/S.K.JAJU BABU(SR.) along with M/S. JIKKU SEBAN GEORGE, DEEPTI SUSAN GEORGE, SHRUTHI BALAKRISHNAN, RISHABH SAXENA, DEEPANSHI KAPOOR, OMKAR PRADHAN & AMITAVA MAJUMDAR, Advocates for Addl.R14 to R16 and of ADV.SRI.ARJUN SREEDHAR, AMICUS CURIAE, the court passed the following:

Nitin Jamdar, C.J. & Basant Balaji, J.
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W.P.(PIL)Nos. 50, 60 & 70 of 2025 - S
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Dated this the 15th day of July 2025

ORDER

The learned Advocate General places on record copy of the monetary claim filed in Admiralty Suit No.12 of 2025 and the interim orders passed by the learned Single Judge on 7 July 2025 and 10 July 2025 in the said Admiralty Suit. Therefore, at present the issue regarding monetary claim as against the Respondent Company is being considered by the learned Single Judge in the Admiralty Suit.

2. The learned counsel for the Petitioners state that apart from the monetary claim against the Respondent Company, there are other issues regarding the duties and functions of the State Authorities, the Pollution Control Board and Director General of Shipping, which still need to be looked at and, therefore, the petitions be heard.

3. Rule and the petitions are admitted.

4. Add the petition to the monthly board commencing from 8 September 2025.

5. We grant liberty to the Petitioners, in case any specific urgent intervention is required on the part of the State Authorities, the Director General of Shipping or the Pollution Control Board, to take out an application for that relief.

6. In the meanwhile, all pleadings in the petition be completed. The learned counsel for the parties in all these petitions will exchange the pleadings as there is a commonality of cause as far as the reliefs against the public authority are concerned.

Sd/-

Nitin Jamdar
Chief Justice

Sd/-

Basant Balaji
Judge

vpv

ANNEXURE R9-IX

E-FILING NO - EF-HCK-2025-063956

BEFORE THE HON'BLE HIGH COURT OF KERALA AT ERNAKULAM

Adml.S. No ..... Of Year 2025

7.00 ORIGINAL SUITS/CIVIL SUIT

7.00 ORIGINAL SUITS/CIVIL SUIT

PLAINTIFF(S)

1. STATE OF KERALA REPRESENTED BY ITS SPECIAL SECRETARY

VS

DEFENDANT(S)

1. M V MSC AKITETA II (IMO NO. 9220847)
AND OTHERS

ADMIRALITY SUIT FILED UNDER ADMIRALITY ACT,2017 READ WITH RULE 3 OF THE ADMIRALITY RULES,2019

FILING NATURE : ORDINARY
FEES PAID & STATUS - 0 (SUCCESS)
VALUATION OF THE SUIT : 95310000000
C.F Payable : 1000000 Under Rule 29 of the Kerala High Court Admiralty (Jurisdiction and Settlement of Maritime Claims) Rules, 2019

NO COURT FEE IS REQUIRED TO BE PAID AS PER SECTION 73A OF KERALA COURT FEE AND SUITS VALUATION ACT FOR AG OFFICE .
SERVED ON
ROSHEN.D.ALEXANDER
FILED BY

1. ADVOCATE GENERAL OFFICE KERALA

Sd/-
E-VERIFIED
ADVOCATE GENERAL OFFICE KERALA()

FSO VERIFIED -18
Case Registration Time : 07-07-2025 17:19:10

BEFORE THE HONOURABLE HIGH COURT OF KERALA AT ERNAKULAM

Adml.S. No ..... Of Year 2025

PLAINTIFF : STATE OF KERALA REPRESENTED BY ITS SPECIAL SECRETARY

V/S

DEFENDANTS : M V MSC AKITETA II (IMO NO. 9220847) AND OTHERS

INDEX

SL	Title	Description	Page Nos
1	Synopsis	Synopsis	1-5
2	Plaint	Plaint	6-45
3	Affidavit	Affidavit	46-48
4	Document 1	Relevant page of the Ship profile of MV MSC AKITETA II-bearing IMO No.9220847 obtained from www.equasis.org	49-55
5	Document 2	Relevant pages of the Ship Profile of MV MSC ELSA 3 (IMO No. 9123221) taken from the website https://www.equasis.org/ .	56-64
6	Document 3	True copy of the cargo manifest of MSC Elsa 3 as received from Mercantile Marine Department, Kochi.	65-76
7	Document 4	A true copy of the Press Release by Ministry of Defence, posted on 26.05.2025 on “Oil Slick Detected after Liberian Container Vessel Sinks off Kerala Coast, ICG Leads Pollution response”.	77
8	Document 5	A true copy of the list of Containers retrieved by the Plaintiff.	78-79
9	Document 6	Photographs of the Plastic Pellets and cotton balls, beached at Thiruvananthapuram, Kollam, Alappuzha, and Ernakulam.	80-81
10	Document 7	A copy of the specific advisories to fishermen by the Kerala State Disaster Management	82
11	Document 8	A true copy of the G.O.(Ms)No.11/2025/DMD dated 29.05.2025 declaring the sinking of the Vessel MSC Elsa 3 as State Disaster.	83-84
12	Document 9	A true copy of GO (Rt) No. 371/2025/DMD dated 3-6-2025 ordering Interim cash relief assistance of Rs.1000/- to each fishermen family of Ernakulam, Alappuzha, Kollam and Thiruvananthapuram and 6 kg rice to each fishermen family.	85-86
13	Document 10	A true copy of the letter dated 01.07.2025 from the Divisional Forest Officer, Chalakkudy to the Director of Department of Environment and Climate Change regarding the report on Dolphin strandings at Munnakkal Beach, Azheekode Thrissur along with photographs of the carcass of Dolphins.	87-93
14	Document 11	A true copy of the SITREP dated 27.06.2025 available from the official website of the Kerala State Disaster Management authority.	94-96
15	Document 12	A true copy of the GO (Rt) No.363/2025/DMD dated 30.05.2025 of the Disaster Management (A) Department.	97-98
16	Document 13	A true copy of the Notice dated 24.05.2025 from the Mercantile Marine Department; Kochi to the 2nd Defendant.	99

17	Document 14	A true copy of the letter dated 26.05.2025 from Director General, India Coast Guard.	100-101
18	Document 15	A true copy of the notice under Section 356(J) of Merchant Shipping Act 1958 and Article 9 of the Nairobi International Convention on the Removal of Wrecks 2007, dated 30.05.2025 from Directorate General of Shipping.	102-105
19	Document 16	A true copy of the RBI Reference rate as on 30.06.2025.	106
20	Document 17	A true copy of the paper titled “Plastic Waste in Marine Environment; a review of sources, occurrence and effects”, published in Journal of Science of the Total Environment.	107-123
21	Document 18	A true copy of the paper titled “EFFECT OF CALCIUM CARBIDE ON BIO-CHEMICAL PROPERTIES OF ROSY BARB, PETHIA CONCHONIUS (HAMILTON, 1822)” published in connect journals.	124-128
22	Document 19	A true copy of the paper titled “Maritime Pollution in the Indian Ocean after the MV X-Press Pearl accident”, published in Journal of Marine Pollution Bulletin.	129-139
23	Document 20	A true copy of the CPCB’s 2019 guideline titled “Determination of Environmental Compensation to be recovered for violation of Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016”.	140-233
24	Document 21	A true copy of the report on the assessment of environmental compensation and remediation cost by the Director, Directorate of Environment and Climate Change, Government of Kerala.	234-260
25	Document 22	A true copy of the action taken by the Kerala State Pollution Control Board in view of the ship wreck incident.	261-265
26	Document 23	A true copy of the letter dated 26.06.2025 from the Chairman, Kerala State Pollution Control Board to the Special Secretary, Environmental Department with regard to their claim pursuant to sinking of MSC Elsa 3.	266-277
27	Document 24	A true copy of the Minutes of Meeting dated 28/05/2025 by the Hon’ble Minister of Fisheries, Saji Cherian along with other dignitaries pursuant to sinking of MSC Elsa 3.	278-282
28	Document 25	A true copy of the study conducted by Centre for Aquatic Resource Management and Conservation, KUFOS on the subject MSC Elsa-3 Container mishap: Impact assessment studies - Fish eggs and larvae.	283-285
29	Document 26	A true copy letter dated 25.06.2025 from the Director of Fisheries to the Special Secretary to Environment with regard to their claim pursuant to sinking of MSC Elsa 3.	286-290
30	Document 27	Relevant page of the Company Profile of Elsa 3 Maritime INC taken from the website https://www.equasis.org/ .	291
31	Document 28	Relevant page of the Company Profile of Chloe Navigation Ltd - LIB taken from the website https://www.equasis.org/ .	292-293
32	Document 29	Relevant pages of the Ship Profile of MV MSC CAGLIARI IV (IMO No 9318187) taken from the website https://www.equasis.org	294-301
33	Document 30	Relevant page of the Company profile of ALION MARITIME LTD- LIB, bearing IMO No.6233177 obtained from www.equasis.org	302-303
34	Document 31	Relevant page of the Ship profile of MV MSC Melissa, bearing IMO No.9926918 obtained from www.equasis.org	304-310
35	Document 32	Relevant page of the Company profile of AVANTAGE Enterprises INC, bearing IMO No.1977801 obtained from www.equasis.org	311-312
36	Document 33	Relevant page of the Ship profile of MV MSC FLORA-bearing IMO No.9978937 obtained from www.equasis.org	313-315

37	Document 34	Relevant page of the Ship profile of MV MSC MANASA F, bearing IMO No.9238882 obtained from www.equasis.org	316-321
38	Document 35	Relevant page of the Ship profile of MV MSC AGRIGENTO-bearing IMO No.9618276 obtained from www.equasis.org	322-327
39	Document 36	Relevant page of the Ship profile of MV MSC MICHELA-bearing IMO No.9720512 obtained from www.equasis.org	328-332
40	Document 37	Relevant page of the Ship profile MV MSC KATIE-bearing IMO No.946745718 obtained from www.equasis.org	333-338
41	Document 38	Relevant page of the Ship profile of MV MSC SABRINA III-bearing IMO No.8714205 obtained from www.equasis.org	339-347
42	Document 39	Relevant page of the Ship profile of MV MSC NAIROBI X-bearing IMO No.9605243 obtained from www.equasis.org	348-354
43	Document 40	A copy of the Bills of Lading issued by 2nd Defendant to Consignees of various Containers on Board the Subject Vessel and the Arrival Notices issued by the 3rd Defendant, on behalf of the 2nd Defendant.	355-360
44	Document 41	A copy of the Certificate of Entry issued by North Standard P&I, dated 07.02.2025, for the Subject Vessel.	361-366
45	Document 42	Copy of Letter No. DFTVM/1759/2025-G2 dated 04.07.2025 of the Director of Fisheries addressed to the Special Secretary, Fisheries and Ports Department	367-369
46	DIRECTION	Application for arrest of first defendant vessel	370-383
47	Memo of appearance	Memo of appearance	384

Sd/-

E-VERIFIED

ADVOCATE GENERAL OFFICE KERALA

THE HIGH COURT OF KERALA
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BEFORE THE HON'BLE HIGH COURT OF KERALA AT ERNAKULAM
(Admiralty Jurisdiction)

Adml.S. No..... of Year 2025

State of Kerala
Represented by its Special Secretary : Plaintiff

Vs

Owners and parties interested in
M V MSC AKITETA II(IMO No. **9220847**)
& Ors : Defendants

SYNOPSIS

1. The present Admiralty Suit is filed under the admiralty jurisdiction of this Hon'ble Court by the State of Kerala, represented by its Special Secretary, seeking arrest of the vessel M.V. MSC AKITETA II(IMO No. 9220847), presently lying within the territorial waters of India at Vizhinjam Seaport, in lieu of M.V. MSC ELSA 3 (IMO No. 9123221), which sank off the coast of Kerala on 25.05.2025, causing grave and widespread environmental, economic and ecological damage. The arrest is sought as a measure of securing maritime claims raised by the Plaintiff under Section 4 of the Admiralty (Jurisdiction and Settlement of Maritime Claims) Act, 2017, totaling 9531 Crores, along with interest and costs.

2. The said claims have arisen on account of the catastrophic sinking of MSC ELSA 3, a Liberian-flagged container vessel, while it was transiting from Vizhinjam Seaport to Kochi Port, approximately 13 nautical miles from the Thottappally spillway on the Kerala coast. The vessel, built in 1997 and

carrying over 643 containers including hazardous cargo and plastic pellets known as 'nurdles', developed a starboard list on 24.05.2025 and fully submerged the following morning. The incident has resulted in massive pollution of Kerala's marine ecosystem, with oil slicks and floating cargo causing serious detriment to the environment, coastal fisheries, and public health.

3. The Plaintiff submits that the maritime claims in the present suit arise from: (i) environmental pollution and damage to the coastline and related interests under Section 4(u) of the Admiralty Act, (ii) economic loss caused to the State's fishing community, and (iii) expenses incurred by the State in mitigating the consequences of the incident, including clean-up operations, manpower deployment, scientific assessments and public welfare measures.

4. As on 30.06.2025, over 61 containers have washed ashore along the districts of Thiruvananthapuram, Kollam, Alappuzha, and Ernakulam, and approximately 59.6 metric tons of plastic nurdles have been collected and transported from Veli Beach to Kollam Port. Manual and mechanical clean-up continues with the aid of 600 government personnel and 300 volunteers, under the supervision of the Marine Emergency Response Centre.

5. It is submitted that the disaster prompted the Kerala State Disaster Management Authority (KSDMA) to issue advisories and to declare the incident a "State Disaster" on 29.05.2025. Financial relief has been sanctioned to 78,498 fishermen families and 27,020 allied families at ₹1,000 per person along with free ration of 6kg rice per head. The fish market has suffered a severe crash due to contamination fears. Furthermore, six cetacean carcasses, including dolphins and a whale, have been found ashore, suspected to have died due to exposure to

microplastics and toxic substances released from the vessel. The cumulative damage to the ecosystem, coastal economy and public confidence, the Plaintiff asserts, is incalculable and continuing.

6. In furtherance of assessing the impact and losses, the Department of Disaster Management vide GO (Rt) No.363/2025/DMD dated 30.05.2025, appointed the deponent as Principal Impact Assessment Officer. The Plaintiff has, based on scientific inputs and departmental reports, raised the following specific maritime claims: ₹8,626.12 Crores towards pollution damage, ₹378.48 Crores for environmental restoration and preventive measures, and ₹526.51 Crores for economic loss to fishermen—aggregating to a total claim of ₹9531 Crores. The Plaintiff prays that interest at the rate of 6% per annum be awarded from the date of suit till judgment and thereafter at 12% till realization.

7. The Plaintiff further submits that MSC AKITETA IIand MSC ELSA 3 are sister ships under the common commercial, financial and technical control of the Second Defendant, which is the true de facto owner and operator, despite the nominal registration of vessels under separate shell companies. The Plaintiff has placed on record instances of other vessels (such as MSC Manasa F, MSC Melissa, MSC Flora, MSC Akiteta II, MSC Agrigento, MSC Michela, MSC Katie, MSC Sabrina III, and MSC Nairobi X), all registered in the name of separate entities but bearing the address and operational control of the Second Defendant, highlighting a pattern of deliberate corporate structuring to defeat potential claims.

8. It is contended that this structure is a fraudulent device to frustrate maritime claim enforcement. Even assuming the Second Defendant is a demise

charterer, the Plaintiff asserts that under Section 5(1)(b) read with Section 5(2) of the Admiralty Act, this Hon'ble Court is empowered to order arrest of the sister vessel MSC AKITETA IIto secure the claim arising out of MSC ELSA 3. The continued presence of the Defendant vessel within the jurisdiction of this Court, coupled with the grave risk of its imminent departure, makes it imperative that this Hon'ble Court grant emergent and immediate interim relief by ordering its arrest

9. The suit is filed with utmost urgency. If the Defendant vessel is allowed to leave Indian waters, the Plaintiff will be irreparably prejudiced and the possibility of realizing the rightful claim will be irretrievably lost. Hence, the Plaintiff prays that this Hon'ble Court be pleased to issue a Warrant of Arrest against the Defendant vessel, M.V. MSC Akit, together with her hull, tackle, engines, machinery, paraphernalia and appurtenances. The Plaintiff also seeks that upon arrest, the vessel be condemned and sold, and the net sale proceeds be deposited before this Hon'ble Court and applied towards satisfaction of the Plaintiff's claim, along with interest and costs.

10. In the premises set out above, the Plaintiff humbly submits that this Hon'ble Court be pleased to exercise its admiralty jurisdiction and grant the reliefs prayed for in I.A. No.1 of 2025, including but not limited to arrest and sale of the Defendant vessel for securing and satisfying the Plaintiff's maritime claims arising out of the environmental disaster caused by the sinking of MSC ELSA 3.

Acts Referred :-

1) The Admiralty (Jurisdiction and Settlement of Maritime Claims) Act, 2017.
2) Merchant Shipping Act 1958.
3) Environment Protection Act 1986.

Dated this the 7th day July, 2025.

Kparvathy

PARVATHY KOTTOL
GOVERNMENT PLEADER

THE HIGH COURT OF KERALA
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E-FILING NO - EF-HCK-2025-063956

BEFORE THE HON'BLE HIGH COURT OF KERALA AT ERNAKULAM

Adml.S. No ..... Of Year 2025

PLAINTIFF(S)

1. STATE OF KERALA REPRESENTED BY ITS SPECIAL SECRETARY
   ENVIRONMENT DEPARTMENT, GOVERNMENT SECRETARIAT, THIRUVANANTHAPURAM
   , PIN-695001

VS

DEFENDANT(S)

1. M V MSC AKITETA II (IMO NO. 9220847)
   (AND HER OWNERS AND ALL OTHER PERSONS CONCERNED AND ALL OTHER PERSONS CONCERNED AND/OR INTERESTED IN HER) A VESSEL REGISTERED IN LIBERIA, TOGETHER WITH HER HULL, TACKLE, ENGINES, GEARS, PLANT, MACHINERY, ARTICLES, THINGS, APPAREL, EQUIPMENT, PARAPHERNALIA, AND ALL OTHER APPURTENANCES, PRESENTLY AT THE PORT AND HARBOUR OF ADANI PORT, WITHIN THE TERRITORIAL WATERS OF INDIA AND WITHIN THE ADMIRALTY JURISDICTION OF THIS HON'BLE COURT.
   ,
2. MEDITERRANEAN SHIPPING CO. S.A (MSC)
   REPRESENTED AS OWNER/DEMISE CHARTERER/MANAGER AND OPERATOR OF THE VESSEL, MSC ELSA 3, HAVING ITS OFFICE ADDRESS AT SA CHEMIN RIEU, 12-14, 1208, GENEVA, SWITZERLAND
3. MEDITERRANEAN SHIPPING COMPANY
   THROUGH ITS AUTHORIZED NODAL OFFICER, MR. JACOB GEORGE, MSC HOUSE, ANDHERI – KURLA ROAD, ANDHERI EAST, MUMBAI, MAHARASHTRA, INDIA
   , PIN -400059
4. MSC AGENCY INDIA PVT LTD
   146, PALAYAMKOTTAI ROAD, 1ST FLOOR, MANICKAM TOWER, TUTICORIN, INDIA

, PIN -628003

5. ADANI VIZHINJAM PORT PVT LTD

PORT OPERATION BUILDING, MULLOOR, THIRUVANANTHAPURAM, KERALA, INDIA

, PIN -695521

ADMIRALITY SUIT FILED UNDER ADMIRALITY ACT,2017 READ WITH RULE 3 OF THE ADMIRALITY RULES,2019 BY ADVOCATE GENERAL OFFICE KERALA
NEAR HIGH COURT OF KERALA
PIN - 682031

THE HIGH COURT OF KERALA
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The plaintiff above named states as follows:-

I. PARTICULARS OF PARTIES

1. The Plaintiff is the State of Kerala, represented by its' Special Secretary, Environment Department, having its office at the address mentioned in the cause title above. Vide Order dated 30.06.2025, the State of Kerala, has authorized the Special Secretary, Environment Department, to verify and sign the present admiralty suit for Maritime Claims under Section 4 of the Admiralty (Jurisdiction and Settlement of Maritime Claims) Act, 2017 ("hereinafter referred as Admiralty Act, 2017), towards the loss/damages incurred by State of Kerala, pursuant to sinking of the vessel, MSC Elsa 3 and resultant pollution thereof.

2. The 1st Defendant is a Liberian flagged vessel, bearing IMO No.9220847 and is presently lying with its hull, tackle, engines, gears, boilers, machinery and other appurtenant at Port and Harbour of Vizhinjam Seaport International Limited, within the territorial waters of the State and subject to the jurisdiction of this Hon'ble Court. The 2nd Defendant is the Owner of the Vessel, MSC Elsa 3 ("hereinafter referred to as "Subject Vessel") which is a Liberian Flagged Vessel bearing IMO No 9123221 and that of 1st Defendant Vessel. The 3rd Defendant is the office of the 2nd Defendant in India and 4th Defendant is the agent of the 2nd Defendant for the Subject Vessel. The 2nd Defendant is also the Demise Charterer/Manager/Operator of the 1st Defendant Vessel as well as the Subject Vessel.

3. The 5th Defendant is the Commercial Port Operator of Vizhinjam International Seaport, Thiruvanthapuram, in which the 1st Defendant Vessel is harboured/anchored. 5th Defendant is a necessary party for the purpose of

communicating the Orders of this Court to the 1st Defendant Vessel and for such other directions as may be issued by this Court, in the course of hearing of this Suit and other applications.

II. CAUSE OF ACTION OF THE SUIT

4. The present Admiralty Suit has been filed by the Plaintiff seeking arrest, sequestration, condemnation and sale of the 1st Defendant Vessel or such other Vessels, in lieu of the Subject Vessel, against the following maritime claims as defined under Section 4 of the Admiralty (Jurisdiction and Settlement of Maritime Claims) Act 2017:-

a) Maritime claim arising out of damage caused by the Subject vessel to the Environment, Coastline or related interests and compensation for such damage to the State of Kerala (Section 4(u))

b) Maritime claim arising out of measures taken to prevent, minimize or remove the damage caused by Subject Vessel to the Environment, coastline or related interests, in the State of Kerala (Section 4(u))

c) Maritime Claim arising out of the economic loss caused to the fisherman of the State of Kerala, pursuant to the damage caused by the Subject Vessel. (Section 4(u))

5. The Plaintiff seeks a decree for an outstanding principal sum of Rs. 9,531.11 Crores (Rupees Nine Thousand Five Hundred and Thirty One Crores and prays for leave of this Court to amend the claim amount, by bringing on record additional acts and/or documents which may be necessary and/or available.

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6. The cause of action, in the aforesaid heads of maritime claims, as against the 2nd Defendant arose on 24.05.2025, when the subject Vessel developed a starboard list, while transiting from Vizhinjam International Seaport to Kochi and when, on 25.05.2025, it completely sank off the coast of Kerala and continuously therefrom is causing damage by way of pollution to marine environment, coastline and related interests of the State and also economic loss to its' Fishermen. The damage caused by the Subject Vessel, is in the territorial waters of the Plaintiff (i.e. 12NM). Therefore, the Plaintiff's suit is within limitation and no part of the Plaintiff's claim is barred by law of limitation.

III. URGENCY

7. The Plaintiff is seeking arrest of the 1st Defendant Vessel in lieu of the Subject Vessel, against which Maritime Claims, mentioned in paragraph 4 above, arises. The Plaintiff apprehends that the 2nd Defendant, who is the Owner /Demise Charterer, of the 1st Defendant Vessel, may take steps to sail out the 1st Defendant Vessel, which may frustrate the Plaintiff's claim. If the 1st Defendant Vessel is permitted to sail away, the Plaintiff will have no recourse to satisfy and/or secure its claim. Thus, the Plaintiff is filing this present Suit against the 1st Defendant Vessel.

8. Since the Plaint is filed in the above said circumstances, the Plaint contains a short narration of relevant facts and documents, which are presently available and is supplemented by documents which have been annexed as Plaint documents. The Plaintiff craves leave to add, amend, and alter the Plaint if need to and to place on record additional facts and/or documents which may be necessary and/or available. The Plaintiff submits that, should any further relevant fact or document remain to be placed on record; such failure may be pleased to be excused as the Plaintiff is putting its earnest efforts to access those

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documents and the present Suit is being filed, with the relevant facts and documents known to the Plaintiff. The Plaintiff craves leave to add, amend and alter the amount to be realized in the Suit, by bringing on record additional facts and/or documents. The Plaintiff also craves leave to move application for arrest, sequestration, condemnation and sale of the other Vessels, in lieu of the Subject Vessel, as against the claims of the Plaintiff, set out herein below or as amended.

IV. BRIEF FACTS

9. The facts and circumstances leading to and/or necessitating the filing of the present suit are more particularly set out herein below:

10. That the subject vessel, MSC ELSA 3 (IMO No. 9123221), was a Liberian-flagged container ship built in the year 1997 (28 years) and registered at the Port of Monrovia, Liberia. The vessel was owned and commercially operated by 2nd Defendant. The technical and International Safety Management ('ISM') of the Subject vessel is entrusted to MSC Shipmanagement Ltd., based in Limassol, Cyprus. The Subject Vessel was a container ship with an overall length ('LOA') of 183.91 meters (approximately 600 feet), a beam of 25.3 meters (approximately 82 feet), a reported draught of 9.9 meters, and gross and deadweight tonnes of 16,799 GT and 22,994 DWT, respectively. The vessel had a carrying capacity of 1,730 twenty-foot equivalent units ('TEUs'). The vessel was covered by a Protection and Indemnity Club (hereinafter referred to as 'P&I Club'), being the North Standard P&I Club, which is a member of the International Group of P&I Clubs ("IG P&I").

11. That on 23.05.2025, the subject Vessel, departed from Vizhinjam Seaport, India at approximately 2003 Indian Standard Time, bound for Kochi Port. At the time, the vessel was laden with a total of six hundred and forty-three (643)

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containers, with two hundred and ninety-six (296) containers onboard and three hundred and forty-seven (347) containers in the cargo hold. The vessel was also carrying thirteen (13) containers bearing hazardous materials, classified under Class 4.3 and Class 9 of the International Maritime Dangerous Goods ("IMDG Code"), out of which twelve (12) containers contained a cargo of calcium carbide. Further, out of the six hundred and forty-three (643) containers about Sixty Eight (68) containers, i.e. about 1400 MT, were carrying plastic products known as 'nurdles" were being carried by the vessel.

12. Additionally, the Subject vessel carried approximately more than four hundred and fifty (450) metric tonnes of marine fuel oil, including approximately three hundred and sixty-seven (367) tonnes of Very Low Sulfur Fuel Oil ('VLSFO) and sixty-four (64) tonnes of Diesel Oil at the time of the incident.

13. That on 24.05.2025, at around 1300 hours IST, while transiting approximately thirty-eight (38) nautical miles southwest of Kochi and approximately twenty-one point five (21.5) nautical miles off the nearest coast of Kerala, the vessel developed a starboard list which kept increasing. Within the next two hours, at approximately 1515 hours IST, the list had increased to 30 degrees and the vessel was steadily maintaining this list angle.

14. That on 25.05.2025, about 0750 Hours IST, the Subject Vessel sunk at 13 Nautical Miles from Thottappally spillway, coast of State of Kerala, at the approximate positing of Latitude 09 Deg 18.50.022 N and Longitude 76 Deg 07`58.967``E. That within hours of the vessel's submergence, the Indian Coast Guard surveillance aircraft detected an oil slick at the site.

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15. That consequent to the sinking of the Subject Vessel, some of the containers stowed on the deck were afloat and dispersed into the surroundings, while the Containers stowed below deck submerged along with the Vessel. As on 30.06.2025, about 61 Containers, washed ashore, have been retrieved by this Plaintiff.

16. The Cargo Manifest indicated that approximately 68 containers onboard the Vessel contained Plastic materials, including plastic products, packaging materials and plastic pellets (Nurdles). Plastic pellets (also known as nurdles) are small plastic granules that are widely used as a raw material in the creation of plastic products. When plastic pellets are released into the marine environment, they can cause environmental damage, including impacts on fishing, aquaculture and tourism.

17. An estimate of number of Nurdles fallen overboard the Subject Vessel, is beyond Plaintiff's computation. More than 60MT of these, Nurdles were found along the shoreline near Thiruvananthapuram, Kollam, Alappuzha, Ernakulam and immediate manual clean-up operations were initiated by this Plaintiff, to mitigate environmental impact caused by these Nurdles. The State of Kerala has deployed 600 personnel for the clean-up activities. Plastic nurdles have spread over 20 km, a caution has been provided by International Tanker Owners Pollution Federation (ITOPF), an expert agency appointed by the P&I Insurers, that nurdle contamination could spread along a 100-km coastline and they emphasized the need for elevated storage and mechanical assistance (front-end loaders or excavators) for cleanup.

18. That the Kerala State Disaster Management Authority (KSDMA), in collaboration with local government bodies, has mobilized substantial additional manpower including Civil Defence personnel and locals to support ongoing shoreline cleanup operations. Further, the local fishing community which has extended crucial support by providing trawlers and/or boats for reconnaissance and recovery of containers adrift and beached on locations with difficult terrain, enabling better access to impacted coastal stretches and enhancing the overall operational reach of the response teams.

19. That on 25.05.2025, the Kerala State Disaster Management Authority issued specific advisories to fishermen, instructing them not to venture within a 20 nautical mile radius of the sunken Subject vessel. The Disaster Management (A) Department of the State of Kerala, declared this Incident as State Disaster vide G.O.(Ms)No.11/2025/DMD dated 29.05.2025.

20. The release of Oil and other pollutants in the Sea have caused a fear amongst the Consumers, on the quality of the fish. The fish market has faced a serious downfall since 25.05.2025. Hence, the Disaster Management (A) Department of the State of Kerala, has ordered an interim financial assistance of ₹1000/- (Rupees One Thousand only) per head and free ration of 6 kg rice per person to be disbursed to 78,498 fishermen families and 27,020 allied families in the districts of Thiruvananthapuram, Kollam, Alappuzha, and Ernakulam . The same is disbursed to the Fishermen by the Plaintiff.

21. That since on 25.05.2025, six marine mammal carcasses five dolphins and one whale - have washed ashore on the Alappuzha coast. On 26.06.2025, carcass of two dolphins was ashore at Azheekode Munakkal Beach, Thrissur District. The post-mortem report of the one of the dead dolphin is awaited. The

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other one, was already decomposed when discovered, precluding the collection of scientifically viable samples. The Plaintiff submits that the mortality of these cetaceans is due to their exposure with the hazardous substances and micro plastics discharged from the Subject Vessel.

22. As on 30.06.2025, about 61 of containers have washed ashore the coasts of the State, particularly in Thiruvanthapuram, Kollam, Alapuzha and Ernakulam District. Onshore response efforts continue to progress under the supervision of the Marine Emergency Response Centre. The transportation of cleaned plastic pellets (nurdles) from Veli Beach to Kollam Port remains ongoing, with two additional truckloads dispatched on 28.06.2025. It is submitted that a total of 790 bags weighing 14.032 metric tons were moved on 27 June 2025, bringing the cumulative transported quantity to approximately 59.6 metric tons since the commencement of operations on 24 June 2025.

23. Shoreline cleanup efforts have mobilized approximately 300 volunteers across the State. Recovery operations also targets floating pellet bags reported near shore, with 8 to 9 bags retrieved from the coastline within the last 24 hours, as on 27.06.2025.

24. That, in view of the foregoing facts and circumstances, the Plaintiff submits that it has the following valid and enforceable maritime claims as against the Defendants, arising under Section 4 of the Admiralty, Act, 2017.

V. HEADS OF MARITIME CLAIM

25. Vide GO (Rt) No.363/2025/DMD dated 30.05.2025, the Department of Disaster Management has authorized the Special Secretary, Environment as

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Principal Impact Assessment Officer. The Special Secretary, Environment has been authorized to make all necessary arrangements for study of potential damage caused by Oil Spill from the vessel MSC Elsa and also from the Containers/parts thereof beached ashore and from the Cargoes floating and beached on the shore of the Coast of Kerala, including steps for restoration and remediation by engaging various Scientific and Research Institutions/Experts.

26. Pursuant to the above, the Special Secretary has made an assessment of the loss incurred and the likely future loss to be incurred by the State Government, on account of the above incident, for which the 2nd Defendant is liable. The future loss/compensation computed by the Plaintiff herein, shall be without prejudice to the right of the Plaintiff, with a leave of this Court, to amend, alter and modify its Claims, with additional documents.

27. This consolidated claim as stated in paragraph VI below is based on the report submitted by the Department of Fisheries and information collected from various other departments, including Disaster Management Department, Kerala State Disaster Management Authority, Local Self Government Department, Kerala State Pollution Control Board and Central Agencies empowered under the Merchant Shipping Act, 1958. The claims set out herein below, is without prejudice to its right to amend, alter and modify the same, with additional documents.

V.1. Maritime claim arising out of damage caused by the subject vessel to the environment, coastline or related interests of the State of Kerala and compensation for such damage.

28. This particular head of loss is defined as a "Maritime Claim" under Section 4(u) of the Admiralty (Jurisdiction and Settlement of Maritime Claims)

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Act, 2017 "Admiralty Act 2017). The Plaintiff seeks for damages/loss in this particular head of maritime claim, under two categories:-

i. Oil pollution damage caused by the subject Vessel to the environment coastline or related interest in the State of Kerala
ii. Other Pollution damage (Cargo) caused by the subject Vessel, to the environment coastline cost or related interest in the State of Kerala.

V.1.A-Oil Pollution Damage:

29. The oil spill from the subject Vessel, pursuant to its listing to Starboard side, has been detected by the Indian Coast Guard Surveillance Aircraft within hours from the subject Vessels submergence on 25.05.2025. The Mercantile Marine Department, Kochi vide letter dated 24.05.2025 has issued a notice under Section 356 J of Merchant Shipping Act 1958, evidencing the fact that there was an oil leakage from the subject Vessel into the sea due to severe listing to 30 degree starboard side near the Kochi Coast.

30. Further, vide letter dated 26.05.2025 the Director General, India Coast Guard has intimated the Disaster Management (A) Department of Oil spill and drifting of debris, including cargo, along Kerala's coastline. Vide letter dated 30.05.2025 by the Directorate General of Shipping, the State of Kerala has also been informed of the oil spill from the subject vessel to the sea.

31. Thus, it is indubitable that Oil Pollution damage has been caused by the Subject Vessel to the marine environment of the State of Kerala, its coastline and other related interests.

32. As per Part XI-A of Prevention and Containment of Pollution of the Sea by Oil of the Merchant Shipping Act 1958 and the International Convention on Civil Liability for Bunker Oil Pollution Damage, 2001 (Bunker Convention),

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the Owner, Demise Charterer, manager and operator of the Subject Vessel is strictly liable for oil pollution damage.

33. Having established the fact that there was an oil spill from the subject Vessel, and going by the provisions of law stated herein above, the 2nd Defendant, being the owner, demise charterer, manager and operator of the subject Vessel is liable for the damage caused to the marine environment, coastline and related interest of the State of Kerala, for oil pollution.

34. In view thereof, the 2nd Defendant is liable for an amount of **Rs.8554.39 Crores** towards the compensation for the oil pollution damage caused by the subject Vessel to the marine environment, coastline and related interests of the State of Kerala. Rs.8554.39 Crores being equivalent to USD 1 Billion, for which the 2nd Defendant has obtained insurance coverage for oil pollution from its' Protection and Indemnity Club, North Standard P&I. As on 30.06.2025, the reference rate of 1USD in INR is Rs.85.5439.

V.I.B-Other Pollution Damage (Cargo):

35. The Cargo Manifest of the Subject Vessel reveals that the vessel was carrying a total of 643 containers at the time of its sinking. A classification of these containers, based on the manifest, is presented in the table below.

Category of Cargo	Number of Containers
Hazardous Cargo	58
Cargo containing plastic materials	68
Other Cargo	445
Empty	72
Total	643 Containers

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36. Of the above, in 68 Containers, there were 1400 tons of plastic cargos. Of these plastic cargos, majority of them contain Polymers of ethylene, linear low density poly ethylene, polypropylene, High-density polyethylene (HDPE) and other Hazardous substances. The subject vessel along with these cargos, are at present lying at 13 Nautical Miles from Thottappally spillway, coast of State of Kerala, sunken. The salvagers (T&T Salvage Asia PTe Ltd) appointed by the 2nd and 3rd Defendant has not been able to recover any of these cargos, underdeck. The potential effects of plastics are complex and the negative effects of plastics on human and environmental health, marine flora and fauna, are significant, complex and cannot be negated.

37. Another element of pollution damage caused by the Subject Vessel is spillage of large quantities of plastic nurdles. These Plastic nurdles were part of the Plastic Cargo mentioned above. The plastic nurdles/plastic pellets are materials, when exposed to prolonged immersion in seawater, it is has the potential to fragment into micro-plastics, which may be ingested or absorbed by marine flora and fauna. Plastic nurdles—pre-production pellets usually composed of polyethylene (PE) and polypropylene (PP)—are now recognized as persistent pollutants in marine environments. Marine fauna, from zooplankton to fish, seabirds, turtles and bivalves, ingest nurdles mistaken for food. This ingestion can lead to GI blockage, ulceration, reduced nutrition, and even death. Moreover, polymer leachates—especially from virgin PP, PE, and PS—induce oxidative stress, DNA damage, and growth inhibition in marine microalgae, largely due to leached additives and metals. Furthermore, those buoyant polymers (LDPE, LLDPE, HDPE, PP) disrupt ecosystem processes: they alter sediment properties, impede gas exchange, and interfere with nesting habitats (e.g. for sea turtles). They also host biofilms that transport pathogens and invasive species across marine environments. The combined effects—

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physical obstruction, chemical toxicity, pollutant transport, microbial hitchhiking—have cascading impacts on food webs and human health, making these plastics serious environmental threats.

38. The Plaintiff is not in a position to quantify the Plastic Pellets, floating in the sea and of those eaten by the marine flora and fauna. The aftermath of these Nurdles are unknown and continuing on the marine environment of the State. Also, disintegrated cotton bales and other debris from the subject Vessel to the sea, of which some of them have beached ashore the coasts of Kerala, mostly in Thiruvananthapuram, Kollam, Alappuzha and Ernakulum Districts. The aftermath of marine damage caused by these pollutants is irreperable and has far reaching consequences.

39. Furthermore, the Subject vessel was carrying 1,502.5 tonnes of hazardous substances, including highly reactive and toxic compounds such as Calcium Carbide and Hydrazine. These chemicals are categorized under Red-category wastes due to their acute toxicity, potential to react violently with water, and long-term ecological risks. It is Class 4.3 Dangerous goods under the International Maritime Dangerous Goods Code (IMDG Code).

40. The environmental compensation for release of Plastic waste, Hazardous chemicals and other pollutants are computed in accordance with Central Pollution Control Board (CPCB) guidelines. The environmental compensation (EC) is calculated based on the methodology adopted by CPCB for calculating Environmental Compensation (EC). This method of calculation is outlined in CPCB's 2019 guideline titled "Determination of Environmental Compensation to be recovered for violation of Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016".

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41. The assessment is critical for determining the financial liability associated with environmental damage caused by unmanaged plastic pollutants. It incorporates pollutant-specific remediation costs, exposure period, and applies maximum Environmental Risk Factors (ERFs) based on pollutant severity and persistence. The Environmental compensation for pollution caused by the Subject Vessel by release of Plastic Waste to marine environment, is Rupees **30.09 crores**, release of Hazardous Chemical to the sea amounts to **Rupees 30.42 crores** and release of other pollutants to the sea is **Rupees 11.22 crores**. Thus, the total compensation payable by the 2nd Defendant to the Plaintiff for pollution damage, other than oil pollution, is **Rs. 71.73 Crores.**

42. A combined reading of V.I.A and V.I.B, the Maritime claim arising out of damage caused by the subject vessel to the environment, coastline or related interests of the State of Kerala and compensation for such damage is **Rs.71.73 Crores**.

43. This Plaintiff submits that above computation of environmental compensation, is without prejudice to the above claim and shall be subject to the compensation to be assessed by National Institute of Oceanography (NIO), entrusted by the State of Kerala.

V.II - Maritime claim arising out of measures taken to prevent, minimize or remove the damage caused by subject Vessel to the environment, coastline or related interests, in the State of Kerala and cost of reasonable measures for restoration of environment.

44. This particular head of loss is a maritime claim defined under Section 4(u) of the Admiralty Act, 2017. Pursuant to the wreckage of the subject vessel,

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various departments of the State of Kerala, has taken several measures to prevent, minimize and/or remove the Pollution Damage (Oil and Cargo).

45. The Kerala State Pollution Control Board has prepared an emergency shore line cleanup, formation of a Rapid Response Team (RRT), Water Quality Monitoring and such other, exclusively for the abovementioned Shipping Casualty. Pursuant thereto, they have incurred a cost of Rs.1, 37, 63,045/-. They have also submitted an estimate for future, preventive measures, that they might incur, which amounts to Rs.18, 00, 00,000/-.

46. The Kerala State Disaster Management Authority has played an important role in minimizing or removing the damage caused by subject Vessel to the environment, coastline or related interests, in the State of Kerala. The expenditure/reasonable costs, incurred by the said Authority is under process and hence, the Plaintiff craves leave to add/amend the suit by adding the expenditure incurred by the Kerala State Disaster Management Authority in this particular head of loss, as and when the same is available.

47. In order to ensure that the fish available along the coast of Kerala are safe for human consumption the Department of Fisheries has appointed the Central Marine Fisheries Research Institute (CMFRI), Central Institute of Fisheries Technology (CIFT) and Kerala University of Fisheries & Ocean Studies (KUFOS), for studies of water and fish tissue at definite intervals, by way of a standard protocol. In this regard, the Department of Fisheries has incurred cost of an amount 45 lakhs towards the said studies by Centre for Aquatic Resource Management and Conservation, Kerala University of Fisheries & Ocean Studies (KUFOS) for a period of 3 months.

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48. The Cost of restoration of the marine environment, coastline and other related interests are also to be borne by the State of Kerala. As a part of remediation costs, the Plaintiff has computed the same as per the Central Pollution Control Board (CPCB) guidelines. A remediation fund equivalent to five times the calculated Environmental Compensation (EC) (EC = (Q x ERF x R) + (5000 x N)) is the reasonable cost to cover the costs of all reasonable and necessary measures for ecological restoration resulting from the discharge of pollutant cargos into the marine environment. The remediation cost, thus, calculated is as provided below:-

a) Remediation cost for Hazardous Chemical Pollution = 30.42× 5 = ₹152.1 crores

b) Remediation cost for plastic pollution = 30.09 × 5= ₹ 150.45 crores

c) Remediation cost for other pollutants = 11.22 × 5 = ₹ 56.1 crores

49. The total remediation cost incurred by the Plaintiff, to cover the costs of all reasonable and necessary measures for ecological restoration resulting from the discharge of pollutant cargos into the marine environment is Rs.358.65 Crores.

50. Thus, the Maritime claim arising out of measures taken to prevent, minimize or remove the damage caused by subject Vessel to the environment, coastline or related interests, in the State of Kerala and cost of reasonable measures for restoration of environment is **Rs.378.48 Crores.**

V.III - Maritime Claim arising out of the economic loss caused to the fisherman of the State of Kerala, pursuant to the damage caused by the Subject Vessel.

51. This head of loss, is a "Maritime Claim" defined under Section 4(u) of the Admiralty (Jurisdiction and Settlement of Maritime Claims) Act, 2017 ("Admiralty Act 2017).

52. On 25.05.2025, the Disaster Management (A) Department of the State of Kerala issued specific advisories to fishermen, instructing them not to venture within a 20 nautical mile radius of the sunken Subject vessel. Pursuant to the said notification, the marine fishing activities from 25.05.2025 are significantly disrupted.

53. The Plaintiff has engaged the Department of Fisheries to conduct a study and submit an estimate of loss to fishermen livelihood. The Department of Fisheries have on 19.06.2025, formed the committee named Coordination Committee for assessing the situation related to capsizing of the cargo ship MSC ELSA 3 off the coast of Kerala to draw a detailed report of loss of livelihood to fishermen. The Kerala University of Fisheries and Ocean Studies (KUFOS) has been engaged by the department to assess the economic loss due to market scare on fish quality and loss of income due to fishing ban in 20 nautical miles area around the ship wreck.

54. The interim report/findings by the Kerala University of Fisheries and Ocean Studies (KUFOS) on the wreckage of Subject Vessel and its potential short term impacts on the ecology and fisheries along the Kerala coast south of the wreck site (located 14.6 NM off Thottappally) is 2 fold:-

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a) Economic loss to fishermen community due to market scare on quality of Fish

b) Economic loss due to fishing ban in 20 Nautical Miles around the area of wreckage of the Subject Vessel.

55. In addition to the above, the Department of Fisheries, have also computed Economic loss caused to the fisherman due to fishing ban ((loss of Man-days), possible damage of boats and fishing gear or nets.

56. As per the database of Fisheries Information and Management System(FIMS) following is the estimated number of people affected – number of active marine fishermen:-

- In Thiruvananthapuram District - 48437 active marine fishermen and 7123 allied fish workers
- In Kollam District – 18191 active marine fishermen and 17295 allied fish workers.
- In Alappuzha District – 24287 active marine fishermen and 22879 allied fish workers.
- In Ernakulum District – 11028 active marine fishermen and 11180 allied fish workers.

The plaintiff craves leave to produce the database of FIMS, of the number of active marine fishermen in Thiruvananthapuram, Kollam, Alappuzha and Ernakulum Districts, as and when it deems necessary.

57. Thus, there are total 1, 05,518 families which include 78498 marine fisher folk families in the above three districts (33980 numbers in Thiruvananthapuram District, 15235 families in Kollam, 19957 families in Alappuzha and 9326 families in Ernakulum) and also 27,020 registered allied

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fishermen families (2525 numbers of in Thiruvananthapuram, 6923 numbers in Kollam, 11375 families in Alappuzha and 6197 numbers of families in Ernakulum).

V.III.1 Economic loss due to market scare on fish quality:-

58. The economic loss due to market scare on fish quality, is computed as below:-

a) Average daily fish catch data during May/June 2024 =Cumulative landing/61 days (A).

b) A=49560 ton/61 days = 812.5 ton/day (assumed to represent 70% of the landing, another 30% is assumed to have landed at minor fish landing centres).

c) Total (major + minor landing centers) daily fish landing = 812.5 x 1.43 = 1161.9 to/day or 1161900 kg/day (B).

d) Expected fish landing (in ton) between 25th May and 8th June (15 days) = 1161.9 x 15 days = 17428.5 tons or 17428500 kg.

e) Reports from different sources indicate a downfall in sea fish price by 80% as on the 25.05.2025, following the market scare on fish quality due to the oil and cargo pollution by the Subject Vessel.

f) The market slowly recovered reducing the loss in sale price to 20% only by 08.06.2025.

g) Taking this into consideration, the compensation is computed on a 50% loss in sale price averaged for the period 25th May to 8th June, 2025.

h) The average (average of different varieties of fish) market price per kg, sea fish was round Rs.400/- kg prior to the pollution. A 50% price loss after the pollution, accounts to a loss of Rs.200/kg of fish sold.

Sea-17

59. Thus, the loss incurred by the fishermen community of the State of Kerala due to the pollution (oil and Cargo) by the Subject Vessel and the resultant market scare on the quality of fish, is 17428500kg x Rs.200 = 348,57,00,000 / **Rs.349 Crores.**

V.III.2. Landing loss due to fishing Ban in 20 Nautical Miles, at Alappuzha

60. The Plaintiff has imposed a fishing ban in the 20 Nautical Mile area around the area of wreckage of the Subject Vessel on 25.05.2025 at Alappuzha and this ban is expected to continue till the sunken ship is salvaged, which is approximately at least 6 months.

61. The wreck of the Subject Vessel is located in close promixity to the Indian Coastline at a depth of 51 metres, there is a heightened risk of oil spill due to the bunkers in the sunken vessel, Further, the presence of dangerous goods, including those capable of reacting with water to emit flammable gases (IMDG Class 4.3), in addition to other environmentally sensitive cargos, poses a severe risk to the marine ecosystem and coastal environment. Therefore, to avoid damage and loss of life of fishermen, their boats and fishing gears, the fishing ban in the 20 Nautical Mile area around the area of wreckage of the Subject Vessel continues to be in operation.

62. The average monthly fish landing at Alappuzha is 412 tons and the total monthly landing (including the assumed 30% landing at minor landing centres) is expected to be 589.2 tons. The 20NM fishing ban area approximately represents 50% of the fishing area off Alappuzha. Based on this statistics, the estimated loss from the fishing ban will be:

a) (Monthly catch/2) x 6 months = (589.2tons/2) x 6 = 1767.6 ton or 1767600 kg fish.

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b) At the average rate of Rs.400/kg fish, the economic loss will be;
c) 1767600kg x Rs. 400 = Rs.70,70,40,000 or **Rs.71 Crores**

V.III.3. Economic loss to the fisherman due to fishing ban of 20NM for 8 days

63. The department of Fisheries has conducted a detailed study on the loss of Man-days, of fishermen folk in the Thiruvanathapuram, Kollam, Alappuzha, and Ernakulum Districts.

64. The Per Capita income of fishermen during 2023-24 was Rs.1,56,397/-. On projecting the GSDP of Fisheries sector for the year 2024-25 using the previous four years GSDP data the average income per day calculated for 250 mandays Rs.207830/250 is Rs.830/-. Accordingly, the income loss from livelihood to the fishermen of the said four districts for the period 25th May to 1st June 2025, calculated based on the per capita income comes to Rs. 106.51 crore. The details are as follows:

Loss of Livelihood to Fishermen from 25th May 2025 to 1st June 2025 based on per capita income Rs.1,56,397/-				
District	Marine Fisher folk (No.)	Allied Fisher folk (No.)	Total Fisher folk (No.)	Income loss (in crore) of fishermen for 8 days @ Rs.830/-day
Thiruvananthapuram	48437	7123	55560	36.89
Kollam	18191	17295	35486	23.56
Alappuzha	24286	22879	47165	31.32
Ernakulam	11027	11179	22206	14.74
Total	101941	58476	160417	106.51

Thus, a total of **Rs. 106.51 Crore** is submitted as an interim loss assessment for loss of mandays.

Sabal J.

65. In addition to the above, the loss due to damage of boats and fishing gear is being received in districts viz. Thiruvananthapuram, Kollam, & Alappuzha and the same is being physically verified for assessing the extent of loss. Hence the Plaintiff craves leave to further amend this maritime claim, as and when the necessary details are available. The Plaintiff , also reserves its right to claim damages for the Mackerel fishes and expenses incurred with regard to enforcement of fishing ban in 20NM area.

66. Thus, Maritime Claim arising out of the economic loss caused to the fisherman of the State of Kerala, pursuant to the damage caused by the Subject Vessel, is **Rs.526.51 Crore**

VI. CONSOLIDATED STATEMENT OF CLAIM

Sl.No.	Maritime Claim	Amount
1.	Maritime claim arising out of damage caused by the subject vessel to the environment, coastline or related interests of the State of Kerala and compensation for such damage.	**Rs.8626.12 Crores**
2.	Maritime claim arising out of measures taken to prevent, minimize or remove the damage caused by subject Vessel to the environment, coastline or related interests, in the State of Kerala and cost of reasonable measures for restoration of environment.	**Rs.378.48 Crores.**
3	Maritime Claim arising out of the economic loss caused to the fisherman of the State of Kerala, pursuant to the damage caused by the Subject Vessel.	**Rs.526.51Crores.**
	Total	**Rs.9,531.11 Crores**

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(Rupees Nine Thousand Five Hundred and Thirty-One Crores)

VII. THE 2nd DEFENDANT IS THE OWNER OF THE 1st DEFENDANT VESSEL AND THE SUBJECT VESSEL.

67. Though the Subject Vessel is shown to be registered by, the Company "Elsa 3 Maritime Inc", the registered address of the said Company is the same as that of the 2nd Defendant. The 1st Defendant Vessel is under the registered ownership of MANDJET OCEANWAY LTD which also operates under the same address as that of the 2nd Defendant. The Equasis Report dated 30.06.2025 of the 1st Defendant Vessel, shows that 1st Defendant Vessel's Registered Owner and 2nd Defendant, operates under the same address. This evidences that the 1st Defendant Vessel and MSC Elsa 3 are, owned by the 2nd Defendant. The Equasis report is an information system which collates existing safety-related information on ships from both public and private sources, and makes it available on the Internet.

THE HIGH COURT OF KERALA

68. The Plaintiff states that while, there is nothing illegal or wrong in setting up one Ship Owning Companies to insulate the other companies and that it was an accepted norm peculiar to shipping industry, such practice should not be within an intention to defraud and act dishonesty, to defend the potential claims against the Owner of the Vessel. In the present case, *MSC ELSA 3* is registered under the ownership of *Elsa 3 Maritime Inc.*, a Liberian flagged Vessel. However, the said registered ownership is merely nominal and not indicative of true operational and financial control.

69. The modus of operation undertaken by 2nd Defendant, is illegal, with an intention to defraud the Central and State machineries and mechanism, and regulations under various central Acts. This is more so evident from the fact that the vessel named MSC Manasa F, bearing IMO No.9220847, though is

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registered under the name of ALION maritime LTD-LIB, its registered address is that of the 2nd defendant. Similar is in the case of the vessel MV MSC Melissa- bearing IMO No.9926918, MV MSC FLORA-bearing IMO No.9978937, MV MSC AKITETA II-bearing IMO No.9220847, MV MSC AGRIGENTO-bearing IMO No.9618276, MV MSC MICHELA-bearing IMO No.9720512, MV MSC KATIE-bearing IMO No.9467457, MV MSC SABRINA III-bearing IMO No.8714205, MV MSC NAIROBI X-bearing IMO No.9605243.

70. 2nd Defendant Company sets up shell companies/paper companies and then registers the vessels which are actually owned by them in the name of these shell companies/paper companies only with intention to defraud the potential claims against them. For all practical purposes, 2nd Defendant Company is the defacto owner and ultimate beneficiary of the revenue earned by these vessels. Even if the plaintiff were to initiate an action on its maritime claims as against the purported registered owner of the subject vessels, it will not be able to realize its claims because the purported registered owner has no assets or properties worth the claim of the Plaintiff, as known to the Plaintiff.

71. The 2nd Defendant is a global container shipping company incorporated and headquartered in Geneva, Switzerland. It operates the second largest container shipping fleet in the world, with more than 700 vessels deployed globally on liner and charter routes. The 2nd Defendant functions as the principal commercial operator for the MSC Group, which consists of multiple ship-owning, ship-operating, chartering, crewing, and management entities, structured through numerous wholly owned or affiliated subsidiaries and special purpose vehicles (SPVs), incorporated in various jurisdictions including Liberia, Panama, Cyprus, Malta and others. These SPVs hold registered title to

individual vessels within the MSC fleet but are financially, commercially, and operationally controlled, directed, and managed by 2nd Defendant.

VII. I. Indicators of Control by the 2nd Defendant on the Subject Vessel (Breakdown)

A. Commercial Control

72. The Plaintiff states that the 2nd Defendant Vessel has Commercial Control over the Subject Vessel. This statement is supported by the Bills of Lading issued by 2nd Defendant to Consignees of various Containers on Board the Subject Vessel and the Arrival Notices issued by the 4th Defendant, on behalf of the 2nd Defendant. The Bills of Lading issued by 2nd Defendant to Consignees of various Containers on Board the Subject Vessel and the Arrival Notices issued by the 4th Defendant, shows that the Commercial Management of the Subject Vessel is with the 2nd Defendant.

73. It is submitted that Voyage Scheduling are conducted by the 2nd Defendant and through its global booking system. Thus, entire commercial control of the Subject Vessel is with the 2nd Defendant.

B. Financial Control

74. The Plaintiff states that the "Group Principal", of the Subject Vessel for the purpose of Protection and Indemnity Cover (P&I) Cover for Oil Pollution is the 2nd Defendant. The P&I Cover by the Subject Vessel is arranged by the 2nd Defendant through its P&I Club, North Standard Limited, UK.

75. Rules 13.14 to 13.16 of P&I Rules, issued by North Standard Limited, is produced herein below:

> "Group Entries
>
> 13.14 The managers may accept an entry on the basis that the ship is part of a group rating agreement and assess premium accordingly.

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13.15 The member or a joint entrant or such other person as may be agreed in writing by the managers must be designated group principal and any communication from or on behalf of the club to the group principal is deemed to be within the knowledge of all insured parties in the group and any communication from and action taken by the group principal is deemed conclusively to be made with the full approval of any and all insured parties within that group. Neither the club nor the managers, their servants or agents, shall be liable in any other manner whatsoever to any insured party in the event that the group principal did not, in fact, have such power and authority.

13.16 All persons entering ships under a group rating agreement and the group principal remain jointly and severally liable to pay all amounts due to the club in respect of any and all ships in the same group."

76. The Plaintiff submits that a perusal of the above Rules shows the "Group Principal" i.e. the 2nd Defendant, is liable for payment of Premium to the Club. The payment of Insurance of the Vessel by the 2nd Defendant for the Subject Vessel, would only mean that the 2nd Defendant Vessel has financial control over the Subject Vessel.

77. The 2nd Defendant has appointed T&T Salvage Asia, PTE Ltd, No. 29, Tuas Avenure 4, Singapore 639379 for salvage operations. T&T Salvage Asia, PTE Ltd were directly contracted and compensated by 2nd Defendant, demonstrating financial control and responsibility for the vessel.

*C. **Technical & Operational Control***

The vessel's crewing, technical management and ISM compliance are coordinated by companies affiliated or engaged by 2nd Defendant, further demonstrating full operational dominion.

D. Government Conduct Recognition

78. The Union of India and the competent authorities/officers thereof, has issued various statutory notices directly addressed to the 2nd Defendant concerning incidents involving the subject vessel, including notices pertaining to environmental pollution and remedial action, thereby recognizing 2nd Defendant as the operational entity responsible for the vessel.

79. The 1st Defendant Vessel and Subject Vessel are, thus, Sister Vessels.

VIII. IN THE ALTERNATIVE, 2nd Defendant is the Demise Charterer of the 1st Defendant Vessel and the Subject Vessel.

80. Without prejudice to the submissions of the Plaintiff in paragraph VII above, it is submitted that the 2nd Defendant Vessel is the Demise Charterer of the 2nd Defendant Vessel and the Subject Vessel. Therefore, this admiralty suit is maintainable as against arrest of the 1st defendant vessel even if subject vessel was on demise charter by the second dependent. A plaintiff reading of Section 5(2) of the Admiralty Act 2017 r/s Section 5 (1)(b)of the said Act provides for arrest of the first defendant vessel for the purpose of providing security in respect of the above maritime claims set out by the plaintiff, for which the second defendant as demise charterer of the subject vessel is liable.

81. The plaintiff states that as per Section 7 of the Environment Protection Act, "no person carrying on any industry, operation or process shall discharge or emit or permit to be discharged or emitted any environmental pollutants in excess of standards as may be prescribed". Admittedly, the subject vessel, demised chartered by the 2nd defendant , who is responsible for the operation of the subject vessel, has caused pollution (oil and cargo and have caused significant loss to the marine environment, coastline and other related interest of

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the State and have made significant economic loss to the livelihood of the fishermen. Thus the 2nd defendant as demise charterer is liable for the aforesaid maritime claims.

82. The International Convention of Civil liability for Bunker Oil Pollution Damage 2001 establishes strict liability for pollution damage. As per Article 3 of the said convention, "shipowner" means the owner, including the registered owner, bareboat charterer, manager and operator of the ship. Article 3 thereof states that the "shipowner" at the time of an incident shall be liable for pollution damage caused by any bunker oil on board or originating from the ship. India has ratified the said convention in the 2015; therefore, the convention applies to the subject vessel and the 2nd defendant. Therefore, the 2nd defendant is liable for pollution damage, as per the provisions of the said convention.

83. In view of the above the plaintiff is entitled to invoke the admiralty jurisdiction of this Hon'ble High Court under Section 5(1)/(a) read with Section 5(2) of the Admiralty Act 2017, to enforce its maritime claim and recover the outstanding sums, by an action *in rem* against the first defendant Vessel in lieu of the subject vessel, against which the maritime claims, as mentioned above, arises.

84. The first defendant Vessel is presently lying at the Port and Harbour of Vizhinjam International Seaport, within the territorial waters of India and within the jurisdiction of this Hon'ble Court. Hence, this Hon'ble Court has the necessary jurisdiction to entertain, try and dispose of the present suit.

85. The Plaintiff further seeks that pending the hearing and final disposal of the Suit, the Defendant Vessel together with her hull, tackle, machinery,

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engines, paraphernalia and all appurtenant be arrested, condemned and sold for payment to the Plaintiff by and pursuant to the orders and directions of this Hon'ble Court and the net sale proceeds therein be deposited with the Registry of this Hon'ble Court and applied towards satisfaction of the Plaintiff's claim together with interest and costs.

86. Therefore, the Plaintiff submits it is just, necessary and convenient that pending the hearing and final disposal of the suit, this Hon'ble Court be pleased to issue a Warrant of Arrest against the Defendant Vessel together with her hull, tackle, engines, machinery, paraphernalia and all other appurtenant.

87. The Plaintiff seeks that it is just, necessary, and convenient that this Hon'ble Court be pleased to pass emergent orders against the Defendant Vessel in order to protect and preserve the Plaintiff's claim against the Sister Vessel. If the ad-interim reliefs as prayed for are not granted, grave harm, prejudice, and injury would be caused to the Plaintiff. The balance of convenience is also clearly in favour of the Plaintiff. The Plaintiff has more than a *prima facie* case/reasonably arguable best case/an arguable best case to warrant the arrest of the Defendant Vessel.

88. The Plaintiff will rely upon a list of documents which is annexed hereto. The Plaintiff will rely upon a compilation of documents when produced.

89. The Plaintiff craves leave to submit additional documents and statements, if required, during the course of the hearing before this Hon'ble Court.

90. The Plaintiff has filed the present suit in extreme haste. There is every possibility that the Defendant Vessel may leave the jurisdiction of this Hon'ble

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Court, in which case the Plaintiff herein shall face extreme economic hardship in recovering the sums due and payable to them by the Owner or by the 2nd Defendant.

91. In view of the aforementioned urgency, the Plaintiff has presented a brief narration of the facts necessitating the filing of the instant suit. Further, the Plaintiff has used its best endeavors to supplement its case with the help of documents available at such notice, all of which have been annexed to the Plaint.

92. The Plaintiff has made every effort to ensure that all available documents are placed before this Hon'ble Court to comply with the Plaintiff's duty of full and frank disclosure while seeking an ex-parte order of arrest of the first Defendant Vessel. The Plaintiff craves leave to add, alter and amend the Plaint and or rely upon such other and further documents as may be relevant and necessary for the purposes of the Plaintiff's claim.

93. The Plaintiff seeks the leave of the Court to arrest another Vessel of 2nd Defendant, if the 1st Defendant Vessel is unable to secure the aforementioned maritime claims of the Plaintiff.

94. The cause of action, in the above heads of maritime claims arose as against the second Defendant on 24.05.2025 when the subject Vessel developed a starboard list, while transiting from Vizhinjam International Seaport to Kochi. Therefore, the Plaintiff suit is within limitation and no part of the Plaintiff's claim is barred by law of limitation.

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VIII. PRAYER

95. The Plaintiff therefore prays:

i. That this Hon'ble Court may be pleased to pass a decree or judgment directing the 1st and 2nd Defendant to pay to the Plaintiff a sum of Rs.9531 Crores towards the maritime claims set out in, paragraph above, at the aforesaid rate of 6% per annum from the date of the suit till date of judgment and decree and thereafter at 12% from the date of decree till realization.

ii. In the alternative, this Hon'ble Court may be pleased to order and decree against the first Defendant Vessel to pay to the Plaintiff a sum equal to its value of hull, tackle, machinery, engines, gears, articles, things, bunkers, apparel, plant, furniture and other appurtenances, towards the maritime claims set out in, paragraph above.

iii. The 1st Defendant Vessel along with her hull, tackle, machinery, engines, gears, articles, things, bunkers, apparel, plant, furniture and other appurtenances at present lying at the Port and Harbour of 5th Defendant, within territorial waters of India and within the jurisdiction of this Hon'ble Court be arrested by a warrant of arrest of this Hon'ble Court and the same may be condemned in respect of the claims narrated herein above and be ordered to be sold along with her hull, tackle, machinery, engines, gears, articles, things, bunkers, apparel, plant, furniture and other appurtenances and net sale proceeds be applied to this satisfaction of the Plaintiff's claim in the suit.

iv. That pending the hearing and final disposal of the suit, the 1st Defendant Vessel along with her hull, tackle, machinery, engines, gears, articles,

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things, bunkers, apparel, plant, furniture and other appurtenances at present lying at the Port and Harbour of 5th Defendant, within territorial waters of India, or wherever she is withing the territorial waters of India, be arrested by a warrant of arrest of this Hon'ble Court.

v. That pending the hearing and final disposal of the suit, the first Defendant Vessel along with her hull, tackle, machinery, engines, gears, articles, things, bunkers, apparel, plant, furniture and other appurtenances at present lying at the Port and Harbour of 5th Defendant, within territorial waters of India, or wherever she is withing the territorial waters of India be ordered to be appraised and sold and net sale proceeds thereof be ordered to be deposited in this Hon'ble Court to the credit of the Plaintiff's claim.

vi. For ad interim reliefs in terms of prayer, clause (iii) & (iv).

vii. For the costs of suit.

viii. For such other and further reliefs as this Hon'ble Court may deem fit and proper in the facts and circumstances of the case.

Dated this 7th the day of July, 2025.

SEERAM SAMBASIVA RAO IAS
Special Secretary
Environment Department
Govt. of Kerala. Secretariat
Thiruvananthapuram

Kparvathy

Parvathy Kottol
Government Pleader

5.8.25

Plaintiff
(represented by the Special Secretary, Environment)

VALUATION

The suit is valued at Rs. 9531 Crores and the Court Fees payable as per the Kerala Court fees and Suits Valuation Act, 1959 is Rs. 10,00,000/-.

Court fee is not payable under Section 73A of Kerala Court Fees and Suits Valuation Act, 1959

Dated this 7th the day of July, 2025

Parvathy Kottol
Government Pleader

THE HIGH COURT OF KERALA
सत्यमेव जयते

For the Plaintiff

SEERAM SAMBASIVA RAO IAS
Special Secretary
Environment Department
Govt. of Kerala, Secretariat
Thiruvananthapuram

VERIFICATION

I, Seeram Sambasiva Rao, aged 39 years, S/o Venkata Raman residing at 2C Season, Summer Breeze, Kuravankonam, Thiruvanthapuram - 695003 do hereby verify that I am aware of the facts stated in the above paragraphs and I am duly authorized to sign and verify this plaint and that all facts stated above are and correct to the best of our knowledge and belief.

Dated this 7th the day of July, 2025

PLAINTIFF

THE HIGH COURT OF KERALA
सत्यमेव जयते

SEERAM SAMBASIVA RAO IAS
Special Secretary
Environment Department
Govt. of Kerala, Secretariat
Thiruvananthapuram

LIST OF DOCUMENTS

Sl. No.	Description of documents	Date of Document
1	Relevant page of the Ship profile of MV MSC AKITETA II-bearing IMO No.9220847 obtained from www.equasis.org	**03.07.2025**
2	Relevant pages of the Ship Profile of MV MSC **ELSA 3** (IMO No. **9123221**) taken from the website https://www.equasis.org/ .	**30.06.2025**
3	True copy of the cargo manifest of MSC Elsa 3 as received from Mercantile Marine Department, Kochi.	**10.06.2025**
4	A true copy of the Press Release by Ministry of Defence, posted on 26.05.2025 on "Oil Slick Detected after Liberian Container Vessel Sinks off Kerala Coast, ICG Leads Pollution response".	**26.05.2025**
5	A true copy of the list of Containers retrieved by the Plaintiff.	**30.06.2025**
6	Photographs of the Plastic Pellets and cotton balls, beached at Thiruvananthapuram, Kollam, Alappuzha, and Ernakulam.	**25.05.2025 onwards**
7	A copy of the specific advisories to fishermen by the Kerala State Disaster Management.	**25.05.2025**
8	A true copy of the G.O.(Ms)No.11/2025/DMD dated 29.05.2025 declaring the sinking of the Vessel MSC Elsa 3 as State Disaster.	**29.05.2025**
9	A true copy of GO (Rt) No. 371/2025/DMD dated 3-6-2025 ordering Interim cash relief assistance of Rs.1000/- to each fishermen family of Ernakulam, Alappuzha, Kollam and Thiruvananthapuram and 6 kg rice to each fishermen family.	**03.06.2025**
10	A true copy of the letter dated 01.07.2025 from the Divisional Forest Officer, Chalakkudy to the Director of Department of Environment and Climate Change regarding the report on Dolphin strandings at Munnakkal Beach, Azheekode Thrissur along with photographs of the carcass of Dolphins.	**01.07.2025**

11	A true copy of the SITREP dated 27.06.2025 available from the official website of the Kerala State Disaster Management authority.	**27.06.2025**
12	A true copy of the GO (Rt) No.363/2025/DMD dated 30.05.2025 of the Disaster Management (A) Department.	**30.05.2025**
13	A true copy of the Notice dated 24.05.2025 from the Mercantile Marine Department; Kochi to the 2nd Defendant.	**24.05.2025**
14	A true copy of the letter dated 26.05.2025 from Director General, India Coast Guard.	**26.05.2025**
15	A true copy of the notice under Section 356(J) of Merchant Shipping Act 1958 and Article 9 of the Nairobi International Convention on the Removal of Wrecks 2007, dated 30.05.2025 from Directorate General of Shipping.	**30.05.2025**
16	A true copy of the RBI Reference rate as on 30.06.2025.	**30.06.2025**
17	A true copy of the paper titled "Plastic Waste in Marine Environment; a review of sources, occurrence and effects", published in Journal of Science of the Total Environment.	**24.05.2016**
18	A true copy of the paper titled "EFFECT OF CALCIUM CARBIDE ON BIO-CHEMICAL PROPERTIES OF ROSY BARB, PETHIA CONCHONIUS (HAMILTON, 1822)" published in connect journals.	**08.02.2019**
19	A true copy of the paper titled "Maritime Pollution in the Indian Ocean after the MV X-Press Pearl accident", published in Journal of Marine Pollution Bulletin.	**21.10.2022**
20	A true copy of the CPCB's 2019 guideline titled "Determination of Environmental Compensation to be recovered for violation of Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016".	**05/2019**

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21	A true copy of the report on the assessment of environmental compensation and remediation cost by the Director, Directorate of Environment and Climate Change, Government of Kerala.	**01.07.2025**
22	A true copy of the action taken by the Kerala State Pollution Control Board in view of the ship wreck incident.	**24.05.2025**
23	A true copy of the letter dated 26.06.2025 from the Chairman, Kerala State Pollution Control Board to the Special Secretary, Environmental Department with regard to their claim pursuant to sinking of MSC Elsa 3.	**26.06.2025**
24	A true copy of the Minutes of Meeting dated 28/05/2025 by the Hon'ble Minister of Fisheries, Saji Cherian along with other dignitaries pursuant to sinking of MSC Elsa 3.	**28.05.2025**
25	A true copy of the study conducted by Centre for Aquatic Resource Management and Conservation, KUFOS on the subject MSC Elsa-3 Container mishap: Impact assessment studies - Fish eggs and larvae.	
26	A true copy letter dated 25.06.2025 from the Director of Fisheries to the Special Secretary to Environment with regard to their claim pursuant to sinking of MSC Elsa 3.	**25.06.2025**
27	Relevant page of the Company Profile of Elsa 3 Maritime INC taken from the website https://www.equasis.org/ .	**03.07.2025**
28	Relevant page of the Company Profile of Chloe Navigation Ltd - LIB taken from the website https://www.equasis.org/ .	**03.07.2025**
29	Relevant page of the Ship profile of MSC CAGLIARI IV - IMO n° 9318187 obtained from www.equasis.org	**03.07.2025**
30	Relevant page of the Company profile of ALION MARITIME LTD- LIB, bearing IMO No.6233177 obtained from www.equasis.org	**03.07.2025**

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31	Relevant page of the Ship profile of MV MSC Melissa, bearing IMO No.9926918 obtained from www.equasis.org	03.07.2025
32	Relevant page of the Company profile of AVANTAGE Enterprises INC, bearing IMO No.1977801 obtained from www.equasis.org	03.07.2025
33	Relevant page of the Ship profile of MV MSC FLORA-bearing IMO No.9978937 obtained from www.equasis.org	03.07.2025
34	Relevant pages of the Ship Profile of MV MSC **Manasa F** (IMO No **9220847**) taken from the website https://www.equasis.org/ .	03.07.2025
35	Relevant page of the Ship profile of MV MSC AGRIGENTO-bearing IMO No.9618276 obtained from www.equasis.org	03.07.2025
36	Relevant page of the Ship profile of MV MSC MICHELA-bearing IMO No.9720512 obtained from www.equasis.org	03.07.2025
37	Relevant page of the Ship profile MV MSC KATIE-bearing IMO No.946745718 obtained from www.equasis.org	03.07.2025
38	Relevant page of the Ship profile of MV MSC SABRINA III-bearing IMO No.8714205 obtained from www.equasis.org	03.07.2025
39	Relevant page of the Ship profile of MV MSC NAIROBI X-bearing IMO No.9605243 obtained from www.equasis.org	03.07.2025
40	A copy of the Bills of Lading issued by 2nd Defendant to Consignees of various Containers on Board the Subject Vessel and the Arrival Notices issued by the 4th Defendant, on behalf of the 2nd Defendant.	22.02.2025 & 28.05.2025
41	A copy of the Certificate of Entry issued by North Standard P&I, dated 07.02.2025, for the Subject Vessel.	07.02.2025
42	A copy of the letter from Director of Fisheries to Special Secretary Environment on revised loss of Manday of fishermen	04.07.2025

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BEFORE THE HON'BLE HIGH COURT OF KERALA AT ERNAKULAM
(Admiralty Jurisdiction)

Adml.S. No..... of Year 2025

State of Kerala
Represented by its Special Secretary : Plaintiff

Vs

Owners and parties interested in
M V MSC AKITETA II (IMO No. **9220847**)
& Ors : Defendants

AFFIDAVIT

I, Seeram Sambasiva Rao, aged 39 years, S/o Venkata Raman residing at 2C Season, Summer Breeze, Kuravankonam, Thiruvanthapuram - 695003 do hereby solemnly affirm and state as follows.

1. I am the Special Secretary, Environment Department, who has been authorized by the State of Kerala, vide order dated 30.06.2025. to verify and sign the present admiralty suit. I know the facts of the case and am competent and duly authorized to swear this affidavit.

2. The above admiralty suit is filed for Maritime Claims under Section 4 of the Admiralty (Jurisdiction and Settlement of Maritime Claims) Act, 2017 (22 of

Seal 7

2017), towards the loss/damages incurred by State of Kerala, pursuant to sinking of the vessel, MSC Elsa 3 and resultant pollution thereof.

3. Vide GO (Rt) No.363/2025/DMD dated 30.05.2025, the Department of Disaster Management has authorized me as Principal Impact Assessment Officer. I have been authorized to make all necessary arrangements for study of potential damage caused by Oil Spill from the vessel MSC Elsa and also from the Containers/parts thereof beached ashore and from the Cargoes floating and beached on the shore of the Coast of Kerala, including steps for restoration and remediation by engaging various Scientific and Research Institutions/Experts.

THE HIGH COURT OF KERALA
सत्यमेव जयते

4. Pursuant to the above, I have made an assessment of the loss incurred and the likely future loss to be incurred by the State Government, on account of the above incident, based on the report submitted by the Department of Fisheries and information collected from various other departments, including Disaster Management Department, Kerala State Disaster Management Authority, Local Self Government Department, Kerala State Pollution Control Board and Central Agencies empowered under the Merchant Shipping Act, 1958.

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5. I have read out and understood the averments in the plaint. I put my signature on the plaint only after reading out and understanding the averments. I am producing documents along with the plaint. The documents produced are true copies of their respective Originals and computer print outs. Hence, it is humbly prayed that this Hon'ble Court may be pleased to accept the plaint along with this affidavit and documents into file and issue summons to the defendants and order arrest of the Defendant Vessel "M V MSC AKITETA II" failing which irreparable injury and hardship will be caused to the Plaintiff.

THE HIGH COURT OF KERALA सत्यमेव जयते

6. Therefore, it is humbly prayed that this Hon'ble Court may be pleased to accept the plaint along with the affidavit and documents into file and issue summons to the defendant in the interest of justice.

Dated this the 7th day of July, 2025

DEPONENT

SEERAM SAMBASIVA RAO IAS
Special Secretary
Environment Department
Govt. of Kerala Secretariat
Thiruvananthapuram

Solemnly affirmed and signed before me by the deponent who is personally known to me on this .7th.. Day of July 2025 at my office in Ernakulam

PARVATHY KOTTOL
GOVERNMENT PLEADER

Equasis - Ship folder
MSC AKITETA II

imo: 9220847

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Ship informations

• Ship particulars

Information		Since
IMO number :	9220847	
Name of ship :	MSC AKITETA II	(since 01/02/2025)
Call sign :	D5WN4	
MMSI :	636019864	
Gross tonnage :	26061	(during 2001)
DWT :	30592	
Type of ship :	Container Ship	(during 2001)
Year of build :	2001	
Flag :	Liberia	(since 01/03/2020)
Status of ship :	In Service/Commission	(during 12/2001)
Last update :	02/07/2025	

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• Management detail

IMO	Role	Name of company	Address	Date of effect
1535947	ISM Manager	MSC SHIPMANAGEMENT LTD	MSC House, 8, Spyrou Kyprianou Avenue, 3070, Limassol, Cyprus.	since 21/02/2025
0152944	Ship manager/ Commercial manager	MSC MEDITERRANEAN SHIPPING CO	chemin Rieu, 12-14, 1208, Geneva, Switzerland.	since 20/02/2025
0145063	Registered owner	NAIRNE OCEANWAY LTD	C/O: MSC Mediterranean Shipping Co SA chemin Rieu, 12-14, 1208, Geneva, Switzerland.	since 20/02/2025

• Classification surveys

Classification society	Date survey	Date next survey
Bureau Veritas (IACS)	08/01/2022	04/01/2027

• Safety management certificate

Classification society	Date survey	Date expiry	Date of status	Status	Reason	Type
Bureau Veritas (IACS)	26/06/2025	26/06/2030	21/02/2025	Delivered		Convention
Registro Italiano Navale (IACS)	15/07/2024	08/08/2029				Convention

• P&I information

Name of P&I insurer	Recorded on
Britannia Steamship insurance Association Ld	01/07/2025
Steamship Mutual Underwriting Association (Bermuda)	20/06/2025
UK P&I Club	20/02/2025

THE HIGH COURT OF KERALA सत्यमेव जयते

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Ship inspections

• List of port state control

Authority	Port of inspection	Date of report	Detention	PSC organisation	Type of inspection	Duration (days)	Number of deficiencies
Singapore	Singapore	19/02/2025	N	Tokyo MoU	Follow-up inspection		
Singapore	Singapore	18/02/2025	N	Tokyo MoU	Initial inspection		5
Philippines	Manila South Harbour	09/11/2024	N	Tokyo MoU	Follow-up inspection		
Hong Kong, China	Hong Kong Marine Department	27/09/2024	N	Tokyo MoU	Follow-up inspection		
Hong Kong, China	Hong Kong Marine Department	26/09/2024	N	Tokyo MoU	Initial inspection		5
Japan	Osaka	15/04/2024	N	Tokyo MoU	Initial inspection		1
Vietnam	Ho Chi Minh City	30/11/2023	N	Tokyo MoU	Initial inspection		
Vietnam	Ho Chi Minh City	26/09/2023	N	Tokyo MoU	Follow-up inspection		
				Tokyo MoU	Initial inspection		
China Peoples's Republic	Xiamen	17/07/2023	N	Tokyo MoU	Initial inspection		4
China Peoples's Republic	Shenzhen	21/04/2023	N	Tokyo MoU	Follow-up inspection		
				Tokyo MoU	Initial inspection		2
Vietnam	Ho Chi Minh City	27/07/2022	N	Tokyo MoU	Initial inspection		1
China Peoples's Republic	Xiamen	27/01/2022	N	Tokyo MoU	Initial inspection		
Kenya	Mombasa	09/07/2019	N	Indian Ocean MoU	Initial inspection	0	
France	Longoni	15/11/2018	N	Indian Ocean MoU	Initial inspection	0	
Kenya	Mombasa	14/03/2018	N	Indian Ocean MoU	Initial inspection	0	
Kenya	Mombasa	03/04/2017	N	Indian Ocean MoU	Initial inspection	0	
Kenya	Mombasa	14/06/2016	N	Indian Ocean MoU	Initial inspection	0	

THE HIGH COURT OF KERALA सत्यमेव जयते

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• List of port state control

Authority	Port of inspection	Date of report	Detention	PSC organisation	Type of inspection	Duration (days)	Number of deficiencies
Kenya	Mombasa	31/12/2015	N	Indian Ocean MoU	Initial inspection	0	
Kenya	Mombasa	16/07/2015	N	Indian Ocean MoU	Initial inspection	0	1
Kenya	Mombasa	28/01/2015	N	Indian Ocean MoU	Initial inspection	0	
France	Le Port	27/06/2013	N	Indian Ocean MoU	Initial inspection	0	1
France	Nantes	29/03/2010	N	Paris MoU	Initial inspection	0	
Belgium	Antwerp	28/09/2009	N	Paris MoU	Initial inspection	0	7
Belgium	Antwerp	22/12/2008	N	Paris MoU	Initial inspection	0	
Belgium	Antwerp	16/01/2008	N	Paris MoU	Initial inspection	0	
Belgium	Antwerp	14/03/2007	N	Paris MoU	Initial inspection	0	
France	Nantes	23/08/2006	N	Paris MoU	Initial inspection	0	
Belgium	Antwerp	25/01/2006	N	Paris MoU	Initial inspection	0	
France	Nantes	18/03/2005	N	Paris MoU	More detailed inspection	0	2
France	Montoir/bret	09/08/2004	N	Paris MoU	Initial inspection	0	
Belgium	Antwerp	22/01/2004	N	Paris MoU	More detailed inspection	0	1
France	Montoir/bret	09/12/2003	N	Paris MoU	Initial inspection	0	2
France	Montoir/bret	05/02/2003	N	Paris MoU	Initial inspection	0	
Germany	Hamburg	12/06/2002	N	Paris MoU	Initial inspection	0	
Singapore	Singapore	14/01/2002	N	Tokyo MoU			

THE HIGH COURT OF KERALA

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• Human element deficiencies

PSC organisation	Authority	Port of inspection	Date of report	Human element deficiencies
Paris MoU	Belgium	Antwerp	28/09/2009	2
Paris MoU	France	Nantes	18/03/2005	1

THE HIGH COURT OF KERALA
सत्यमेव जयते

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Ship history

• Current and former name(s)

Name of ship	Date of effect	Source
MSC AKITETA II	since 01/02/2025	IHS Maritime
Akiteta	since 01/01/2022	IHS Maritime
Marie Delmas	during 2001	IHS Maritime

• Current and former flag(s)

Flag	Date of effect	Source
Liberia	since 01/03/2020	IHS Maritime
Bahamas	since 01/10/2011	IHS Maritime
Cyprus	since 01/11/2007	IHS Maritime
Bahamas	since 01/01/2001	IHS Maritime

• Current and former classification status

Classification society	Date of survey	Sources
Bureau Veritas (IACS)	08/01/2022	Bureau Veritas
Bureau Veritas (IACS)	28/01/2017	Bureau Veritas
Bureau Veritas (IACS)	31/01/2012	Bureau Veritas
Bureau Veritas (IACS)	28/03/2007	Bureau Veritas
Bureau Veritas (IACS)	04/01/2002	Bureau Veritas

HIGH COURT OF KERALA सत्यमेव जयते

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• Company

Company	Role	Date of effect	Sources
MSC SHIPMANAGEMENT LTD	ISM Manager	since 21/02/2025	
NAIRNE OCEANWAY LTD	Registered owner	since 20/02/2025	
MSC MEDITERRANEAN SHIPPING CO	Ship manager/ Commercial manager	since 20/02/2025	
CONCHART COMMERCIAL INC	Ship manager/ Commercial manager	during 03/2020	
GLOBAL SHIP LEASE 44 LLC	Registered owner	during 03/2020	
TECHNOMAR SHIPPING INC-LIB	ISM Manager	since 31/03/2019	
ANGLO-EASTERN GERMANY GMBH	ISM Manager	since 01/03/2018	
CMA CGM SA THE FRENCH LINE	Ship manager/ Commercial manager	since 19/11/2008	
CMA SHIPS UK LTD	ISM Manager	since 19/11/2008	
CMA SHIPS UK LTD	ISM Manager	since 19/11/2008	
GLOBAL SHIP LEASE 8 LTD	Registered owner	since 01/03/2008	
DELMAS SAS	Registered owner	since 01/07/2006	
DOHLE SHIPMANAGEMENT LTD	Ship manager/ Commercial manager	since 01/07/2006	
DOHLE SHIPMANAGEMENT LTD	ISM Manager	since 03/09/2002	
DELMAS SAS	Ship manager/ Commercial manager	during 2001	

THE HIGH COURT OF KERALA सत्यमेव जयते

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Equasis - Ship folder
MSC ELSA 3

imo: 9123221

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Ship informations

• Ship particulars

Information		Since
IMO number :	9123221	
Name of ship :	MSC ELSA 3	(since 01/07/2015)
Call sign :	A8NR5	
MMSI :		
Gross tonnage :	16799	(since 01/06/1997)
DWT :	22994	
Type of ship :	Container Ship	(since 01/02/1997)
Year of build :	1997	
Flag :	Liberia	(since 01/11/2014)
Status of ship :	Total Loss	(since 25/05/2025)
Last update :	11/06/2025	

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• Management detail

IMO	Role	Name of company	Address	Date of effect
6253356	Registered owner	ELSA 3 MARITIME INC	C/O: MSC Mediterranean Shipping Co SA chemin Rieu, 12-14, 1208, Geneva, Switzerland.	since 22/09/2021
1535947	ISM Manager	MSC SHIPMANAGEMENT LTD	MSC House, 8, Spyrou Kyprianou Avenue, 3070, Limassol, Cyprus.	since 03/07/2015
0152944	Ship manager/ Commercial manager	MSC MEDITERRANEAN SHIPPING CO	chemin Rieu, 12-14, 1208, Geneva, Switzerland.	during 07/2015

• Classification status

Classification society	Date change status	Status	Reason
Bureau Veritas (IACS)	since 25/05/2025	Suspended	Non-compliance with conditions of class / recommendations
DNV-GL (ex GL) (IACS)	since 01/07/2012	Delivered	

• Classification surveys

Classification society	Date survey	Date next survey
Bureau Veritas (IACS)	13/11/2023	13/11/2028
DNV-GL (ex GL) (IACS)	22/06/2012	

• Safety management certificate

Classification society	Date survey	Date expiry	Date of status	Status	Reason	Type
Bureau Veritas (IACS)	10/11/2020	09/11/2025	10/11/2020	Delivered		Convention

• P&I information

Name of P&I insurer	Recorded on
Steamship Mutual Underwriting Association (Bermuda)	20/06/2025
UK P&I Club	20/02/2025
North of England P&I Association	09/06/2022

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Ship inspections

• List of port state control

Authority	Port of inspection	Date of report	Detention	PSC organisation	Type of inspection	Duration (days)	Number of deficiencies
India	Manglore	19/11/2024	N	Indian Ocean MoU	Initial inspection	0	5
India	Tuticorin	20/07/2023	N	Indian Ocean MoU	Initial inspection	0	9
Singapore	Singapore	28/10/2022	N	Tokyo MoU	Initial inspection		14
Bangladesh	Chittagong	20/10/2022	N	Indian Ocean MoU	Initial inspection	0	1
Nigeria	Onne	13/01/2022	N	Abuja MoU	Initial inspection	0	
Togo	Port of Lome	08/12/2020	N	Abuja MoU	Initial inspection	0	
Nigeria	Apapa	15/10/2020	N	Abuja MoU	Initial inspection	0	
Jordan	Aqaba	14/05/2017	N	Mediterranean MoU	Initial inspection	0	3
Hong Kong, China	Hong Kong Marine Department	16/09/2015	N	Tokyo MoU	Initial inspection		3
Venezuela	Puerto Cabello	14/10/2013	N	Vina Del Mar MoU	Initial inspection	0	
Argentina	Dock Sud	28/12/2012	N	Vina Del Mar MoU	Re-inspection	0	3
Argentina	La Plata	26/12/2012	N	Vina Del Mar MoU	More detailed inspection	0	3
Morocco	Casablanca	19/09/2012	N	Mediterranean MoU	Initial inspection	0	
Spain	Algeciras	20/06/2012	N	Paris MoU	Initial inspection	0	
United States of America	San Juan, Puerto Rico	16/10/2011	N	US Coast Guard	Standard Examination	0	
Peru	Callao	06/10/2011	N	Vina Del Mar MoU	Initial inspection	0	2
Chile	Iquique	02/07/2011	N	Vina Del Mar MoU	Initial inspection	0	1
		02/07/2011	N	Tokyo MoU			
Germany	Hamburg	27/05/2011	N	Paris MoU	More detailed inspection	0	

THE HIGH COURT OF KERALA सत्यमेव जयते

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• List of port state control

Authority	Port of inspection	Date of report	Detention	PSC organisation	Type of inspection	Duration (days)	Number of deficiencies
France	Dunkirk	25/05/2011	N	Paris MoU	More detailed inspection	0	4
Germany	Hamburg	29/12/2010	N	Paris MoU	More detailed inspection	0	7
		18/11/2010	N	Tokyo MoU			
Netherlands	Rotterdam	28/07/2010	Y	Paris MoU	More detailed inspection	2	21
		14/04/2010	N	Tokyo MoU			
Spain	Marin	22/12/2009	N	Paris MoU	Initial inspection	0	
Netherlands	Rotterdam	07/10/2009	N	Paris MoU	More detailed inspection	0	6
		08/09/2009	N	Tokyo MoU			
		02/09/2009	N	Tokyo MoU			
Netherlands	Rotterdam	09/03/2009	N	Paris MoU	More detailed inspection	0	7
		03/02/2009	N	Tokyo MoU			
Spain	Bilbao	08/01/2009	N	Paris MoU	More detailed inspection	0	5
Germany	Hamburg	18/08/2008	N	Paris MoU	More detailed inspection	0	13
		16/07/2008	N	Tokyo MoU			
		15/07/2008	N	Tokyo MoU			
Netherlands	Rotterdam	16/06/2008	N	Paris MoU	More detailed inspection	0	6
France	Dunkirk	14/06/2008	N	Paris MoU	More detailed inspection	0	5
United States of America	New York, New York	31/10/2007	N	US Coast Guard	Standard Examination	0	
United States of America	Norfolk, Virginia.	07/08/2007	N	US Coast Guard	Standard Examination	0	

THE HIGH COURT OF KERALA

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• List of port state control

Authority	Port of inspection	Date of report	Detention	PSC organisation	Type of inspection	Duration (days)	Number of deficiencies
United States of America	Norfolk, Virginia.	16/07/2006	N	US Coast Guard	Standard Examination	0	
		20/06/2006	N	Tokyo MoU			
		22/05/2006	N	Tokyo MoU			
		05/01/2005	N	Tokyo MoU			
		28/07/2004	N	Tokyo MoU			
		15/01/2004	N	Tokyo MoU			
		03/07/2003	N	Tokyo MoU			
United States of America	MSO Los Angeles/ Long Beach	17/06/2003	N	US Coast Guard		0	
		27/05/2003	N	Tokyo MoU			
Japan	Kinki	06/09/2002	N	Tokyo MoU			
Hong Kong, China	Hong Kong Marine Department	02/05/2002	N	Tokyo MoU			
United States of America	MSO Los Angeles/ Long Beach	21/03/2001	N	US Coast Guard		0	
Canada	Vancouver	15/12/2000	N	Tokyo MoU			
Spain	Algeciras	16/06/2000	N	Paris MoU		0	1
Spain	Valencia	13/06/2000	N	Paris MoU		0	1
Spain	Barcelona	12/06/2000	N	Paris MoU		0	1
Italy	Livorno	03/04/2000	N	Paris MoU		0	
United States of America	MSO Charleston	13/03/2000	N	US Coast Guard		0	
United States of America	MSO Miami	15/11/1999	N	US Coast Guard		0	
United States of America	MSO Miami	03/08/1999	N	US Coast Guard		0	

• Human element deficiencies

PSC organisation	Authority	Port of inspection	Date of report	Human element deficiencies
Indian Ocean MoU	India	Tuticorin	20/07/2023	4
Indian Ocean MoU	Bangladesh	Chittagong	20/10/2022	1

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• Human element deficiencies

PSC organisation	Authority	Port of inspection	Date of report	Human element deficiencies
Paris MoU	Germany	Hamburg	29/12/2010	2
Paris MoU	Netherlands	Rotterdam	28/07/2010	3
Paris MoU	Netherlands	Rotterdam	07/10/2009	2
Paris MoU	Netherlands	Rotterdam	09/03/2009	2
Paris MoU	Spain	Bilbao	08/01/2009	2
Paris MoU	Netherlands	Rotterdam	16/06/2008	1

THE HIGH COURT OF KERALA
सत्यमेव जयते

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Ship history

• Current and former name(s)

Name of ship	Date of effect	Source
MSC ELSA 3	since 01/07/2015	IHS Maritime
Alexandra N	since 01/11/2014	IHS Maritime
Adrian	since 01/06/2006	IHS Maritime
TMM Hidalgo	since 01/05/2003	IHS Maritime
Delmas Tourville	since 01/10/2002	IHS Maritime
Adrian	since 01/03/2002	IHS Maritime
Ivory Star	since 01/11/2001	IHS Maritime
TMM Manzanillo	since 01/06/2001	IHS Maritime
Adrian	since 01/03/2001	IHS Maritime
CSAV Barcelona	since 01/02/2000	IHS Maritime

HIGH COURT OF KERALA सत्यमेव जयते

• Current and former flag(s)

Flag	Date of effect	Source
Liberia	since 01/11/2014	IHS Maritime
Germany	since 01/11/2014	IHS Maritime
Liberia	since 01/09/2007	IHS Maritime
Germany	since 01/04/2005	IHS Maritime

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• Current and former classification status

Classification society	Date of survey	Sources
Bureau Veritas (IACS)	13/11/2023	Bureau Veritas
Bureau Veritas (IACS)	27/11/2020	Bureau Veritas
Bureau Veritas (IACS)	14/09/2015	Bureau Veritas
DNV-GL (ex GL) (IACS)	22/06/2012	Germanischer Lloyd
DNV-GL (ex GL) (IACS)	29/06/2007	Germanischer Lloyd
DNV-GL (ex GL) (IACS)	26/06/2002	Germanischer Lloyd

• Company

Company	Role	Date of effect	Sources
ELSA 3 MARITIME INC	Registered owner	since 22/09/2021	
ONE STAR MSC LTD	Registered owner	during 08/2018	
MSC SHIPMANAGEMENT LTD	ISM Manager	since 03/07/2015	
MSC MEDITERRANEAN SHIPPING CO	Ship manager/ Commercial manager	during 07/2015	
ADRIAN MARINE INC-LIB	Registered owner	during 07/2015	
QUADRANT MARITIME PVT LTD	ISM Manager	since 19/02/2015	
QUADRANT MARITIME PVT LTD	Ship manager/ Commercial manager	since 19/02/2015	
DANAE INTERNATIONAL CORP	Registered owner	during 11/2014	
WILHELMSEN AHRENKIEL BULK GMBH	ISM Manager	since 25/07/2012	
UNKNOWN	ISM Manager	since 11/07/2012	

THE HIGH COURT OF KERALA सत्यमेव जयते

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• Company

Company	Role	Date of effect	Sources
WILHELMSEN AHRENKIEL BULK GMBH	Ship manager/ Commercial manager	since 01/07/2012	
KOMROWSKI BEFRACHTUNGSKONTOR	ISM Manager	since 26/04/2002	

THE HIGH COURT OF KERALA
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LOCATION MSC ELSA 3 - CARGO MANIFEST

Sr No	CntrNo	BAY	ROW	TIER	CARGO	OprCode	POR	POL	POD	Dest	FPOD	ISO SzTp	SzTp	Wgt	F/E
1	GLDU5046345	01	01	10	SAWN TIMBER	MSC	ABIDJAN	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	26	F
2	GLDU9700990	01	02	10	WOOD	MSC	LOME	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	28.6	F
3	MSMU8237551	02	00	08	CASHEW	MSC	TINCAN	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	32	F
4	MSMU5828102	02	00	10	BAMBOO STICKS	MSC	XIAMEN	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	32.1	F
5	TGBU4300980	02	01	12	RECOVERED (WASTE AND SCRAP) PAPER OR PAPERBOARD -	MSC	SHARJAH	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	28.6	F
6	MSMU7436625	02	01	84	WOOD IN THE ROUGH, WHETHER OR NOT STRIPPED OF BARK	MSC	CHARLESTON	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	45G1	40HC	31.5	F
7	MSMU7559105	02	01	86	SPINNING MACHINE	MSC	SHANGHAI	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	13.8	F
8	CAIU8084859	02	02	12	WOOD IN THE ROUGH, WHETHER OR NOT STRIPPED OF BARK	MSC	SAVANNAH	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	32.4	F
9	TRHU8270418	02	02	84	COCONUTS, BRAZIL NUTS AND CASHEW NUTS, FRESH OR DR	MSC	TEMA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29	F
10	TCLU5704422	02	02	86	SPINNING MACHINE	MSC	SHANGHAI	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	13.6	F
11	FFAU2394781	02	03	12	WASTE PAPER - PRINTED TMP	MSC	DAMMAM	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	25	F
12	TGHU6492646	02	03	84	RECOVERED (WASTE AND SCRAP) PAPER OR PAPERBOARD -	MSC	SHARJAH	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	30.8	F
13	CAAU7859855	02	03	86	WOODWORKING CLAMP CARRIER	MSC	QINGDAO	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	15.5	F
14	MSMU6844392	02	04	12	POLYMERS OF PROPYLENE OR OF OTHER OLEFINS, IN PRIM	MSC	SHUAIBA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29	F
15	MEDU7910999	02	04	84	COTTON, NOT CARDED OR COMBED	MSC	ABIDJAN	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	28.5	F
16	MSMU6329324	02	04	86	SPINNING MACHINE	MSC	SHANGHAI	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	13.5	F
17	GLDU9832039	02	05	84	HDPE LUBAN DGDZ-6097	MSC	SOHAR	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29.1	F
18	MSDU5484865	02	05	86	SPINNING MACHINE	MSC	SHANGHAI	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	13.2	F
19	MSMU5562603	02	06	84	RECOVERED (WASTE AND SCRAP) PAPER OR PAPERBOARD -	MSC	SHARJAH	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	28.8	F
20	MSDU7394462	02	06	86	SPINNING MACHINE	MSC	SHANGHAI	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	45G1	40HC	14.3	F
21	TGBU7810040	02	07	84	RECOVERED (WASTE AND SCRAP) PAPER OR PAPERBOARD -	MSC	SHARJAH	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	45G1	40HC	30.8	F
22	MSCU5356639	02	07	86	SPINNING MACHINE	MSC	SHANGHAI	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	45G1	40HC	13.8	F
23	MSDU6444527	02	08	84	WOOD IN THE ROUGH, WHETHER OR NOT STRIPPED OF BARK	MSC	SAVANNAH	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	32.1	F
24	FSCU3510856	03	00	04	WOOD	MSC	LOME	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	24.9	F
25	GLDU3752928	03	00	06	CALCIUM CARBIDE.SIZE:50-80MM	MSC	TIANJIN XINGANG	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	28.9	F
26	MEDU3865839	03	01	06	WOOD	MSC	LOME	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	28.9	F
27	MEDU6618806	03	01	08	CALCIUM CARBIDE.SIZE:50-80MM	MSC	TIANJIN XINGANG	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	28.8	F
28	TCLU2550703	03	01	10	CALCIUM CARBIDE.SIZE:50-80MM	MSC	TIANJIN XINGANG	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	28.8	F
29	DFSU2231980	03	02	06	WOOD	MSC	LOME	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	22G1	20DV	25	F
30	MSDU1913339	03	02	08	CALCIUM CARBIDE	MSC	SHANGHAI	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	28.8	F
31	AXIU2227284	03	02	10	CALCIUM CARBIDE.SIZE:50-80MM	MSC	TIANJIN XINGANG	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	22G1	20DV	28.8	F
32	TRHU2413764	03	03	10	WOOD IN THE ROUGH, WHETHER OR NOT STRIPPED OF BARK	MSC	TEMA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	23	F
33	IPXU3585748	03	04	10	WOOD	MSC	LOME	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	28	F
34	MEDU5451524	05	01	02	CONTINUOUSLY PRE-PAINTED GALVANIZED STEEL COILS	MSC	TIANJIN XINGANG	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	29.5	F
35	MEDU5372298	05	01	04	CALCIUM CARBIDE	MSC	SHANGHAI	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	26.1	F
36	MSNU1198797	05	01	06	HYDRAZINE AND HYDROXYLAMINE AND THEIR INORGANIC SA	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	25.2	F
37	MSNU2728654	05	01	08	FISH BODY OIL - JAPAN CRUDE FISH OIL	MSC	TOMAKOMAI	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	23.1	F
38	MSMU1988490	05	02	02	QUICKLIME, SLAKED LIME AND HYDRAULIC LIME, OTHER T	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	25.3	F
39	MSMU1837390	05	02	04	CALCIUM CARBIDE	MSC	SHANGHAI	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	26	F
40	FBIU0260644	05	02	06	QUICKLIME, SLAKED LIME AND HYDRAULIC LIME, OTHER T	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	22.4	F
41	MEDU3645731	05	02	08	QUICKLIME, SLAKED LIME AND HYDRAULIC LIME, OTHER T	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	22.6	F
42	MSDU1465743	05	03	04	QUICKLIME, SLAKED LIME AND HYDRAULIC LIME, OTHER T	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	22G1	20DV	25.6	F
43	MSMU1694031	05	03	06	QUICKLIME, SLAKED LIME AND HYDRAULIC LIME, OTHER T	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	22.4	F
44	MEDU2563881	05	03	08	QUICKLIME, SLAKED LIME AND HYDRAULIC LIME, OTHER T	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	22.4	F
45	BMOU2619296	05	04	04	QUICKLIME, SLAKED LIME AND HYDRAULIC LIME, OTHER T	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	22.5	F
46	MSNU1776719	05	04	06	FISH BODY OIL - JAPAN CRUDE FISH OIL	MSC	TOMAKOMAI	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	23.1	F
47	HPCU2286769	05	04	08	QUICKLIME, SLAKED LIME AND HYDRAULIC LIME, OTHER T	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	22.4	F
48	TEMU3396821	05	07	12	QUICKLIME, SLAKED LIME AND HYDRAULIC LIME, OTHER T	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	25.3	F
49	MEDU5456697	05	07	84	QUICKLIME, SLAKED LIME AND HYDRAULIC LIME, OTHER T	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	25.3	F
50	CRXU3062703	05	08	12	TENSAGEX EOM6708 SODIUM LAURYL ETHER SULPHATE	MSC	PORT KLANG	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	22.8	F
51	MEDU9883594	06	01	10	EMPTY CONTAINER	MSC	NACALA	VIZHINJAM	COCHIN	COCHIN	COCHIN	4532	40HR	4.6	E
52	CXRU1320977	06	01	84	EMPTY CONTAINER	MSC	NACALA	VIZHINJAM	COCHIN	COCHIN	COCHIN	4532	40HR	4.5	E

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53	CRLU1400379	06	01	86	EMPTY CONTAINER	MSC	NACALA	VIZHINJAM	COCHIN	COCHIN	COCHIN	4532	40HR	4.6	E
54	MEDU9176210	06	02	10	EMPTY CONTAINER	MSC	NACALA	VIZHINJAM	COCHIN	COCHIN	COCHIN	4532	40HR	4.5	E
55	MEDU9712544	06	02	84	EMPTY CONTAINER	MSC	NACALA	VIZHINJAM	COCHIN	COCHIN	COCHIN	45R1	40HR	4.4	E
56	BMOU9650591	06	02	86	EMPTY CONTAINER	MSC	NACALA	VIZHINJAM	COCHIN	COCHIN	COCHIN	4532	40HR	4.3	E
57	CXRU1434497	06	03	10	EMPTY CONTAINER	MSC	NACALA	VIZHINJAM	COCHIN	COCHIN	COCHIN	4532	40HR	4.7	E
58	OTPU6675868	06	03	84	EMPTY CONTAINER	MSC	NACALA	VIZHINJAM	COCHIN	COCHIN	COCHIN	4532	40HR	4.5	E
59	TRIU8087165	06	03	86	EMPTY CONTAINER	MSC	NACALA	VIZHINJAM	COCHIN	COCHIN	COCHIN	4532	40HR	4.8	E
60	CXRU1470299	06	04	10	EMPTY CONTAINER	MSC	NACALA	VIZHINJAM	COCHIN	COCHIN	COCHIN	4532	40HR	4.7	E
61	TGHU9919515	06	04	84	EMPTY CONTAINER	MSC	NACALA	VIZHINJAM	COCHIN	COCHIN	COCHIN	4532	40HR	4.5	E
62	MEDU9036033	06	05	10	EMPTY CONTAINER	MSC	NACALA	VIZHINJAM	COCHIN	COCHIN	COCHIN	4532	40HR	4.6	E
63	FSCU5798607	06	05	84	EMPTY CONTAINER	MSC	NACALA	VIZHINJAM	COCHIN	COCHIN	COCHIN	4532	40HR	4.6	E
64	TEMU9668758	06	06	10	EMPTY CONTAINER	MSC	NACALA	VIZHINJAM	COCHIN	COCHIN	COCHIN	4532	40HR	4.5	E
65	OTPU6454341	06	06	84	EMPTY CONTAINER	MSC	NACALA	VIZHINJAM	COCHIN	COCHIN	COCHIN	4532	40HR	4.5	E
66	SZLU9308506	06	08	84	EMPTY CONTAINER	MSC	NACALA	VIZHINJAM	COCHIN	COCHIN	COCHIN	4532	40HR	4.7	E
67	OTPU6670335	06	09	84	EMPTY CONTAINER	MSC	DJIBOUTI	VIZHINJAM	COCHIN	COCHIN	COCHIN	4532	40HR	4.2	E
68	TRIU8922459	06	10	84	EMPTY CONTAINER	MSC	NACALA	VIZHINJAM	COCHIN	COCHIN	COCHIN	45R1	40HR	4.8	E
69	MSNU2431579	07	01	02	COATED PAPER C2S GLOSS	MSC	SHANGHAI	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	26.9	F
70	MEDU5533279	07	01	04	QUICKLIME, SLAKED LIME AND HYDRAULIC LIME, OTHER T	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	22G1	20DV	25.3	F
71	MEDU2513432	07	01	06	QUICKLIME, SLAKED LIME AND HYDRAULIC LIME, OTHER T	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	25.3	F
72	MEDU3694335	07	01	08	HYDRAZINE AND HYDROXYLAMINE AND THEIR INORGANIC SA	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	25.3	F
73	TGHU3305741	07	02	02	QUICKLIME, SLAKED LIME AND HYDRAULIC LIME, OTHER T	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	25.3	F
74	MSCU6523999	07	02	04	QUICKLIME, SLAKED LIME AND HYDRAULIC LIME, OTHER T	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	25.4	F
75	MSDU1542813	07	02	06	HYDRAZINE AND HYDROXYLAMINE AND THEIR INORGANIC SA	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	22G1	20DV	25.3	F
76	MSNU1340113	07	02	08	QUICKLIME, SLAKED LIME AND HYDRAULIC LIME, OTHER T	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	25.2	F
77	TGBU3207825	07	03	02	QUICKLIME, SLAKED LIME AND HYDRAULIC LIME, OTHER T	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	25.1	F
78	MSDU2860110	07	03	04	QUICKLIME, SLAKED LIME AND HYDRAULIC LIME, OTHER T	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	25.3	F
79	MSDU2580438	07	03	06	QUICKLIME, SLAKED LIME AND HYDRAULIC LIME, OTHER T	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	25.2	F
80	MSNU2119447	07	03	08	FISH BODY OIL - JAPAN CRUDE FISH OIL	MSC	TOMAKOMAI	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	23.2	F
81	MSNU2432106	07	04	02	COATED PAPER C2S GLOSS	MSC	SHANGHAI	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	27.3	F
82	MEDU3565169	07	04	04	HYDRAZINE AND HYDROXYLAMINE AND THEIR INORGANIC SA	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	25.3	F
83	FTAU1969256	07	04	06	FISH BODY OIL - JAPAN CRUDE FISH OIL	MSC	TOMAKOMAI	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	22.8	F
84	MSDU1673346	07	04	08	QUICKLIME, SLAKED LIME AND HYDRAULIC LIME, OTHER T	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	22.7	F
85	MSNU2433165	07	05	06	COATED PAPER C2S GLOSS	MSC	SHANGHAI	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	27.3	F
86	MSNU2095073	07	05	08	FISH BODY OIL - JAPAN CRUDE FISH OIL	MSC	TOMAKOMAI	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	23.2	F
87	MSNU2002466	07	06	06	FISH BODY OIL - JAPAN CRUDE FISH OIL	MSC	TOMAKOMAI	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	23.1	F
88	SEKU1329020	07	06	08	FISH BODY OIL - JAPAN CRUDE FISH OIL	MSC	TOMAKOMAI	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	23	F
89	MEDU2940856	07	07	10	HYDRAZINE AND HYDROXYLAMINE AND THEIR INORGANIC SA	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	25.3	F
90	MSDU1118528	07	07	12	QUICKLIME, SLAKED LIME AND HYDRAULIC LIME, OTHER T	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	22.5	F
91	UETU2647575	07	07	84	QUICKLIME, SLAKED LIME AND HYDRAULIC LIME, OTHER T	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	25.2	F
92	GLDU9454849	07	08	10	HYDRAZINE AND HYDROXYLAMINE AND THEIR INORGANIC SA	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	25.2	F
93	TCLU2443731	07	08	12	QUICKLIME, SLAKED LIME AND HYDRAULIC LIME, OTHER T	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	22.5	F
94	CORU2426800	09	07	06	WOOD	MSC	LOME	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	24.5	F
95	TEMU5053400	09	07	08	WOOD	MSC	LOME	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	24.9	F
96	SEGU3108092	09	08	06	DRIED LEGUMINOUS VEGETABLES, SHELLED, WHETHER OR N	MSC	SEATTLE	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	22G1	20DV	28.7	F
97	CAIU6911963	09	08	08	WOOD	MSC	LOME	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	28	F
98	MSDU7438935	10	01	02	RECOVERED (WASTE AND SCRAP) PAPER OR PAPERBOARD -	MSC	SHARJAH	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	30.8	F
99	TGBU6376120	10	01	04	UNCOATED KRAFT PAPER AND PAPERBOARD, IN ROLLS OR S	MSC	SAVANNAH	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29.6	F
100	MSMU8511277	10	01	06	RECOVERED (WASTE AND SCRAP) PAPER OR PAPERBOARD -	MSC	SHARJAH	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	28.7	F
101	BMOU6743638	10	01	08	COCONUTS, BRAZIL NUTS AND CASHEW NUTS, FRESH OR DR	MSC	TEMA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	30.2	F
102	MSMU4192926	10	01	82	POLYMERS OF ETHYLENE, IN PRIMARY FORMS - POLYETHYL	MSC	SHUAIBA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29	F
103	MSMU8311664	10	01	84	COCONUTS, BRAZIL NUTS AND CASHEW NUTS, FRESH OR DR	MSC	TEMA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	30.2	F
104	CRSU9163535	10	01	86	RECOVERED (WASTE AND SCRAP) PAPER OR PAPERBOARD -	MSC	BALTIMORE	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	28.6	F
105	MSNU9570832	10	02	02	WOOD IN THE ROUGH, WHETHER OR NOT STRIPPED OF BARK	MSC	SAVANNAH	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	32.4	F
106	MSDU8103176	10	02	04	BLEACHED CHEMI THERMO	MSC	VANCOUVER	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29.3	F

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107	FFAU1968376	10	02	06	CASHEW	MSC	TINCAN	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	30.9	F
108	MSDU5020340	10	02	08	BLEACHED CHEMI THERMO MECHANICAL PULP	MSC	VANCOUVER	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	28.8	F
109	MSNU9569174	10	02	82	COTTON, NOT CARDED OR COMBED	MSC	SAN PEDRO	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	28.8	F
110	TIIU4199195	10	02	84	POLYMERS OF ETHYLENE, IN PRIMARY FORMS - POLYETHYL	MSC	SHUAIBA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29	F
111	BMOU5634083	10	02	86	BLEACHED CHEMI THERMO MECHANICAL PULP	MSC	VANCOUVER	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29.6	F
112	GAOU6717598	10	03	02	DICYANDIAMIDE 99.5 PCT MIN	MSC	TIANJIN XINGANG	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	31.8	F
113	MSNU5736458	10	03	04	LINEAR LOW DENSITY POLYETHYLENE	MSC	JUBAIL	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29.1	F
114	MSDU5453170	10	03	06	POLYMERS OF ETHYLENE, IN PRIMARY FORMS - POLYETHYL	MSC	SHUAIBA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29	F
115	TIIU4006260	10	03	08	RECOVERED (WASTE AND SCRAP) PAPER OR PAPERBOARD -	MSC	SHARJAH	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29	F
116	MSBU5494845	10	03	82	BLEACHED CHEMI THERMO	MSC	VANCOUVER	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	28.9	F
117	MSNU5589104	10	03	84	HDPE LUBAN DGDZ-6097	MSC	SOHAR	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29	F
118	MSDU7272464	10	03	86	BLEACHED CHEMI THERMO MECHANICAL PULP	MSC	VANCOUVER	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	45G1	40HC	29.1	F
119	MSDU6586389	10	04	02	HIGH BULK C2S ART BOARD	MSC	QINGDAO	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	30.2	F
120	MSMU8820548	10	04	04	CASHEW	MSC	TINCAN	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	30.7	F
121	MSDU7745525	10	04	06	RECOVERED (WASTE AND SCRAP) PAPER OR PAPERBOARD -	MSC	SHARJAH	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	28.7	F
122	CAIU7391022	10	04	08	BLEACHED CHEMI THERMO MECHANICAL PULP	MSC	VANCOUVER	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29.6	F
123	MSMU4130842	10	04	82	COCONUTS, BRAZIL NUTS AND CASHEW NUTS, FRESH OR DR	MSC	TEMA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29.5	F
124	MSMU8663602	10	04	84	BLEACHED CHEMI THERMO MECHANICAL PULP	MSC	VANCOUVER	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29.9	F
125	MSNU6129741	10	04	86	BLEACHED CHEMI THERMO MECHANICAL PULP	MSC	VANCOUVER	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29.9	F
126	CAAU5517525	10	05	02	WOOD IN THE ROUGH, WHETHER OR NOT STRIPPED OF BARK	MSC	SAVANNAH	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	45G1	40HC	32.4	F
127	MSMU8467226	10	05	04	BLEACHED CHEMI THERMO	MSC	VANCOUVER	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29	F
128	MSDU6901460	10	05	06	POLYMERS OF ETHYLENE, IN PRIMARY FORMS - POLYETHYL	MSC	SHUAIBA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29	F
129	TGBU7944970	10	05	08	RECOVERED (WASTE AND SCRAP) PAPER OR PAPERBOARD -	MSC	SAVANNAH	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	28.1	F
130	TCNU3185367	10	05	82	COTTON, NOT CARDED OR COMBED	MSC	SAN PEDRO	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	28.8	F
131	TRHU7691412	10	05	84	HDPE LUBAN DGDZ-6097	MSC	SOHAR	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29	F
132	MSDU7734011	10	05	86	WASTE	MSC	OSAKA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	25.9	F
133	TGBU5843981	10	06	02	BLEACHED CHEMI THERMO MECHANICAL PULP	MSC	VANCOUVER	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29.8	F
134	MSMU5243355	10	06	04	LINEAR LOW DENSITY POLYETHYLENE	MSC	JUBAIL	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29.1	F
135	FSCU8333075	10	06	06	COCONUTS, BRAZIL NUTS AND CASHEW NUTS, FRESH OR DR	MSC	TEMA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	30.2	F
136	GAOU7402949	10	06	08	BLEACHED CHEMI THERMO	MSC	VANCOUVER	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	30	F
137	MSMU6896544	10	06	82	RECOVERED (WASTE AND SCRAP) PAPER OR PAPERBOARD -	MSC	BALTIMORE	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	28.7	F
138	MEDU9438710	10	06	84	RECOVERED (WASTE AND SCRAP) PAPER OR PAPERBOARD -	MSC	SAVANNAH	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	27.3	F
139	FFAU2173245	10	06	86	WASTE PAPER - PRINTED TMP	MSC	DAMMAM	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	23.6	F
140	MSMU8184805	10	07	10	BLEACHED CHEMI THERMO	MSC	VANCOUVER	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	28.9	F
141	TCLU1709051	10	07	82	LINEAR LOW DENSITY POLYETHYLENE	MSC	JUBAIL	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29.2	F
142	MSDU7030964	10	07	84	COTTON, NOT CARDED OR COMBED	MSC	SAN PEDRO	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	45G1	40HC	28.7	F
143	FFAU1988937	10	07	86	POLYMERS OF ETHYLENE, IN PRIMARY FORMS - POLYETHYL	MSC	SHUAIBA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29	F
144	MSMU4975979	10	08	10	BLEACHED CHEMI THERMO MECHANICAL PULP	MSC	VANCOUVER	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29.8	F
145	MSNU7461684	10	08	82	COCONUTS, BRAZIL NUTS AND CASHEW NUTS, FRESH OR DR	MSC	TEMA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	28.5	F
146	TRHU8022849	10	08	84	RECOVERED (WASTE AND SCRAP) PAPER OR PAPERBOARD -	MSC	SHARJAH	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29.3	F
147	MSDU6985136	10	08	86	WASTE PAPER - PRINTED TMP	MSC	DAMMAM	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	23.7	F
148	CAAU7262721	10	09	82	WOOD IN THE ROUGH, WHETHER OR NOT STRIPPED OF BARK	MSC	CHARLESTON	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	32.5	F
149	TRHU7720995	10	09	84	COTTON, NOT CARDED OR COMBED	MSC	SAN PEDRO	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	28.9	F
150	MSDU7238623	10	09	86	USED OR NEW RAGS, SCRAP TWINE, CORDAGE, ROPE AND C	MSC	MANAGUA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	45G1	40HC	19.6	F
151	MSDU5396830	10	10	82	RECOVERED (WASTE AND SCRAP) PAPER OR PAPERBOARD -	MSC	SHARJAH	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29.6	F
152	MSDU5851997	10	10	84	HDPE LUBAN DGDZ-6097	MSC	SOHAR	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29	F
153	MSMU5762427	10	10	86	GAUZE ROLL 90 CM 17TH	MSC	SHANGHAI	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	19.3	F
154	TLLU3260369	11	07	04	HYDRAZINE AND HYDROXYLAMINE AND THEIR INORGANIC SA	MSC	RAS AL KHAIMAH	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	25.2	F
155	MSMU2067289	11	07	06	WOOD	MSC	LOME	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	25	F
156	MEDU5711766	11	07	08	HYDRAZINE AND HYDROXYLAMINE AND THEIR INORGANIC SA	MSC	RAS AL KHAIMAH	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	22G1	20DV	25.3	F
157	DFSU1142277	11	08	04	HYDRAZINE AND HYDROXYLAMINE AND THEIR INORGANIC SA	MSC	RAS AL KHAIMAH	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	22G1	20DV	25.3	F
158	MSBU1495139	11	08	06	WOOD	MSC	LOME	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	26.5	F
159	MSNU3694965	11	08	08	WOOD IN THE ROUGH, WHETHER OR NOT STRIPPED OF BARK	MSC	TEMA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	23	F
160	MSMU2959752	13	01	02	WOOD	MSC	LOME	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	28	F

AGENCY (INDIA) PVT. LTD. COCHIN

161	DFSU2936965	13	02	02	HYDRAZINE AND HYDROXYLAMINE AND THEIR INORGANIC SA	MSC	RAS AL KHAIMAH	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	25.3	F
162	MSMU1796706	13	03	02	BROWN FUSED ALUMINA	MSC	TIANJIN XINGANG	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	29.2	F
163	MSMU2978243	13	04	02	WOOD	MSC	LOME	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	27.9	F
164	HPCU2318758	13	05	02	DRIED LEGUMINOUS VEGETABLES, SHELLED, WHETHER OR N	MSC	SEATTLE	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	29	F
165	MSNU2421225	13	06	02	PRINTING PAPER	MSC	SHANGHAI	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	27.3	F
166	MSMU4243427	14	01	04	RUBBER CHEMICAL ANTI-OXIDANT 6PPD	MSC	QINGDAO	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	25.2	F
167	MSCU5260347	14	01	06	RECOVERED (WASTE AND SCRAP) PAPER OR PAPERBOARD -	MSC	SHARJAH	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	45G1	40HC	29.7	F
168	BMOU6117552	14	01	08	COCONUTS, BRAZIL NUTS AND CASHEW NUTS, FRESH OR DR	MSC	TEMA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	28.5	F
169	MSNU5275649	14	01	82	COCONUTS, BRAZIL NUTS AND CASHEW NUTS, FRESH OR DR	MSC	TEMA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29	F
170	MSDU7920000	14	01	84	RECOVERED (WASTE AND SCRAP) PAPER OR PAPERBOARD -	MSC	SHARJAH	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29	F
171	MEDU4556979	14	01	86	WASTE PAPER - PRINTED TMP	MSC	DAMMAM	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	45G1	40HC	24.2	F
172	MSBU5488349	14	02	04	BLEACHED CHEMI THERMO MECHANICAL PULP	MSC	VANCOUVER	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29.2	F
173	MSMU4069700	14	02	06	COTTON, NOT CARDED OR COMBED	MSC	SAN PEDRO	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29.2	F
174	MSMU4267537	14	02	08	COCONUTS, BRAZIL NUTS AND CASHEW NUTS, FRESH OR DR	MSC	TEMA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29	F
175	CAAU8115710	14	02	82	RECOVERED (WASTE AND SCRAP) PAPER OR PAPERBOARD -	MSC	SHARJAH	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29.8	F
176	MSMU7932610	14	02	84	MOPLEN HP456J, BG25BC	MSC	DAMMAM	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29.2	F
177	TGBU8008683	14	02	86	STANDARD ACCESSORIES	MSC	YOKOHAMA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	45G1	40HC	26.6	F
178	CAAU7366120	14	03	04	BLEACHED CHEMI THERMO	MSC	VANCOUVER	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29.1	F
179	MSDU6396136	14	03	06	BLEACHED CHEMI THERMO MECHANICAL PULP	MSC	VANCOUVER	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	28.9	F
180	MSDU5935655	14	03	08	COCONUTS, BRAZIL NUTS AND CASHEW NUTS, FRESH OR DR	MSC	TEMA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29.7	F
181	MSMU5928307	14	03	82	BLEACHED CHEMI THERMO	MSC	VANCOUVER	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29	F
182	MSNU7324254	14	03	84	RECOVERED (WASTE AND SCRAP) PAPER OR PAPERBOARD -	MSC	SHARJAH	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29.8	F
183	CRSU9238038	14	03	86	RECOVERED (WASTE AND SCRAP) PAPER OR PAPERBOARD -	MSC	SHARJAH	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	25.5	F
184	MSNU7084322	14	04	04	RECOVERED (WASTE AND SCRAP) PAPER OR PAPERBOARD -	MSC	SHARJAH	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29	F
185	MEDU7587335	14	04	06	COCONUTS, BRAZIL NUTS AND CASHEW NUTS, FRESH OR DR	MSC	TEMA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	30.2	F
186	SEGU4102822	14	04	08	COCONUTS, BRAZIL NUTS AND CASHEW NUTS, FRESH OR DR	MSC	TEMA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	45G1	40HC	28.5	F
187	FFAU1152443	14	04	82	COCONUTS, BRAZIL NUTS AND CASHEW NUTS, FRESH OR DR	MSC	TEMA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	30.1	F
188	MSDU7713317	14	04	84	COCONUTS, BRAZIL NUTS AND CASHEW NUTS, FRESH OR DR	MSC	TEMA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	28.5	F
189	TXGU5490721	14	04	86	COTTON, NOT CARDED OR COMBED	MSC	SAN PEDRO	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	28.8	F
190	MSMU8539633	14	05	04	RECOVERED (WASTE AND SCRAP) PAPER OR PAPERBOARD -	MSC	SHARJAH	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	30.9	F
191	CLHU9096854	14	05	06	RECOVERED (WASTE AND SCRAP) PAPER OR PAPERBOARD -	MSC	SHARJAH	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	30.1	F
192	SEKU6756679	14	05	08	COTTON, NOT CARDED OR COMBED	MSC	ABIDJAN	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	28.2	F
193	MSNU6641850	14	05	82	MOPLEN HP456J, BG25BC	MSC	DAMMAM	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29.1	F
194	MSNU5878653	14	05	84	RECOVERED (WASTE AND SCRAP) PAPER OR PAPERBOARD -	MSC	SHARJAH	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29	F
195	MSDU8256068	14	05	86	COTTON, NOT CARDED OR COMBED	MSC	SAN PEDRO	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	45G1	40HC	28.8	F
196	FFAU3929765	14	06	04	BLEACHED CHEMI THERMO MECHANICAL PULP	MSC	VANCOUVER	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29.9	F
197	MSMU6125697	14	06	06	BLEACHED CHEMI THERMO MECHANICAL PULP	MSC	VANCOUVER	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29.4	F
198	FFAU3835198	14	06	08	COTTON, NOT CARDED OR COMBED	MSC	SAN PEDRO	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29	F
199	MSDU7961442	14	06	82	BLEACHED CHEMI THERMO	MSC	VANCOUVER	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	28.9	F
200	CAAU8148550	14	06	84	HDPE LUBAN DGDZ-6097	MSC	SOHAR	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29	F
201	MSMU7377923	14	06	86	COTTON, NOT CARDED OR COMBED	MSC	SAN PEDRO	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	45G1	40HC	28.9	F
202	MSDU8659519	14	07	04	BLEACHED CHEMI THERMO	MSC	VANCOUVER	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	30.1	F
203	MSDU6543392	14	07	06	RECOVERED (WASTE AND SCRAP) PAPER OR PAPERBOARD -	MSC	SHARJAH	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	30.1	F
204	MSDU7779905	14	07	08	POLYMERS OF ETHYLENE, IN PRIMARY FORMS - POLYETHYL	MSC	SHUAIBA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29	F
205	MSBU8157196	14	07	82	RECOVERED (WASTE AND SCRAP) PAPER OR PAPERBOARD -	MSC	SHARJAH	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29.7	F
206	TGBU5732458	14	07	84	BLEACHED CHEMI THERMO MECHANICAL PULP	MSC	VANCOUVER	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29.8	F
207	TIIU4259870	14	07	86	HDPE LUBAN DGDZ-6097	MSC	SOHAR	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29	F
208	MSMU7076149	14	08	04	POLYMERS OF PROPYLENE OR OF OTHER OLEFINS, IN PRIM	MSC	SHUAIBA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29.1	F
209	TGBU5569090	14	08	06	COTTON, NOT CARDED OR COMBED	MSC	ABIDJAN	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	28.2	F
210	MSMU7751885	14	08	08	COTTON, NOT CARDED OR COMBED	MSC	SAN PEDRO	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29.2	F
211	MSMU4766222	14	08	82	MOPLEN HP462R, BG25BC	MSC	DAMMAM	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29.2	F
212	TRHU6546404	14	08	84	POLYMERS OF ETHYLENE, IN PRIMARY FORMS - POLYETHYL	MSC	SHUAIBA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29	F
213	TEMU7962275	14	08	86	COTTON, NOT CARDED OR COMBED	MSC	SAN PEDRO	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	28.8	F
214	DFSU6579758	14	09	82	POLYPROPYLENE	MSC	TIANJIN XINGANG	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	31.9	F

MSC AGENCY (INDIA) PVT. LTD. COCHIN

215	MSDU6902764	14	09	84	POLYMERS OF ETHYLENE, IN PRIMARY FORMS - POLYETHYL	MSC	SHUAIBA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29	F
216	UETU6122498	14	09	86	POLYMERS OF PROPYLENE OR OF OTHER OLEFINS, IN PRIM	MSC	SHUAIBA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29	F
217	CXDU2015607	14	10	82	RECOVERED (WASTE AND SCRAP) PAPER OR PAPERBOARD -	MSC	SHARJAH	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	28.8	F
218	MSBU6514118	14	10	84	RECOVERED (WASTE AND SCRAP) PAPER OR PAPERBOARD -	MSC	SHARJAH	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	28	F
219	MSDU6063270	14	10	86	COCONUTS, BRAZIL NUTS AND CASHEW NUTS, FRESH OR DR	MSC	TEMA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29	F
220	MSNU2149708	15	01	02	COCONUTS, BRAZIL NUTS AND CASHEW NUTS, FRESH OR DR	MSC	TEMA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	29	F
221	MSNU1128803	15	02	02	HYDRAZINE AND HYDROXYLAMINE AND THEIR INORGANIC SA	MSC	RAS AL KHAIMAH	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	29.2	F
222	GLDU9792316	15	03	02	HYDRAZINE AND HYDROXYLAMINE AND THEIR INORGANIC SA	MSC	RAS AL KHAIMAH	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	29.3	F
223	MSMU1207880	15	04	02	WOOD	MSC	LOME	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	27.5	F
224	GLDU5626220	15	05	02	DRIED LEGUMINOUS VEGETABLES, SHELLED, WHETHER OR N	MSC	SEATTLE	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	28.2	F
225	MSMU2708757	15	06	02	DRIED LEGUMINOUS VEGETABLES, SHELLED, WHETHER OR N	MSC	SEATTLE	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	28.9	F
226	TEMU2390217	15	07	02	GRANITE, PORPHYRY, BASALT, SANDSTONE AND OTHER MON	MSC	CAPE TOWN	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	28.1	F
227	DRYU2963086	15	08	02	HYDRAZINE AND HYDROXYLAMINE AND THEIR INORGANIC SA	MSC	RAS AL KHAIMAH	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	25.3	F
228	MSDU2362462	17	01	82	WOOD	MSC	LOME	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	25	F
229	MSDU2524199	17	02	82	HYDRAZINE AND HYDROXYLAMINE AND THEIR INORGANIC SA	MSC	RAS AL KHAIMAH	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	25.3	F
230	MSCU6973595	17	03	82	WOOD	MSC	LOME	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	29.8	F
231	MSDU1932220	17	04	82	HYDRAZINE AND HYDROXYLAMINE AND THEIR INORGANIC SA	MSC	RAS AL KHAIMAH	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	25.3	F
232	TCNU3559512	18	01	02	ARTIFICIAL GRAPHITE	MSC	TIANJIN XINGANG	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	31.8	F
233	MSNU9657336	18	01	04	MOPLEN HP456J, BG25BC	MSC	DAMMAM	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29.1	F
234	MSDU8655154	18	01	06	COTTON, NOT CARDED OR COMBED	MSC	SAN PEDRO	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29	F
235	MSMU7556620	18	01	08	RECOVERED (WASTE AND SCRAP) PAPER OR PAPERBOARD -	MSC	SHARJAH	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29.7	F
236	FFAU1922312	18	01	84	COCONUTS, BRAZIL NUTS AND CASHEW NUTS, FRESH OR DR	MSC	TEMA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	28.5	F
237	FFAU3986002	18	01	86	POLYMERS OF ETHYLENE, IN PRIMARY FORMS - POLYETHYL	MSC	SHUAIBA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29	F
238	MSDU6980276	18	02	02	WOOD IN THE ROUGH, WHETHER OR NOT STRIPPED OF BARK	MSC	SAVANNAH	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	32.1	F
239	MSMU5586082	18	02	04	WOOD IN THE ROUGH, WHETHER OR NOT STRIPPED OF BARK	MSC	CHARLESTON	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	32	F
240	MSDU7215335	18	02	06	RECOVERED (WASTE AND SCRAP) PAPER OR PAPERBOARD -	MSC	SHARJAH	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	45G1	40HC	30.5	F
241	MSDU8647386	18	02	08	RECOVERED (WASTE AND SCRAP) PAPER OR PAPERBOARD -	MSC	SHARJAH	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29.9	F
242	MSDU6251410	18	02	84	BLEACHED CHEMI THERMO MECHANICAL PULP	MSC	VANCOUVER	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	28.9	F
243	FFAU1691321	18	02	86	COCONUTS, BRAZIL NUTS AND CASHEW NUTS, FRESH OR DR	MSC	TEMA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	31.6	F
244	MSCU5380661	18	03	02	WOOD IN THE ROUGH, WHETHER OR NOT STRIPPED OF BARK	MSC	SAVANNAH	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	32.3	F
245	MSMU5579416	18	03	04	RECOVERED (WASTE AND SCRAP) PAPER OR PAPERBOARD -	MSC	BALTIMORE	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29.1	F
246	MEDU7466755	18	03	06	RE420MO POLYPROPYLENE	MSC	ABU DHABI	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	28.9	F
247	MEDU8952628	18	03	08	RECOVERED (WASTE AND SCRAP) PAPER OR PAPERBOARD -	MSC	SHARJAH	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	30.4	F
248	MSDU7574253	18	03	84	COCONUTS, BRAZIL NUTS AND CASHEW NUTS, FRESH OR DR	MSC	TEMA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	45G1	40HC	28.5	F
249	MSNU6114886	18	03	86	BLEACHED CHEMI THERMO MECHANICAL PULP	MSC	VANCOUVER	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	28.9	F
250	MSNU6794335	18	04	02	BLEACHED CHEMI THERMO MECHANICAL PULP	MSC	VANCOUVER	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29.9	F
251	MSDU5928595	18	04	04	COCONUTS, BRAZIL NUTS AND CASHEW NUTS, FRESH OR DR	MSC	TEMA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29	F
252	TCLU7727160	18	04	06	BLEACHED CHEMI THERMO MECHANICAL PULP	MSC	VANCOUVER	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29.9	F
253	FBLU0090922	18	04	08	COTTON, NOT CARDED OR COMBED	MSC	SAN PEDRO	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	45G1	40HC	29.1	F
254	TGBU4622923	18	04	84	POLYMERS OF PROPYLENE OR OF OTHER OLEFINS, IN PRIM	MSC	SHUAIBA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	28.9	F
255	BEAU4259321	18	04	86	COCONUTS, BRAZIL NUTS AND CASHEW NUTS, FRESH OR DR	MSC	TEMA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	28.5	F
256	TCLU5663863	18	05	02	DICYANDIAMIDE 99.5 PCT MIN	MSC	TIANJIN XINGANG	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	32	F
257	MSDU8999479	18	05	04	LINEAR LOW DENSITY POLYETHYLENE	MSC	JUBAIL	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29.2	F
258	MSDU8251255	18	05	06	COTTON, NOT CARDED OR COMBED	MSC	SAN PEDRO	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	45G1	40HC	29	F
259	MSMU6531340	18	05	08	POLYMERS OF ETHYLENE, IN PRIMARY FORMS - POLYETHYL	MSC	SHUAIBA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29	F
260	MSMU8766811	18	05	82	COTTON, NOT CARDED OR COMBED	MSC	SAN PEDRO	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29.3	F
261	FBLU0063531	18	05	84	COCONUTS, BRAZIL NUTS AND CASHEW NUTS, FRESH OR DR	MSC	TEMA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	45G1	40HC	28.5	F
262	MSCU5412840	18	05	86	COTTON, NOT CARDED OR COMBED	MSC	SAN PEDRO	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	45G1	40HC	28.7	F
263	MSDU8601380	18	06	02	BLEACHED CHEMI THERMO	MSC	VANCOUVER	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	30	F
264	MSDU5949319	18	06	04	BLEACHED CHEMI THERMO MECHANICAL PULP	MSC	VANCOUVER	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29.7	F
265	TCNU2916220	18	06	06	BLEACHED CHEMI THERMO MECHANICAL PULP	MSC	VANCOUVER	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	45G1	40HC	29.8	F
266	MSDU7069204	18	06	08	RECOVERED (WASTE AND SCRAP) PAPER OR PAPERBOARD -	MSC	SHARJAH	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	30.4	F
267	MSDU5950325	18	06	82	WOOD IN THE ROUGH, WHETHER OR NOT STRIPPED OF BARK	MSC	SAVANNAH	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	32.1	F
268	MSMU5110820	18	06	84	COCONUTS, BRAZIL NUTS AND CASHEW NUTS, FRESH OR DR	MSC	TEMA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	28.5	F

MSC AGENCY (INDIA) PVT. LTD.

269	MSDU5526699	18	06	86	WASTE PAPER - PRINTED TMP	MSC	DAMMAM	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	23.7	F
270	CAAU7417206	18	07	02	WOOD IN THE ROUGH, WHETHER OR NOT STRIPPED OF BARK	MSC	SAVANNAH	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	32.4	F
271	MSMU5528492	18	07	04	COCONUTS, BRAZIL NUTS AND CASHEW NUTS, FRESH OR DR	MSC	TEMA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	30.2	F
272	FFAU2077806	18	07	06	BLEACHED CHEMI THERMO	MSC	VANCOUVER	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29.9	F
273	MSMU5808750	18	07	08	BLEACHED CHEMI THERMO MECHANICAL PULP	MSC	VANCOUVER	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29.2	F
274	MEDU7994900	18	07	82	HIGH BULK C2S ART BOARD	MSC	QINGDAO	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	30.3	F
275	MSDU6094856	18	07	84	COCONUTS, BRAZIL NUTS AND CASHEW NUTS, FRESH OR DR	MSC	TEMA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	30.1	F
276	FFAU4142006	18	07	86	WOOD IN THE ROUGH, WHETHER OR NOT STRIPPED OF BARK	MSC	CHARLESTON	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	32.2	F
277	MSMU8961525	18	08	02	ARTIFICIAL GRAPHITE	MSC	TIANJIN XINGANG	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	31.9	F
278	BMOU5933145	18	08	04	CASHEW	MSC	TINCAN	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	31	F
279	MSMU7221463	18	08	06	RECOVERED (WASTE AND SCRAP) PAPER OR PAPERBOARD -	MSC	SHARJAH	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	30.8	F
280	MEDU4793060	18	08	08	RECOVERED (WASTE AND SCRAP) PAPER OR PAPERBOARD -	MSC	SHARJAH	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	30.2	F
281	CAIU7605762	18	08	82	COTTON, NOT CARDED OR COMBED	MSC	SAN PEDRO	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29.2	F
282	MSMU7843410	18	08	84	COCONUTS, BRAZIL NUTS AND CASHEW NUTS, FRESH OR DR	MSC	TEMA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29	F
283	MSMU4137195	18	08	86	WOOD IN THE ROUGH, WHETHER OR NOT STRIPPED OF BARK	MSC	CHARLESTON	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	31.3	F
284	TCLU5276371	18	09	82	POLYPROPYLENE	MSC	TIANJIN XINGANG	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	32	F
285	MSMU4269150	18	09	84	COCONUTS, BRAZIL NUTS AND CASHEW NUTS, FRESH OR DR	MSC	TEMA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	28.5	F
286	CAIU4607479	18	09	86	STANDARD ACCESSORIES	MSC	YOKOHAMA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	24.1	F
287	MSMU7180770	18	10	82	COTTON, NOT CARDED OR COMBED	MSC	SAN PEDRO	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29.1	F
288	FFAU3824608	18	10	84	COTTON, NOT CARDED OR COMBED	MSC	SAN PEDRO	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	28.5	F
289	FCIU4619879	19	01	82	CALCIUM CARBIDE	MSC	SHANGHAI	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	28.8	F
290	SEGU1488630	19	02	82	CALCIUM CARBIDE.SIZE:50-80MM	MSC	TIANJIN XINGANG	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	22G1	20DV	28.8	F
291	DFSU2681951	19	03	82	CALCIUM CARBIDE	MSC	SHANGHAI	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	28.8	F
292	CAIU2703977	19	04	82	WOOD	MSC	LOME	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	27.5	F
293	MSDU2942820	21	03	82	WOOD	MSC	LOME	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	27.5	F
294	TRHU1269930	21	03	84	WOOD	MSC	LOME	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	25	F
295	TEMU2040501	21	04	82	WOOD	MSC	LOME	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	28	F
296	MSMU1459264	21	04	84	THIS IS SEZ CARGO STEEL CORD	MSC	QINGDAO	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	16.7	F
297	TCLU2570422	21	05	82	CALCIUM CARBIDE	MSC	SHANGHAI	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	28.8	F
298	TRHU1570624	21	05	84	STANDARD ACCESSORIES	MSC	YOKOHAMA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	4.6	F
299	DFSU2765179	21	06	82	CALCIUM CARBIDE	MSC	SHANGHAI	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	28.8	F
300	MSNU2295560	21	06	84	SPINNING MACHINE	MSC	SHANGHAI	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	2.5	F
301	FTAU1518118	21	07	82	SAWN TIMBER	MSC	ABIDJAN	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	25.3	F
302	MSMU3453692	21	08	82	WOOD IN THE ROUGH, WHETHER OR NOT STRIPPED OF BARK	MSC	TEMA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	23	F
303	MSMU1907878	21	09	82	QUICKLIME, SLAKED LIME AND HYDRAULIC LIME, OTHER T	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	25.2	F
304	MSMU1487158	23	01	02	DRIED LEGUMINOUS VEGETABLES, SHELLED, WHETHER OR N	MSC	SEATTLE	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	28.5	F
305	TEMU5860973	23	01	04	WOOD	MSC	LOME	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	25.5	F
306	MSMU1409237	23	01	06	WOOD	MSC	LOME	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	27	F
307	MSBU3051616	23	01	08	WOOD IN THE ROUGH, WHETHER OR NOT STRIPPED OF BARK	MSC	TEMA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	23	F
308	MSNU2420933	23	02	02	PRINTING PAPER	MSC	SHANGHAI	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	28	F
309	MEDU6890054	23	02	04	HYDRAZINE AND HYDROXYLAMINE AND THEIR INORGANIC SA	MSC	RAS AL KHAIMAH	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	25.3	F
310	CAIU3197826	23	02	06	WOOD	MSC	LOME	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	25.4	F
311	MEDU5780387	23	02	08	WOOD	MSC	LOME	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	25.1	F
312	TGBU1192367	23	03	02	PRINTING PAPER	MSC	SHANGHAI	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	26.8	F
313	MEDU5849293	23	03	04	WOOD IN THE ROUGH, WHETHER OR NOT STRIPPED OF BARK	MSC	TEMA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	23	F
314	MEDU6139763	23	03	06	WOOD IN THE ROUGH, WHETHER OR NOT STRIPPED OF BARK	MSC	TEMA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	23	F
315	FCIU6368730	23	03	08	WOOD IN THE ROUGH, WHETHER OR NOT STRIPPED OF BARK	MSC	TEMA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	22G1	20DV	23	F
316	MSDU1187405	23	04	02	WOOD	MSC	LOME	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	22G1	20DV	26	F
317	MEDU2917223	23	04	04	HYDRAZINE AND HYDROXYLAMINE AND THEIR INORGANIC SA	MSC	RAS AL KHAIMAH	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	25.4	F
318	MEDU5746720	23	04	06	WOOD IN THE ROUGH, WHETHER OR NOT STRIPPED OF BARK	MSC	TEMA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	22G1	20DV	23	F
319	MEDU3174101	23	04	08	HYDRAZINE AND HYDROXYLAMINE AND THEIR INORGANIC SA	MSC	RAS AL KHAIMAH	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	25.4	F
320	FBIU0412407	23	05	02	WOOD	MSC	LOME	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	22G1	20DV	28	F
321	TEMU3811901	23	05	04	WOOD IN THE ROUGH, WHETHER OR NOT STRIPPED OF BARK	MSC	TEMA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	23	F
322	MSNU2431162	23	05	06	PRINTING PAPER	MSC	SHANGHAI	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	23.6	F

MSC AGENCY (INDIA) PVT. COCHIN

323	CAIU2783798	23	05	08	WOOD IN THE ROUGH, WHETHER OR NOT STRIPPED OF BARK	MSC	TEMA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	23	F
324	MSDU1720258	23	06	02	WOOD	MSC	LOME	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	27	F
325	MEDU3929810	23	06	04	HYDRAZINE AND HYDROXYLAMINE AND THEIR INORGANIC SA	MSC	RAS AL KHAIMAH	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	25.4	F
326	MSDU1525375	23	06	06	WOOD	MSC	LOME	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	22G1	20DV	25	F
327	TGBU3222049	23	06	08	WOOD IN THE ROUGH, WHETHER OR NOT STRIPPED OF BARK	MSC	TEMA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	23	F
328	TGBU1195108	23	07	02	PRINTING PAPER	MSC	SHANGHAI	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	26.7	F
329	MEDU6204365	23	07	04	WOOD IN THE ROUGH, WHETHER OR NOT STRIPPED OF BARK	MSC	TEMA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	23	F
330	MEDU3440330	23	07	06	WOOD IN THE ROUGH, WHETHER OR NOT STRIPPED OF BARK	MSC	TEMA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	23	F
331	MSDU2473893	23	07	08	WOOD IN THE ROUGH, WHETHER OR NOT STRIPPED OF BARK	MSC	TEMA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	23	F
332	MSNU2420548	23	08	02	PRINTING PAPER	MSC	SHANGHAI	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	27.1	F
333	MSDU2528738	23	08	04	HYDRAZINE AND HYDROXYLAMINE AND THEIR INORGANIC SA	MSC	RAS AL KHAIMAH	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	25.3	F
334	MSNU1864540	23	08	06	HYDRAZINE AND HYDROXYLAMINE AND THEIR INORGANIC SA	MSC	RAS AL KHAIMAH	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	25.2	F
335	MEDU5227860	23	08	08	WOOD IN THE ROUGH, WHETHER OR NOT STRIPPED OF BARK	MSC	TEMA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	22G1	20DV	23	F
336	MSNU5326849	24	01	10	BLEACHED CHEMI THERMO	MSC	VANCOUVER	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29.1	F
337	MSNU9045285	24	01	82	HE125MO POLYPROPYLENE	MSC	ABU DHABI	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29.2	F
338	MSMU5916883	24	01	84	MOPLEN HP456J, BG25BC	MSC	DAMMAM	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29.1	F
339	MSMU4723637	24	01	86	COCONUTS, BRAZIL NUTS AND CASHEW NUTS, FRESH OR DR	MSC	TEMA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	30.1	F
340	MEDU8593435	24	02	10	RECOVERED (WASTE AND SCRAP) PAPER OR PAPERBOARD -	MSC	SHARJAH	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	30.4	F
341	MSCU5358014	24	02	82	BLEACHED CHEMI THERMO	MSC	VANCOUVER	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	45G1	40HC	29.8	F
342	FDCU0241538	24	02	84	COTTON, NOT CARDED OR COMBED	MSC	SAN PEDRO	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	45G1	40HC	29.1	F
343	MSMU8295687	24	02	86	RECOVERED (WASTE AND SCRAP) PAPER OR PAPERBOARD -	MSC	SHARJAH	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	28.3	F
344	MSMU5309724	24	03	10	BLEACHED CHEMI THERMO	MSC	VANCOUVER	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	28.8	F
345	FFAU2841410	24	03	82	RECOVERED (WASTE AND SCRAP) PAPER OR PAPERBOARD -	MSC	SHARJAH	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	30.6	F
346	MSDU6166956	24	03	84	BLEACHED CHEMI THERMO MECHANICAL PULP	MSC	VANCOUVER	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	28.8	F
347	TCNU1313622	24	03	86	RECOVERED (WASTE AND SCRAP) PAPER OR PAPERBOARD -	MSC	SHARJAH	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	45G1	40HC	28.5	F
348	GLDU7653986	24	04	10	RECOVERED (WASTE AND SCRAP) PAPER OR PAPERBOARD -	MSC	SHARJAH	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	30.5	F
349	FFAU1994014	24	04	82	COCONUTS, BRAZIL NUTS AND CASHEW NUTS, FRESH OR DR	MSC	TEMA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29	F
350	MSNU6562803	24	04	84	COCONUTS, BRAZIL NUTS AND CASHEW NUTS, FRESH OR DR	MSC	TEMA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	28.5	F
351	MSCU5091490	24	04	86	BE961MO PROPYLENE COPOLYMERS	MSC	ABU DHABI	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	45G1	40HC	29.1	F
352	MEDU7947299	24	05	10	BLEACHED CHEMI THERMO MECHANICAL PULP	MSC	VANCOUVER	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	45G1	40HC	29.1	F
353	CAAU5917898	24	05	82	COCONUTS, BRAZIL NUTS AND CASHEW NUTS, FRESH OR DR	MSC	TEMA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29.5	F
354	MSNU8621560	24	05	84	LINEAR LOW DENSITY POLYETHYLENE	MSC	JUBAIL	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29.1	F
355	TGBU7867133	24	05	86	COTTON, NOT CARDED OR COMBED	MSC	ABIDJAN	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	45G1	40HC	28.3	F
356	CAAU7460162	24	06	10	BLEACHED CHEMI THERMO	MSC	VANCOUVER	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29.1	F
357	MSMU6221134	24	06	82	HE125MO POLYPROPYLENE	MSC	ABU DHABI	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29.2	F
358	TCNU4327661	24	06	84	RECOVERED (WASTE AND SCRAP) PAPER OR PAPERBOARD -	MSC	BALTIMORE	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	45G1	40HC	28.3	F
359	MSMU8660814	24	06	86	COCONUTS, BRAZIL NUTS AND CASHEW NUTS, FRESH OR DR	MSC	TEMA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	28.5	F
360	MSMU8315206	24	07	10	RE420MO POLYPROPYLENE	MSC	ABU DHABI	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	28.9	F
361	MSNU8507898	24	07	82	COCONUTS, BRAZIL NUTS AND CASHEW NUTS, FRESH OR DR	MSC	TEMA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29	F
362	CAIU7737100	24	07	84	ELOTEX MP2050	MSC	SHANGHAI	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	28.3	F
363	MSNU8699677	24	07	86	POLYMERS OF PROPYLENE OR OF OTHER OLEFINS, IN PRIM	MSC	SHUAIBA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29	F
364	TRHU6806667	24	08	10	COTTON, NOT CARDED OR COMBED	MSC	SAN PEDRO	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	28.7	F
365	MSBU8176128	24	08	82	BLEACHED CHEMI THERMO MECHANICAL PULP	MSC	VANCOUVER	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29.6	F
366	TXGU5344558	24	08	84	COCONUTS, BRAZIL NUTS AND CASHEW NUTS, FRESH OR DR	MSC	TEMA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	28.5	F
367	MSDU5813641	24	08	86	COCONUTS, BRAZIL NUTS AND CASHEW NUTS, FRESH OR DR	MSC	TEMA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	12.9	F
368	MSDU5457730	24	08	88	WOOD SAWN OR CHIPPED LENGTHWISE, SLICED OR PEELED,	MSC	VERACRUZ	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29.7	F
369	CAAU6763101	24	09	82	BLEACHED CHEMI THERMO MECHANICAL PULP	MSC	VANCOUVER	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29	F
370	MSMU8660795	24	09	84	BLEACHED CHEMI THERMO MECHANICAL PULP	MSC	VANCOUVER	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29.5	F
371	FSCU9885968	24	09	86	COTTON, NOT CARDED OR COMBED	MSC	ABIDJAN	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	28.5	F
372	MSDU8553168	24	10	82	COCONUTS, BRAZIL NUTS AND CASHEW NUTS, FRESH OR DR	MSC	TEMA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29	F
373	MSNU8668423	24	10	84	MOPLEN HP456J, BG25BC	MSC	DAMMAM	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29.1	F
374	FFAU2290489	24	10	86	COTTON, NOT CARDED OR COMBED	MSC	SAN PEDRO	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	45G1	40HC	28.8	F
375	MSBU3144262	25	01	02	WOOD	MSC	LOME	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	28	F
376	MSDU1412527	25	01	04	WOOD	MSC	LOME	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	22G1	20DV	22.4	F

AGENCY (INDIA) PVT. LTD. COCHIN MSC

377	GLDU5051830	25	01	06	WOOD IN THE ROUGH, WHETHER OR NOT STRIPPED OF BARK	MSC	TEMA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	23	F
378	MSCU6300233	25	01	08	WOOD	MSC	LOME	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	24.9	F
379	MSBU1487473	25	02	02	WOOD	MSC	LOME	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	27.5	F
380	MSCU6014477	25	02	04	HYDRAZINE AND HYDROXYLAMINE AND THEIR INORGANIC SA	MSC	RAS AL KHAIMAH	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	25.4	F
381	BMOU2055597	25	02	06	WOOD IN THE ROUGH, WHETHER OR NOT STRIPPED OF BARK	MSC	TEMA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	22G1	20DV	23	F
382	MSNU3547619	25	02	08	WOOD IN THE ROUGH, WHETHER OR NOT STRIPPED OF BARK	MSC	TEMA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	23	F
383	GLDU5121686	25	03	02	WOOD	MSC	LOME	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	26.5	F
384	CAXU6391333	25	03	04	HYDRAZINE AND HYDROXYLAMINE AND THEIR INORGANIC SA	MSC	RAS AL KHAIMAH	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	25.3	F
385	MEDU6313073	25	03	06	WOOD	MSC	LOME	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	25	F
386	MSCU6867485	25	03	08	WOOD	MSC	LOME	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	25	F
387	MSMU3385767	25	04	02	WOOD	MSC	LOME	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	25	F
388	MSDU1964980	25	04	04	HYDRAZINE AND HYDROXYLAMINE AND THEIR INORGANIC SA	MSC	RAS AL KHAIMAH	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	25.2	F
389	CAIU3142952	25	04	06	DRIED LEGUMINOUS VEGETABLES, SHELLED, WHETHER OR N	MSC	SEATTLE	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	27.1	F
390	UETU2642486	25	04	08	WOOD	MSC	LOME	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	22G1	20DV	26	F
391	MSNU3557197	25	05	02	WOOD	MSC	LOME	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	25	F
392	MEDU5672422	25	05	04	WOOD IN THE ROUGH, WHETHER OR NOT STRIPPED OF BARK	MSC	TEMA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	23	F
393	FTAU1392797	25	05	06	WOOD IN THE ROUGH, WHETHER OR NOT STRIPPED OF BARK	MSC	TEMA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	23	F
394	MSNU2417647	25	05	08	WOOD IN THE ROUGH, WHETHER OR NOT STRIPPED OF BARK	MSC	TEMA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	23	F
395	MSMU3653577	25	06	02	BROWN FUSED ALUMINA	MSC	TIANJIN XINGANG	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	29.2	F
396	MSMU1185137	25	06	04	HYDRAZINE AND HYDROXYLAMINE AND THEIR INORGANIC SA	MSC	RAS AL KHAIMAH	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	25.3	F
397	MEDU6350842	25	06	06	WOOD IN THE ROUGH, WHETHER OR NOT STRIPPED OF BARK	MSC	TEMA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	23	F
398	MSMU2760354	25	06	08	WOOD IN THE ROUGH, WHETHER OR NOT STRIPPED OF BARK	MSC	TEMA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	23	F
399	TEMU5104235	25	07	02	WOOD	MSC	LOME	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	22G1	20DV	26	F
400	MEDU2488751	25	07	04	WOOD IN THE ROUGH, WHETHER OR NOT STRIPPED OF BARK	MSC	TEMA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	23	F
401	FCIU2073367	25	07	06	WOOD	MSC	LOME	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	22.4	F
402	MSDU2246077	25	07	08	WOOD IN THE ROUGH, WHETHER OR NOT STRIPPED OF BARK	MSC	TEMA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	23	F
403	MSNU2420419	25	08	02	PRINTING PAPER	MSC	SHANGHAI	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	27.3	F
404	TGBU3835950	25	08	04	HYDRAZINE AND HYDROXYLAMINE AND THEIR INORGANIC SA	MSC	RAS AL KHAIMAH	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	25.2	F
405	MEDU3512261	25	08	06	WOOD	MSC	LOME	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	25.3	F
406	MSMU1218800	25	08	08	WOOD	MSC	LOME	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	2210	20DV	25	F
407	MEDU2076590	27	01	02	QUICKLIME, SLAKED LIME AND HYDRAULIC LIME, OTHER T	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	22.6	F
408	MSNU2654741	27	01	04	QUICKLIME, SLAKED LIME AND HYDRAULIC LIME, OTHER T	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	22.5	F
409	MSMU1878126	27	01	06	FISH BODY OIL - JAPAN CRUDE FISH OIL	MSC	TOMAKOMAI	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	22.8	F
410	PGRU2312104	27	02	02	HYDRAZINE AND HYDROXYLAMINE AND THEIR INORGANIC SA	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	25.2	F
411	MSDU1590982	27	02	04	QUICKLIME, SLAKED LIME AND HYDRAULIC LIME, OTHER T	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	22G1	20DV	25.3	F
412	MSNU1564237	27	02	06	FISH BODY OIL - JAPAN CRUDE FISH OIL	MSC	TOMAKOMAI	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	23	F
413	MSNU3700250	27	03	02	QUICKLIME, SLAKED LIME AND HYDRAULIC LIME, OTHER T	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	22.4	F
414	FCIU5592350	27	03	04	HYDRAZINE AND HYDROXYLAMINE AND THEIR INORGANIC SA	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	25.2	F
415	CAXU3381959	27	03	06	QUICKLIME, SLAKED LIME AND HYDRAULIC LIME, OTHER T	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	25.3	F
416	FTAU1353002	27	04	02	HYDRAZINE AND HYDROXYLAMINE AND THEIR INORGANIC SA	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	25.2	F
417	MSMU2191793	27	04	04	QUICKLIME, SLAKED LIME AND HYDRAULIC LIME, OTHER T	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	25.2	F
418	MSNU3015508	27	04	06	HYDRAZINE AND HYDROXYLAMINE AND THEIR INORGANIC SA	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	25.3	F
419	CAXU3305476	27	05	02	QUICKLIME, SLAKED LIME AND HYDRAULIC LIME, OTHER T	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	25.2	F
420	MSMU1686036	27	05	04	QUICKLIME, SLAKED LIME AND HYDRAULIC LIME, OTHER T	MSC	PORT KLANG	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	19.3	F
421	TGBU3937530	27	05	06	PALMOCOL PDA 1300 DIETHANOLAMIDE HSCODE 3402139000	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	22G1	20DV	25.3	F
422	FCGU2267880	27	06	02	QUICKLIME, SLAKED LIME AND HYDRAULIC LIME, OTHER T	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	25.4	F
423	MEDU1436579	27	06	04	QUICKLIME, SLAKED LIME AND HYDRAULIC LIME, OTHER T	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	22.5	F
424	MSMU3295128	27	06	06	QUICKLIME, SLAKED LIME AND HYDRAULIC LIME, OTHER T	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	22G1	20DV	25.3	F
425	FCIU5964268	27	07	02	QUICKLIME, SLAKED LIME AND HYDRAULIC LIME, OTHER T	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	25.2	F
426	MSMU2560741	27	07	04	QUICKLIME, SLAKED LIME AND HYDRAULIC LIME, OTHER T	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	25.2	F
427	CORU2612039	27	07	06	QUICKLIME, SLAKED LIME AND HYDRAULIC LIME, OTHER T	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	25.3	F
428	MEDU1182411	27	08	02	HYDRAZINE AND HYDROXYLAMINE AND THEIR INORGANIC SA	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	25.3	F
429	MSDU1076968	27	08	04	QUICKLIME, SLAKED LIME AND HYDRAULIC LIME, OTHER T	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	25.2	F
430	CAIU6734343	27	08	06	HYDRAZINE AND HYDROXYLAMINE AND THEIR INORGANIC SA	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	25.2	F

431	MSDU7193848	28	01	08	STANDARD NEWSPRINT	MSC	CORNER BROOK	VIZHINJAM	COCHIN	COCHIN	COCHIN	45G1	40HC	28.8	F
432	MSNU5262702	28	01	82	MOPLEN HP456J, BG25BC	MSC	JUBAIL	VIZHINJAM	COCHIN	COCHIN	COCHIN	4510	40HC	29.1	F
433	MSDU9837180	28	01	84	EMPTY CONTAINER	MSC	TIANJIN XINGANG	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4532	40HR	4.6	E
434	MEDU9660590	28	01	86	EMPTY CONTAINER	MSC	TIANJIN XINGANG	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4532	40HR	4.4	E
435	MSDU9792254	28	01	88	EMPTY CONTAINER	MSC	TIANJIN XINGANG	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4532	40HR	4.4	E
436	MSMU4799268	28	02	08	POLYETHYLENE LUPOLEN	MSC	JUBAIL	VIZHINJAM	COCHIN	COCHIN	COCHIN	4510	40HC	29.1	F
437	MSMU8785684	28	02	82	STANDARD NEWSPRINT	MSC	CORNER BROOK	VIZHINJAM	COCHIN	COCHIN	COCHIN	4510	40HC	26.7	F
438	MEDU9614722	28	02	84	EMPTY CONTAINER	MSC	TIANJIN XINGANG	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4532	40HR	4.2	E
439	MSDU9786652	28	02	86	EMPTY CONTAINER	MSC	TIANJIN XINGANG	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4532	40HR	4.4	E
440	TTNU8488604	28	02	88	EMPTY CONTAINER	MSC	TIANJIN XINGANG	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4532	40HR	4.2	E
441	BMOU6908527	28	03	08	STANDARD NEWSPRINT	MSC	CORNER BROOK	VIZHINJAM	COCHIN	COCHIN	COCHIN	4510	40HC	28.8	F
442	MSDU9868663	28	03	82	EMPTY CONTAINER	MSC	TIANJIN XINGANG	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4532	40HR	3.6	E
443	MEDU9775310	28	03	84	EMPTY CONTAINER	MSC	TIANJIN XINGANG	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4532	40HR	4.2	E
444	MSDU9794560	28	03	86	EMPTY CONTAINER	MSC	TIANJIN XINGANG	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4532	40HR	4.4	E
445	GESU9273269	28	03	88	EMPTY CONTAINER	MSC	TIANJIN XINGANG	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4532	40HR	4.2	E
446	FFAU2505674	28	04	08	CHINA GREEN TEA	MSC	SHANGHAI	VIZHINJAM	COCHIN	COCHIN	COCHIN	45G1	40HC	30.4	F
447	MSDU9799623	28	04	82	EMPTY CONTAINER	MSC	TIANJIN XINGANG	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4532	40HR	4.4	E
448	MSDU9797852	28	04	84	EMPTY CONTAINER	MSC	TIANJIN XINGANG	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4532	40HR	4.4	E
449	TTNU8122256	28	04	86	EMPTY CONTAINER	MSC	TIANJIN XINGANG	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4532	40HR	4	E
450	MEDU9744433	28	04	88	EMPTY CONTAINER	MSC	TIANJIN XINGANG	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4532	40HR	4	E
451	MSDU6596920	28	05	08	MOPLEN HP456J, BG25BC	MSC	JUBAIL	VIZHINJAM	COCHIN	COCHIN	COCHIN	4510	40HC	29.1	F
452	MSDU9794093	28	05	82	EMPTY CONTAINER	MSC	TIANJIN XINGANG	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4532	40HR	4.4	E
453	MSDU9792167	28	05	84	EMPTY CONTAINER	MSC	TIANJIN XINGANG	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4532	40HR	4.4	E
454	GESU9440828	28	05	86	EMPTY CONTAINER	MSC	TIANJIN XINGANG	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4532	40HR	4	E
455	SZLU9020150	28	05	88	EMPTY CONTAINER	MSC	TIANJIN XINGANG	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4532	40HR	4.2	E
456	MSMU6697497	28	06	08	LINEAR LOW DENSITY POLYETHYLENE LLDPE	MSC	JUBAIL	VIZHINJAM	COCHIN	COCHIN	COCHIN	4510	40HC	29.1	F
457	TTNU8127828	28	06	82	EMPTY CONTAINER	MSC	TIANJIN XINGANG	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4532	40HR	4.7	E
458	SEGU9441496	28	06	84	EMPTY CONTAINER	MSC	TIANJIN XINGANG	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4532	40HR	4.5	E
459	CRSU6131489	28	06	86	EMPTY CONTAINER	MSC	TIANJIN XINGANG	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4532	40HR	4.7	E
460	MSDU9793636	28	06	88	EMPTY CONTAINER	MSC	TIANJIN XINGANG	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4532	40HR	4.4	E
461	TEMU8185971	28	07	08	LUPOLEN 2427K, BG25BC	MSC	JUBAIL	VIZHINJAM	COCHIN	COCHIN	COCHIN	4510	40HC	29.3	F
462	MSDU9799752	28	07	82	EMPTY CONTAINER	MSC	TIANJIN XINGANG	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4532	40HR	4.4	E
463	OTPU6569314	28	07	84	EMPTY CONTAINER	MSC	TIANJIN XINGANG	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4532	40HR	4	E
464	MSDU9793501	28	07	86	EMPTY CONTAINER	MSC	TIANJIN XINGANG	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4532	40HR	4.4	E
465	MSDU9793435	28	07	88	EMPTY CONTAINER	MSC	TIANJIN XINGANG	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4532	40HR	4.4	E
466	MSMU5750220	28	08	08	LUPOLEN 2427K, BG25BC	MSC	JUBAIL	VIZHINJAM	COCHIN	COCHIN	COCHIN	4510	40HC	29.2	F
467	MSDU9797765	28	08	82	EMPTY CONTAINER	MSC	TIANJIN XINGANG	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4532	40HR	4.4	E
468	MSDU9797430	28	08	84	EMPTY CONTAINER	MSC	TIANJIN XINGANG	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4532	40HR	4.4	E
469	MSDU9883250	28	08	86	EMPTY CONTAINER	MSC	TIANJIN XINGANG	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4532	40HR	4.6	E
470	MSDU9798078	28	08	88	EMPTY CONTAINER	MSC	TIANJIN XINGANG	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4532	40HR	4.4	E
471	MSDU9019223	28	09	82	EMPTY CONTAINER	MSC	TIANJIN XINGANG	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4532	40HR	4.2	E
472	MSDU9793585	28	09	84	EMPTY CONTAINER	MSC	TIANJIN XINGANG	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4532	40HR	4.4	E
473	TRIU8172077	28	09	86	EMPTY CONTAINER	MSC	TIANJIN XINGANG	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4532	40HR	4.7	E
474	BMOU9227770	28	10	82	EMPTY CONTAINER	MSC	TIANJIN XINGANG	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	45R1	40HR	4.2	E
475	MSDU9793604	28	10	84	EMPTY CONTAINER	MSC	TIANJIN XINGANG	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4532	40HR	4.4	E
476	MEDU9094770	28	10	86	EMPTY CONTAINER	MSC	TIANJIN XINGANG	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4532	40HR	4.2	E
477	MSNU3630805	29	01	02	HYDRAZINE AND HYDROXYLAMINE AND THEIR INORGANIC SA	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	25.2	F
478	MEDU2520982	29	01	04	TENSAGEX EOM670B SODIUM LAURYL ETHER SULPHATE	MSC	PORT KLANG	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	21.4	F
479	MSNU2958940	29	01	06	HYDRAZINE AND HYDROXYLAMINE AND THEIR INORGANIC SA	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	25.3	F
480	MEDU3937749	29	02	02	QUICKLIME, SLAKED LIME AND HYDRAULIC LIME, OTHERT	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	22.6	F
481	FCIU4295511	29	02	04	QUICKLIME, SLAKED LIME AND HYDRAULIC LIME, OTHERT	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	22.5	F
482	MSMU2212303	29	02	06	FISH BODY OIL - JAPAN CRUDE FISH OIL	MSC	TOMAKOMAI	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	23	F
483	MSNU2402061	29	03	02	QUICKLIME, SLAKED LIME AND HYDRAULIC LIME, OTHERT	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	25.3	F
484	TRHU1596526	29	03	04	HYDRAZINE AND HYDROXYLAMINE AND THEIR INORGANIC SA	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	25.2	F

485	MSDU2079977	29	03	06	HYDRAZINE AND HYDROXYLAMINE AND THEIR INORGANIC SA	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	25.3	F
486	MEDU5584532	29	04	02	HYDRAZINE AND HYDROXYLAMINE AND THEIR INORGANIC SA	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	25.2	F
487	FCIU6423484	29	04	04	QUICKLIME, SLAKED LIME AND HYDRAULIC LIME, OTHERT	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	25.2	F
488	TGBU1194415	29	04	06	COATED PAPER C2S GLOSS	MSC	SHANGHAI	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	27.2	F
489	MSCU6984579	29	05	02	HYDRAZINE AND HYDROXYLAMINE AND THEIR INORGANIC SA	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	25.3	F
490	CAIU6235093	29	05	04	QUICKLIME, SLAKED LIME AND HYDRAULIC LIME, OTHERT	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	25.2	F
491	MSNU3323645	29	05	06	QUICKLIME, SLAKED LIME AND HYDRAULIC LIME, OTHERT	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	25.2	F
492	INBU3896815	29	06	02	QUICKLIME, SLAKED LIME AND HYDRAULIC LIME, OTHERT	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	25.3	F
493	MSNU2215060	29	06	04	HYDRAZINE AND HYDROXYLAMINE AND THEIR INORGANIC SA	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	25.3	F
494	MEDU2343660	29	06	06	QUICKLIME, SLAKED LIME AND HYDRAULIC LIME, OTHERT	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	22.6	F
495	MSMU2660669	29	07	02	HYDRAZINE AND HYDROXYLAMINE AND THEIR INORGANIC SA	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	25.3	F
496	MEDU3005462	29	07	04	QUICKLIME, SLAKED LIME AND HYDRAULIC LIME, OTHERT	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	25.4	F
497	CAIU2523764	29	07	06	QUICKLIME, SLAKED LIME AND HYDRAULIC LIME, OTHERT	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	22G1	20DV	22.5	F
498	BMOU2765095	29	08	02	QUICKLIME, SLAKED LIME AND HYDRAULIC LIME, OTHERT	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	22.5	F
499	TGHU1013041	29	08	04	QUICKLIME, SLAKED LIME AND HYDRAULIC LIME, OTHERT	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	22.5	F
500	FCIU2736259	29	08	06	QUICKLIME, SLAKED LIME AND HYDRAULIC LIME, OTHERT	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	25.3	F
501	MSMU6691605	32	01	02	WOOD IN THE ROUGH, WHETHER OR NOT STRIPPED OF BARK	MSC	CHARLESTON	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	32.3	F
502	MSMU7525980	32	01	04	RECOVERED (WASTE AND SCRAP) PAPER OR PAPERBOARD -	MSC	BALTIMORE	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	45G1	40HC	28.7	F
503	MSBU5363486	32	01	06	COTTON, NOT CARDED OR COMBED	MSC	ABIDJAN	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	28.4	F
504	TRHU8731799	32	01	08	LINEAR LOW DENSITY POLYETHYLENE	MSC	JUBAIL	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29.1	F
505	MSNU7166652	32	01	82	COTTON, NOT CARDED OR COMBED	MSC	SAN PEDRO	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29.1	F
506	TEMU8622407	32	01	84	BLEACHED CHEMI THERMO	MSC	VANCOUVER	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29.1	F
507	TRHU7331210	32	01	86	COTTON, NOT CARDED OR COMBED	MSC	SAN PEDRO	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	28.6	F
508	UETU6280528	32	02	02	RECOVERED (WASTE AND SCRAP) PAPER OR PAPERBOARD -	MSC	SHARJAH	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	30.1	F
509	MSNU6046668	32	02	04	HIGH BULK C2S ART BOARD	MSC	QINGDAO	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29.9	F
510	MSMU5922124	32	02	06	COTTON, NOT CARDED OR COMBED	MSC	SAN PEDRO	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	28.8	F
511	MSMU8003065	32	02	08	RECOVERED (WASTE AND SCRAP) PAPER OR PAPERBOARD -	MSC	SHARJAH	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	27.9	F
512	MSBU5203092	32	02	82	WOOD IN THE ROUGH, WHETHER OR NOT STRIPPED OF BARK	MSC	CHARLESTON	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	32.1	F
513	MEDU7069547	32	02	84	BE961MO PROPYLENE COPOLYMERS	MSC	ABU DHABI	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29.1	F
514	MSNU9610730	32	02	86	COTTON, NOT CARDED OR COMBED	MSC	SAN PEDRO	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	28.5	F
515	TIIU5564306	32	03	02	BLEACHED CHEMI THERMO MECHANICAL PULP	MSC	VANCOUVER	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29.3	F
516	MSDU5586189	32	03	04	COCONUTS, BRAZIL NUTS AND CASHEW NUTS, FRESH OR DR	MSC	TEMA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	30.2	F
517	TEMU6906826	32	03	06	COTTON, NOT CARDED OR COMBED	MSC	ABIDJAN	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	28.2	F
518	MSDU6902759	32	03	08	POLYMERS OF ETHYLENE, IN PRIMARY FORMS - POLYETHYL	MSC	SHUAIBA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29	F
519	TRHU6548665	32	03	82	POLYMERS OF PROPYLENE OR OF OTHER OLEFINS, IN PRIM	MSC	SHUAIBA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29	F
520	MSMU8666772	32	03	84	COTTON, NOT CARDED OR COMBED	MSC	SAN PEDRO	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	28.8	F
521	FBLU0053195	32	03	86	COCONUTS, BRAZIL NUTS AND CASHEW NUTS, FRESH OR DR	MSC	TEMA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	45G1	40HC	28.5	F
522	CAAU7119310	32	04	02	WOOD IN THE ROUGH, WHETHER OR NOT STRIPPED OF BARK	MSC	CHARLESTON	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	32.4	F
523	MSDU7392460	32	04	04	WOOD IN THE ROUGH, WHETHER OR NOT STRIPPED OF BARK	MSC	CHARLESTON	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	45G1	40HC	31.9	F
524	MSMU4201859	32	04	06	COCONUTS, BRAZIL NUTS AND CASHEW NUTS, FRESH OR DR	MSC	TEMA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	30.1	F
525	MEDU7774819	32	04	08	UNCOATED KRAFT PAPER AND PAPERBOARD, IN ROLLS OR S	MSC	CHARLESTON	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29.1	F
526	MSMU6919911	32	04	82	COCONUTS, BRAZIL NUTS AND CASHEW NUTS, FRESH OR DR	MSC	TEMA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	28.5	F
527	MSDU6376438	32	04	84	POLYMERS OF PROPYLENE OR OF OTHER OLEFINS, IN PRIM	MSC	SHUAIBA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29	F
528	CAIU7764830	32	04	86	COCONUTS, BRAZIL NUTS AND CASHEW NUTS, FRESH OR DR	MSC	TEMA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	28.5	F
529	MSMU4829357	32	05	02	WOOD IN THE ROUGH, WHETHER OR NOT STRIPPED OF BARK	MSC	CHARLESTON	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	32.4	F
530	MSDU8486959	32	05	04	POLYMERS OF ETHYLENE, IN PRIMARY FORMS - POLYETHYL	MSC	SHUAIBA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29.1	F
531	MEDU4902074	32	05	06	COCONUTS, BRAZIL NUTS AND CASHEW NUTS, FRESH OR DR	MSC	TEMA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29	F
532	MSDU6902609	32	05	08	POLYMERS OF ETHYLENE, IN PRIMARY FORMS - POLYETHYL	MSC	SHUAIBA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29	F
533	TRHU5078187	32	05	82	LINEAR LOW DENSITY POLYETHYLENE	MSC	JUBAIL	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29.1	F
534	MSNU5292610	32	05	84	BLEACHED CHEMI THERMO MECHANICAL PULP	MSC	VANCOUVER	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29.1	F
535	UETU6863612	32	05	86	BLEACHED CHEMI THERMO	MSC	VANCOUVER	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29.5	F
536	MSMU8809467	32	06	02	WOOD IN THE ROUGH, WHETHER OR NOT STRIPPED OF BARK	MSC	SAVANNAH	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	32.2	F
537	MSDU6992686	32	06	04	HIGH BULK C2S ART BOARD	MSC	QINGDAO	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	30.1	F
538	MSDU8716075	32	06	06	RECOVERED (WASTE AND SCRAP) PAPER OR PAPERBOARD -	MSC	SHARJAH	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	30	F

ASC AGENCY (INDIA) PVT. LTD. COCHIN

539	TEMU7978271	32	06	08	RECOVERED (WASTE AND SCRAP) PAPER OR PAPERBOARD -	MSC	SHARJAH	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	30.6	F
540	MSDU8943818	32	06	82	RECOVERED (WASTE AND SCRAP) PAPER OR PAPERBOARD -	MSC	SHARJAH	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	30.3	F
541	MSDU3067115	32	06	84	RECOVERED (WASTE AND SCRAP) PAPER OR PAPERBOARD -	MSC	SHARJAH	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	30.7	F
542	MEDU7409919	32	06	86	POLYMERS OF PROPYLENE OR OF OTHER OLEFINS, IN PRIM	MSC	SHUAIBA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29.1	F
543	TIIU4778242	32	07	02	BAMBOO STICKS	MSC	XIAMEN	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	32.1	F
544	UETU6084398	32	07	04	LINEAR LOW DENSITY POLYETHYLENE LLDPE	MSC	JUBAIL	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29.1	F
545	TRHU8651456	32	07	06	LINEAR LOW DENSITY POLYETHYLENE	MSC	JUBAIL	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29.1	F
546	TRHU6850799	32	07	08	POLYMERS OF ETHYLENE, IN PRIMARY FORMS - POLYETHYL	MSC	SHUAIBA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29	F
547	TIIU4796230	32	07	82	COTTON, NOT CARDED OR COMBED	MSC	ABIDJAN	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	28.3	F
548	TLLU7582790	32	07	84	LINEAR LOW DENSITY POLYETHYLENE LLDPE	MSC	JUBAIL	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29.1	F
549	TIIU4801569	32	07	86	BLEACHED CHEMI THERMO MECHANICAL PULP	MSC	VANCOUVER	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	28.9	F
550	MEDU8562630	32	08	02	BLEACHED CHEMI THERMO	MSC	VANCOUVER	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	30	F
551	CAAU7516092	32	08	04	COTTON, NOT CARDED OR COMBED	MSC	SAN PEDRO	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	28.8	F
552	MSMU5815738	32	08	06	RECOVERED (WASTE AND SCRAP) PAPER OR PAPERBOARD -	MSC	SHARJAH	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	30.4	F
553	MSNU7161096	32	08	08	COTTON, NOT CARDED OR COMBED	MSC	SAN PEDRO	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	28.5	F
554	UETU5581194	32	08	82	BLEACHED CHEMI THERMO	MSC	VANCOUVER	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	45G1	40HC	29.1	F
555	TGHU6048708	32	08	84	POLYMERS OF PROPYLENE OR OF OTHER OLEFINS, IN PRIM	MSC	SHUAIBA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29.2	F
556	MEDU4479189	32	08	86	COCONUTS, BRAZIL NUTS AND CASHEW NUTS, FRESH OR DR	MSC	TEMA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	28.5	F
557	FSCU7995082	32	08	88	96768 SETS OF EMPTY TIN PLATE CAN	MSC	XIAMEN	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	9.6	F
558	CAIU9482517	32	09	82	RECOVERED (WASTE AND SCRAP) PAPER OR PAPERBOARD -	MSC	SHARJAH	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	30.9	F
559	MSMU6438557	32	09	84	RECOVERED (WASTE AND SCRAP) PAPER OR PAPERBOARD -	MSC	SHARJAH	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	28.7	F
560	TGCU5017406	32	09	86	COCONUTS, BRAZIL NUTS AND CASHEW NUTS, FRESH OR DR	MSC	TEMA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	28.5	F
561	MSMU4287467	32	10	82	BLEACHED CHEMI THERMO	MSC	VANCOUVER	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	30	F
562	MSDU5532460	32	10	84	COCONUTS, BRAZIL NUTS AND CASHEW NUTS, FRESH OR DR	MSC	TEMA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	30.2	F
563	MSNU7311935	32	10	86	POLYMERS OF ETHYLENE, IN PRIMARY FORMS - POLYETHYL	MSC	SHUAIBA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29	F
564	MSMU1199249	35	05	02	QUICKLIME, SLAKED LIME AND HYDRAULIC LIME, OTHER T	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	25.3	F
565	MSDU1772626	35	05	04	CONTINUOUSLY PRE-PAINTED GALVANIZED STEEL COILS	MSC	TIANJIN XINGANG	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	29.8	F
566	MSNU1989083	35	05	06	CONTINUOUSLY PRE-PAINTED GALVANIZED STEEL COILS	MSC	TIANJIN XINGANG	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	29.7	F
567	MEDU5402113	35	05	82	HYDRAZINE AND HYDROXYLAMINE AND THEIR INORGANIC SA	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	22G1	20DV	25.3	F
568	MSDU1472742	35	06	02	HYDRAZINE AND HYDROXYLAMINE AND THEIR INORGANIC SA	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	25.3	F
569	MSNU2421610	35	06	82	COATED PAPER C2S GLOSS	MSC	SHANGHAI	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	27.1	F
570	MSMU1547236	35	07	04	QUICKLIME, SLAKED LIME AND HYDRAULIC LIME, OTHER T	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	25.3	F
571	MEDU6386486	35	07	06	QUICKLIME, SLAKED LIME AND HYDRAULIC LIME, OTHER T	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	25.4	F
572	DFSU2829144	35	07	08	CONTINUOUSLY PRE-PAINTED GALVANIZED STEEL COILS	MSC	TIANJIN XINGANG	VIZHINJAM	COCHIN	COCHIN	COCHIN	22G1	20DV	29.7	F
573	MSMU1682200	35	08	82	QUICKLIME, SLAKED LIME AND HYDRAULIC LIME, OTHER T	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	25.2	F
574	MSBU5176145	36	01	82	TEA	MSC	JAKARTA	VIZHINJAM	COCHIN	COCHIN	COCHIN	4510	40HC	29	F
575	MSMU7909292	36	01	84	STANDARD NEWSPRINT	MSC	CORNER BROOK	VIZHINJAM	COCHIN	COCHIN	COCHIN	4510	40HC	24.5	F
576	OTPU6023386	36	01	86	EMPTY CONTAINER	MSC	DJIBOUTI	VIZHINJAM	COCHIN	COCHIN	COCHIN	4532	40HR	4.2	E
577	CXRU1401615	36	01	88	EMPTY CONTAINER	MSC	NACALA	VIZHINJAM	COCHIN	COCHIN	COCHIN	4532	40HR	4.7	E
578	TGBU5982333	36	02	82	CASSIA KABC GRADE INDONESIA ORIGIN	MSC	BELAWAN	VIZHINJAM	COCHIN	COCHIN	COCHIN	4510	40HC	28.8	F
579	MSDU8493979	36	02	84	LUPOLEN 2427F, BG25BC	MSC	JUBAIL	VIZHINJAM	COCHIN	COCHIN	COCHIN	4510	40HC	29.2	F
580	CXRU1198637	36	02	86	EMPTY CONTAINER	MSC	NACALA	VIZHINJAM	COCHIN	COCHIN	COCHIN	4532	40HR	4.6	E
581	CXRU1271466	36	02	88	EMPTY CONTAINER	MSC	NACALA	VIZHINJAM	COCHIN	COCHIN	COCHIN	4532	40HR	4.6	E
582	MSMU4989838	36	03	82	STANDARD NEWSPRINT	MSC	CORNER BROOK	VIZHINJAM	COCHIN	COCHIN	COCHIN	4510	40HC	28.6	F
583	MSDU5612879	36	03	84	CINNAMOMUM	MSC	BELAWAN	VIZHINJAM	COCHIN	COCHIN	COCHIN	4510	40HC	28.8	F
584	OTPU6086785	36	03	86	EMPTY CONTAINER	MSC	DJIBOUTI	VIZHINJAM	COCHIN	COCHIN	COCHIN	4532	40HR	4.2	E
585	MSDU9805201	36	03	88	EMPTY CONTAINER	MSC	NACALA	VIZHINJAM	COCHIN	COCHIN	COCHIN	4532	40HR	4.6	E
586	MSMU7809117	36	04	82	STANDARD NEWSPRINT	MSC	CORNER BROOK	VIZHINJAM	COCHIN	COCHIN	COCHIN	45G1	40HC	28.8	F
587	MSNU6118808	36	04	84	MOPLEN HP456J, BG25BC	MSC	JUBAIL	VIZHINJAM	COCHIN	COCHIN	COCHIN	4510	40HC	29.1	F
588	TEMU9300025	36	04	86	EMPTY CONTAINER	MSC	NACALA	VIZHINJAM	COCHIN	COCHIN	COCHIN	4532	40HR	4.7	E
589	TEMU9062170	36	04	88	EMPTY CONTAINER	MSC	NACALA	VIZHINJAM	COCHIN	COCHIN	COCHIN	45R1	40HR	4.6	E
590	MSMU7378956	36	05	84	STANDARD NEWSPRINT	MSC	CORNER BROOK	VIZHINJAM	COCHIN	COCHIN	COCHIN	45G1	40HC	28.6	F
591	FFAU1376124	36	05	86	STANDARD NEWSPRINT	MSC	CORNER BROOK	VIZHINJAM	COCHIN	COCHIN	COCHIN	4510	40HC	25	F
592	SEGU9212000	36	05	88	EMPTY CONTAINER	MSC	NACALA	VIZHINJAM	COCHIN	COCHIN	COCHIN	4332	40RE	4.6	E

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593	TGBU7799825	36	06	84	MOPLEN HP456J, BG25BC	MSC	JUBAIL	VIZHINJAM	COCHIN	COCHIN	COCHIN	4510	40HC	29.1	F
594	SZLU9261076	36	06	86	EMPTY CONTAINER	MSC	NACALA	VIZHINJAM	COCHIN	COCHIN	COCHIN	4532	40HR	4.7	E
595	TEMU9793857	36	06	88	EMPTY CONTAINER	MSC	NACALA	VIZHINJAM	COCHIN	COCHIN	COCHIN	4532	40HR	4.7	E
596	MSNU7822940	36	07	10	STANDARD NEWSPRINT	MSC	CORNER BROOK	VIZHINJAM	COCHIN	COCHIN	COCHIN	4510	40HC	26.6	F
597	MSMU5710320	36	07	82	POLYPROPYLENE MOPLEN EP332K	MSC	JUBAIL	VIZHINJAM	COCHIN	COCHIN	COCHIN	4510	40HC	29	F
598	TLLU7953443	36	07	84	POLYPROPYLENE MOPLEN EP332K	MSC	JUBAIL	VIZHINJAM	COCHIN	COCHIN	COCHIN	4510	40HC	28.8	F
599	CXRU1416979	36	07	86	EMPTY CONTAINER	MSC	DJIBOUTI	VIZHINJAM	COCHIN	COCHIN	COCHIN	4532	40HR	4.2	E
600	MSMU8666686	36	08	84	STANDARD NEWSPRINT	MSC	CORNER BROOK	VIZHINJAM	COCHIN	COCHIN	COCHIN	4510	40HC	27.7	F
601	CRLU1321433	36	08	86	EMPTY CONTAINER	MSC	NACALA	VIZHINJAM	COCHIN	COCHIN	COCHIN	4532	40HR	4.6	E
602	MSCU7391897	36	08	88	EMPTY CONTAINER	MSC	NACALA	VIZHINJAM	COCHIN	COCHIN	COCHIN	4532	40HR	4.7	E
603	MSDU5708733	36	09	82	POLYETHYLENE LUPOLEN 2421H	MSC	JUBAIL	VIZHINJAM	COCHIN	COCHIN	COCHIN	4510	40HC	29.1	F
604	TTNU8470863	36	09	84	EMPTY CONTAINER	MSC	NACALA	VIZHINJAM	COCHIN	COCHIN	COCHIN	4532	40HR	4.8	E
605	CXRU1389042	36	09	86	EMPTY CONTAINER	MSC	NACALA	VIZHINJAM	COCHIN	COCHIN	COCHIN	4532	40HR	4.7	E
606	MSMU7213869	36	10	82	LINEAR LOW DENSITY POLYETHYLENE LLDPE	MSC	JUBAIL	VIZHINJAM	COCHIN	COCHIN	COCHIN	4510	40HC	29.2	F
607	CXRU1118797	36	10	84	EMPTY CONTAINER	MSC	NACALA	VIZHINJAM	COCHIN	COCHIN	COCHIN	4532	40HR	4.5	E
608	SEGU9180638	36	10	86	EMPTY CONTAINER	MSC	NACALA	VIZHINJAM	COCHIN	COCHIN	COCHIN	4532	40HR	4.7	E
609	MSNU2421673	37	05	04	COATED PAPER C2S GLOSS	MSC	SHANGHAI	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	27.2	F
610	MSNU1070569	37	05	06	QUICKLIME, SLAKED LIME AND HYDRAULIC LIME, OTHERT	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	25.2	F
611	TGBU3615283	37	05	82	QUICKLIME, SLAKED LIME AND HYDRAULIC LIME, OTHERT	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	25.2	F
612	MSNU2431455	37	06	04	COATED PAPER C2S GLOSS	MSC	SHANGHAI	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	27.2	F
613	MSNU2433123	37	06	06	COATED PAPER C2S GLOSS	MSC	SHANGHAI	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	27.2	F
614	MSMU1103545	37	06	82	QUICKLIME, SLAKED LIME AND HYDRAULIC LIME, OTHERT	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	22.4	F
615	MSMU2711494	37	07	06	HYDRAZINE AND HYDROXYLAMINE AND THEIR INORGANIC SA	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	25.3	F
616	FBIU0191374	37	07	08	QUICKLIME, SLAKED LIME AND HYDRAULIC LIME, OTHERT	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	25.2	F
617	UETU2877109	37	08	06	HYDRAZINE AND HYDROXYLAMINE AND THEIR INORGANIC SA	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	25.2	F
618	GAOU2440550	37	08	08	HYDRAZINE AND HYDROXYLAMINE AND THEIR INORGANIC SA	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	25.2	F
619	MEDU5727839	37	08	10	QUICKLIME, SLAKED LIME AND HYDRAULIC LIME, OTHERT	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	2210	20DV	25.3	F
620	TRHU1265683	37	08	82	HYDRAZINE AND HYDROXYLAMINE AND THEIR INORGANIC SA	MSC	RAS AL KHAIMAH	VIZHINJAM	COCHIN	COCHIN	COCHIN	22G1	20DV	25.2	F
621	MSDU2261657	39	07	80	SHIP STOCK	MSC	ANTWERP	COLOMBO	OPTIONAL PORT			2210	20DV	5.2	F
622	MSDU7092673	40	01	80	RECOVERED (WASTE AND SCRAP) PAPER OR PAPERBOARD -	MSC	SHARJAH	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29.1	F
623	BMOU6881025	40	01	82	COTTON, NOT CARDED OR COMBED	MSC	SAN PEDRO	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	28.6	F
624	CAIU7753517	40	01	84	POLYMERS OF ETHYLENE, IN PRIMARY FORMS - POLYETHYL	MSC	SHUAIBA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29	F
625	MSNU7136745	40	02	80	BLEACHED CHEMI THERMO MECHANICAL PULP	MSC	VANCOUVER	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29.1	F
626	MSMU6678579	40	02	82	COCONUTS, BRAZIL NUTS AND CASHEW NUTS, FRESH OR DR	MSC	TEMA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29	F
627	CAAU7379220	40	02	84	COTTON, NOT CARDED OR COMBED	MSC	SAN PEDRO	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	28.8	F
628	MEDU7336849	40	03	80	POLYMERS OF PROPYLENE OR OF OTHER OLEFINS, IN PRIM	MSC	SHUAIBA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29.1	F
629	TCLU5649644	40	03	82	COCONUTS, BRAZIL NUTS AND CASHEW NUTS, FRESH OR DR	MSC	TEMA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	28.5	F
630	MSDU6369803	40	03	84	COTTON, NOT CARDED OR COMBED	MSC	SAN PEDRO	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29	F
631	MSMU4358278	40	04	80	POLYMERS OF ETHYLENE, IN PRIMARY FORMS - POLYETHYL	MSC	SHUAIBA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29.1	F
632	MSMU6961275	40	04	82	COCONUTS, BRAZIL NUTS AND CASHEW NUTS, FRESH OR DR	MSC	TEMA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29	F
633	MSBU5449363	40	04	84	LINEAR LOW DENSITY POLYETHYLENE	MSC	JUBAIL	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29.2	F
634	CAAU7841003	40	06	80	BLEACHED CHEMI THERMO MECHANICAL PULP	MSC	VANCOUVER	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29.7	F
635	MSMU8505850	40	06	82	BLEACHED CHEMI THERMO	MSC	VANCOUVER	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29.2	F
636	MEDU7082019	40	06	84	MOPLEN HP462R, BG25BC	MSC	DAMMAM	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	29.2	F
637	MSDU6954053	40	07	82	BLEACHED CHEMI THERMO MECHANICAL PULP	MSC	VANCOUVER	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	28.9	F
638	MEDU7999815	40	07	84	RECOVERED (WASTE AND SCRAP) PAPER OR PAPERBOARD -	MSC	SHARJAH	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	28.6	F
639	CAIU4864796	40	09	82	COCONUTS, BRAZIL NUTS AND CASHEW NUTS, FRESH OR DR	MSC	TEMA	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	45G1	40HC	28.5	F
640	MSMU5054428	40	09	84	USED CIRCULAR KNITTING MACHINES	MSC	XIAMEN	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	25.8	F
641	MSMU5651296	40	10	84	WOOD IN THE ROUGH, WHETHER OR NOT STRIPPED OF BARK	MSC	SAVANNAH	VIZHINJAM	TUTICORIN	TUTICORIN	TUTICORIN	4510	40HC	32.3	F
642	CRXU5299926	41	05	80	SHIP STOCK	MSC		COLOMBO	OPTIONAL PORT			2232	20RE	3	E
643	MSCU3627900	41	07	80	SHIP STOCK	MSC		COLOMBO	OPTIONAL PORT			2232	20RE	3	F

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'हर काम देश के नाम'

New Delhi, Jyaishtha 05, 1947
Monday, May 26, 2025

Oil Slick Detected after Liberian Container Vessel Sinks off Kerala Coast; ICG Leads Pollution Response

The Indian Coast Guard (ICG) launched a full-scale pollution response operation following the sinking of the Liberian container vessel MV MSC ELSA 3, which went down on May 25, 2025, approximately 15 nautical miles southwest of Alappuzha, Kerala. Within hours of the vessel's submergence, ICG surveillance aircraft detected an oil slick at the site. ICG Ship Saksham, already stationed in pollution response configuration, was deployed immediately. An ICG Dornier aircraft conducted aerial assessments and dispersed Oil Spill Dispersant (OSD) across the affected zone.

By late morning on May 25, the oil slick was spotted drifting east-southeast from the site of the sinking at a speed of 1.5 to 2 knots. Rough sea conditions and strong winds made response efforts more challenging. Despite the hazardous situation, with over 100 cargo containers floating in the area, some breaking apart and releasing their contents, ICG continued operations with full effect. To ensure safety, all passing ships have been diverted, and mariners have been warned to navigate cautiously due to floating debris and potential navigation hazards.

ICG intensified surveillance and spill mitigation efforts using aerial sorties and specialised dispersal equipment. Two Offshore Patrol Vessels (OPVs) remain on-site for round-the-clock monitoring, while pollution response vessel Samudra Prahari and additional OPVs have been mobilised with large quantities of OSD.

The Mercantile Marine Department, Kochi, issued a pollution liability warning to the vessel owners M/s MSC under the Merchant Shipping Act, 1958. The MSC appointed T&T Salvage for container recovery, oil removal, and environmental clean-up. The ICG also advised the Kerala state administration to prepare for shoreline clean-up and to alert local communities not to handle any cargo or debris that may wash ashore.

SR/MR/KB

Sl no	CntrNo	SzTp	F/E	Cargo	Container spotted time	Container spotted location	Container spotted location - Lat & Long	District	Taluk	Panchayth	Village	Opened/ Sealed/Damaged	Responsible authorities at the site	whether customs has visited opr not	How far from the NH	Whtr the container shifted to port or not
1	TGBU7867133	40HC	F	COTTON, NOT CARDED OR COMBED		Alappuzha Tharayil kadavu Taluk :Karthikapally Panchyt : Arattupuzha Village : Arattupuzha Ward no 7	Lat.9.149554 Long.78.457423	Alappuzha	Karthikapally	Arattupuzha	Arattupuzha	Damaged	District Disaster Management Authority,PCB,Factotories and Boilers,Police, Fire and Rescue	Yes	5km	
2	FSCU9885968	40HC	F	COTTON, NOT CARDED OR COMBED		Alappuzha Tharayil kadavu Taluk :Karthikapally Panchyt : Arattupuzha Village : Arattupuzha Ward no 7	Lat.9.149554 Long.78.457423	Alappuzha	Karthikapally	Arattupuzha	Arattupuzha	Opened	District Disaster Management Authority,PCB,Factotories and Boilers,Police, Fire and Rescue	Yes	5km	
3	CXRU1320977	40HR	E	EMPTY CONTAINER		Cheriyazheekkal		Kollam	Karunagappally	Alappad	Alappad					Yes
4	MEDU9712544	40HR	E	EMPTY CONTAINER		Thirumullavaram		Kollam	Kollam	Kollam Corporation	Kollam West					Yes
5	BMOU9650591	40HR	E	EMPTY CONTAINER		Neendakara		Kollam	Karunagappally	Neendakara	Neendakara					Yes
6	OTPU6670335	40HR	E	EMPTY CONTAINER		Neendakara		Kollam	Karunagappally	Neendakara	Neendakara					Yes
7	TGBU6376120	40HC	F	UNCOATED KRAFT PAPER AND PAPERBOARD, IN ROLLS OR S		Thanni Beach	Lat 8.820° Long 76.644°	Kollam	KOLLAM	Mayyanad	Mayyanad					Yes
8	MSMU5762427	40HC	F	GAUZE ROLL 90 CM 17TH		Cheriyazheekkal		KOLLAM	Karunagappally	Alappad	Alappad					Yes
9	FTAU1518118	20DV	F	SAWN TIMBER		PARAVUR THEKKUMBHAGOM BEACH	Lat 8.820° Long 76.644°	KOLLAM	KOLLAM	Paravur Municipali	KOTTAPURAM	DAMAGED				Yes
10	MEDU3512261	20DV	F	WOOD		KOLLAM BEACH		KOLLAM	Kollam	Kollam Corporation	Mundakkal					Yes
11	MEDU9660590	40HR	E	EMPTY CONTAINER		PARIMANAM	Lat 8.952236° Long 76.533588°	KOLLAM	Karunagappally	Neendakara	Neendakara	SEALED			300m	No
12	MSDU9792254	40HR	E	EMPTY CONTAINER		PARIMANAM	Lat 8.952248° Long 76.533588°	KOLLAM	Karunagappally	Neendakara	Neendakara	OPENED			300m	No
13	MSMU8785684	40HC	F	STANDARD NEWSPRINT		KAKKATHOPE CHURCH, SAKTHIKULANGARA	Lat 8.92686° Long 76.540709°	KOLLAM	Kollam	Kollam Corporation	Sakthikulangara	DAMAGED				Yes
14	MEDU9614722	40HR	E	EMPTY CONTAINER		SAKTHIKULANGARA	Lat 8.932516° Long 76.538901°	KOLLAM	Kollam	Kollam Corporation	Sakthikulangara	OPENED				Yes (One part)
15	MEDU9775310	40HR	E	EMPTY CONTAINER		Neendakara		KOLLAM	Karunagappally	Neendakara	Neendakara					Yes
16	MSDU9794560	40HR	E	EMPTY CONTAINER		KAKKATHOPE CHURCH, SAKTHIKULANGARA	Lat 8.92686° Long 76.540709°	KOLLAM	Kollam	Kollam Corporation	Sakthikulangara	SEALED				Yes
17	GESU9273269	40HR	E	EMPTY CONTAINER		PANDARATHURUTH	Lat 8.917541° Long 76.541827°	KOLLAM		Kollam Corporation		OPENED				No
18	FFAU2505674	40HC	F	CHINA GREEN TEA		NORTH OF SAKTHIKULANGARA CHURCH		KOLLAM	Kollam	Kollam Corporation						No
19	MSDU9797852	40HR	E	EMPTY CONTAINER		SAKTHIKULANGARA		KOLLAM	Kollam	Kollam Corporation						No
20	TTNU8122256	40HR	E	EMPTY CONTAINER		PARIMANAM	Lat 8.952236° Long 76.533588°	KOLLAM	Karunagappaly	Neendakara	Neendakara	OPENED				
21	MEDU9744433	40HR	E	EMPTY CONTAINER		Neendakara		KOLLAM	Karunagappaly	Neendakara	Neendakara					Yes
22	MSDU9792167	40HR	E	EMPTY CONTAINER		KAKKATHOPE CHURCH, SAKTHIKULANGARA	Lat 8.92686° Long 76.540709°	KOLLAM	Kollam	Kollam Corporation	Sakthikulangara					Yes
23	GESU9440828	40HR	E	EMPTY CONTAINER		KAKKATHOPE CHURCH, SAKTHIKULANGARA	Lat 8.92686° Long 76.540709°	KOLLAM	Kollam	Kollam Corporation	Sakthikulangara	SEALED				Yes
24	TTNU8127828	40HR	E	EMPTY CONTAINER		KAKKATHOPE CHURCH, SAKTHIKULANGARA	Lat 8.92686° Long 76.540709°	KOLLAM	Kollam	Kollam Corporation	Sakthikulangara					Yes
25	MSDU9793836	40HR	E	EMPTY CONTAINER		PARIMANAM	Lat 8.957755° Long 76.531835°	KOLLAM	Karunagappaly	Neendakara	Neendakara	OPENED				Yes
26	OTPU6569314	40HR	E	EMPTY CONTAINER		KAKKATHOPE CHURCH, SAKTHIKULANGARA	Lat 8.92686° Long 76.540709°	KOLLAM	Kollam	Kollam Corporation	Sakthikulangara	OPENED				Yes
27	MSDU9793501	40HR	E	EMPTY CONTAINER		Ozhukuthode (Maruthadi)		Kollam	Kollam	Kollam Corporation	Sakthikulangara					Yes
28	MSDU9893250	40HR	E	EMPTY CONTAINER		KAKKATHOPE CHURCH, SAKTHIKULANGARA		KOLLAM	Kollam	Kollam Corporation	Sakthikulanga	SEALED				Yes
29	MSDU9798078	40HR	E	EMPTY CONTAINER		PARIMANAM, 12th WARD	Lat 8.95579° Long 76.532472°	KOLLAM	Karunagappaly	Neendakara	Neendakara	SEALED				Yes
30	MSDU9793585	40HR	E	EMPTY CONTAINER		Sakthikulangara Harbour		KOLLAM	Kollam	Kollam Corporation	Sakthikulangara	Damaged				No
31	TRIU8172077	40HR	E	EMPTY CONTAINER		Neendakara		KOLLAM	Karunagappally	Neendakara	Neendakara					Yes
32	MSDU9793604	40HR	E	EMPTY CONTAINER		KAKKATHOPE CHURCH, SAKTHIKULANGARA	Lat 8.92686° Long 76.540709°	KOLLAM	Kollam	Kollam Corporation	Sakthikulangara					Yes
33	MEDU9094770	40HR	E	EMPTY CONTAINER		SAKTHIKULANGARA	Lat 8.92686° Long 76.540709°	KOLLAM	Kollam	Kollam Corporation	Sakthikulangara					
34	MSBU5363486	40HC	F	COTTON, NOT CARDED OR COMBED		Neendakara		Kollam	Karunagappally	Neendakara	Neendakara					Yes
35	TRHU6850799	40HC	F	POLYMERS OF ETHYLENE, IN PRIMARY FORMS - POLYETHYL		KOLLAM PORT		KOLLAM	Kollam	Kollam Corporation	Mundakkal	SEALED				Yes
36	MSMU7909292	40HC	F	STANDARD NEWSPRINT		SAKTHIKULANGARA	Lat 8.92686° Long 76.540709°	KOLLAM	Kollam	Kollam Corporation	Sakthikulangara	DAMAGED			300m	Yes
37	CXRU1198637	40HR	E	EMPTY CONTAINER		Mundakkal Papanasam Beach		Kollam	Kollam	Kollam Corporation	Mundakkal					Yes
38	CXRU1271466	40HR	E	EMPTY CONTAINER		Neendakara		Kollam	Karunagappally	Neendakara	Neendakara					Yes
39	MSMU4989838	40HC	F	STANDARD NEWSPRINT		Ozhukuthode		Kollam	Kollam	Kollam Corporation	Sakthikulangara					Yes
40	OTPU6086785	40HR	E	EMPTY CONTAINER		Thirumullavaram		Kollam	Kollam	Kollam Corporation	Kollam West					No
41	MSDU9805201	40HR	E	EMPTY CONTAINER		Thirumullavaram		Kollam	Kollam	Kollam Corporation	Kollam West					No
42	MSMU7378956	40HC	F	STANDARD NEWSPRINT		Ozhukuthode		Kollam	Kollam	Kollam Corporation	Sakthikulangara					Yes
43	MSCU7391897	40HR	E	EMPTY CONTAINER		Ozhukuthode		Kollam	Kollam	Kollam Corporation	Sakthikulangara					Yes
44	TTNU8470863	40HR	E	EMPTY CONTAINER		Neendakara		KOLLAM	Karunagappally	Neendakara	Neendakara					Yes
45	CXRU1389042	40HR	E	EMPTY CONTAINER		Neendakara		KOLLAM	Karunagappally	Neendakara	Neendakara					Yes
46	SEGU9180638	40HR	E	EMPTY CONTAINER		Thirumullavaram		Kollam	Kollam	Kollam Corporation	Kollam West					Yes
47	CRXU5299926	20RE	E	SHIP STOCK		Thangassery Light House		Kollam	Kollam	Kollam Corporation	Kollam West					Yes
48	TGHU9919515	40HR	E	EMPTY CONTAINER		Edava	8.748074°, 76.695419°	Thiruvananthapuram	Varkala			Damaged	Customs	Yes		Container shifted to the Vizhinjam KMB port
49	MSNU5736458	40HC	F	LINEAR LOW DENSITY POLYETHYLENE		Veli north		Thiruvananthapuram	Thiruvananthapuram	Thiruvananthapuram corporation		Damaged	Customs	Yes, Container was found with initials MSNU573. When cross checked with the records it is found to be MSNU5736458		Container shifted to the Vizhinjam KMB port

50	MSDU6901460	40HC	F	POLYMERS OF ETHYLENE, IN PRIMARY FORMS - POLYETHYL		Vizhinjam Fishing Harbour, near sea port, Ward no 61	8.37584, 76.9913	Thiruvananthapuram	Neyattinkkara	Thiruvananthapuram Corporation	Vizhinjam	Opened	Revenue officials, Coastalpolice, customs	Yes	3km	Container shifted to the Vizhinjam KMB port
51	MSMU5243355	40HC	F	LINEAR LOW DENSITY POLYETHYLENE		Poovar, opposite to poovar coastal police station, ward no 8	8.18366, 77.04339	Thiruvananthapuram	neyattinkara	poovar	poovar	Damaged	revenue, police	Yes	8km	Container shifted to the Vizhinjam KMB port
52	MSDU2942820	20DV	F	WOOD		St andrews church kazhakottam	8°33'01.1"N 76°51'11.7"E	Thiruvananthapuram	Thiruvananthapuram	Kadinamkulam	Menamkulam	Damaged	Customs	Yes, only parts were there, container was completely damaged .		Container shifted to the Vizhinjam KMB port
53	MSNU2417647	20DV	F	WOOD IN THE ROUGH, WHETHER OR NOT STRIPPED OF BARK		Kallumukku, Ward No 7	8.3207257,77.060665	Thiruvananthapuram	Neyattinkara	Karumkulam	Karumkulam	Sealed	Revenue Officials, Tahsildhar Nandakumar V M (9497711283)	Yes	1km	Container shifted to the Vizhinjam KMB port
54	MSDU9794093	40HR	E	EMPTY CONTAINER		Kovalam Beach		Thiruvananthapuram	Neyattinkara				Customs	Yes. It is one out of the six sides of a container.		Container shifted to the Vizhinjam KMB port
55	CRSU6131489	40HR	E	EMPTY CONTAINER		South Kollamcode, Pozhiyoor	8.298386°, 77.090144°	Thiruvananthapuram	Neyattinkara		Kulathoor	Damaged	Customs	Yes, one side of a container		Yes, Container shifted to the Vizhinjam KMB port
56	MSDU9799752	40HR	E	EMPTY CONTAINER		ANCHUTHENGU		THIRUVANANTHAPURAM	CHIRAYENKEEZHU			DAMAGED	Customs	Yes		Yes, Container shifted to the Vizhinjam KMB port
57	MSDU6902759	40HC	F	POLYMERS OF ETHYLENE, IN PRIMARY FORMS - POLYETHYL		At VSSC, South thumba	8.52034, 76.87723	Thiruvananthapuram	Thiruvananthapuram	Thiruvananthapuram corporation	attipra	Damaged	PCB, Factories and boilers, Revenue officials and Police	Yes		Container shifted to the Vizhinjam KMB port
58	MSDU6902609	40HC	F	POLYMERS OF ETHYLENE, IN PRIMARY FORMS - POLYETHYL		Back of Manthara Temple, Ward No 14	8.75379, 76.691092	Thiruvananthapuram	Varkala	Edava	Edava	Damaged	PCB, Revenue officials, Saji.S.S (Tahsildar) 8281428446			
59	MSCU3627900	20RE	F	SHIP STOCK		vettor - cherruniyoor		Thiruvananthapuram	Varkala				factories and boilers, PCB, revenue officials	Yes		untraceable
60	MSDU9799623	40HR	E	EMPTY CONTAINER		Anchuthengu		Thiruvananthapuram	Chirayenkeezhu			Damaged	Customs	Yes, Only a part was finded		Yes, Container part shifted to the Vizhinjam KMB port
61	UETU6084398	40HC	F	LINEAR LOW DENSITY POLYETHYLENE LLDPE		Hindustan Bijli Road, Varkala Papanasham, Ward No 28	8.730477, 76.707334	Thiruvananthapuram	Varkala	Varkala Muncipality	Varkala	Damaged	PCB, Revenue officials, customs			Container shifted to the Vizhinjam KMB port

THE HIGH COURT OF KERALA
सत्यमेव जयते

Plastic Pellets washed ashore near Vizhinjam Port

Plastic Nurdles and Cotton bales at Valiyathura Beach, Thiruvananthapuram on 10.06.2025

Plastic Nurdles washed ashore along the beaches in Thiruvananthapuram

Kerala State Disaster Management Authority - KSDMA
Published by Sekhar Lukose Kurlakose
May 26 at 4:38 PM

കേരളത്തിന്റെ സമുദ്രാതിർത്തിയിൽ കപ്പൽ മുങ്ങിയ സാഹചര്യത്തിൽ മുഖ്യമന്ത്രി പിണറായി വിജയന്റെ നേതൃത്വത്തിൽ ഉന്നതതല യോഗം ചേർന്ന് സാഹചര്യങ്ങൾ വിലയിരുത്തി. തീരപ്രദേശത്ത് ഉള്ളവരും മത്സ്യത്തൊഴിലാളികളും ജാഗ്രത പാലിക്കണമെന്ന് നിർദ്ദേശം നൽകി.

MSC ELSA3 എന്ന കപ്പൽ പൂർണ്ണമായും മുങ്ങിയതിനെ തുടർന്നുള്ള സാഹചര്യം നേരിടുന്നതിനെ കുറിച്ച് ആലോചിക്കാനാണ് മുഖ്യമന്ത്രി അടിയന്തിര യോഗം വിളിച്ചത്.

അഴീക്കലിൽ നിന്ന് 14.6 നോട്ടിക്കൽ മൈൽ അകലെയാണ് കപ്പൽ മുങ്ങിയത്. കപ്പലിലെ മുഴുവൻ ജീവനക്കാരെയും രക്ഷിച്ചു. തീരപ്രദേശത്ത് ഉള്ളവർ ജാഗ്രത പാലിക്കണം.

കപ്പലിൽ 643 കണ്ടെയിനറുകൾ ഉണ്ടായിരുന്നു. ഇവയിൽ 73ൽ കാലി കണ്ടെയിനറുകൾ ആണ്. 13 എണ്ണത്തിൽ ചില അപകടകരമായ വസ്തുക്കൾ ആണ്. ഇവയിൽ ചിലതിൽ കാൽസ്യം കാർബൈഡ് എന്ന വെള്ളം ചേർന്നാൽ തീ പിടിക്കാവുന്നതും പൊള്ളലിന് കാരണമാകാവുന്നതുമായ രാസവസ്തുവും ഉണ്ട്. കപ്പലിലെ ഇന്ധനവും ചോർന്നിട്ടുണ്ട്.

ഇന്നലെ രാത്രിയും ഇന്ന് രാവിലെയുമായി 9 കണ്ടെയ്നറുകൾ കരയ്ക്കടിഞ്ഞു. ശക്തികുളങ്ങര ഹാർബറിന് സമീപം നാല് എണ്ണവും ചവറയ്ക്ക് സമീപം മൂന്ന് എണ്ണവും ചെറിയഅഴീക്കലിൽ ഒരെണ്ണവും അഴീക്കൽ തുറമുഖത്തിന് സമീപം ഒരെണ്ണവും കണ്ടെത്തി. കോസ്റ്റ് ഗാർഡ് രണ്ട് കപ്പലുകൾ ഉപയോഗിച്ച് എണ്ണ പടരുന്നത് തടയാൻ നടപടി സ്വീകരിച്ച് വരുന്നു. ഒരു ഡോണിയർ വിമാനം ഉപയോഗിച്ച് എണ്ണ നശിപ്പിക്കുവാൻ പൊടി തളിക്കുന്ന ജോലി പുരോഗമിക്കുകയാണ്.

ടയർ 2, ഇൻസിഡന്റ് കമാന്റഗറിയിൽ ഉള്ള ദുരന്തം ആയതിനാൽ മേഖലയിലെ സേനകളെയും സഹകരണങ്ങളെയും വിഭവങ്ങളും ഉപയോഗിച്ചാണ് പ്രതികരണ-പ്രതിരോധ പ്രവർത്തനങ്ങൾ നടത്തുന്നത്. കോസ്റ്റ് ഗാർഡ് ഡയറക്ടർ ജനറൽ ആണ് മേഖലയിലെ എണ്ണചോർച്ച പ്രതിരോധ പദ്ധതിയുടെ അദ്ധ്യക്ഷൻ.

ആലപ്പുഴ, കൊല്ലം, എറണാകുളം, തിരുവനന്തപുരം ജില്ലകളിലെ തീരങ്ങളിൽ ആണ് കണ്ടെയ്നർ എത്താൻ കൂടുതൽ സാധ്യത. എണ്ണപ്പാട പടരാം എന്നതിനാൽ കേരള തീരത്ത് പൂർണ്ണമായും ജാഗ്രത നിർദ്ദേശം നൽകിയിട്ടുണ്ട്.

1. തീരത്ത് അപൂർവ്വ വസ്തുക്കൾ, കണ്ടെയ്നറുകൾ എന്നിവ കണ്ടാൽ തൊടരുത്, അടുത്ത് പോകരുത്, അവയുടെ അടുത്ത് കൂട്ടം കൂടരുത്, 200 മീറ്റർ എങ്കിലും അകലെ നിൽക്കുക.112 എന്ന ഫോൺ നമ്പറിൽ വിളിച്ച് അറിയിക്കുക.

2. മത്സ്യ തൊഴിലാളികൾ നിലവിൽ കടലിൽ പോകരുത് എന്ന നിർദ്ദേശം കാലാവസ്ഥാ സംബന്ധിയായി തന്നെ നൽകിയിട്ടുണ്ട്.

3. കപ്പൽ മുങ്ങിയ ഇടത്തു നിന്നും 20 നോട്ടിക്കൽ മൈൽ അകലെ വരെയുള്ള പ്രദേശത്ത് ആരും മത്സ്യ ബന്ധനത്തിന് പോകരുത്. അപൂർവ്വ വസ്തുക്കൾ, കണ്ടെയ്നർ എന്നിവ കണ്ടാൽ തൊടരുത്, അടുത്ത് പോകരുത് 112ൽ അറിയിക്കുക എന്ന നിർദ്ദേശം മത്സ്യ തൊഴിലാളികൾക്കും ബാധകം ആണ്.

4. കണ്ടെയ്നറുകൾ കരയിൽ സുരക്ഷിതമായി മാറ്റാൻ ICG, കൈയിനുകൾ വിനിയോഗിക്കാൻ Factories and Boilers വകുപ്പിന്റെ നേതൃത്വത്തിൽ രണ്ട് വീതം റാപ്പിഡ് റെസ്പോൺസ് ടീമുകൾ തൃശ്ശൂർ മുതൽ തെക്കൻ ജില്ലകളിലും, ഓരോ ടീമുകൾ വീതം വടക്കൻ ജില്ലകളിലും തയ്യാറാക്കാൻ നിർദ്ദേശിച്ചിട്ടുണ്ട്.

5. എണ്ണപ്പാട തീരത്ത് എത്തിയാൽ കൈകാര്യം ചെയ്യാൻ പൊലൂഷൻ കൺട്രോൾ ബോർഡിന്റെ നേതൃത്വത്തിൽ രണ്ട് വീതം റാപ്പിഡ് റെസ്പോൺസ് ടീമുകൾ തൃശ്ശൂർ മുതൽ തെക്കൻ ജില്ലകളിലും ഓരോന്ന് വീതം വടക്കൻ ജില്ലകളിലും തയ്യാറാക്കാൻ നിർദ്ദേശിച്ചിട്ടുണ്ട്.

6. ജില്ലാഭരണ നിർവഹണ അതോറിറ്റിയും പോലീസും മറ്റു വകുപ്പുകളും ഇവർക്ക് വേണ്ട സഹായങ്ങൾ ചെയ്യുന്നതായിരിക്കും.

7. കപ്പലിലെ എണ്ണ കടലിന്റെ താഴെത്തട്ടിൽ പെട്ടുപോകാൻ സാധ്യതയുള്ളതിനാൽ, കോസ്റ്റ് ഗാർഡ്, നേവി, ഫോറസ്റ്റ് ഡിപ്പാർട്ട്മെന്റ്, ഫാക്ടറീസ് & ബോയിലേഴ്സ് എന്നിവരെ ഉൾപ്പെടുത്തി പദ്ധതി തയ്യാറാക്കാനുള്ള നിർദ്ദേശവും നൽകിയിട്ടുണ്ട്.

8. ഓയിൽ സ്പിൽ കണ്ടിജൻസി കൈകാര്യം ചെയ്യുന്നതിനായി കൂടുതൽ സജ്ജീകരണമൊരുക്കാൻ കോസ്റ്റ് ഗാർഡ്, പോർട്ട് വകുപ്പ്, നേവി എന്നിവരോട് നിർദ്ദേശിച്ചിട്ടുണ്ട്.

9. കണ്ടെയ്നർ, എണ്ണപ്പാട, കടലിന്റെ അടിയിലേക്ക് പോകുന്ന എണ്ണ എന്നിവ കൈകാര്യം ചെയ്യുവാൻ പ്രത്യേകം നിർദ്ദേശങ്ങൾ ജില്ലകൾക്കും വകുപ്പുകൾക്കും നൽകിയിട്ടുണ്ട്.

10. പൊതുജനങ്ങളുടെ സുരക്ഷ, പരിസ്ഥിതി സംരക്ഷണം, മത്സ്യബന്ധന മേഖലയുടെ സംരക്ഷണം എന്നിവ മുൻനിർത്തിയുള്ള പ്രവർത്തങ്ങൾക്കായിരിക്കും സംസ്ഥാനം മുൻഗണന നൽകുക.

ആരും ആശങ്കപ്പെടേണ്ടതില്ലെന്നും സാധ്യമായ എല്ലാ നടപടികളും വിവിധ സംവിധാനങ്ങളെ ഏകോപിപ്പിച്ച് ചെയ്യുന്നുണ്ടെന്നും മുഖ്യമന്ത്രി പിണറായി വിജയൻ പറഞ്ഞു.

#kerala #shipwreck Kerala Government Chief Minister's Office, Kerala National Disaster Management Authority, India

GOVERNMENT OF KERALA

Abstract

Disaster Management Department-Coastal pollution along the coast of Kerala due to the wreckage of ship M/s ELSA 3 in the Arabian sea-State Specific Disaster-Notified-Orders Issued.

DISASTER MANAGEMENT (A) DEPARTMENT

G.O.(Ms)No.11/2025/DMD Dated 29-05-2025,Thiruvananthapuram

Read: 1) DO No. 242/SP dated 26.05.2025 from Director General, India Coast Guard.

2) GO(Ms)No.6/2023/DMD dated 18/06/2023

ORDER

A Ship, M/s MSC ELSA-3, carrying more than 643 containers, was reported to have capsized on 25th May 2025 off the Kerala Coast near Thottappalli in Alappuzha District. The maritime incident has raised serious environmental concerns, including the potential for Oil spill and drifting of debris, including cargo, along Kerala's coastline.

Considering the potentially serious environmental, social, and economic impact of the ship wreckage, Government hereby declare the wreckage of ship M/s ELSA 3 in the Arabian sea 14.6 nautical miles off the Kerala coast as a State-Specific disaster.

(By order of the Governor)
TINKU BISWAL
PRINCIPAL SECRETARY

The Secretary to Government of India, Ministry of Home Affairs (DM Division), 'C' Wing, III Floor, NDCC-II, Jai Singh Road, New Delhi-110001 (with Covering Letter)

All Members of the State Disaster Management Authority

All Additional Chief Secretaries/ Principal Secretary/ Secretary/ Special Secretary including Finance Department.

Secretary, Law Department

The Land Revenue Commissioner, Thiruvananthapuram
Member Secretary, KSDMA
The Resident Commissioner, 3, Jantar Mantar Road, Kerala House, New Delhi-100 001
All District Collectors
The Director, Institute of Land and Disaster Management, PTP Nagar, Thiruvananthapuram
The Principal Accountant General (Audit), Kerala, Thiruvananthapuram
The Accountant General (A&E), Kerala, Thiruvananthapuram
All District Treasury Officers
The Accountant General branch office, Kottayam/Ernakulam/Thrissur/Kozhikode
The Finance(BW) Department
The Information officer, Web& New Media
Stock File/Office Copy

Forwarded /By order

Signed by Sivaprasad V N
Date: 29-05-2025 14:31:37

Section Officer

THE HIGH COURT OF KERALA
सत्यमेव जयते

DMA3/121/2025-DMD

സ.ഉ.(സാധാ) നം.371/2025/DMD

"ഭരണഭാഷ- മാതൃഭാഷ"

കേരള സർക്കാർ

സംഗ്രഹം

ദുരന്ത നിവാരണ വകുപ്പ്- M/s ELSA കപ്പലപകടത്തെ തുടർന്ന മത്സ്യത്തൊഴിലാളികൾക്ക് ആശ്വാസ ധനസഹായവും സൗജന്യ റേഷനും അനുവദിച്ച് ഉത്തരവ് പുറപ്പെടുവിക്കുന്നു.

ദുരന്ത നിവാരണ (എ) വകുപ്പ്

സ.ഉ.(സാധാ) നം.371/2025/DMD തീയതി 03-06-2025,തിരുവനന്തപുരം

പരാമർശം: 29/05/2025 ലെ സ.ഉ(കൈ)നം.11/2025/ഡിഎംഡി

ഉത്തരവ്

2025 മെയ് 25ന് കേരളതീരത്തുനിന്ന് 14.6 നോട്ടിക്കൽ മൈൽ അകലെ അറബിക്കടലിൽ ഉണ്ടായ MSC ELSA-3 കപ്പലപകടത്തെ തുടർന്നുള്ള പാരിസ്ഥിതിക, സാമൂഹിക പ്രശ്നങ്ങൾ പരിഗണിച്ച് പ്രസ്തുത കപ്പൽ അപകടത്തെ പരാമർശം ഉത്തരവ് പ്രകാരം സംസ്ഥാന സവിശേഷ ദുരന്തമായി പ്രഖ്യാപിച്ചിട്ടുണ്ട്.

MSC ELSA 3 കപ്പലപകടം തിരുവനന്തപുരം, കൊല്ലം, ആലപ്പുഴ, എറണാകുളം എന്നീ ജില്ലകളിലെ മത്സ്യത്തൊഴിലാളികളുടെ ഉപജീവനമാർഗ്ഗത്തെ സാരമായി ബാധിക്കുന്ന സാഹചര്യമാണ് നിലവിലുള്ളത്.

സർക്കാർ ഈ വിഷയം വിശദമായി പരിശോധിച്ചു. ഫിഷറീസ് വകുപ്പ് ഡയറക്ടർ നൽകിയ വിശദാംശങ്ങളുടെ അടിസ്ഥാനത്തിൽ തിരുവനന്തപുരം, കൊല്ലം, ആലപ്പുഴ, എറണാകുളം, ജില്ലകളിലെ 78498 മത്സ്യത്തൊഴിലാളി കുടുംബങ്ങൾക്കും 27020 മത്സ്യബന്ധന അനുബന്ധ തൊഴിലാളി കുടുംബങ്ങൾക്കും ഇടക്കാല ആശ്വാസമായി സംസ്ഥാന ദുരന്ത പ്രതികരണ നിധിയിൽ നിന്നും 1000 രൂപ വീതവും കൂടാതെ ഒരു കുടുംബത്തിന് 6 കിലോ അരി വീതം സൗജന്യ റേഷനും അനുവദിക്കുന്നതിന് തീരുമാനിച്ചു.

മേൽ സാഹചര്യത്തിൽ തിരുവനന്തപുരം, കൊല്ലം, ആലപ്പുഴ, എറണാകുളം, ജില്ലകളിലെ 78498 മത്സ്യത്തൊഴിലാളി കുടുംബങ്ങൾക്കും 27020 മത്സ്യബന്ധന അനുബന്ധ തൊഴിലാളി കുടുംബങ്ങൾക്കും ഇടക്കാല ആശ്വാസമായി സംസ്ഥാന ദുരന്ത പ്രതികരണ നിധിയിൽ നിന്നും 1000 രൂപ വീതം നൽകുന്നതിന് ആകെ 105,518,000/- (പത്ത് കോടി അൻപത്തി അഞ്ച് ലക്ഷത്തി പതിനെണ്ണായിരം രൂപ മാത്രം) [1,05,518x1000] അനുവദിച്ച് ഉത്തരവാകുന്നു.

മേൽ തുക ഫിഷറീസ് വകുപ്പ് ഡയറക്ടറുടെ STSB A/C No.701121400000010 -ലേക്ക് ക്രെഡിറ്റ് ചെയ്ത് നൽകുന്നതിനുള്ള നടപടി ദുരന്ത നിവാരണ വകുപ്പിലെ ഫിനാൻസ് ഓഫീസർ സ്വീകരിക്കേണ്ടതാണ്.

മേൽ പ്രകാരം 1,05,518 കുടുംബങ്ങൾക്ക് ആറ് കിലോ അരി വീതം സൗജന്യ റേഷൻ

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DMA3/121/2025-DMD

സ.ഉ.(സാധാ) നം.371/2025/DMD

അനുവദിക്കുന്നതിനുള്ള നടപടി ഭക്ഷ്യ പൊതു വിതരണ വകുപ്പ് അടിയന്തരമായി സ്വീകരിക്കേണ്ടതാണ്. ഇതിന് ആവശ്യമായ തുക അനുവദിക്കുന്നതിന് ഭക്ഷ്യ പൊതു വിതരണ വകുപ്പ് ശുപാർശ സമർപ്പിക്കുന്ന മുറയ്ക്ക് സംസ്ഥാന ദുരന്ത പ്രതികരണ നിധിയിൽ നിന്നും അനുവദിച്ച് നൽകുന്നതാണ്.

(ഗവർണറുടെ ഉത്തരവിൻ പ്രകാരം)
ടിങ്കു ബിസ്വാൾ
പ്രിൻസിപ്പൽ സെക്രട്ടറി

അഡീഷണൽ ചീഫ് സെക്രട്ടറി, ഫിഷറീസ് വകുപ്പ്
അക്കൗണ്ടന്റ് ജനറൽ (ആഡിറ്റ്) ,(എ&.ഇ) കേരള, തിരുവനന്തപുരം
കമ്മീഷണർ, ലാന്റ് റവന്യൂ തിരുവനന്തപുരം
കമ്മീഷണർ, ദുരന്തനിവാരണം
ജില്ലാകളക്ടർമാർ, ആലപ്പുഴ,കൊല്ലം, ഏറണാകുളം, തിരുവനന്തപുരം
ഡയറക്ടർ, ഫിഷറീസ് വകുപ്പ്
മെമ്പർ സെക്രട്ടറി, സംസ്ഥാന ദുരന്ത നിവാരണ അതോറിറ്റി
ഭക്ഷ്യപൊതുവിതരണ വകുപ്പ്
ട്രഷറി ഡയറക്ടർ, തിരുവനന്തപുരം
ഫിനാൻസ് ഓഫിസർ , ദുരന്തനിവാരണ വകുപ്പ്
പൊതുജന സമ്പർക്ക വകപ്പ് (Web and New Media)
സ്റ്റോക്ക് ഫയൽ / ഓഫീസ് കോപ്പി

ഉത്തരവിൻ പ്രകാരം

Signed by Sivaprasad V N
Date: 03-06-2025 17:35:45
സെക്ഷൻ ഓഫീസർ

പകർപ്പ്:-
ഫിഷറീസ് വകുപ്പ് മന്ത്രിയുടെ പ്രൈവറ്റ് സെക്രട്ടറിക്ക്
ഭക്ഷ്യപൊതുവിതരണ വകുപ്പ് മന്ത്രിയുടെ പ്രൈവറ്റ് സെക്രട്ടറിക്ക്
റവന്യൂ ദുരന്ത നിവാരണ വകുപ്പ് പ്രിൻസിപ്പൽ സെക്രട്ടറിയുടെ പി.എ -ക്ക്
ഫിഷറീസ് വകുപ്പ് സെക്രട്ടറിയുടെ പി-എ-ക്ക്
ഭക്ഷ്യപൊതുവിതരണ വകുപ്പ് സെക്രട്ടറിയുടെ സി.എ-ക്ക്

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Through e-mail only

M. Venkateshwaran IFS
Divisional Forest Officer

Divisional Forest Office
Chalakudy, Pin : 680 307
0480 2701340 (O)
e-mail dfo.clkdy.for@kerala.gov.in

No. KFDDO-36723/2025/DFOCLKDY/CC5 Dated: 01..07.2025

To

Director,
Department of Environment & Climate Change,
Thiruvananthapuram, Kerala
,India.

Sir,

Sub:- Report on Dolphin Strandings at Munakkal Beach, Azhikode, Thrissur - reg.

Ref:

****

Kind attention is invited to the above subject. This is to bring to your kind notice two dolphin stranding incidents reported from Munakkal Beach, Azhikode, under the jurisdiction of Konakkuzhi Forest Station.

On the evening of **26.06.2025**, information was received about a dead dolphin (*Delphinus delphis*) washed ashore at Azheekkode Munakkal beach in Thrissur. The staff immediately reached the location and conducted an initial examination. The carcass appeared to be approximately three days old. A mahazar was prepared, and the dolphin was taken into official custody.

As per the instructions of the Assistant Forest Veterinary Officer (AFVO), Thrissur, the carcass was shifted to the Zoological Park Hospital, Puthur, for preservation. On **27.06.2025**, it was transported to the Department of Pathology, College of Veterinary and Animal Sciences, Mannuthy, where a post-mortem was conducted under the supervision of the Head of Department. samples were collected for further analysis, and the carcass was later disposed of at the Konakkuzhi P&CS facility, following standard protocol.

On **27.06.2025**, another dolphin (*Delphinus delphis*) was found stranded at the same location. However, the carcass was in an advanced stage of decomposition, and hence, and sample collection was not possible due to the extent of decomposition.

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It is **suspected** that the deaths of these dolphins may be linked to the **recent container spill from the sunken ship off the Cochin coast**, which reportedly contained **hazardous materials**. Hence, an OR has been registered at the Konakkuzhi Forest Station for further investigation into the incident.

Yours faithfully,

Encl: Priliminary Report.

Divisional Forest Officer

1. Copy to the Additional Principal Chief Conservator of Forests (E &TW) Thiruvananthapuram.
2. Copy to Additional Principal Chief Conservator of Forests (FM) Thiruvananthapuram.
3. Copy to the Chief Conservator of Forests Central Circle, Thrissur

THE HIGH COURT OF KERALA
सत्यमेव जयते

DECEASED DOLPHIN AT MUNDAKAL BEACH, AZHIKODE on 26.06.2025

सत्यमेव जयते

DECEASED DOLPHIN EXAMINED AT DEPT of PATHOLOGY COLLEGE OF VETERINARY AND ANIMAL SCIENCES, MANNUTHI

Visual Record of Dolphin and Whale Mortalities along the Coast of Alappuzha

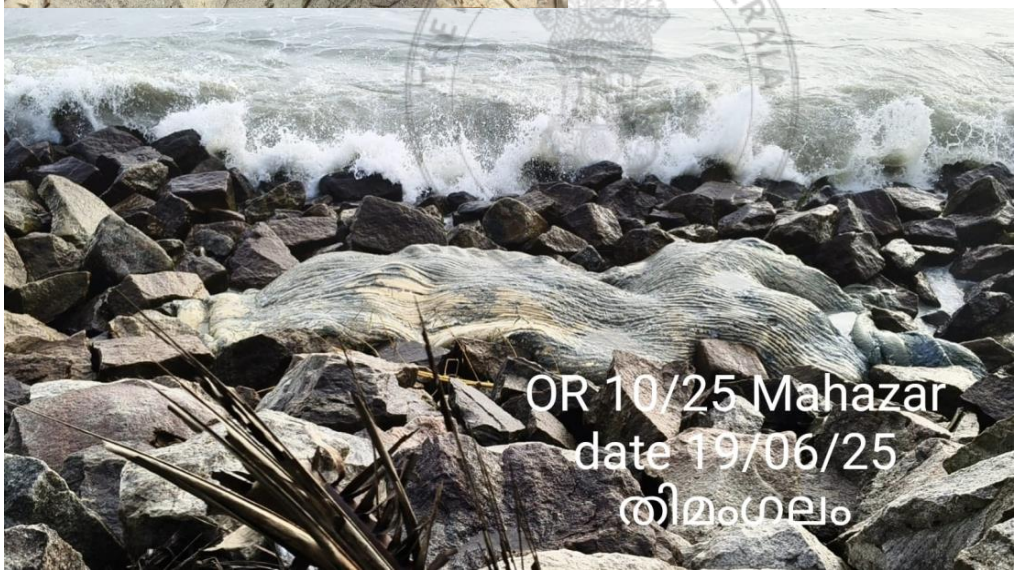
सत्यमेव जयते

OR 12/25 Mahazar
date 24/06/25 Dolphin

OR 13/25 Mahazar
date 26/06/25 Dolphin

OR 09/25 Mahazar
date 17/06/25
തിമിംഗലം

OR 11/25 Mahazar
Date 23/06/25 Dolphin


OR 10/25 Mahazar
date 19/06/25
തിമംഗലം

Directorate General of Shipping

SITREP – 33, 1800 hrs on 27/06/2025

Sinking of MSC ELSA 3 (IMO no. 9123221, Flag Liberia) South West of Kochi

The contents of this SITREP are based on both written and verbal inputs received from the stakeholders

1. Incident Overview:

Refer to SITREP – 6

2. Response Actions Initiated:

Refer to SITREP – 6

3. Present Status:

Onshore response efforts continue to progress under the supervision of the MERC. The transportation of cleaned plastic pellets (nurdles) from Veli Beach to Kollam Port remains ongoing, with two additional truckloads dispatched today. A total of 790 bags weighing 14.032 metric tons were moved on 27 June 2025, bringing the cumulative transported quantity to approximately 59.6 metric tons since the commencement of operations on 24 June 2025. Further nurdle transportation from both Veli Beach and Perumathura Beach is scheduled for tomorrow.

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Shoreline cleanup efforts have mobilised approximately 490 volunteers across Trivandrum, Rameswaram, and Kanyakumari. Recovery operations also targeted floating pellet bags reported near shore, with 8 to 9 bags retrieved from the coastline within the last 24 hours. Discussions regarding the final disposal plan for recovered nurdles are underway with relevant stakeholders, including MSC.

Offshore, the vessel transition is progressing. The tug Canara Megh arrived at Kochi Port and is currently being loaded with oil spill response equipment and personnel, including two divers equipped for contingency recovery of floating containers. The vessel is expected to sail by the evening of 27 June to relieve Nand Saarthi at the wreck site by the following morning. Nand Saarthi has remained on station, monitoring the site.

4. Situation Assessment:

While onshore recovery and transportation of nurdles have stabilised, the continued surfacing of floating pellet bags near the shoreline remains a concern. Drone and field surveillance efforts are being maintained to monitor for new hotspots. Despite significant quantities of recovered nurdles, a final disposal mechanism has yet to be formally concluded, requiring coordinated engagement with MSC, Customs, and other authorities.

Offshore, the operational readiness of Canara Megh for wreck-site monitoring and potential floating container recovery represents a positive development. However, the timeline for oil extraction and full-scale wreck removal remains contingent on the mobilisation of the new contractor engaged by MSC. The Directorate General of Shipping has reiterated the need for updated master logs on nurdle recovery, precise container status, and formalisation of disposal protocols. Additionally, aerial and sea patrols by the Indian Coast Guard continue to monitor the incident area, with no major changes reported as of today.

5. Environmental Risks:

<u>Refer to SITREP – 6, 1800 hrs on 28/05/2024</u>

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6. Coordination Measures

Refer to SITREP – 6 for the overall coordination measures being undertaken

GOVERNMENT OF KERALA

Abstract

Disaster Management Department-MSC ELSA 3 Ship wreckage in the Arabian Sea- Committee constituted for the impact assessment, restoration and remedial measures- Orders issued.

DISASTER MANAGEMENT(A)DEPARTMENT

G.O.(Rt)No.363/2025/DMD Dated,Thiruvananthapuram, 30-05-2025

Read 1 GO(MS)11/2025/DMD dated 29/05/2025

ORDER

As per Government Order read above, Government have declared the ship wreckage of ship M/s ELSA 3 in the Arabian sea 14.6 nautical miles off the Kerala coast as a State-Specific disaster, considering the potentially serious environmental, social, and economic impact of the ship wreckage.

In this regard the Special Secretary, Department of Environment is designated as Principal Impact Assessment Officer.

All the procedural requirements for impact assessment, restoration and remediation across sectors in accordance with the law as well as for engaging with various scientific and research institutions/experts with the aim to procure their services for such studies shall be housed in the Environment Department.

Special Secretary Environment shall constitute a multidisciplinary team (specialists/experts and generalist officers) from Fisheries, Tourism, Coastal Infrastructure sector (Harbor Engineering, Ports), Industries & Commerce, Agriculture, Water Resources and Local Self Government Departments for the above purpose. The team shall be chaired by the Special Secretary, Environment Department.

(By order of the Governor)
TINKU BISWAL

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DMA1/158/2025-DMD G.O.(Rt)No.363/2025/DMD

PRINCIPAL SECRETARY

To:
Additional Chief Secretary, Home& Vigilance
Additional Chief Secretary, Finance Department.
Secretary, Environment Department
Director, Environment Departmnent
Commissioner, Disaster Management
Member Secretary, KSDMA
Principal Accountant General(A&E/ Audit) Department
I& PRD, Web& New Media
Stock file/ office copy

Forwarded /By order
Signed by Sivaprasad V N
Date: 30-05-2025 17:27:08
Section Officer

Annexure 4

भारत सरकार / GOVERNMENT OF INDIA
पqन, पोत पॉरवहन और जलमाग [मंÜ□लय/ MINISTRY OF PORTS, SHIPPING AND WATERWAYS
नौवहन महाÜनदेशालय/ DIRECTORATE GENERAL OF SHIPPING
समुÜ8 वा□ंय □भाग, कोिंच
MERCANTILE MARINE DEPARTMENT, KOCHI

F.No. MMD KO-13028/1/2020-SURVEY Date: 24.05.2025

NOTICE

Subject : Threat of oil pollution from the disabled vessel MSC ELSA 3, IMO No. 9123221 off Kochi – reg.

Notice Under Section 356(J) of the Merchant Shipping Act, 1958 –reg.

The notice, issued under Section 356(J) of the Merchant Shipping Act, 1958, directs the Master/Owner/Operator/P&I Insurer/Agent of the vessel "MSC ELSA 3" (IMO No. 9123221) to take immediate action to prevent the likely escape of oil from the vessel into the sea due to severe listing to 30 Deg Starboard side near the Kochi coast. This directive is in response to the vessel being in a assumed disabled condition with all its auxiliary engines (generator) non-operational at 30 NM off the Kochi coast, Kerala at position 09°30.1'N / 075°46.638'E. The vessel in its present condition poses a severe threat of pollution to the Indian water and coastline.

Hence, the Master/Owner/Operator/P&I Insurer/Agent of the vessel take required actions immediately which shall include:

1. Action for preventing the escape of oil from the vessel; and Monitoring of the area;
2. Action for removal of oil from the vessel;
3. Action for removal of oil slicks on the surface of sea, if it were to occur; and
4. Action to disperse the oil slicks on the surface of sea, if it were to occur.
5. Towing the vessel away from the Coast to mitigate the risk of pollution.

The Directorate General of Shipping and the jurisdictional MMD needs to be informed of the actions taken in the manner immediately and regular updates needs to be provided to all concerned Authorities.

(J Senthil Kumar)
Principal officer cum Jt.DG (Tech)

नॉथ [एंड पी.ओ. पोèट बॉÈस सं.3701, □ि□□गंटन ßवीप, कोिंच - 682009
North End P.O., Post Box No.3701, Willingdon Island, Kochi – 682009
दू रू भा षा Tेlephone 0484 2666104, 2587000-38; ई-मेल / E Mail: po.mmd-ker@gov.in

ACS, Home
Copy to: Pvt. Secretary, DM May-26 1:19 PM

महानिदेशक एस परमेश, अ.वी.से.प., रा.त.प., त.प.
महानिदेशक भारतीय तटरक्षक
Director General S Paramesh, AVSM, PTM, TM
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तटरक्षक मुख्यालय,
राष्ट्रीय स्टेडियम परिसर
नई दिल्ली-110001
Coast Guard Headquarters
National Stadium Complex
New Delhi-110001

DO:242/SP

26 May 25

Dr. A Jayathilak, IAS
Chief Secretary
Govt. of Kerala
Thiruvananthapuram - 695001

Dear Chief Secretary sir,

1. I am writing this communique with reference to your letter DO No. 62/CS/2025/CSO dated 25 May 25 to provide an update on the measures undertaken by the Indian Coast Guard (ICG) in response to the sinking of the ill-fated MV *MSC Elsa 3* in the early hours of 25 May 25, as well as the actions undertaken to mitigate the risk of an oil spill from the vessel.

25 May 25
Pl reply. pl

2. ICG on receipt of distress alert at 1315 h on 24 May 25 from *MV MSC Elsa 3* approximately 38 n miles South West of Kochi, initiated actions as per standard operating procedure which resulted in rescue of all 24 crew. The vessel was carrying 640 containers including 13 containers of International Maritime Dangerous Goods (IMDG) Code cargo (Calcium Carbide) and 456 MT of Very Low Sulphur Fuel Oil (VLSFO) and Marine Gas Oil (MGO), substances that present a significant risk of oil and chemical pollution. **In accordance with established protocol, notices were issued to the vessel's owner and master under Section 356J of the Merchant Shipping Act, 1958, for the containment of pollutants. A NAVAREA navigational warning was also promulgated on 24 May 25 for the safety of mariners.**

Chief Secretary

3. **ICG is continuously monitoring the maritime situation through deployment of ships and aircraft**. Following the sinking of the vessel at 0750 h on 25 May 25, a Coast Guard Dornier Aircraft (CGDO) from Kochi was deployed for oil spill assessment and reported a silver sheen in smaller patches of oil slick. Two additional sorties of the CGDO in Pollution Response (PR) configuration were flown on the same day to conduct dispersant spray operations in the affected area. In parallel, three ICG Offshore Patrol Vessels, equipped with Pollution Control Equipment and Oil Spill Dispersants, were deployed for immediate response. Additionally, a ICG Dornier, fitted with an Oil Detection Sensor (MSS 6000) from Chennai, along with a specialized Pollution Control Vessel from Mumbai, have also been mobilized to augment the response efforts.

may-26 12:55 pm

4. The Directorate General of Shipping has conducted a series of review meetings with key participants, including the ICG, the owners and managers of M/s MSC Shipping, the State Administration, State Disaster Management Authority (SDMA), and the District Collectors of the coastal districts. These meetings have facilitated the swift and coordinated implementation of response measures. Additionally, M/s T&T Salvage Asia Pvt. Ltd. and experts from the International Tanker Owners Pollution Federation (ITOPF) have been engaged as the professional team overseeing the salvage operations. An Ocean-Going Tug has also been mobilized from Ratnagiri to support these efforts.

5. Given the critical nature of the situation, it is clear that the professional salvors' expertise, combined with the proactive measures taken by the ICG, are effectively addressing the immediate threat of pollution at sea. **However, it is imperative that the Kerala State authorities take swift action to prepare for potential shoreline cleanup, as outlined in the National Oil Spill Disaster Contingency Plan (Article 7.4). This will ensure a rapid and coordinated response should pollutants reach the shores, minimizing environmental damage and safeguarding coastal ecosystems.**

6. ICG stands resolutely committed to mobilizing all available resources and expertise to address the threat of marine pollution. We remain unwavering in our focus on safeguarding the marine environment, and will ensure a coordinated, thorough, and persistent response throughout the duration of this operation.

Warm regards,

Yours sincerely,

भारत सरकार/ GOVERNMENT OF INDIA
पत्तन,पोत परिवहन और जलमार्ग मंत्रालय
MINISTRY OF PORTS, SHIPPING AND WATERWAYS
नौवहन महानिदेशालय, मुंबई
DIRECTORATE GENERAL OF SHIPPING, MUMBAI

File No: 25-35011/1/2025-NT - DGS **Date**: 30.05.2025

NOTICE UNDER SECTION 356(J) OF MERCHANT SHIPPING ACT, 1958 AND ARTICLE 9 OF THE NAIROBI INTERNATIONAL CONVENTION ON THE REMOVAL OF WRECKS 2007

Subject: Sinking of the vessel *MSC ELSA 3* (IMO no.: 9123221, Flag: Liberia) at position Lat 09, 18' 50.022N, Long 76, 07' 58.967 E – reg.

Whereas, the container vessel *MSC ELSA 3* (IMO no.: 9123221, Flag: Liberia), owned and operated by Mediterranean Shipping Co SA, chemin Rieu, 12-14, 1208, Geneva, Switzerland and managed by MSC Ship management Ltd., Cyprus, developed a severe starboard list while enroute from Vizhinjam to Kochi, about 30 nautical miles southwest of Kochi Port.

Accordingly, a notice under Section 356-J of the Merchant Shipping Act, 1958, dated 24.05.2025, has already been issued by the Mercantile Marine Department (MMD), Kochi to take immediate action to prevent the likely escape of oil from the vessel into the sea due to severe listing.

Whereas, the vessel *MSC ELSA 3*, capsized and sank on 25.05.2025 at approximately 0750 hrs, off the Kerala coast at position Lat 09, 18' 50.022N, Long 76, 07' 58.967 E. And whereas the said vessel has sunk and is currently discharging oil into the marine environment, thereby posing a potential and serious threat of pollution to the Indian Exclusive Economic Zone and its coastline.

It is further noted that the vessel was laden with containerised cargo, including dangerous goods classified under Class 4.3 and Class 9 under the International Maritime Dangerous Goods (IMDG) Code, in addition to other environmentally sensitive cargo such as plastic nurdles, which pose a severe risk to the marine ecosystem.

Furthermore, it has also come to the attention of this Directorate that multiple containers have detached from the vessel and are now possibly scattered on the seabed, rendering the sea area a navigational hazard. In addition, some containers and their contents have been observed to have drifted away from the sunken vessel and/or reached the coastlines of Kerala and Tamil Nadu.

This situation necessitates immediate and effective remedial action, including salvage operations for removal of the sunken ship, removal of the oil from the ship, recovery of the cargo of containers and contents, and the proper and environmentally compliant disposal, in order to mitigate further risk to marine safety and the coastal environment.

Now, therefore, in exercise of the powers conferred under Section 356-J of the Merchant Shipping (MS) Act, 1958, the Directorate General of Shipping hereby directs the Master, Owner, Agent, Charterer, Managers, and Operators of the said vessel to undertake all necessary and immediate measures to prevent, contain, and mitigate pollution of the Indian waters and coastline resulting from the sinking of *MSC Elsa 3*.

In pursuance of **Section 356-J(2) of the MS Act**, and **Article 9 of the Nairobi International Convention on the Removal of Wrecks 2007** (Nairobi Convention) on the *'measures to facilitate the removal of wrecks'*, the following actions, among others as may be deemed necessary, shall be undertaken without delay, and with due regard to prevailing environmental standards and maritime and other safety protocols:

1. Initiation of action for the removal of the sunken vessel, including all on-deck and under-deck containerised cargo, located at position Lat 09° 18' 50.022" N, Long 76° 07' 58.967" E;
2. Deployment of resources for the removal of oil slicks observed on the sea surface;
3. Execution of appropriate and environmentally safe measures to disperse oil slicks on the surface of the sea;
4. Implementation of containment measures to prevent further escape of oil from the sunken vessel;
5. Safe and effective removal of any remaining oil contained within the vessel;
6. Recovery of containers, including those with IMDG cargo that have become detached and are presently resting on the seabed;
7. Removal of containers and debris, including those with IMDG cargo that are floating or have drifted ashore along the Indian coastline;
8. Collection and disposal of cargo that has been spilled into the marine environment or washed ashore, including hazardous or potentially polluting substances; and
9. Immediate removal of plastic nurdles across stretches of shoreline, with due care taken to prevent further harm to the marine ecosystem.

The concerned parties are hereby instructed to inform this Directorate of the status of actions undertaken at the earliest and to provide timely and regular updates to all relevant authorities until the completion of all remedial measures.

This notice is issued with the approval of the Competent Authority.

Yours faithfully,

(Capt. Anish Joseph)
Dy. Nautical Advisor -cum-
Sr. Dy. Director General (Tech)
Directorate General of Shipping, Mumbai

To,

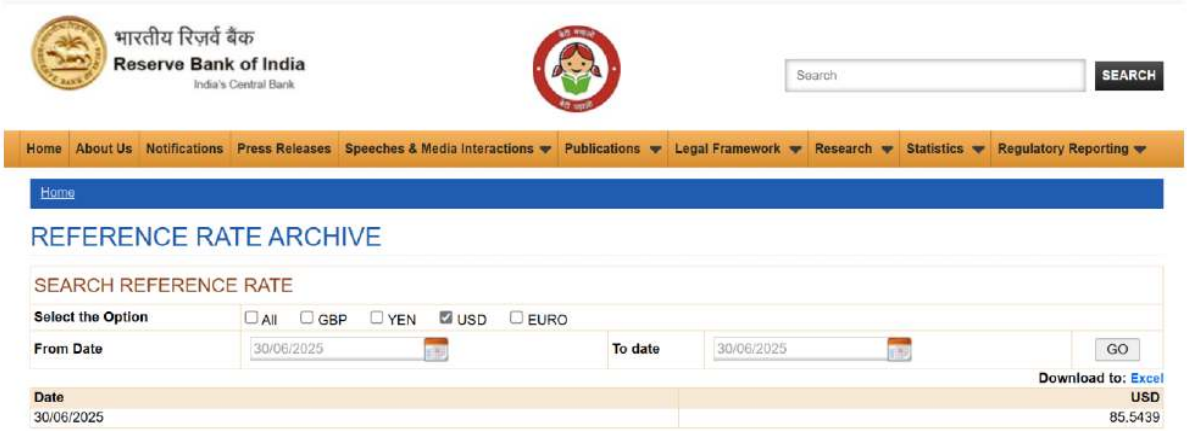
1. **The Master of the vessel MSC Elsa 3** (IMO no.: 9123221).
2. **The Ship Owner & Operator** – Mediterranean Shipping Co SA, chemin Rieu, 12-14, 1208, Geneva, Switzerland.
3. **The Ship Managers** - MSC SHIP MANAGEMENT LIMITED, MSC House, 8 Spyrou Kyprianou Avenue, Limassol, CY-3070, Cyprus. Kind Attn: Capt. Manish Ashok Gupta, General Manager- (Safety, Quality & Insurance)/ DPA,
4. **Protection & Indemnity (P&I) Insurers of the vessel** - NorthStandard, 100, The Quayside, Newcastle upon Tyne, NE1 3DU, United Kingdom. Kind Attn: Gillian Clark.
5. **The Flag State Administration** - Deputy Commissioner of Maritime Affairs, Republic of Liberia, 22980 Indian Creek Drive, Suite 200 Dulles, Virginia 20166 USA

Copy to:

1. **Kerala State Government** - Office of the Chief Secretary, Government of Kerala, Secretariat, Thiruvananthapuram - 695001.
2. **Tamil Nadu State Government** - Office of the Chief Secretary, Government of Tamil Nadu, Secretariat, Chennai - 600009.
3. **Kerala State Maritime Board** - Chief Executive Officer, Kerala Maritime Board, HO TC XXII/1666 (4&5), 1st Floor, Mulamoottil Building Pipinmoodu, Sasthamangalam Thiruvananthapuram, Kerala – 695010.

4. **Tamil Nadu State Maritime Board** - Chief Executive Officer, Tamil Nadu Maritime Board, No. 171, South Kesavaperumal Puram, Off Greenways Road, Raja Annamalaipuram, Chennai - 600 028.
5. **Kerala State Disaster Management Authority** (KSDMA) - Commissioner, Disaster Management, Vikas Bhavan, PO, Observatory Hills, opposite Kanakakkunnu Palace, Nanthancodu, Thiruvananthapuram, Kerala 695033.
6. **Tamil Nadu State Disaster Management Authority** (TNSDMA) - Commissioner, Disaster Management, Commissionerate of Revenue Administration Exhilagam, Chepauk, Chennai-5.
7. The **Nautical Advisor** to the Govt of India, Directorate General of Shipping, Mumbai.
8. The **Chief Surveyor** with the Govt. of India, Directorate General of Shipping, Mumbai.
9. The **Chief Ship Surveyor** with the Govt. of India, Directorate General of Shipping, Mumbai.
10. **MMD, Kochi** - Principal Officer, Mercantile Marine Department, Willingdon Island, Kochi, Kerala 682009.
11. **Indian Coast Guard** - MRCC, Mumbai, Hqrs Coast Guard Region (West), Worli Sea Face, Post – Worli Colony, Mumbai – 400 030. Kind Attn: The Officer-in-Charge.
12. **Recognised organisation of the vessel** - Bureau Veritas Marine Division (BV) , Reg Off:72, Business Park, 3rd Floor Marol Industrial Area, MIDC Cross Road, Andheri East, Mumbai – 400 093.
13. **Salvors** - T&T SALVAGE ASIA, PTE LTD, No. 29 Tuas Avenue 4, Singapore 639379.
14. The Chairman, **Cochin Port Authority**, Willingdon Island, Kochi, Kerala 682009.

सत्यमेव जयते



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THE HIGH COURT OF KERALA
सत्यमेव जयते

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Review

Plastic waste in the marine environment: A review of sources, occurrence and effects

W.C. LI *, H.F. TSE, L. FOK

Department of Science and Environmental Studies, The Hong Kong Institute of Education, Hong Kong

HIGHLIGHTS

- The annual production of plastic has increased 200-fold from the 1950s to 2014
- Macroplastics and microplastics pose a risk to organisms
- Microplastics can lead to absorption of hydrophobic contaminants
- Recommendations are made to minimise plastic pollution in the environment

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ABSTRACT

This review article summarises the sources, occurrence, fate and effects of plastic waste in the marine environment. Due to its resistance to degradation, most plastic debris will persist in the environment for centuries and may be transported far from its source, including great distances out to sea. Land- and ocean-based sources are the major sources of plastic entering the environment, with domestic, industrial and fishing activities being the most important contributors. Ocean gyres are particular hotspots of plastic waste accumulation. Both macroplastics and microplastics pose a risk to organisms in the natural environment, for example, through ingestion or entanglement in the plastic. Many studies have investigated the potential uptake of hydrophobic contaminants, which can then bioaccumulate in the food chain, from plastic waste by organisms. To address the issue of plastic pollution in the marine environment, governments should first play an active role in addressing the issue of plastic waste by introducing legislation to control the sources of plastic debris and the use of plastic additives. In addition, plastics industries should take responsibility for the end-of-life of their products by introducing plastic recycling or upgrading programmes.

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Contents

1. Introduction . . . 334
   1.1. Macroplastics . . . 335
   1.2. Microplastics . . . 335
      1.2.1. Primary microplastics . . . 335
      1.2.2. Secondary microplastics . . . 335
2. Sources of plastic debris . . . 335
   2.1. Land-based debris . . . 335
   2.2. Ocean-based debris . . . 335
3. Occurrence in water bodies and beach sediments . . . 336
   3.1. Water bodies . . . 336
   3.2. Beaches, sediments and shorelines . . . 338
4. Effects on organisms . . . 338
   4.1. Plastic ingestion . . . 338

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4.2. Plastic entanglement . . . 340
4.3. Chemical effects on organisms . . . 343
5. Fate of plastic debris in the environment . . . 344
6. Recommendations . . . 344
7. Conclusion . . . 345
Acknowledgment . . . 345
References . . . 345

1. Introduction

Plastic contamination in the natural environmental has attracted much attention from both researchers and the general public. Organisms can ingest the plastic or become entangled in it; plastic waste is therefore hazardous to the entire ecosystem (Stefatos et al., 1999; Sutherland et al., 2010). Plastics are synthetic or semi-synthetic organic polymers that are cheap, lightweight, strong, durable and corrosion-resistant (Derraik, 2002; Thompson et al., 2009). They tend to become brittle, break down into small pieces, and eventually degrade further when exposed to UV radiation either under direct sunlight or in seawater (Moore, 2008). However, the actual time that it takes for plastic to completely degrade in the marine environment remains unknown (Andrady, 2005). Many types of plastic debris, such as fishing nets, ropes and plastic bags, occur in the natural environment. It is estimated that 50% of plastic products, including utensils, plastic bags and packaging, are intended to be disposable (Hopewell et al., 2009). Therefore, the annual production of plastic has increased significantly from 1.5 million t in the 1950s to an estimated 299 million t in 2013 (PlasticsEurope, 2015). The most commonly used and abundant polymers are high-density polyethylene (HDPE), low-density polyethylene (LDPE), polyvinyl chloride (PVC), polystyrene (PS), polypropylene (PP) and polyethylene terephthalate (PET) (Table 1), which together account for approximately 90% of the total plastic production worldwide (Andrady and Neal, 2009). As a result, these polymers are also the most commonly found plastics in the environment, especially in aquatic environments (Andrady, 2011; Engler, 2012). Due to their corrosion-resistant properties, most plastics are regarded as "hard-to-degrade" materials, which will persist in the environment for up to a century (Cole et al., 2011). Large plastic items, known as macroplastics, have been reported in the marine environment since the early days of production (Derraik, 2002). Microplastics (<5 mm), which are smaller, have recently drawn attention because they not only make their way into the marine environment but are also more easily ingested by marine organisms; they may thus act as vectors for the chemical transfer of pollutants within the food chain (Teuten et al., 2009). This article reviews the sources of both macroplastic and microplastic debris found in water bodies and beach sediments, and their occurrences are summarised in tables. The physical and chemical effects and the fate of the plastic debris are then evaluated. Finally, various recommendations are proposed to control the amount of plastic entering the natural environment and raise public awareness of the effects of plastic debris.

Table 1
Types of plastic commonly found in the natural environment. (Halden, 2010; Andrady, 2011; Ghosh et al., 2013).

Type	Specific gravity	Use/application	Health effects
Polyester (PES)	1.40	Fibers, textiles	Cause eye and respiratory-tract irritation and acute skin rashes (Ecology Center, 1996).
Polyethylene terephthalate (PET)	1.37	Carbonated drinks bottles, peanut butter jars, plastic film, microwavable packaging, tubes, pipes, insulation molding	Potential human carcinogen (Ecology Center, 1996).
Polyethylene (PE)	0.91–0.96	Wide range of inexpensive uses including supermarket bags, plastic bottles	
High-density polyethylene (HDPE)	0.94	Detergent bottles, milk jugs, tubes, pipes, insulation molding	Release estrogenic chemicals resulting in changes in the structure of human cells (Ecology Center, 1996)
Polyvinyl chloride (PVC)	1.38	Plumbing pipes and guttering, shower curtains, window frames, flooring, films	Lead to cancer, birth defects, genetic changes, chronic bronchitis, ulcers, skin diseases, deafness, vision failure, indigestion, and liver dysfunction (Ecology Center, 1996).
Low-density polyethylene (LDPE)	0.91–0.93	Outdoor furniture, siding, floor tiles, shower curtains, clamshell packaging, films	
Polypropylene (PP)	0.85–0.83	Bottle caps, drinking straws, yogurt containers, appliances, car fenders (bumpers), plastic pressure pipe systems, tanks and jugs	
Polystyrene (PS)	1.05	Packaging foam, food containers, plastic tableware, disposable cups, plates, cutlery, CD, cassette boxes, tanks, jugs, building materials (insulation)	Irritate eyes, nose and throat and can cause dizziness and unconsciousness. Migrates into food and stores in body fat. Elevated rates of lymphatic and hematopoietic cancers for workers (Ecology Center, 1996).
High impact polystyrene (HIPS)	1.08	Refrigerator liners, food packaging, vending cups, electronics	
Polyamides (PA) (nylons)	1.13–1.35	Fibers, toothbrush bristles, fishing line, under-the-hood car engine moldings, making films for food packaging	Lead to cancer, skin allergies, dizziness, headaches, spine pains and system dysfunction (Ecology Center, 1996)
Acrylonitrile butadiene styrene (ABS)	1.06–1.08	Electronic equipment cases (e.g., computer monitors, printers, keyboards), drainage pipe, automotive bumper bars	Airborne ultrafine particle (UFP) concentrations maybe generated while printing with ABS, which leads to oxidative stress, inflammatory mediator release, and could induce heart disease, lung disease, and other systemic effects (Card et al., 2008).
Polycarbonate (PC)	1.20–1.22	Compact discs, eyeglasses, riot shields, security windows, traffic lights, lenses, construction materials	Bisphenol-A could be leached from polycarbonate products, which leads to liver function alternation, changes in insulin resistance, reproductive system and brain function (Srivastava and Godara, 2013).
Polycarbonate/acrylonitrile butadiene styrene (PC/ABS)		A blend of PC and ABS that creates a stronger plastic. Used in car interior and exterior parts and mobile phone bodies	

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1.1. Macroplastics

Macroplastic pollution is a global issue and is perceived as one of the most severe forms of pollution in shorelines, oceans and freshwater bodies. The problem has been widely reported since the 1990s (Shomura and Godfrey, 1990), and macroplastic litter has been subjected to much study. More recently, this issue has drawn greater public attention and is now covered by several international regulations. Anthropogenic macroplastic debris surveys and clean-up campaigns have usually focused on the larger plastic items found on beaches, and there is wide geographical variability in the level of pollution, which increases the difficulty of analysing potential trends. Macroplastics are generally defined as having a size >25 mm (Romeo et al., 2015), but, despite their larger size, it has been reported that they are regularly ingested and retained by various marine species including seabirds, fish and cetaceans (Derraik, 2002, Teuten et al., 2007).

1.2. Microplastics

1.2.1. Primary microplastics

According to Cole et al. (2011), primary microplastics are defined as plastics manufactured to have a microscopic size. Most primary microplastics in the environment are generated from industrial and domestic products (Betts, 2008; Moore, 2008) and are mainly used in air-blasting media (Gregory, 1996), in facial cleansers and cosmetics (Zitko and Hanlon, 1991) and in medicine as drug vectors (Patel et al., 2009). For example, blasting acrylic, melamine or polyester microplastic scrubbers (0.25–1.7 mm) is used to remove rust and paint (Browne et al., 2007). Although modern wastewater treatment facilities can remove up to 99% of microplastics, microplastics released thru effluents are still significant due to their sheer amount (Rochman et al., 2015). Thus, microplastics readily enter the marine environment and may accumulate in seas and freshwater bodies (Thompson et al., 2007). One of the most widely discussed types of primary microplastics consists of scrubbers, which are used in exfoliating hand cleansers and facial scrubs. In the 1980s, the use of the microplastic scrubbers increased significantly following the patenting of these products by cosmetic companies. The size, shape and composition vary according to the cosmetic (Fendall and Sewell, 2009), for example, polyethylene and polypropylene granules (<5 mm) and polystyrene spheres (<2 mm) have all been found in a single cosmetic product.

Browne et al. (2011) catalogued microplastic pollution at the shorelines of 18 sites worldwide, representing six continents from the poles to the equator. It was found that one of the most significant sources of microplastics in the marine environment was sewage polluted by fibres from washing clothes. It was concluded that the polyester (78%) and acrylic (22%) fibres on the studied shores were mainly from washing machine discharges rather than the fragmentation of plastic cleaning tools because the proportions of polyester fibres found in the wastewater and marine sediment were similar to those used for textiles (Oerlikon, 2009). Moreover, there was a positive relationship between the abundance of microplastics and human population density (Oerlikon, 2009).

1.2.2. Secondary microplastics

Secondary microplastics are derived from the fragmentation of large plastics into smaller debris, both at sea and on land (Ryan et al., 2009). The longevity of plastics is estimated to range from months to thousands of years (Zheng et al., 2005; Barnes et al., 2009), although this figure is still uncertain because conventional plastics have only been mass-produced for approximately 60 years. However, there are many reports stating that the fragmentation of plastic items is occurring in the environment as a result of various physical, biological and chemical processes that reduce the structural integrity of plastic debris (Browne et al., 2007).

Weathering is the most important process causing the breakdown of plastics (Arthur et al., 2009). According to Corcoran et al. (2009), beaches are the optimal settings for plastic fragmentation due to the presence of both chemical and mechanical weathering. Another important process is photodegradation caused by sunlight. The ultraviolet radiation in sunlight causes oxidation of the polymer matrix, resulting in chemical bond breakage (Barnes et al., 2009). Compared to the cold temperatures of the marine environment, plastic debris on beaches is degraded more quickly due to the higher oxygen availability and direct exposure to sunlight, resulting in the loss of structural integrity (Browne et al., 2007). Finally, plastic particles are vulnerable to fragmentation from a combination of mechanical forces, for example, abrasion, wave action and turbulence (Barnes et al., 2009). The introduction of biodegradable plastics is also a source of microplastics. Biodegradable plastics are composed of traditional synthetic polymers plus starch and vegetable oils and are designed to reduce the degradation time (Derraik, 2002; Thompson et al., 2004; O'Brine and Thompson, 2010). However, if the plastics are inappropriately disposed of, the synthetic polymer, which is not biodegradable, will accumulate and fragment in the environment (Fig. 1).

2. Sources of plastic debris

2.1. Land-based debris

Land-based sources of plastic debris contribute 80% of the plastic debris in the marine environment, with densely populated or industrialised areas being the major sources due to littering, plastic bag usage and solid waste disposal, for example (Derraik, 2002). A study by Lee et al. (2013) found that the majority of floating and beached plastic debris originated from coastal recreational activities and land-based sources in the northern South China Sea. Other researchers found that large quantities of plastic debris derived from raw manufacturing materials were transported onto beaches following accidental spillage during handling and other processes (Redford et al., 1997). Other land-based sources include wastewater effluent and refuse site leachate (Browne et al., 2010). Plastics are transported from their sources by river systems and wastewater treatment works to the marine environment (Browne et al., 2010; Cole et al., 2011). In addition, extreme weather events (e.g., hurricanes or flooding) increase the transfer of land-based debris to the sea (Barnes et al., 2009). Research has found that the abundance of microplastic in Californian waters increased from 10 to 60 plastic particles m^{-3} after a storm and that increased river water volume resulted in litter being deposited at greater distances from the estuary (Moore et al., 2002).

2.2. Ocean-based debris

Ocean-based sources account for the remaining 20% of marine plastic debris, to which commercial fishing is the major contributing human activity. In 1975, the sinking of a fishing fleet resulted in the deposition of 135,400 t of plastic fishing gear and 23,600 t of synthetic packaging material into the sea (Cawthorn, 1989). Currently, the amount of fishing gear lost to the environment has quadrupled: an estimated 640,000 t of discarded fishing gear are added into the ocean every year, which amounts to approximately 10% of the total marine debris (Good et al., 2010). These discarded fishing items, including monofilament lines and nylon netting, float at specific depths within the sea, which results in "ghost fishing" and may cause the entanglement of aquatic organisms (Lozano and Mouat, 2009). There is a significant relationship between the number of ocean-based plastic items found on beaches and the level of commercial fishing (Walker et al., 1997; Cunningham and Wilson, 2003; Ribic et al., 2010). Edyvane et al. (2004) also highlighted this relationship by demonstrating a probable link between the reduction of ocean-based plastic debris over 10 years and a documented decline in specific inshore fisheries. Overall, these studies suggest that

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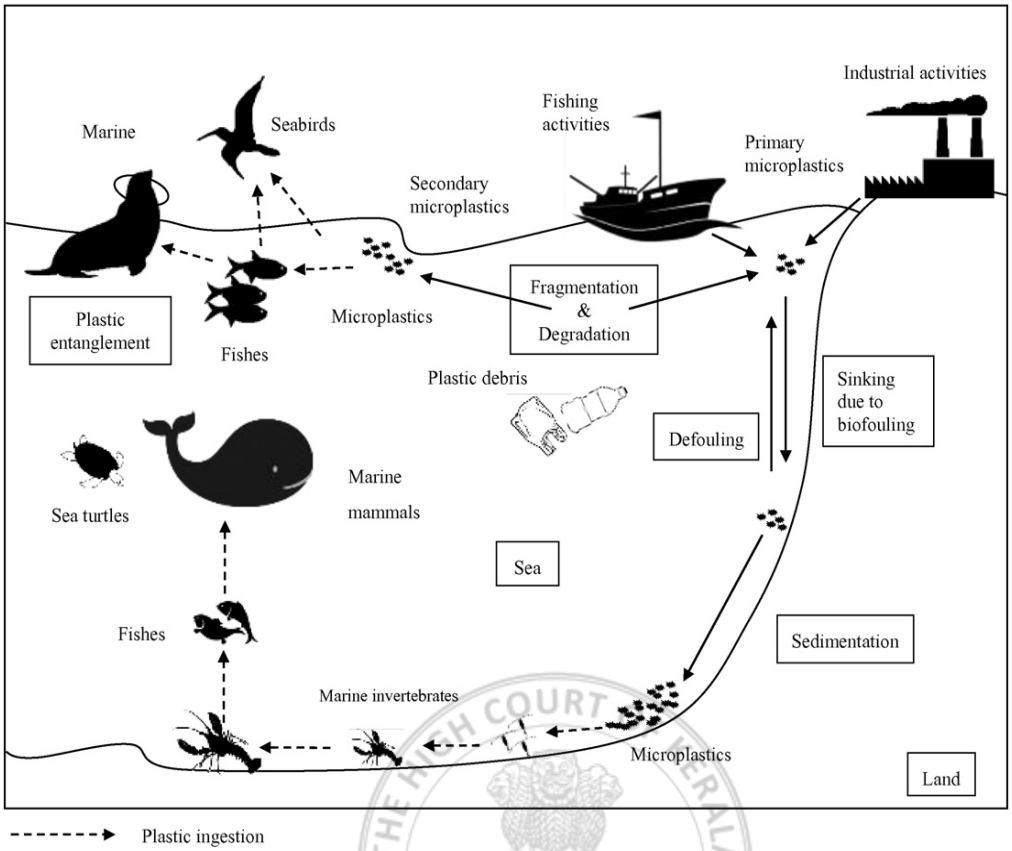

Fig. 1. Potential pathways of plastic debris transportation and its biological interactions (Wright et al., 2013; Ivar do Sul and Costa, 2014).

the level of fishing activity contributes to the amount of plastic debris in the ocean.

3. Occurrence in water bodies and beach sediments

3.1. Water bodies

Floating plastic particles have been reported in the Northern Hemisphere subtropical gyres, particularly in the North Atlantic, since the early 1970s. Many publications have reported that plastic debris is the most serious marine litter worldwide; as detailed in Table 2, plastic debris is found globally in multiple seas. The distribution of plastic debris in the sea depends on various mechanisms, including winds, currents, coastline geography and human factors such as urban areas and trade routes (Barnes et al., 2009). For example, Table 2 shows that the density of plastic debris in the Mediterranean Sea and Atlantic Ocean is very high, attributed to both natural and human factors. With regard to the natural factors, the densities might exceed 1000 pd. ha^{-1} along the coast, especially next to large cities and offshore canyons because the waste is trapped in zones with high sedimentation rates, and these rates are a regular occurrence where sea floors are flat (Galgani et al., 2000). In addition, coastal areas with industrial activity are regarded as plastic hotspots: an estimated 100,000 plastic particles m^{-3} were found in a harbour area near a PE production plant in Sweden (Noren and Naustvoll, 2010).

In addition, accumulation zones of plastic debris are also found in the open sea far from any waste sources, for example, 320 km off the Danish coast (Galgani et al., 2000). Gyres are particular hotspots for both macroplastic and microplastic accumulation (Lebreton et al., 2012; Eriksen et al., 2013b): the plastic debris, originating from both sea- and land-based sources, is transported into the subtropical gyres (Lebreton et al., 2012) and thus forms accumulation zones of particles. Eriksen et al. (2013b) reported 26,898 particles km^{-2}, ranging in size from 0.355 mm to over 4.750 mm, in the South Pacific subtropical gyre. The high abundance of plastic debris in the South Pacific subtropical gyre might be due to the occasional transfer of particles from the shores of Indonesia and Ecuador via the boundary currents (Eriksen et al., 2013b). Another study conducted by Moore et al. (2001) measured the plastic pollution in the contrasting region, the North Pacific subtropical gyre. >33.000 particles km^{-2} were reported that ranged in size from 0.355 mm to over 4.760 mm, including fragments, Styrofoam pieces, pellets, polypropylene and thin plastic films. This phenomenon may be explained by the influence of hydrodynamics (Moore et al., 2001) and might be related to the location of strong currents in the upper parts of canyons with overall reduced water movements. Sedimentation factors may also explain this situation: an area with very low turbulence (Jegou and Salomon, 1991) that coincides with the convergence zone of seabed sediment movements (Open University, 1993) will favour sedimentation, producing an accumulation zone. In addition to the natural factors affecting the plastic accumulation zones in the ocean, human activities such as fishing also contribute to the density and distribution of plastic in the marine environment (Kanehiro et al., 1995). Other anthropogenic factors, such as tourism and the presence of large metropolitan areas, are important in terms of the abundance and distribution of plastic debris (Galgani et al., 2000).

There have been many recent studies of the microplastic pollution in water bodies (Eriksen et al., 2013a; Reisser et al., 2013; Desforges et al., 2014). Plastics can be buoyant because they are composed of multiple polymers (Cole et al., 2011). The buoyancy of plastic is highly related to its specific gravity. Generally, plastic with a specific gravity <1 (Table 1) is buoyant. Microplastic abundance has been found to be higher in coastal areas compared with offshore regions because anthropogenic activities are the major source of microplastics in the marine environment (Barnes et al., 2009; Ribic et al., 2010; Doyle et al., 2011; Collignon et al., 2012; Dubaish and Liebezeit, 2013). Eriksen et al. (2013a) calculated the levels of plastic pollution in the surface water

FSO VERIFIED -18

Table 2
Occurrence of plastic debris found in water bodies.

Location	Regions	Water bodies	Water column	Debris load	Unit	Plastic type	Plastic sizes	Plastic (%)	Reference
Baltic Sea	Baltic Sea	Marine	Surface water	1.3 ± 0.8	Items/Ha	Macroplastics	>20 mm mesh	35.7%	Galgani et al. (2000)
Atlantic Ocean	North Sea	Marine	Surface water	1.6 ± 0.4	Items/Ha	Macroplastics	>20 mm mesh	48.3%	Galgani et al. (2000)
	Channel East	Marine	Surface water	1.2 ± 0.1	Items/Ha	Macroplastics	>20 mm mesh	84.6%	Galgani et al. (2000)
	Bay of Seine	Marine	Surface water	1.7 ± 0.1	Items/Ha	Macroplastics	>20 mm mesh	89%	Galgani et al. (2000)
	Celtic Sea	Marine	Surface water	5.3 ± 2.5	Items/Ha	Macroplastics	>20 mm mesh	29.5%	Galgani et al. (2000)
	Rio de la Plata	River and estuary	Coastal area and river bottom	0–15.1	Items/Ha	–	–	74%	Acha et al. (2003)
	Offshore, Ireland	Marine	Surface water	2.5	Item/m^3	Macroplastics and microplastics	<1.25 mm to >10 mm	94%	Lusher et al. (2014)
	Portuguese coast	Marine	Surface water and depth range of 25 m in the water column	0.02–0.04	Item/m^3	Microplastics	–	43.8–91.7%	Frias et al. (2014)
	Gioana estuary, Brazil	Estuary	Surface and bottom water	0.3	Item/m^3	Microplastics	2.23 ± 1.65 mm	–	Lima et al. (2014)
Mediterranean Sea	Gulf of Lion	Marine	Surface water	1.4 ± 0.2	Items/Ha	Macroplastics	>10 mm mesh	70.5%	Galgani et al. (2000)
	East Corsica	Marine	Surface water	2.3 ± 0.7	Items/Ha	–	–	45.8%	Galgani et al., 2000
	Adriatic Sea	Marine	Surface water	3.8 ± 2.5	Items/Ha	Macroplastics	>20 mm mesh	69.5%	Galgani et al. (2000)
	Greece Gulfs	Marine	Seafloor	0.7–4.4	Items/Ha	–	–	56%	Koutsodendris et al. (2008)
Pacific Ocean	North Pacific Central Gyre	Marine	Surface water	334,271	Item/km^2	Macroplastics and microplastics	0.355 to >4.76 mm	98%	Moore et al. (2001)
	Waters around Australia	Marine	Surface water	4256.4	Item/km^2	Macroplastics and microplastics	0.4 to 82.6 mm	80%	Reisser et al. (2013)
	Tokyo Bay	Marine	Surface water	1.9–3.4	Items/Ha	–	–	48.3–58.9%	Kuriyama et al. (2003)
	North Pacific offshore, surface	River	Surface water	0.4–2.2	Item/m^3	–	–	–	Moore et al. (2005)
	North Pacific central gyre	Marine	Surface water	0.02	Item/m^3	Macroplastics and microplastics	1–10 mm	–	Carson et al. (2013)
	North Pacific, inshore, surface	River	Surface water	5.0–7.3	Item/m^3	–	–	–	Moore et al. (2005)
	Eastern China Sea	Marine	Seafloor	–	Items/Ha	–	–	<5%	Lee et al. (2006)
	South Sea of Korea	Marine	Seafloor	–	Items/Ha	–	–	<10%	Lee et al. (2006)
	The South Pacific subtropical gyre	Marine	Surface water	26,898	Item/km^2	Macroplastics and microplastics	0.355 to >4.75 mm	88.8%	Eriksen et al. (2013b)
	NE Pacific Ocean	Marine	Surface water	8–9180	Item/m^3	Microplastics	64.8 μm to 5810 μm	75%	Desforges et al. (2014)
	Geoje Island, South Korea	Marine	Surface water	16,000	Item/m^3	Microplastics	<50 μm to >1000 μm	–	Song et al. (2014)
Southwest England	Tamar Estuary	Estuary	Surface water	0.03	Item/m^3	Microplastics (82%) and macroplastics (19%)	< 1 mm to >5 mm	82%	Sadri and Thompson (2014)
The United States	Laurentian Great Lakes	Lake	Surface water	43,000	Item/km^2	Macroplastics and microplastics	0.355–0.999 mm (81%), 1.000–4.749 mm (17%), >4.75 mm (2%)	90%	Eriksen et al. (2013a)

of lakes and reported an average abundance of 43,157 plastic particles km^{-2}, 81% of which had a size of 0.355–0.999 mm. The majority of these plastics originate from heavily populated areas with heavy commercial and industrial activity, such as coal-burning power plants (Stamper et al., 2012) and sandblasting media (Eriksen et al., 2013a). Reisser et al. (2013) found that the surface waters around Australia are polluted by microplastics from the degradation of larger polyethylene and polypropylene objects. There was a high prevalence of plastic particles smaller than 5 mm. Similarly, it was assumed that the sources of these microplastics consisted mainly of populated regions such as the cities of Sydney and Brisbane (Reisser et al., 2013).

Furthermore, plastic debris is found throughout the water column. Table 2 shows the density of the most common plastic types found in the natural environment. Plastics with a specific gravity > 1, for example, PS, PET and PVC, usually sink to the benthos, whereas LDPE and PP

FSO VERIFIED -18

appear in the surface water. However, the density of individual plastic items can be altered once in the marine environment, for example, low density plastic can also be found on the seafloor. One of the major reasons for this alteration is that plastic debris in the aquatic environment can acquire a microbial biofilm on its surface, leading to colonisation by algae or invertebrates, which produces an increase in density (Andrady, 2011). A study conducted by Lobelle and Cunliffe (2011) investigated the development of biofilms on plastic bags. The authors discovered that a biofilm developed on the surface of the plastic after just 1 week and that microbial density increased dramatically after 3 weeks. When plastic reaches a certain density, some of it sinks to the seafloor, and some remains suspended within the water column due to turbulence (Cole et al., 2011).

3.2. Beaches, sediments and shorelines

In addition to water bodies, the beach is another important environment suffering from plastic pollution. Table 3 illustrates the contamination by plastic debris of beaches worldwide (Velander and Mocogni, 1999; Santos et al., 2009; Martins and Sobral, 2011; Dekiff et al., 2014). The highest abundance, 258,408 items m^{-2}, was found at Fan Lau Tung Wan, Hong Kong (Fok and Cheung, 2015). Over 90% of the collected samples were classified as microplastics (<5 mm), with 92% of the microplastics being expanded polystyrene. The high abundance of expanded polystyrene found on beaches in Hong Kong may be attributable to the high population density and the lifestyle of the people of Hong Kong, for example, the use of insulated boxes for takeaway food or food transportation (Fok and Cheung, 2015). Claessens et al. (2011) investigated beach sediment along the Belgian coast and found that the average microplastic concentration was 92.8 particles kg^{-1} dry sediment, with fibres constituting over 88% (82.1 particles kg^{-1}) of the total collected plastic debris. It is assumed that the analysed fibres were nylon, polyvinyl alcohol and polypropylene, which are mainly derived from fishing nets, carpets and ropes. It was also stated that microplastic concentrations along the Belgian coast are increasing. Claessens et al. studied the change in the plastic concentration with time by investigating vertical sections of beach sediment and showed that the microplastic concentration on the beach at Groenendijk increased three times over the period from 1993 to 1996 to 2005–2008, with estimated concentrations of 54.7 ± 8.7 and 156.2 ± 6.3 particles kg^{-1}, respectively.

In addition to anthropogenic factors, natural factors such as rainstorms may also result in a high accumulation of plastic debris on beaches. A study conducted by Lee et al. (2013) investigated the abundance of plastic in different seasons and found that the accumulation of plastic, especially microplastic, in beach sediment after the rainy season was higher than that before the rainy season. Additionally, the directions of the wind and ocean currents are important determinants of the level of plastic contamination on beaches. A greater abundance of plastic items was observed on windward beaches compared to leeward beaches (Ivar do Sul et al., 2009); for example, the windward beaches of Fernando de Noronha Island, which has no plastic industry or fishing activity, had higher levels of contamination with plastic pellets (Ivar do Sul et al., 2009). This observation implies that plastic debris is mainly transported to windward beaches by surface currents or winds (Debrot et al., 1999; Ivar do Sul et al., 2009). Similar findings have been reported for non-industrial remote locations in Tonga, Rarotonga and Fiji (Gregory, 1999); the Pitcairn Islands (Benton, 1995); the Hawaiian Islands (Corcoran et al., 2009); and Chile (Hidalgo-Ruz and Thiel, 2013).

4. Effects on organisms

4.1. Plastic ingestion

Fig. 1 shows the pathway of plastic ingestion by different organisms. Plastic debris has been found in multiple species worldwide, including seabirds, turtles, crustaceans and fish (Derraik, 2002; Ryan et al., 2009;

Table 3
Occurrence of plastic debris found in beach sediment.

Location	Occurrence	Plastic type	Plastic sizes	Reference
Edinburgh coast, UK	Average density of 0.8 items m^{-2}	–	–	Velander and Mocogni (1999)
Mumbai, India	Average abundance of 7.49 g and 68.83 items m^{-2}	Microplastics and macroplastic	<5 mm to 100 mm	Jayasiri et al. (2013)
Tasmania, Australia	Average abundance of 113 items or 1.69 kg of debris per beach.	–	–	Slavin et al. (2012)
Nakdong River Estuary, South Korea	Average abundances of 8205 particles m^{-2} in May and 27,606 particles m^{-2} in September	Microplastics and macroplastic	1 mm to >25 mm	Lee et al. (2013)
San Diego, California	2453 individual plastic debris	Microplastics and macroplastic	<5 mm to 50 mm	Van et al. (2012)
UK	Maximum 8 particles kg^{-1}	–	–	Thompson et al. (2004)
Hong Kong	Average abundance of 5595 items m^{-2} and maximum 258,408 items m^{-2}	Microplastic	0.315 to >5 mm	Fok and Cheung (2015)
Western coast of Portugal	Average density of 185.1 items m^{-2}	Microplastics (72%), macroplastic (18%)	50 μm to 20 cm	Martins and Sobral (2011)
Hawaii	Average weight of debris per sample was 23.38 g plastic	Microplastics and macroplastic	1–2.8 mm (43%), 2.8–4.75 mm (48%), >4.75 mm (9%)	McDermid and McMullen (2004)
Belgian coast	Average 92.8 particles kg^{-1} dry sediment	Microplastics	38 μm to 1 mm	Claessens et al. (2011)
Norderney	Mean 1.76 kg^{-1} dry sediment	Microplastics and macroplastic	<1 mm to >2 cm	Dekiff et al. (2014)
East Frisian Islands, Germany	Maximum 621 particles per 10 g	–	–	Liebezeit and Dubaish (2012)
Singapore	Maximum 3 particles kg^{-1}	–	–	Ng and Obbard (2006)
North Atlantic Coast	Average density of 0.15–12.5 items m^{-2}	–	–	Barnes and Milner (2005)
Northeast Brazilian Coast	Average density of 82.1 items m^{-2}	–	–	Santos et al. (2009)
Malta Island	>1000 particles m^{-2}	Microplastics	1.9 to 5.6 mm	Tuner and Holmes (2011)

FSO VERIFIED -18

Cole et al., 2011). Macroplastics and microplastics are physical hazards to organisms if ingested (Fendall and Sewell, 2009). The effects include blockage of the intestinal tract, inhibition of gastric enzyme secretion, reduced feeding stimuli, decreased steroid hormone levels, delays in ovulation and failure to reproduce (Azzarello and Vleet, 1987; McCauley and Bjorndal, 1999; Wright et al., 2013). Ingestion seldom leads to immediate mortality in organisms; however, sub-lethal or chronic effects have long-term consequences (Wright et al., 2013). A review by Derraik (2002) suggested that the ingestion of macroplastics and microplastics by organisms might lead to a reduction in food consumption. For example, a negative correlation was found between the fitness of seabirds and the total mass of ingested plastics (Spear et al., 1995). A study conducted by Ryan (1988) investigated and imitated the potential effects of plastic ingestion by seabirds using domestic chicks (*Gallus domesticus*). The chicks, which were fed with polyethylene pellets, had reduced food consumption due to reductions in their stomach storage volume and feeding stimuli. Other studies, however, reported that some organisms might regurgitate the ingested plastic debris, which would reduce the potential adverse effects. For example, Thompson et al. (2004) showed that polychaete worms can excrete egested plastic particles in their faecal casts.

Seabirds may be one of the most vulnerable species to plastic ingestion because seabirds seldom regurgitate undigested hard material, including plastics. The resultant accumulation of plastic in their gastrointestinal tract will eventually lead to gastrointestinal blockage or problems with feeding stimuli and activity levels (Derraik, 2002). The amount of plastic ingested by seabirds varies with their foraging practices, feeding technique and diet (Cole et al., 2011) but has remained at a high level (Fig. 2) (Lozano and Mouat, 2009; van Franeker, 2010; Trevail et al., 2015), indicating that microplastics are a new and increasing problem with regard to plastic ingestion. Plastic fragments have been reported in the guts of seabirds since the 1960s (Ryan et al., 2009). Surface-foraging species, such as gulls, shearwaters and fulmars, are vulnerable to both floating plastic entanglement and ingestion (Ryan, 1987; Moser and Lee, 1992). Table 4 shows that the occurrence of plastic debris in fulmar and shearwater species is over 65%. Zooplanktivorous species, for example, the little auk (*Alle alle*), are also susceptible to plastic ingestion because it may be difficult for them to distinguish between zooplankton, such as amphipods, copepods or euphausiids, and small neustonic plastic debris (Avery-Gomm et al., 2013).

Many studies have found that juvenile birds ingest significantly higher amounts of macroplastic and microplastic debris compared to adult birds (Codina-Garcia et al., 2013; Provencher et al., 2014; Acampora et al., 2014). Intergenerational transfer of plastic debris could explain the higher plastic ingestion by young seabirds (Carey, 2011). A study conducted by Skira (1986) reported that plastic debris is commonly found in the adult short-tailed shearwater at the beginning of its breeding period; however, the quantity of debris declined steadily as the period progressed. Moreover, microplastic ingestion by the non-breeding short-tailed shearwater is higher than that by its breeding equivalent, and the non-breeding bird suffered more from plastic pollution (Carey, 2011). Similarly, van Franeker et al. (2011) reported that the plastic loads of breeding adult northern fulmars increased until July before subsequently decreasing. This decrease in plastic ingestion may be due to the offloading of most of the ingested plastics to the offspring at the breeding grounds (Hutton et al., 2008; Carey, 2011; van Franeker et al., 2011).

In addition, macroplastic and microplastic particles have been detected in the tracts of multiple species of fish from many locations, including the Mediterranean Sea (Romeo et al., 2015), North Pacific Ocean (Boerger et al., 2010; Jantz et al., 2013), South Atlantic Ocean (Possatto et al., 2011; Dantas et al., 2012) and North Sea. Seven common species of fish (1203 individuals) in the North Sea were examined by Foekema et al. (2013), 2.6% of which contained microplastics ranging in size from 0.04 to 4.88 mm. In this study, the physical effects caused by the ingested plastic were insignificant because the amounts ingested were too low and the particle sizes too small to cause intestinal blockage or feelings of satiation. In another study, a high occurrence (36.5%) of synthetic polymers was observed in the gastrointestinal tracts of 504 fish from the English Channel (Lusher et al., 2013), with 92.4% of the ingested plastic debris categorised as microplastics and 68.3% consisting of fibres. However, Hoss and Settle (1990) suggested that digestive system blockage would occur in small organisms if high amounts of plastic

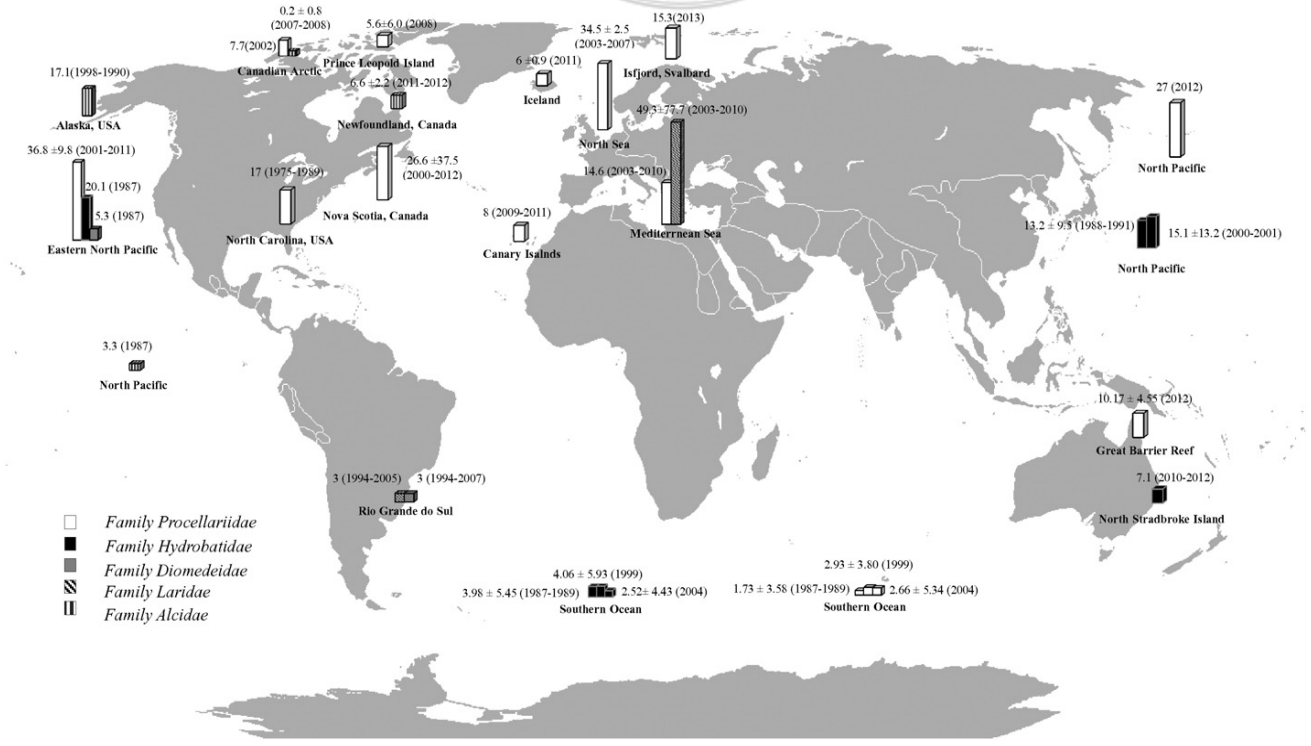

Fig 2. Occurrence (mean pieces) of plastic ingestion found in seabirds.

FSO VERIFIED -18

Table 4
Occurrence of plastic ingestion found in seabirds.

Species	Number studied	Percentage with plastic (%)	Mean number of particles per individual	Studied year	Location	Source
Family Procellariidae						
Fulmarus glacialis	44	86.4%	17	1975–1989	North Carolina, USA	Moser and Lee (1992)
Fulmarus glacialis	15	36	7.7	2002	Davis Strait, Canadian Arctic	Mallory et al. (2006)
Fulmarus glacialis	1295	95	34.5 ± 2.5	2003–2007	North Sea	van Franeker et al. (2011)
Fulmarus glacialis	67	92.5	36.8 ± 9.8	2001–2011	Eastern North Pacific	Avery-Gomm et al. (2012)
Fulmarus glacialis	58	79	6.0 ± 0.9	2011	Westfjords, Iceland	Kuhn and van Franeker (2012)
Fulmarus glacialis	176	93	26.6 ± 37.5	2000–2012	Nova Scotia, Canada	Bond et al. (2014a,b)
Fulmarus glacialis	40	87.5%	15.32	2013	Isfjord, Svalbard	Trevail et al. (2015)
Fulmarus glacialis	25	84	5.6 ± 6.0	2008	Prince Leopold Island	Provencher et al. (2009)
Fulmarus glacialoides	9	79	–	1994–2005	Rio Grande do Sul, Brazil	Colabuono et al. (2009)
Calonectris diomedea	85	83	8	2009–2011	Canary Islands, Spain	Rodríguez et al. (2012)
Calonectris diomedea	49	96	14.6	2003–2010	Catalan coast, Mediterranean	Codina-Garcia et al. (2013)
Puffinus tenuirostris	12	100	27	2012	North Pacific	Tanaka et al. (2013)
Pachyptila vittata	95	–	2.66 ± 5.34	2004	Southern Ocean	Ryan (2008)
Pachyptila vittata	86	–	2.93 ± 3.80	1999	Southern Ocean	Ryan (2008)
Pachyptila vittata	149	–	1.73 ± 3.58	1987–1989	Southern Ocean	Ryan (2008)
Ardenna pacifica	24	21%	10.17 ± 4.55	2012	Great Barrier Reef, Australia	Verlis et al. (2013)
Family Hydrobatidae						
Oceanodroma furcata	7	100	20.1	1987	Offshore, eastern North Pacific	Blight and Burger (1997)
Pelagodroma marina	15	73.3	13.2 ± 9.5	1988–1991	Offshore, North Pacific	Spear et al. (1995)
Pelagodroma marina	86	–	4.06 ± 5.93	1999	Southern Ocean	Ryan (2008)
Pelagodroma marina	5	–	2.52 ± 4.43	2004	Southern Ocean	Ryan (2008)
Pelagodroma marina	253	–	3.98 ± 5.45	1987–1989	Southern Ocean	Ryan (2008)
Puffinus tenuirostris	99	100	15.1 ± 13.2	2000–2001	Offshore, North Pacific	Yamashita et al. (2011)
Puffinus tenuirostris	129	67	7.1	2010–2012	North Stradbroke Island, Australia	Acampora et al. (2014)
Family Diomedeidae						
Thalassarche melanophris	2	100	3	1994–2007	Rio Grande do Sul, Brazil	Tourinho et al. (2010)
Phoebastria nigripes	3	100	5.3	1987	Offshore, eastern North Pacific	Blight and Burger (1997)
Family Laridae						
Rissa tridactyla	4	50	1.2	2003–2010	Catalan coast, Mediterranean	Codina-Garcia et al. (2013)
Larus melanocephalus	4	25	3.7 ± 7.5	2003–2010	Catalan coast, Mediterranean	Codina-Garcia et al. (2013)
Larus audouinii	15	13	49.3 ± 77.7	2003–2010	Catalan coast, Mediterranean	Codina-Garcia et al. (2013)
Larus glaucescens	589	12.2	–	2007–2010	Protection Island, USA	Lindborg et al. (2012)
Family Alcidae						
Aethia psittacula	208	17.1	17.1	1998–1990	Alaska, USA	Robards et al. (1995a,b)
Fratercula cirrhata	9	89	3.3	1987	Offshore, North Pacific	Blight and Burger (1997)
Uria lomvia	3	100	6.6 ± 2.2	2011–2012	Newfoundland, Canada	Bond et al. (2013)
Uria lomvia	186	11%	0.2 ± 0.8	2007–2008	Nunavut, Canada	Provencher et al. (2010)
Alle alle	65	14	1.11	2013	White Bay, Newfoundland	Fife et al. (2015)

debris accumulated in the intestine, similar to the effects caused by large plastic particles in larger organisms. Predation activities are regarded as the most common means of plastic ingestion by fish. For example, tuna find their prey in or chase their prey to shallow waters with abundant buoyant plastic debris (Romeo et al., 2015), thereby ingesting unwanted plastic particles during feeding. In addition, a carnivorous diet leads to secondary ingestion of plastic contained in the prey. Battaglia et al. (2013) suggested that microplastic ingestion by mesopelagic fish resulted in plastic accumulation within *Thunnus thynnus* in the Pacific Ocean.

The problem of plastic ingestion is not restricted to seabirds and fish: sea turtles are also vulnerable to marine plastic debris (Table 5). A recent review by Schuyler et al. (2014) estimated that plastic ingestion by green turtles increased by nearly 20% from 1985 to 2012. It is assumed that most of this debris was ingested during predation activities (Schuyler et al., 2014). Several studies reported that the ingested plastic particles were white or transparent (Bugoni et al., 2001; Da Silva Mendes et al., 2015); it is thus possible that the turtles mistake the white plastic for jellyfish (Da Silva Mendes et al., 2015). In addition to sea turtles, it was reported that at least 48 cetacean species, such as whales and dolphins, suffered from plastic ingestion between 2000 and 2010, which is 11 times higher than between 1960 and 1970. Many regulations now restrict whale or dolphin hunting to protect endangered species, and plastic debris is a new and significant hazard. The death of a West Indian manatee (*Trichechus manatus*), an endangered species, in Florida may have been due to digestive tract blockage by a huge piece of plastic (Laist, 1987). A more recent study produced similar findings regarding the death of sperm whales in the Mediterranean Sea: the death of the whales could be attributed to either starvation or gastric rupture caused by plastic debris (de Stephanis et al., 2013).

4.2. Plastic entanglement

The physical hazards posed by macroplastic debris to marine organisms, such as ingestion and entanglement, have been reported since the late 1980s (Laist, 1987). Despite this, the importance of marine plastic

FSO VERIFIED -18

Table 5
Occurrence of plastic ingestion found in sea turtle, fish and other organisms.

Species	Locations	No of sample	Occurrence	Ingested material	Plastic sizes	Plastic type	Reference
Turtle							
Green turtle (*Chelonia mydas*)	Brazilian coast	265	70%	–	–	–	Santos et al. (2015)
	South west Altantic	62	90%	–	0.5–3.0 cm	Macroplastics and microplastics	Carman et al. (2014)
	Ubatuba, Brazilian coast	20	45%	Soft plastic (54.3%), hard plastic (19%), nylon (21.4%), rubber (4.2%) and foam (1.1%)	(76%) 0–5 cm, (23%) 5–10 cm, (1%) >10 cm	Macroplastics and microplastics	Da Silva Mendes et al. (2015)
	Paranagua Estuary, Brazil	76	70%	Plastic bags (44.7%), hard plastic (38.5%), nylon (7.73%), polystyrene (5.1%) and rubber (1.1%)	–	–	Guebert-Bartholo et al. (2011)
	USA	10	70%	–	–	–	Parker et al. (2011)
Loggerhead sea turtles (*Caretta caretta*)	Adriatic Sea	54	35.2%	–	–	–	Lazar and Gracan (2011)
	Mediterranean	19	37%	–	–	–	Revelles et al. (2007)
	northern Pacific	52	35%	–	–	–	Parker et al. (2005)
	Tuscany coasts, Mediterranean Sea	31	71%	User plastics (70.4%), fragments (20.3%), and threadlike (4.3%)	–	–	Campani et al. (2013)
Chelonia mydas and *Caretta caretta*	Australia	54	65%	–	–	–	Boyle and Limpus (2008)
Fish							
Herring, gray gurnard, whiting, horse mackerel, haddock, atlantic mackerel, and cod	North Sea	566	2.6%		0.04 mm to 4.8 mm	Microplastics	Foekema et al. (2013)
Whiting, blue whiting, Atlantic horse mackerel, poor cod, John Dory, red gurnard, dragonet, redband fish, solenette and thickback sole	English Channel	504	36.5%	Semi synthetic cellulosic material rayon (58%), and polyamide (35%)	0.13 mm to 14.3 mm	Macroplastics and microplastics	Lusher et al. (2013)
Anchovy (*Stolephorus commersonnii*)	Alappuzha, India	16	37.5%		1.14 mm to 2.5 mm	Microplastics	Kripa et al. (2014)
Cololabis saira, *Hygophum reinhardtii*, *Loweina interrupta*, *Myctophum aurolaternatum*, *Symbolophorus californiensis*	North Pacific	670	35%	Fragments (94%), film (3%), fishing line (2%), and finally rope (woven filaments), Styrofoam and rubber (all <1%)	1 mm to 2.79 mm	Microplastics	Boerger et al. (2010)
Lampris sp. (*big eye*)	North Pacific	115	29%		49.1 mm (±71.1)	Macroplastics and microplastics	Choy and Drazen (2013)
Marine invertebrates							
Zooplankton	Western English Channel	15	87%	–	7.3 to 30.6 μm	Microplastic	Cole et al. (2013)
	Portuguese coastal waters	152	61%	Low density polyehtylene (98.1%)	–	Microplastic	Frias et al. (2014)
Neocalanus cristatus	Northeast Pacific Ocean	960	2.6%	–	555.5 ± 148.7 μm	Microplastic	Desforges et al. (2015)
Euphausia pacifica	Northeast Pacific Ocean	413	5.8%	–	816.1 ± 107.7 μm	Microplastic	Desforges et al. (2015)
Norway lobster (*Nephrops norvegicus*)	Clyde, U.K.	120	83	–	–	–	Murray and Cowie (2011)
Brown shrimp (*Crangon crangon*)	Belgium	110	–	fibres (95%), films (5%)	300 to1000 μm	Microplastic	Devriese et al. (2014)
Blue mussel (*Mytilus edulis*)	Belgium, The Netherlands	45	–	Fibres	300 to 1000 μm	Microplastic	De Witte et al. (2014)
Mytilus edulis	North Sea, Germany	36	–	–	5 to 25 μm	Microplastic	Van Cauwenberghe and Janssen (2014)
Gooseneck barnacles (*Lepas* spp.)	North Pacific Subtropical Gyre	385	33.5%	Fragments (99%), monofilament line (1%)	0.609 mm to 6.770 mm	Microplastic and macroplastic	Goldstein and Goodwin (2013)
Cetacean							
Franciscana dolphins (*Pontoporia blainvillei*)	Northern coast of Argentina	106	28.1%	Packaging debris (64.3%), fishery-related fragments (35.7%)	0.2 to 11.4 cm	Macroplastic	Denuncio et al. (2011)

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FSO VERIFIED -18

Table 5 (*continued*)

Species	Locations	No of sample	Occurrence	Ingested material	Plastic sizes	Plastic type	Reference
True's beaked whales (*Mesoplodon mirus*)	North and west coast of Ireland	20	85%	–	0.3 mm–7.1 cm	Microplastic and macroplastic	Lusher et al. (2015)

debris has been largely neglected for three main reasons: 1) entanglement encounters are straightforward and require little investigation, 2) entanglement encounters between debris and organisms are rare, and 3) there is a distinct lack of reports to prove this overall rarity. However, in recent years, there have been many more studies focusing on entanglement encounters between debris, especially plastic debris, and marine organisms.

A recent review by Gall and Thompson (2015) summarised 340 publications related to the incidence of marine organisms ingesting or becoming entangled by marine debris. Plastics accounted for 92% of all ingestion and entanglement cases. It was also found that the occurrence of plastic entanglement (55%) was much higher than that of plastic ingestion (31%). Furthermore, the incidences of entanglement were more serious or more frequently reported than those of ingestion, as it causes direct and visible harm to animals.

Marine animals such as sea turtles, mammals, seabirds and crustaceans are vulnerable to entanglement encounters, which can lead to mortality (Gilman et al., 2009; Macfayden et al., 2009; Gilardi et al., 2010). The effects of entanglement can be summarised as drowning, suffocation, laceration, reduced fitness, a reduced ability to prey or an increased probability of being caught (Laist, 1987; Derraik, 2002; Gall and Thompson, 2015). Table 6 lists the incidence of entanglement encounters for different organisms, including sea lions, seals and seabirds. It is clear that the majority of entanglement materials are plastic, for example, packing loops and fishing materials such as fishing nets and ropes. Fishing materials, which are the most common encounter material reported, mostly originate from fishing activities or cargo ships (Kiessling, 2003; Macfayden et al., 2009; Gilardi et al., 2010). According to Macfayden et al. (2009), >6.4 t of fishing gear are abandoned or lost in the sea each year. Once unusable nets are lost, they continue to indiscriminately entangle marine organisms because most nets are made from synthetic materials, which are cheaper, more durable and more lightweight (Gilardi et al., 2010).

The entanglement incidence for a species depends on its behaviour (Derraik, 2002). Firstly, the sea turtle is regarded as the most susceptible species to 'ghost netting' because they frequently use floating objects either for shelter to avoid predation or as foraging stations (White, 2006). It was found that a larger mesh size poses greater problems because it increases the extent of animal ensnarement, especially for sea turtles (Murray, 2009; Lopez-Barrera et al., 2012; Wilcox et al., 2015). Plastic entanglement encounters have also been widely reported for seals and sea lions, which are the most vulnerable species to entanglement (Lawson et al., 2015). Materials such as packing loops may attract the interest of sea lions and seals, especially juveniles (Arnould and Croxall, 1995; Hanni and Pyle, 2000; Page et al., 2004; Boren et al., 2006); young animals may be particularly vulnerable to entanglement due to their curiosity and playfulness (Page et al., 2004). Moreover, young sea lions and seals are smaller in size and therefore become entangled in the plastic material more easily because it is easier for their necks or legs to pass through the material (Lawson et al., 2015).

Table 6
Occurrence of plastic entanglement by organisms.

Species	Location	Study period	Entangled material	Entanglement rate	Reference
Seals and sea lions					
Antarctic fur seals	Bird Island, South Georgia	1989–2013	Packaging bands (43%), synthetic line (25%) or fishing net (17%)	–	Waluda and Staniland (2013)
Antarctic Fur Seals	Subantarctic island, Bouvetøya	1996–2002	Fishing net (48.1%), polypropylene packaging strap (17.9%), rope or string (14.2%)	0.024–0.059%	Hofmeyr et al. (2006)
	Marion Island	1991–1996	Polypropylene packaging strap (39.5%), synthetic string (10 mm diameter) (10.5%), synthetic rope (>10 mm diameter) (13.2%), and fishing net (21.1%).	0.15%	Hofmeyr and Bester (2002)
	South Georgia	1988–1994	Polypropylene packing band (42%), synthetic string (21%), fishing net fragment (14%)	0.4%	Arnould and Croxall (1995)
New Zealand fur seals	Kaikoura region	1995–2005	Green trawl net (42%), and plastic strapping tape (31%)	0.6–2.8%	Boren et al. (2006)
	Cape Gantheaume, Kangaroo Island	1989–1991 and 2000–2002	Packing tape (30%), trawl netting (28%), lobster float rope (13%)	0.73%	Page et al. (2004)
Hawaiian Monk Seal	Northwestern Hawaiian Islands	1982–1998	Net, line, net and line combination, strap, ring	0.70%	Henderson (2001)
Australian fur seals	Southern Australia	1997–2012	Plastic twine or rope (50%), other plastics (20%), monofilament line (17%)	–	Lawson et al. (2015)
Steller sea lions	Southeast Alaska and northern British Columbia	2000–2007	Packing bands 54%, rubber bands (30%), net (7%), rope (7%)	0.26%	Raum-Suryana et al. (2009)
Australian sea lions	Seal Bay, Kangaroo Island	1988–2002	Monofilament netting (55%), packing tape (11%), trawl netting (11%), other rope (14%)	0.83%	Page et al. (2004)
Seabirds					
Northern gannets	Spanish Iberia and Mauritania	2007–2010	Fishing ropes (73.5%), nets (11.8%), nylon fishing lines (14.7%)	0.93%	Rodríguez et al. (2013)
American crow	Davis, California	2012–2013	Synthetic twine, string and rope (77%), plastic strips (10%)	5.6%	Townsend and Barker (2014)
Others					
Seals, sea lions, gull, fulmar and turtle	United States	2001–2005	Fishing related (91.7%) such as fishing line, fishing hook, fishing string	–	Moore et al. (2009)

FSO VERIFIED -18

Approaching the materials, their heads may become caught in the holes; the neck is therefore the most common part of the sea lion or seal to become entangled. Once they have been entangled, it is difficult for them to remove the material because their long guard hair prevents the material from slipping off easily (Raum-Suryana et al., 2009).

Birds are another group that is particularly vulnerable to entanglement. In a study conducted by Votier et al. (2011), an average of 66 birds become entangled around the legs or feet by plastic material, such as netting, each year in Grassholm, Wales, UK. A study conducted by Moore et al. (2009) investigated 31 bird species and nine marine mammal species and found that the common murre, western gull and California sea lion are the most commonly entangled species. Fishing materials are most frequently responsible for entanglement. The plunge diving fishing method of seabirds such as northern gannets (*Morus bassanus*) leads to a high rate of entanglement encounters, partly because the birds mistake floating plastic debris for fish or other food items (Rountree, 1989). This mode of feeding may be the primary reason for the entanglement encounters of seabirds. Apart from seabirds, terrestrial birds also suffer from plastic entanglement, although there are few studies of the effects of plastic debris on terrestrial animals. A recent report investigated the effect of plastic debris on the American crow (*Corvus brachyrhynchos*) in North America and found that 85.2% of the crow nests studied contained anthropogenic material, including synthetic string, twine, rope, plastic tape and plastic strips; in addition, 11 of 195 (5.6%) investigated nestlings were entangled (Townsend and Barker, 2014).

Plastic entanglement leads to the addition of materials to the bodies of organisms, which raises the energetic cost of movement and therefore increases food consumption requirements. It was discovered that the addition of over 200 g of material in northern fur seals (*Callorhinus ursinus*) produced a four-fold increase in food consumption to simply maintain daily activity levels (Derraik, 2002). The entangled seals also spent more time foraging at sea. In addition, if plastic becomes entangled around the necks of organisms, it constrains their necks and may cause injury or even death by strangling as they grow up (Raum-Suryana et al., 2009). The wounds created by entanglement materials such as fishing nets or packing bands often lead to infection or necrosis. If the lymph system lacks the ability to control these infections, the lungs might become infected, eventually leading to mortality (Angliss and DeMaster, 1998). In addition, secondary infections can occur from microbes entering the bloodstream through the wound.

Table 6 shows that the entanglement rate of seals and sea lions is below 1% on average. However, even a low entanglement rate may have important consequences for the population as a whole. Fowler (1987) reported that although the entanglement rate of northern fur seals is 0.4% and decreasing, this low entanglement rate has had adverse effects on the entire population. Similar studies of the effects of entanglement on the population of northern fur seals in the Pribilof Islands found that the percentage of entangled seals increased by 38% from 1969 to 1973. These rates of entanglement may be the cause of the population decrease at a rate of 4–6% each year, which corresponds to an estimated 40,000 fur seals killed by entanglement (Weisskopf, 1988). Furthermore, the entanglement rates may sometimes be underestimated (Page et al., 2004; Raum-Suryana et al., 2009). Firstly, it is difficult to observe all the entangled individuals within a population. The entangled animals may die at sea or on inaccessible land areas. As mentioned previously, the entanglement materials add weight to the affected animals, resulting in increased time spent at sea and reduced survival rates (Raum-Suryana et al., 2009). Secondly, it is difficult to monitor all the entangled animals that have been identified. For example, for Steller sea lions (*Eumetopias jubatus*), there are over 40 major haul-out sites and eight settlements during the breeding season and over 50 sites during the non-breeding season (Raum-Suryan et al., 2004; Pitcher et al., 2005).

4.3. Chemical effects on organisms

As mentioned previously, plastic ingestion by different organisms has been widely reported. Apart from the physical impacts discussed in earlier sections, the ingestion of plastic debris can also have chemical effects. Multiple studies have reported that marine plastic debris can be a vector for the absorption or transport of waterborne chemical pollutants from invertebrates to higher trophic levels (Gregory, 1996; Teuten et al., 2007), including polychlorinated biphenyls (PCBs) (Zarfl and Matthies, 2010), polycyclic aromatic hydrocarbons (PAHs) (Teuten et al., 2009) and organochlorine pesticides such as DDT (Ivar do Sul and Costa, 2014). These pollutants are regarded as persistent organic pollutants (POPs), which are toxic, persistent in the environment, bioaccumulative, and hydrophobic and have long-range transport potential (Zarfl and Matthies, 2010). Plastics, especially microplastics, are particularly effective at carrying airborne pollutants such as POPs because plastics are composed of highly hydrophobic materials (Ivar do Sul and Costa, 2014). For example, it was found that the concentration of PCBs held by microplastics is one million-fold higher than in the surrounding water (Betts, 2008). In addition, a deployment experiment showed that unpolluted polypropylene pellets readily accumulated or absorbed hydrophobic contaminants such as PCBs, *p*-chlorophenyl and dichlorodiphenyldichloroethylene (DDE) over a period of 7 days (Mato et al., 2001). Plastic debris contaminated with POPs has been found worldwide. PCBs and DDE have been detected on plastic resin pellets gathered along the Japanese coast (Ogata et al., 2009). In Europe, PCBs (0.02–15.56 ng g^{-1}) and DDT (0.16–4.5 ng g^{-1}) have been detected on plastic pellets from the Portuguese coast (Frias et al., 2010). Marine organisms are especially susceptible to polluted plastic via ingestion due to its ubiquity, larger surface-area-to-volume ratio and small size (Barnes et al., 2009).

The toxicity displayed by these POPs is correlated with the amount of plastic ingested because the polluted plastic debris can be a major source of these toxins (Mato et al., 2001). A positive relationship was found between the amount of ingested plastic and the concentration of PCBs in the fat tissues of great shearwaters (Ryan, 1988). A similar study by Yamashita et al. (2011) also reported that the concentration of PCBs in North Pacific pelagic seabirds is positively correlated with the amount of ingested plastic debris. After organisms ingest plastic particles, the presence of digestive surfactants enhance the bioavailability of contaminants from the plastics and significantly increase the desorption rate of the contaminants absorbed on the plastics (Voparil and Mayer, 2000; Teuten et al., 2007). A recent study conducted by Bakir et al. (2014) investigated the POP desorption rate from plastic pellets in gut conditions and in seawater and found that the desorption rate in the presence of gut surfactants (38 °C, pH 4) was higher than in seawater (38 °C, pH 7.5–8.4). The authors suggested that temperature and pH could play important roles in the desorption of POPs from plastic pellets and thus increase the bioavailability of these compounds to marine animals (Bakir et al., 2014). A high concentration of POPs such as PCBs may cause endocrine disruption, teratogenicity and toxicity of the liver and kidney (Muirhead et al., 2006; Yogui and Sericano, 2009). For example, arctic fish suffer from endocrine disruption following exposure to polychlorinated dibenzo-*p*-dioxins (PCDDs) and PCBs. These chemical toxins have also been found in seabirds, the predator at the top of the food chain. In Svalbard, exposure to POPs led to alterations in steroid hormones, thyroid hormones and prolactin in the glaucous gull (Verreault et al., 2006; Verboven et al., 2008).

Apart from POPs, plastic additives, such as brominated flame retardants, phthalates and the constituent monomer bisphenol A, may have serious consequences in the natural environment because low concentrations in the ng/L or μg/L range could have harmful effects on molluscs, crustaceans, fish and amphibians (Oehlmann et al., 2009). Plastic additives are used to reduce the chemical affinity between molecules or as monomers in polycarbonate plastic. They are unstable in the plastic and therefore leach out into the environment (Staples et al.,

1997). Recently, studies have reported that plastic additives are found in the bodies of organisms and are released from the plastic once ingested (Engler, 2012; Lithner et al., 2011). Similar to POPs, the desorption rate of plastic additives, such as diethylhexyl phthalate (DEHP), in the gut is higher than the rate in seawater. According to research by Bakir et al. (2014), the DEHP desorption rate from PE is 14-fold higher in the gut than in seawater. Once the toxins have desorbed from the plastic debris, they tend to bioaccumulate in an organism, causing adverse effects. For example, polybrominated diphenyl ethers (PBDEs), including BDE-183 and BDE-209, released from ingested plastics were detected in the tissues of short-tailed shearwaters, which might cause endocrine disruption (Tanaka et al., 2013).

A high concentration of additives may result in the disruption of biological processes, for example, endocrine disruption due to molecular imitation or competition with the synthesis of endogenous hormones (Barnes et al., 2009; Lithner et al., 2009; Talsness et al., 2009). In particular, phthalates exert effects at the molecular, cellular and organ levels in marine organisms such as fish or invertebrates (Oehlmann et al., 2009). In addition, exposure to phthalates may lead to behaviour alternations in fish (Oehlmann et al., 2009). For example, the presence of 100 μg L^{-1} benzyl butyl phthalate (BBP) in water stimulated alterations in the shoaling and feeding behaviour of the three-spined stickleback (*Gasterosteus aculeate*). Other researchers have also reported that 5 mg L^{-1} diethyl phthalate (DEP) caused changes in the general behaviour of the common carp (Barse et al., 2007). Fossi et al. (2012) were the first to report the effects of DEHP and mono-(2-ethylhexyl) phthalate (MEHP) on the baleen whale, the second-largest filter feeder. The authors found that high concentrations of DEHP or MEHP may lead to endocrine disruption. Bisphenol A can have adverse effects on reproduction and metabolism, the nature of which depends on the concentration of the compound and the species of the organism (Oehlmann et al., 2009). For example, 1.75–2.40 μg L^{-1} BPA caused ovulation delays and reductions in sperm quality in brown trout (Lahnsteiner et al., 2005). However, there is little research on the effects of exposure to POPs and plastic additives on marine seabirds or mammals such as whales, dolphins, seals and sea lions. In addition, the long-term effects of exposure to these hydrophobic contaminants remain unclear (Oehlmann et al., 2009). A study by Koelmans et al. (2015) found that, although chemicals can accumulate in the plastic, the role of plastics in chemical bioaccumulation is relatively low compared to that of naturally occurring particles.

5. Fate of plastic debris in the environment

As mentioned previously, most currently used plastic polymers are highly corrosion resistant and can persist in the environment for a long time (Tamara, 2015). The occurrence of plastic debris in beach sediment and water bodies is summarised in Tables 2 and 3. The fate of plastic debris in the environment primarily depends on the degree of natural attenuation.

Firstly, the biodegradation rate of plastic debris in the natural environment depends on the properties of the debris (Guo et al., 2012). Generally, the rate of biodegradation of most plastic debris is insignificant in natural water bodies such as rivers or oceans. In principle, plastics with high molecular weight, for example, PE and PS, are regarded as biodegradation resistant; these plastics gradually fragment but will remain in the environment as smaller pieces of the same polymer. Only a few microbial strains can biodegrade non-oxidized PE (Shah et al., 2008). The polymer chains eventually reach a sufficiently low molecular weight that can be easily decomposed by microorganisms (Zheng et al., 2005). Additionally, some plastics made of biodegradable materials are vulnerable to degradation via the activities of bacteria and fungi (Gregory and Andrady, 2003). However, the actual degradation time remains unknown (Andrady, 2005). In addition, a recent study of specific biodegradable plastic bags found decomposition rates of only 4.5% after 49 days and approximately 50% after 389 days (Müller et al., 2012).

In addition to biodegradation, photodegradation is another important component of natural attenuation. This process of chemical transformation may occur directly or indirectly via a light-induced mechanism (Yousif and Haddad, 2013). Ultraviolet light from the sun provides the energetic input to begin the incorporation of oxygen atoms into the plastic (Andrady, 2011), allowing the fragmentation of the plastic into small pieces. Photodegradation is regarded as an effective mechanism for LDPE and PP degradation upon exposure to air, for example, when lying on a beach surface (Andrady, 2011). However, in seawater, the rate of photodegradation becomes insignificant because of lower temperatures and lower oxygen concentrations (Andrady, 2011). The overall degradation process is very slow: complete degradation may take over 50 years (Müller et al., 2001). However, a study found that when plastic reaches a certain depth within the sea, the high pressure facilitates the degradation of plastics (Maurizio et al., 2012). In addition, Ho et al. (1999) reported that the degradation rate of plastic debris increased with elevated temperature and humidity because these conditions increased the rates of chemical reactions. Therefore, seawater conditions may hinder plastic degradation. On sediment, biodegradation is relatively significant due to a higher exposure to UV radiation and mechanical erosion than in water (Gregory and Andrady, 2003). However, the degradation rate of plastic in sediment is still almost negligible because the chemically and mechanically labile minerals, such as feldspars and clays, are easily washed out to the ocean (Corcoran et al., 2009). Overall, natural attenuation plays only a minor role in plastic degradation. The majority of plastics are resistant to degradation and only break down into smaller pieces (microplastics), which therefore persist in the natural environment. Ironically, plastic debris in the natural environment poses an ingestion or entanglement hazard to organisms.

6. Recommendations

To commence, governments should play an important role in controlling plastic contamination in ecosystems. Microplastics have become a serious problem because they are ubiquitous in the natural environment, including in surface waters, the benthos and beach sediments (Barnes et al., 2009; Ryan et al., 2009). Microplastics have been detected not only in close proximity to areas of industrial activity but also in remote areas (Lebreton et al., 2012). Developing countries such as China, Indonesia, the Philippines, Sri Lanka and Vietnam are reportedly the major source of plastic pollution in the oceans, accounting for >50% of the plastic in the marine environment (Tibbetts, 2015). Microplastics are difficult or impossible to clean up due to their ubiquity in global waters. However, there remains a lack of legislation to control microplastic contamination (Arthur et al., 2009). Therefore, it is recommended that governments cooperate globally or nationally to regulate the major sources of microplastics, namely, industrial and domestic products (Betts, 2008; Moore, 2008). In addition to greater legislation, more resources should be allocated to research the long-term effects of plastic debris, especially microplastics, on organisms. Because microplastic pollution is still a relatively new and increasing concern, the potential impacts on ecosystems remain uncertain. According to Oehlmann et al. (2009), the long-term effects of plastic additives or POPs on different organisms are poorly understood. This gap in understanding has contributed to the lack of regulation regarding the use of toxic additives such as bisphenol A.

In addition to legislation, it is essential to increase investments in the development of plastic collection technologies. Several advanced technologies have been developed for the collection of plastics from water bodies and soil. In the past, manta trawlers, a hybrid between a fish trawler and a plankton tow, were used for plastic collection (Ryan et al., 2009). The manta trawler was usually placed behind the ship and used to skim surface waters to collect buoyant plastic debris. However, due to the high level of plastic pollution, these technologies were insufficient for the removal of oceanic plastic. Recently, an innovative

FSO VERIFIED -18

technology named the "plastic-eating drone" has been proposed as a method for cleaning up oceanic plastic debris. This technology relies on an autonomous device that can tow a trapping net, which could remove plastic debris from ocean waters (Boyle, 2012). Sonic transmitters could be used to deter marine organisms from getting caught in the net. It has been suggested that this technology could be used both in ocean and freshwater systems (Sigler, 2014). Another innovative technology, "The Ocean Cleanup Array", may be a solution for extracting the plastics accumulating in the ocean gyres by harnessing ocean currents (The Ocean Clean-Up, 2014). Solid floating booms are attached to platforms that are anchored to the ocean floor. The array is designed to allow marine organisms to float beneath the booms and to collect floating plastic along the booms at the level of the surface water (The Ocean Clean-up, 2014). An estimated 7.25 million t of plastic debris could be collected and removed from the ocean (Singh, 2013; The Ocean Clean-up, 2014).

In addition, a new technique using ellipsoid bodies has been developed to detect pixels of coloured plastic debris on beaches using photographs taken by a webcam. The technique involves generating colour references, using a uniform colour space (CIELUV), to detect plastic pixels and to remove misdetected pixels by applying a composite image method (Kataoka et al., 2012). This technique demonstrated superior performance in terms of detecting plastic pixels of various colours compared to the previous method, which instead used the lightness values in the CIELUV colour space (Kataoka et al., 2012). Webcam monitoring of plastic debris on beaches is effective because it is possible to take remote measurements of the level of plastic. In addition to monitoring debris levels, the webcam is also a potential tool for the systematic planning of beach cleanup initiatives (Kataoka et al., 2012).

Furthermore, improving public awareness of the problems produced by microplastics is an important step towards changing people's behaviour with regard to plastic consumption. It has been suggested that the aim of raising public awareness of plastic pollution should be placed on the international political agenda, primarily because the issue of plastic marine litter is not familiar to the general public. Although the dumping of plastic garbage is forbidden by the International Convention for the Prevention of Pollution from Ships (MARPOL) Annex V, many people are unaware of the prohibition regarding the disposal of plastics into the sea. In response to this, awareness should be raised by introducing different campaigns to those stakeholders that play an important role in plastic littering, including plastics industries, marine businesses and consumers. Large multinational organisations, such as the United Nations Environment Programme (UNEP) and the International Maritime Organisation (IMO), should organise campaigns on a global scale.

Finally, plastics industries should be responsible for the end-of-life of their products under requirements similar to those of electronic equipment producers. It has been suggested that materials with a high biodegradation rate, such as starch or pullulan, should be used instead of non-degradable or standard material. Biodegradable material will be more readily degraded by bacteria and fungi, reducing the lifetime of these plastics in the natural environment (Gregory and Andrady, 2003). In addition, industries should consider recycling or upgrading their plastic waste. Recently, the tertiary recycling of plastic has become better known; the process of converting the plastic material into smaller molecules can produce feedstock for the production of new petrochemicals and plastics (Mastellone, 1999). For example, PE can be recycled into a potential feedstock for gasoline production (AL-Salem, 2009).

7. Conclusion

In summary, plastic debris is commonly found in water bodies and beach sediment and originates from two major sources, land-based and ocean-based, with domestic, industrial and fishing activities being the most important contributors. Once the plastic debris has entered the environment, it is difficult to biodegrade and only fragments into smaller pieces; it thus persists in the environment due to its long lifespan and resistance to corrosion. The presence of plastic debris in the environment has adverse effects on a wide range of organisms, predominantly via plastic entanglement or ingestion. Some marine organisms such as fish, seabirds or sea lions accumulate ingested plastic, which is often associated with hydrophobic contaminants, in their bodies; these organisms may also become entangled in the plastic, which can be harmful or fatal. Finally, it is suggested that governments play an active role in addressing the issue of plastic waste by introducing legislation to control the sources of plastic debris and the use of plastic additives. In addition, plastics industries should take responsibility for the end-of-life of their products by introducing plastic recycling or upgrading programmes.

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EFFECT OF CALCIUM CARBIDE ON BIOCHEMICAL PROPERTIES OF ROSY BARB, *PETHIA CONCHONIUS* (HAMILTON, 1822)

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ABSTRACT : The effect of sublethal toxicity of an agro-chemical calcium carbide on carcass composition of freshwater fish rosy barb (*Pethia conchonius*) was estimated. During sublethal exposure for a period of 28 days two concentrations were selected *i.e.*, 1/10th (5.75 mgl^{-1}) and 1/5th (11.51 mgl^{-1}) of LC_{50}(57.5 mgl^{-1}). Elements like, crude protein, crude fat, carbohydrate and ash were estimated throughout the exposure period at the interval of seven days. Crude protein significantly decreased (P<0.05) from 58.58±0.02 to 54.08±0.01 on 28th day, crude fat decreased from 9.55±0.01 to 8.11±0.01 on 28th day of the study whereas, carbohydrate significantly increased from 9.89±0.01 to 11.86±0.01 on 28th day and ash content also significantly increased from 10.86±0.01 to 13.01±0.01 on 28th day. All the estimated parameters showed of carcass of rosy barb significant alteration due to exposure to calcium carbide.

Key words : Carcass composition, biochemical properties, calcium carbide, rosy barb, toxicity.

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INTRODUCTION

The use of acute toxicity tests for assessing the potential hazard of agrochemical contaminants to aquatic organisms is well documented (Hatakeyama *et al*, 1994; Liess and Ohe, 2005). For many years, ethylene is being used as a fruit ripening agent. However, now a days, calcium carbide is getting more popular in this regard as it has a faster fruit or vegetables ripening property. However, inappropriate use of carbide to ripen fruits is associated with many health hazards. A very strong reactive chemical, calcium carbide has carcinogenic properties and acetylene generated from carbide was flammable and explosive even in a low concentration as compared to ethylene (Geesner, 1977).

Calcium carbide apart from ripening of fruits and vegetables, it is being used in aquaculture ponds for eradicating the unwanted crabs and other burrowing animals (Singh, 2001). Dumping of spent calcium carbide waste results to death of aquatic organisms (Elliot, 2000). Untreated calcium carbide waste alters the pH of the soil, is toxigenic and can affect ecosystem processes. Treatment of calcium carbide waste by oxidation (aeration) will reduce its effects on soil health and it come to aquatic environment through runoff, which can affect the aquatic environment and organisms (Fattah, 2005).

Cyprinids are commonly bred as aquarium fish, but also as model fish for scientific research. These include the zebra fish (*Danio rerio*), rosy barb (*Puntius conchonius*), Indian medaka (*Oryzias melastigma*), Gambusia (*Gambusia affinis*), Guppy (*Poecilia reticulata*) etc. (Laan *et al*, 2002; Segner, 2009; CEK and Gokce, 2005). The rosy barb is found in natural conditions in the tropical waters of south-east Asia, including: Afghanistan, Pakistan, Nepal, India and Bangladesh. The popularity of domestic aquarium fish, including the rosy barb, is caused both by its attractive colouring and ease of breeding (CEK *et al*, 2001; CEK and Gokce, 2005; Kupren *et al*, 2008; Prusiñska *et al*, 2008). In addition rosy barb proved to have a high sensitivity to agrochemicals and therefore selected as a potential model fish for present study.

MATERIALS AND METHODS

Chemical and test solution

The calcium carbidewas obtained for assessing its toxicity study on *Pethia conchonius*from local market. Stock solution was prepared having strength of 1000 ppm by adding known quantity of calcium carbide in 1000 ml distilled water. Calculated amount of stock solution was added to water and mixed thoroughly to arrive at a required level of working concentrations.

Test organisms

Adult rosy barb, *Pethia conchonius* (average body

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weight 2.55 ± 0.03g) obtained from a local fish dealer were maintained in dechlorinated water at 25±1ºC. The fishes were fed twice in a day with commercial feed and acclimatized for two weeks before exposure to the test pesticide.

Experimental 1

Lethal toxicity (LC_{50}) study

Lethal toxicity (LC_{50}) study was carried out by following the standard guidelines of EPA/ROC (1998). To determine the LC_{50} of calcium carbide in rosy barb for 96 h by probit analysis method (Finney, 1971). A total of 20 rosy barbs per group were exposed to the concentrations of calcium carbide in 40 litre glass tanks having dechlorinated water for 96 h. Calcium carbide was always freshly dissolved in appropriate volume of water as a stock solution, and added immediately into the test solutions. After every 24 h, the dead animals were removed and the surviving ones were recorded.

Experimental 2

Sublethal experiment

During sublethal exposures for a period of 28 days, two concentrations were selected *i.e.* 1/10th and 1/5th of LC_{50}, such as 5.75 and11.51 mgl^{-1}. At the end of every seven days ofexposure periods *i.e.* 7th, 14th, 21st and 28th days, ten fingerlings were sacrificed for carcass biochemical analysis, such as moisture content, crude protein, crude fat, total ash content and carbohydrate content.

Chemical analysis

The protein content in the sample was estimated by the method of Lowry *et al* (1951), the crude fat was determined by using the method described by Sadasivam and Manickam (1997). The AOAC (1995) method was adopted for determination of carbohydrate, moisture and ash contents.

Statistical analysis

The LC_{50} value was estimated by probit analysis method (Finney, 1971). In the sublethal testing, significance of differences was tested using one way ANOVA (Analysis of variance). Duncan multiple range test was used to check the significant differences ($P< 0.05$) among the control and treatments.

RESULTS

Experiment 1: Lethal toxicity (LC_{50}) experiment

Initially, a range finding test was conducted to ascertain the range of calcium carbide agrochemical to be selected in the definitive test. During the trial, the test animals were exposed to a broad range of concentration on logarithmic scales (0, 0.001, 0.01, 0.1, 1.0, 10.0, and 100 mgl^{-1}). In narrow-range finding test of calcium carbide on rosy barb, the mortality percentage between 10% to 100% was considered. The results of 96 h median lethal concentration value for rosy barb was calculated and presented in Fig. 1. The LC_{50} value of calcium carbide for rosy barb was found to be 57.542 mgl $^{-1}$(probit log value 1.76 in Fig. 1) at 96 h.

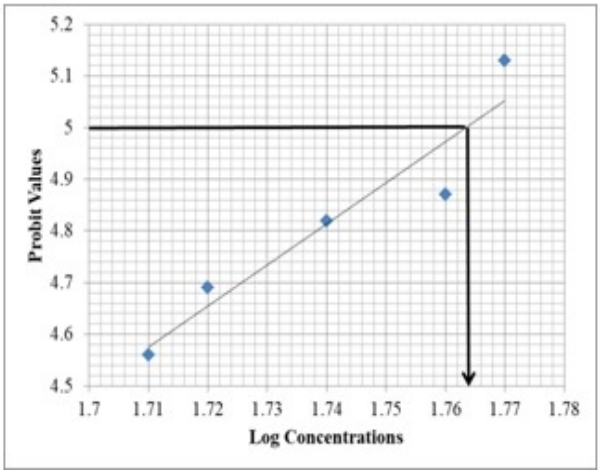

Fig. 1 : Graphical representation of 96h LC_{50} of calcium carbide concentration in rosy barb.

Experiment 2: Sublethal experiment

In sublethal experiment, two concentrations such as 5.75 and 11.51 mgl^{-1} was selected i.e. 1/10th and 1/5th of LC_{50} for a total period of 28 days. Sublethal effect of calcium carbide pesticide on carcass composition of rosy barb, *Pethia conchonius* is given in Table 1 and the details are as follows:

Crude protein

The crude protein percentage values recorded in control groups were 58.44±0.01, 58.48±0.08, 58.47±0.08 and 58.58±0.02 on 7th, 14th, 21st and 28th day, respectively. In 5.75 mgl^{-1}(1/10thconcentration of LC_{50}), the protein percentage values were 58.11±0.03 on 7th day to 57.76±0.01 on 14th day, 57.19±0.02 on 21st day and 56.95±0.01on 28th day. In higher concentration of 11.51mgl^{-1} (1/5th concentration of LC_{50}), the protein percentage values were 57.27±0.01 on 7th day to 56.11±0.03 on 14th day, 55.81±0.01 on 21st day and 54.08±0.0128th day.

Crude fat

Crude fat percentage recorded in control groups were 9.54±0.01, 9.55±0.01, 9.54±0.01 and 9.55±0.01 on 7th, 14th, 21st and 28th day respectively. In 5.75 mgl^{-1}(1/10thconcentration of LC_{50}),the fat percentage values were 9.40±0.01 on 7th day, 9.30±0.01 on 14th day, 9.40±0.01 on 21st day and 9.30±0.01 on 28th day. In higher

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Table 1 : Proximate composition of rosy barb (*Pethia Conchonius*) exposed to sublethal concentrations of calcium carbide.

	Conc.(mgl^{-1})	Days			
		7th Day	14th Day	21st Day	28th Day
Crude protein	Control	58.44±0.01[a]	58.48±0.08[a]	58.47±0.08[a]	58.58±0.02[a]
	1/10th	58.11±0.03[b]	57.76±0.01[b]	57.19±0.02[b]	56.95±0.01[b]
	1/5th	57.27±0.01[c]	56.11±0.03[c]	55.81±0.01[c]	54.08±0.01[c]
Crude fat	Control	9.54±0.01[a]	9.55±0.01[a]	9.54±0.01[a]	9.55±0.01[a]
	1/10th	9.40±0.01[b]	9.30±0.01[b]	9.40±0.01[b]	9.30±0.01[b]
	1/5th	9.28±0.02[c]	9.03±0.02[c]	8.86±0.02[c]	8.11±0.01[c]
Carbohydrate content	Control	9.93±0.013[c]	9.99±0.01[c]	9.95±0.01[c]	9.89±0.01[c]
	1/10th	10.17±0.01[b]	10.51±0.01[b]	10.73±0.01[b]	10.92±0.01[b]
	1/5th	10.44±0.01[a]	10.86±0.01[a]	11.04±0.01d[a]	11.86±0.01[a]
Ash content	Control	10.86±0.01[c]	10.83±0.01[c]	10.84±0.01[c]	10.86±0.01[c]
	1/10th	11.17±0.01[b]	11.39±0.01[b]	11.53±0.01[b]	11.71±0.02[b]
	1/5th	12.01±0.01[a]	12.54±0.01[a]	12.85±0.01[a]	13.01±0.01[a]
Moisture content	Control	10.24±0.01[c]	10.13±0.07[c]	10.20±0.08[c]	10.12±0.01[c]
	1/10th	11.06±0.01[b]	11.22±0.02[b]	11.39±0.03[b]	11.64±0.02[b]
	1/5th	11.84±0.04[a]	12.08±0.04[a]	12.28±0.03[a]	13.04±0.02[a]

(LC_{50}=57.5 mgl^{-1}, 1/10th =5.75 mgl^{-1} and 1/5th = 11.51 mgl^{-1})
The value expressed as mean ± S.E. (n=7). #Different superscripts (a, b, c) in the same row indicate significant difference (P<0.05) when compared to initial values.

concentration of 11.51mgl^{-1} (1/5th concentrationof LC_{50}), the fat percentage values were 9.28±0.02, 9.03±0.02, 8.86±0.02 and 8.11±0.01 on 7th, 14th, 21st and 28th day, respectively.

Carbohydrate

The carbohydrate percentage values recorded in control groups were 9.93±0.013, 9.99±0.01, 9.95±0.01 and 9.89±0.01 on 7th, 14th, 21st and 28th day respectively. In 5.75 mgl^{-1}(1/10thconcentration of LC_{50}), the carbohydrate percentage values were from 10.17±0.01 on 7th day to 10.51±0.01 on 14th day, 10.73±0.01 on 21st day and 10.92±0.01on the 28th day. In higher concentration of 11.51mgl^{-1} (1/5th concentration of LC_{50}), the carbohydrate percentage values were from 10.44±0.01 on 7th day to 10.86±0.01 on 14th day, 11.04±0.01 on 21st day and 11.86±0.01on 28th day.

Ash

The ash content values recorded in control group were 10.86±0.01, 10.83±0.01, 10.84±0.01 and 10.86±0.01 on 7th, 14th, 21st and 28th day respectively. In 5.75 mgl^{-1}(1/ 10th concentration of LC_{50}), the ash content values were 11.17±0.01 on 7th day to 11.39±0.01 on 14th day, 11.53±0.01 on 21st day and 11.71±0.02 on the 28th day whereas in 11.51mgl^{-1} concentration (1/5th of LC_{50}), the ash content values were 12.01±0.01 on 7th day to 12.54±0.01 on 14th day, 12.85±0.01 on 21st day and 13.01±0.01 28th day.

Moisture

The moisture content values recorded in control groups were 10.24±0.01, 10.13±0.07, 10.20±0.08 and 10.12±0.01 on 7th, 14th, 21st and 28th respectively. In 5.75mgl^{-1} (1/10th concentration of LC_{50}), the moisture content values were 11.06±0.01, 11.22±0.02, 11.39±0.03 and 11.64±0.02 on 7th, 14th, 21st and28th, respectively. In higher concentration of 11.51mgl^{-1} (1/5th concentration of LC_{50}), the moisture content values were s 11.84±0.04, 12.08±0.04, 12.28±0.03 and 13.04±0.02 on 7th, 14th, 21st and 28th, respectively.

DISCUSSION

In the present study, LC_{50} value for rosy barb exposed to calcium carbide was estimated to be 57.5 mgl^{-1} at 96 h while the LC_{50} value for rosy barb exposed to nonylphenol was 1.72 mgl^{-1} (Bhattacharya *et al*, 2008) and for copper and zinc were 0.5mgl^{-1} and 9 mgl^{-1} to *Pethia parrah* respectively (Ciji and Nandan, 2013). The results of proximate composition of different experimental groups of fish rosy barb exposed to two sublethal concentrations of calcium carbide for a period of 28 days (11.51 and 5.75 mgl^{-1}) showed significant reduction in crude protein and crude fat contents of muscle. During

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the present study, the values of crude protein and crude fat in rosy barb showed a significant decrease ($p<0.05$) and the value of moisture, carbohydrate and ash showed a significant increase ($p<0.05$) in proportion to concentration of the calcium carbide exposure compared to initial and control. This indicated the utilization of all these energy components when fish is under stress.

Protein, lipid and carbohydrate, which constitute the major components of the body, play an important role in body composition and energy metabolism. This is affected by environmental factors like water pollution (Palanicihamy *et al*, 1986). Protein content in the muscle of *Mystus cavasius* (Ham) exposed to 1/3 of sublethal concentration of electroplating industrial effluent chomium (0.25%) for the period of 30 days has been studied. After 24, 48, 72 h and 15 days of exposurethe muscle showed significant depletion from -9.77%, -20.45%, -26.14% and -31.82% over the control (Palanisamy *et al*, 2011). Protein is the source of energy during chonic conditions of stress and a number of studies have reported a decline in protein composition in different organs of fishes treated with pesticides (Kupren *et al*, 2008; and Prusiñska *et al*, 2008).

Appreciable decline in the biochemical profiles of total glycogen, total lipids and total protein contents of the fish (Vutukuru, 2005). However, the decrease in protein content was significant only at the end of 96 h. This study reflects the extent of the toxic effects of hexavalent chomium and the metal induced cumulative deleterious effects at various functional levels in the widely consumed freshwater fish, *Labeo rohita*. Significant decrease in protein, fat with an increase in crude fibre was observed to be the direct result of significantly reduced food consumption and food conversion efficiency as was observed in pinfish (*Lagodon rhomboides*) exposed to sublethal concentrations of bleached kraft mill effluent (Stoner and Livingston, 1978). Present study revealed that significant increase in carbohydrate content compared to initial value and control group. Similar results were observed by Amin and Indulkar (2017), when common carp exposed to imidacloprid pesticide.

A decrease in the nutritive value of muscle of *Catla catla* fingerlings due to lead toxication. The amide I maximum observed at-1665 cm^{-1} indicated that the protein is dominated by α-helical secondary structure (Palaniappan *et al*, 2009). The Maximum Allowable Toxicant Concentration (MATC) end points of carbohydrate and ash gave sensitive end point whereas that of protein and fat was less sensitive after exposure of *E. maculatus* to monocrotophos (Sulekha and Mercy, 2011). The protein, carbohydrate, and lipid content of muscle, liver, gill and intestine of *M. vittatus* decreased when fish were exposed to Malathion, Thiodon, and Carbaryl (Arunachalam *et al*, 1990). In the present study, crude protein content, crude fat content, moisture content and total ash content showed sensitivity to the sublethal exposure of calcium carbide.

CONCLUSION

From the present study, it is ascertain that calcium carbide is toxic to the experimental fish, rosy barb (*Pethia Conchonius*) and it has negativeeffect on biochemical composition. Thus, the usage of calcium carbide is not safe for ecosystem and non-target aquaticorganisms.

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Maritime pollution in the Indian Ocean after the MV X-Press Pearl accident

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ABSTRACT

The MV X-Press Pearl marine debacle severely affected the marine environment in the Indian Ocean. The objective of this study is to monitor environmental pollution along the west coast of Sri Lanka. Beach sand samples were collected from 40 locations. Visual and microscopic observations, plastic pellets pollution index (PPI), and degradation effects of plastic nurdles were examined. Chemical and thermal characteristics were investigated using Inductively Coupled Plasma Mass Spectrometric analysis (ICP-MS) and Fourier Transform Infra-Red Spectroscopic analysis (FTIR) analyses, respectively. Cylindrical-shaped plastic nurdles (>0.2 cm in size) were observed in off-white (mainly), yellow, and black colours. The white colour plastic nurdles change to yellow at 240 °C and black at 300 °C. Epamulla (PPI = 1940–3364) and Sarakkuwa (PPI = 2158–3466) beaches were recognized as the most contaminated beaches during the initial sampling (i.e., after six to eight days of the explosion of the vessel). Well-rounded small plastic nurdles (i.e., after one year of the disaster) can indicate degradation effects. FTIR results confirm (i) plastic nurdles as low-density polyethylene (LDPE) and (ii) alteration of the chemical composition of nurdles at a low temperature of 60 °C. In this case, a significant amount of microplastics have been added to the environment under the influence of UV irradiation and abrasion against beach sand. In addition, the presence of heavy metals (e.g., arsenic, cadmium, lead, and copper) in swash zone sediments is a great threat to marine animals and plants. Consequently, the ingestion of microplastics and heavy metals would be increased in a wide range of marine organisms and can be bio-accumulated in humans through seafood and salt.

1. Introduction

The fire accident in the cargo vessel MV X-Press Pearl caused the largest marine debacle in the maritime history of Sri Lanka. A fire erupted on 20th May 2021, and the ship burned for nearly two weeks. According to the ship manifest, the vessel was loaded with hazardous chemicals, plastic nurdles, metals such as lead and copper, and bunker fuel at the time of the explosion on 25th May (Hassan et al., 2021; de Vos et al., 2021; Sewwandi et al., 2022). Eventually, the vessel entirely sank on 17th June, regardless of salvage operations and the effort to tow the vessel to deeper waters (Hassan et al., 2021; Ratnayake and Perera, 2022). Immediately following the events, most tourist and environmentally sensitive coastal areas of Sri Lanka were covered with tons of plastic nurdles and remnants of burnt plastics (Fig. 1). Unburnt white opaque nurdles were reported at beach sites as far as Mannar Island on the northwest coast and Trincomalee on the northeast coast of Sri Lanka (Fig. 1). The jeopardy of this plastic nurdle pollution has spread over a larger area, including the coastlines of Indonesia, Malaysia, and Somalia (Partow et al., 2021).

Plastic nurdle pollution from maritime accidents is reasonably uncommon, but some incidents have been reported in marine environments since the 1970s (Carpenter et al., 1972). Nevertheless, the number of accidents has increased in the last 10 years, such as in the Hong Kong seas in 2012 (Earth.Org, 2020), South Africa in 2017 (Schlanger, 2019), and the North Sea in 2020 (i.e., demarcated the largest nurdle pollution in Europe) (Annette and Gaëlle, 2020). The MV X-Press Pearl accident is the most recent nurdle pollution in the Indian Ocean in proximity to the Sri Lankan coastline, which released over 1750 tons of plastic nurdles in 2021 (Hassan et al., 2021; de Vos et al., 2021; Sewwandi et al., 2022). Consequently, this event created significant losses to marine life and coastal environment and the economy of Sri Lanka (Hassan et al., 2021). Huge manual and mechanised cleaning operations (e.g., at Sarakkuwa

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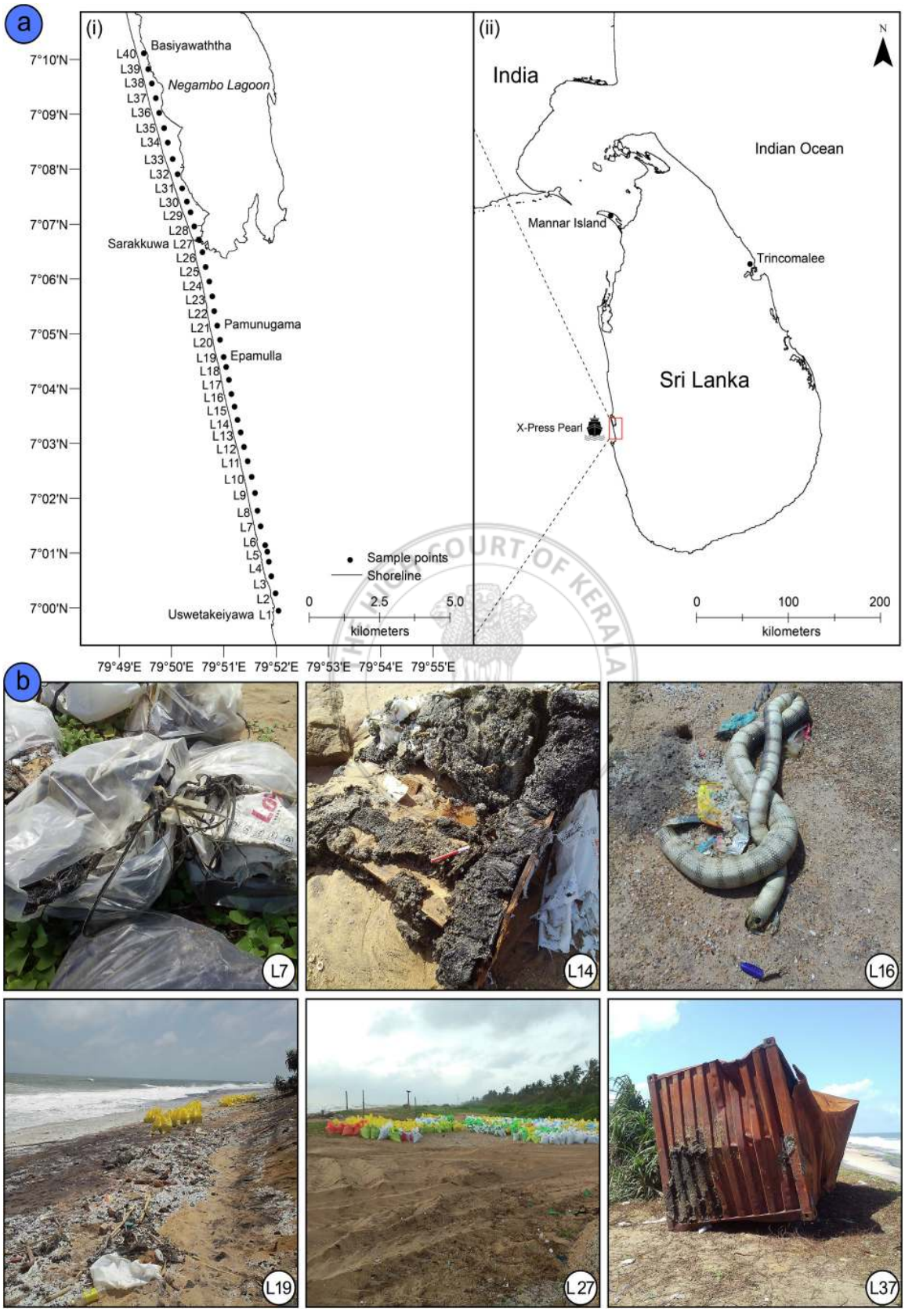

Fig. 1. (a) Simplified map of Sri Lanka shows the location of X-Press Pearl shipwreck and the study area covering 40 locations on the western coast, (b) obtained field photographs six to eight days after the explosion.

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Fig. 2. (a) Collected beach sand samples, (b) visual separation by colour and material, such as i. unburnt white colour nurdles, ii. light yellow colour nurdles, iii. dark yellow colour nurdles, iv. light black colour nurdles, v. black colour nurdles, and vi. plastic wires, and (c) thermal degraded materials, such as i. agglomeration of partially melted nurdles, and ii. and iii. remnants of burnt plastics. (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

beach) were initiated under the guidance of the Marine Environment Protection Agency (MEPA) of Sri Lanka. Although a few previous studies focussed on environmental pollution at Sarakkuwa and Pamunugama beaches, other areas along the west coast of Sri Lanka were poorly investigated.

In this paper, we investigate plastic nurdle pollution along the west coast of Sri Lanka based on visual and microscopic observations, pellets pollution index (PPI), degradation effect, and Inductively Coupled Plasma Mass Spectrometric (ICP-MS) and Fourier Transform Infra-Red Spectroscopic (FTIR) analyses. We also discuss possible short- and long-term environmental damages, such as fragmentation of plastic nurdles into microplastics.

2. Materials and methods

2.1. Study area and sampling

This study covers a distance of 17 km along beaches from Uswetakeiyawa (L1) to Basiyawatta (L40) on the west coast of Sri Lanka, where plastic nurdles were significantly contaminating the beaches after the first explosion of the MV X-Press Pearl vessel (Fig. 1). Systematic beach sand sampling was conducted at 40 locations (Fig. 1), amidst movement restrictions imposed by curfew laws due to the Covid-19 global pandemic. About 4 kg of samples were taken from each location (i.e., 2 kg from the mean sea level (msl) and 2 kg from the berm) six to eight

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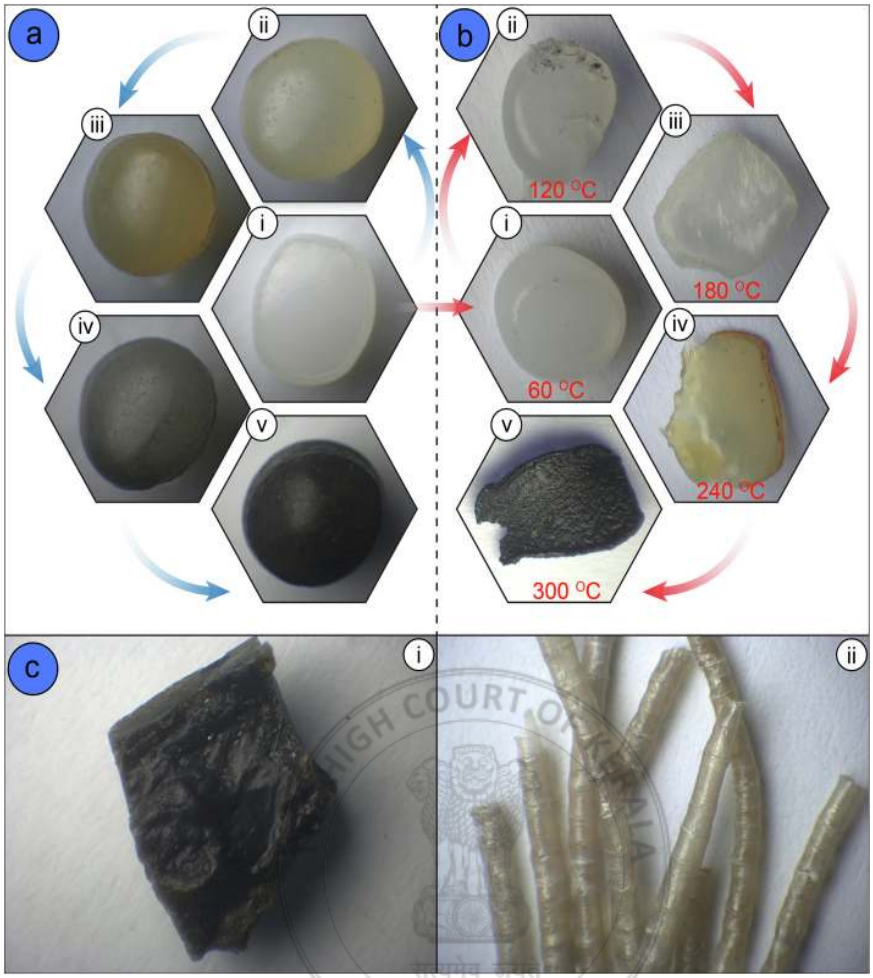

Fig. 3. Nurdles, plastic wires, and burnt plastics observed under 180× magnification and colour changes of unburnt white colour nurdles at different temperatures.

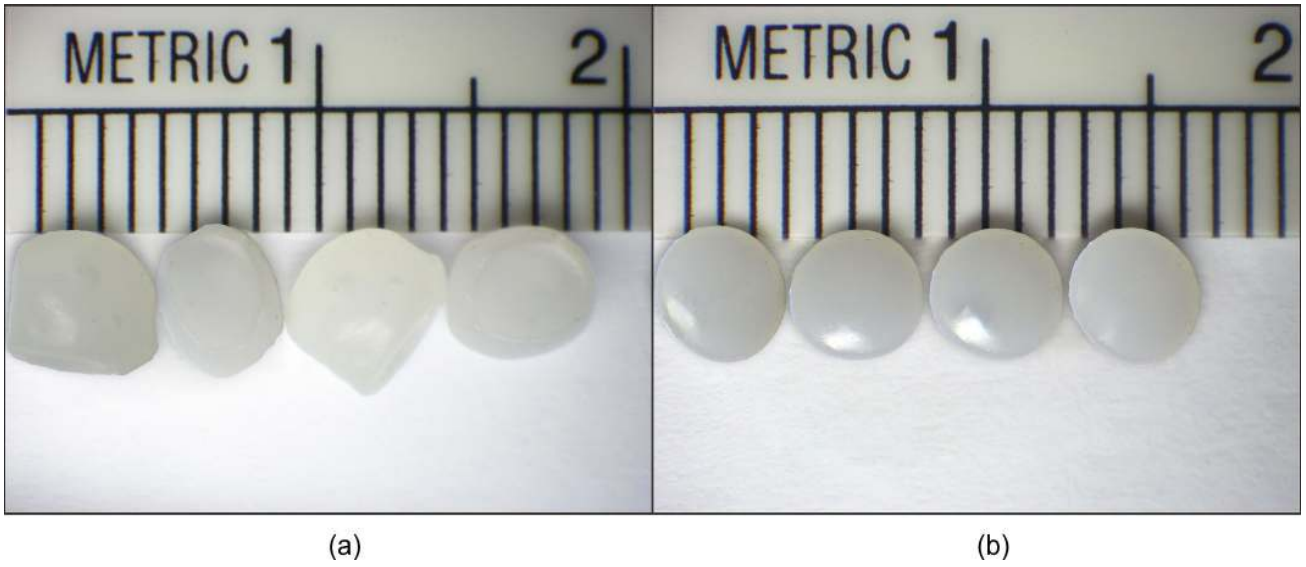

Fig. 4. (a) White colour nurdles six to eight days after the explosion, and (b) well-rounded nurdles one year after the disaster.

days after the explosion. Similarly, additional field excursions were repeated one year after the disaster to monitor post-disaster characteristics. Unburnt nurdles, degraded/deformed nurdles, and remnants of burnt plastics were collected in both field excursions.

2.2. Physical characteristics

2.2.1. Visual examination

Beach sand samples were observed in the as-collected form. Features,

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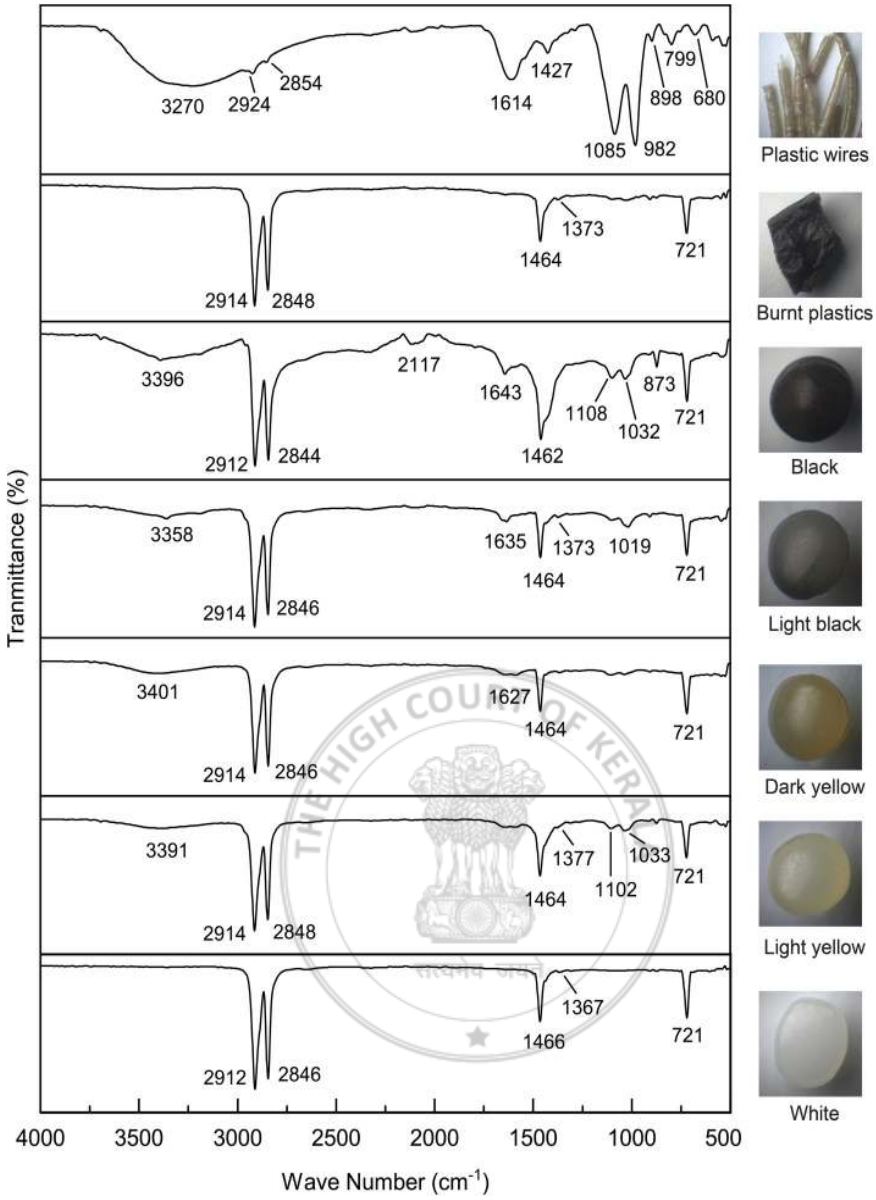

Fig. 5. FTIR spectra of differently coloured nurdles.

such as grain size, percentage of heavy minerals, presence of nurdles, remnants of melted/burnt plastics, organic debris, and any other occurrences, were noted. Unburnt nurdles, degraded/deformed nurdles, and remnants of melted/burnt plastics were thoroughly washed several times with distilled water to remove any dirt/dust particles. Samples were then air-dried and subjected to visual inspection (Heo et al., 2013). The size, colour, and shape of plastic nurdles and wires and remnants of burnt material were then examined by the naked eye.

2.2.2. Microscopic observations

Washed and dried unburnt nurdles, degraded/deformed nurdles, and remnants of melted/burnt plastics were observed using an A.KRÜSS Optronic stereo microscope with 180× magnification. Surface alterations were observed to investigate nurdle deformation under exposure to heat.

2.2.3. Determination of the degradation effect

Degradation effects on unburnt and white-coloured plastic nurdles were determined by comparing the initial samples (i.e., collected six to eight days after the explosion) with those collected one year after the disaster. All the plastic nurdles collected from 10 locations were rinsed and air-dried, and the weight of nurdles was measured using a PerkinElmer Provectus™ 6500 ultra-micro balance. The difference in average weights and volumes of samples (i.e., collected initially and after one year) were used to determine the degradation effects. The density of low-density polythene (LDPE) was taken as 0.925 g cm^{-3} to calculate the volume differences.

2.2.4. Sieve analysis and determination of pellets pollution index (PPI)

Each sample was dried at 105 °C for 4 h to remove moisture. About 500 g of each sample was sieved using a British standard mechanical sieve shaker mounted with 3.15 mm, 2 mm, 1 mm, 500 μm, 125 μm, 63 μm sieves, and the pan. Weight retained on each mesh, the number of nurdles, and remnants of burnt material were recorded.

According to Eq. (1), the ratio between the number of pellets (n) and 1 kg of sample was used to determine the PPI of 80 samples (i.e., one sample from mean sea level and one sample from the berm of each location). The degree of beach sand pollution was then classified based on the PPI as very low (0–5), low (6–20), moderate (21−100), high (101–1000), and very high (>1001).

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Table 1
Peak assignments of IR transmittance spectra of different colour nurdles, plastic wires, and remnants of burnt plastics.

Type of nurdle	Wave number (cm^{-1})	Peak assignment	References
White colour	2912, 2846	$–CH_2$ asymmetric stretching	Bolduc et al. (2018) Sewwandi et al. (2022)
	1466	$–CH_2$ bending	
	1367	$–CH_2$ deformation	
	721	$–CH_2$ rocking deformation	
Light yellow colour	3391	–OH stretching	Fotopoulou and Karapanagioti (2012) Bolduc et al. (2018) Cincinelli et al. (2021) Sewwandi et al. (2022)
	2914, 2848	$–CH_2$ asymmetric stretching	
	1464	$–CH_2$ bending	
	1377	$–CH_2$ deformation	
	1102	–C–O–C symmetric stretching	
	1033	–S=O stretching	
	721	$–CH_2$ rocking deformation	
Dark yellow colour	3401	–OH stretching	Fotopoulou and Karapanagioti (2012) Sewwandi et al. (2022)
	2914, 2846	$–CH_2$ asymmetric stretching	
	1627	–C=O stretching	
	1464	$–CH_2$ bending	
	721	$–CH_2$ rocking deformation	
Light black colour	3358	–OH stretching	Fotopoulou and Karapanagioti (2012) Bolduc et al. (2018) Cincinelli et al. (2021) Sewwandi et al. (2022)
	2914, 2846	$–CH_2$ asymmetric stretching	
	1635	–C=O stretching	
	1464	$–CH_2$ bending	
	1373	$–CH_2$ deformation	
	1019	–S=O stretching	
	721	$–CH_2$ rocking deformation	
Black colour	3396	–OH stretching	Yang et al. (2005) Sudhakar et al. (2007) Fotopoulou and Karapanagioti (2012) Cincinelli et al. (2021) Sewwandi et al. (2022)
	2912, 2844	$–CH_2$ asymmetric stretching	
	2117	C=C stretching (conjugated)	
	1643	–C=O stretching	
	1462	$–CH_2$ bending	
	1108	–C–O–C symmetric stretching	
	1032	–S=O stretching	
	873	$–CH_2$ wagging	
	721	$–CH_2$ rocking deformation	
Remnants of burnt plastics	2914, 2848	$–CH_2$ asymmetric stretching	Bolduc et al. (2018) Sewwandi et al. (2022)
	1464	$–CH_2$ bending	
	1373	$–CH_2$ deformation	
	721	$–CH_2$ rocking deformation	
Plastic wires	3270	–OH stretching	Yang et al. (2005) Sudhakar et al. (2007) Fotopoulou and Karapanagioti (2012)
	2924, 2854	$–CH_2$ asymmetric stretching	
	1614	–C=O stretching	
	1427	–C–C vibration	
	1085	–C–O–C symmetric stretching	
	982	C=C polyester double bond (aromatic)	
	898	C=C styrene double bond (aromatic)	
	799	–C–C stretching	
	680	–C–H bending (aromatic)	

$$PPI = \frac{n\ (nurdles)}{1\ \text{kg}} \quad (1)$$

2.3. Chemical and thermal characteristics

2.3.1. Inductively Coupled Plasma Mass Spectrometry (ICP-MS) analysis

About 200 mg of each sample (i.e., 19 contaminated beach sand samples, nurdles, and burnt plastics) was digested in 8 mL of aqua regia (6.0 mL of HCl and 2.0 mL of HNO_3) at 40 °C for 15 min on a heating mantle. The cooled samples were filtered through 0.20 μm syringe filters into 25 mL volumetric flasks (Sakan et al., 2011). The residue in the beakers was rinsed twice with 5 mL of distilled water and filtered again. Then, double distilled water was added to bring the solution to 25 mL.

A stock solution of 100 μg/mL was prepared with ultrapure water and acidified using 69 % HNO_3 (Sigma-Aldrich, USA) for calibration of the instrument. Calibration standards were prepared using ultrapure water (Thermo Fisher Scientific, USA) to reduce contamination from organics (conductivity 0.05 μS/cm). Calibration standards were prepared as 1, 5, 10, 20, and 30 μg/mL. Samples were diluted 10 times using ultrapure water and analysed using Thermo Fisher Scientific, ICAP RQ, Germany. Results were multiplied by the dilution factor to calculate the original concentrations.

2.3.2. Fourier Transform Infra-Red (FTIR) analysis

Unburnt nurdles, degraded/deformed nurdles, and remnants of melted/burnt plastics were subjected to FTIR-ATR (Attenuated Total Reflection) analysis. Each sample was directly placed in the beam of a Bruker Alpha spectrophotometer over the range of 500–4000 cm^{-1}. Furthermore, five unburnt nurdles were heated separately at temperatures of 60 °C, 120 °C, 180 °C, 240 °C, and 300 °C, and FTIR-ATR analysis was conducted for each heated sample. The transmittance spectra were compared with that of an unheated nurdle to determine the effect of temperature (i.e., alteration of polymer material/carbon chain) on plastic nurdles.

3. Results and discussion

3.1. Physical characteristics of nurdles

Fig. 2 shows (a) contaminated beach sand samples, (b) nurdles separated by colour according to visual inspection and plastic wires, and (c) aggregated nurdles (a cluster of nurdles) and remnants of burnt/melted plastics. Plastic nurdles are mainly off-white (Fig. 2). However, a few nurdles are observed in light yellow, dark yellow, light black, and black colours (Fig. 2) due to the exposure of nurdles to heat, acids and other chemicals, and contaminant binding on the surface (Fotopoulou and Karapanagioti, 2012). Plastic nurdles are found in different shapes, mostly cylindrical and/or rounded, and a few that are irregular in shape (Appendix 1 and Fig. 2). In this study, aggregated plastic nurdles or differently sized clusters of nurdles can be observed in several locations (Appendix 1). This aggregation can indicate partial melting of nurdles due to exposure to heat and acids during the disaster (Hassan et al., 2021). Tiny plastic wires and remnants of burnt material are also identified in most of the locations (Appendix 1 and Fig. 2b). Bubbles can be observed under the microscope in remnants of burnt plastics because of heating (Fig. 3).

The explosion of MV X-Press Pearl vessel thus released not only unburnt nurdles, but also partially burnt/melted nurdles and remnants of burnt-off plastics into the Indian Ocean (Fig. 1). In addition, aquatic animals were severely affected (Fig. 1 and Appendix 2), and it can create serious impacts on future generations of marine and coastal life (de Vos et al., 2021).

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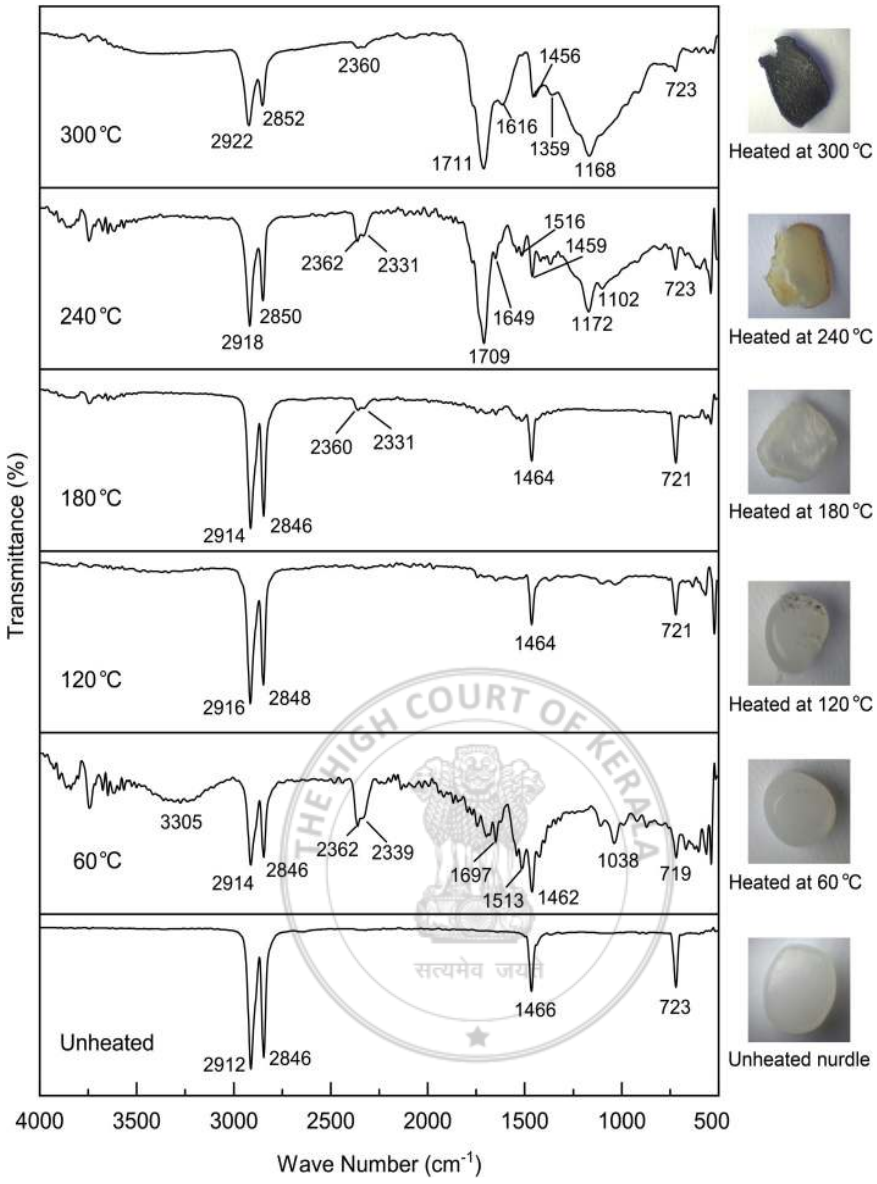

Fig. 6. FTIR spectra of white colour nurdles heated at different temperatures.

3.2. Contaminated beach sands

Sieve analysis can be used to identify any correlation between the nurdle deposition and grain sizes of beach sand (Appendix 3), and simultaneously verify the approximate sizes of nurdles. In this regard, most nurdles are larger than 0.2 cm, and deposited mainly on the berm (Appendix 3). Although no strong correlation is recorded between grain size and nurdle deposition, nurdle deposition is enhanced at locations with higher heavy mineral contents (Appendix 1). Consequently, wave action (i.e., panning) is an important process for the accumulation of plastic nurdles in beach areas (Appendix 4), along with heavy minerals (Subasinghe et al., 2021, 2022). This interpretation is further confirmed by the additional field excursions one year after the disaster (Appendix 2).

Appendix 3 shows the PPI of each sampling location and the degree of beach sand pollution. Accordingly, Epamulla (L19, PPI = 1940–3364) and Sarakkuwa (L27, PPI = 2158–3466) are the most contaminated beaches during the initial sampling, after six to eight days of the explosion of the vessel. In addition, the degree of beach sand pollution of L19 and L27 is at a moderate level after one year (i.e., after completing initial beach cleaning processes). Consequently, the beaches still contain a considerable number of nurdles, and would be permanently buried in marine and coastal environments (de Vos et al., 2021; Hassan et al., 2021).

3.3. Weathering/degradation of nurdles

Cylindrical-shaped nurdles were mainly observed at the initial sampling (Fig. 4a). However, the nurdles are small and rounded in shape after one year (Fig. 4b). Therefore, the average weight and volume differences of nurdles can be used to identify weathering/degradation effects of nurdles. The average weight and volume differences of nurdles are 18.060 mg and 130.119 μm^3, respectively. Scrubbing against beach sand upon wave action is the major reason for the volume reduction of nurdles (Fotopoulou and Karapanagioti, 2012; Zhang et al., 2020). In addition, UV irradiation enhances the degradation of nurdles (Wang et al., 2017). Plastic nurdles can thus break under UV irradiation, and alter the carbon chain of polymer material (Dai et al., 2016; Sewwandi et al., 2022). Consequently, natural processes such as wave action, abrasion against beach sand, UV irradiation, and the presence of

FSO VERIFIED -18

Table 2
Peak assignments of IR transmittance spectra of white colour unburnt nurdles and those heated up to 300 °C at 60 °C intervals.

Heating temperature	Wave number (cm^{-1})	Peak assignment	References
Unheated nurdle (virgin material)	2912, 2846	$–CH_2$ asymmetric stretching	Bolduc et al. (2018) Sewwandi et al. (2022)
	1466	$–CH_2$ bending	
	723	$–CH_2$ rocking vibration	
60 °C	3305	–OH stretching	Fotopoulou and Karapanagioti (2012) Bolduc et al. (2018) Cincinelli et al. (2021)
	2914, 2846	$–CH_2$ asymmetric stretching	
	2362, 2339	O=C=O (surficial attached)	
	1697	–C=O stretching	
	1513	C=C stretching vibration	
	1462	–C–C vibration	
	1038	–C–O–C symmetric stretching	
	719	$–CH_2$ rocking vibration	
120 °C	2916, 2848	$–CH_2$ asymmetric stretching	Fotopoulou and Karapanagioti (2012)
	1464	–C=O stretching	
	721	$–CH_2$ rocking vibration	
180 °C	2914, 2846	$–CH_2$ asymmetric stretching	Fotopoulou and Karapanagioti (2012) Bolduc et al. (2018) Cincinelli et al. (2021)
	2360, 2331	O=C=O (surficial attached)	
	1464	–C–C vibration	
	721	$–CH_2$ rocking vibration	
240 °C	2918, 2850	$–CH_2$ asymmetric stretching	Yang et al. (2005) Sudhakar et al. (2007) Fotopoulou and Karapanagioti (2012) Cincinelli et al. (2021)
	2362, 2331	O=C=O (surficial attached)	
	1709	–C=O stretching	
	1649	–C=O stretching	
	1516	C=C stretching vibration	
	1459	$–CH_2$ bending	
	1172	–CH bending	
	1102	–C–O–C symmetric stretching	
	723	$–CH_2$ rocking vibration	
300 °C	2922, 2852	$–CH_2$ asymmetric stretching	Yang et al. (2005) Sudhakar et al. (2007) Bolduc et al. (2018) Fotopoulou and Karapanagioti (2012)
	2360	O=C=O (surficial attached)	
	1711	–C=O stretching	
	1616	–C=O stretching	
	1456	$–CH_2$ bending	
	1359	$–CH_2$ deformation	
	1168	–CH bending	
	723	$–CH_2$ rocking vibration	

chemicals can rapidly trigger the deformation of plastic nurdles. In this case, MV X-Press Pearl accident added a significant amount of microplastics to the coastal and marine environments.

3.4. Chemical and thermal behaviours of nurdles

3.4.1. Characteristics of nurdles and remnants of burnt plastics

Transmittance peaks of FTIR-ATR analysis can be used to characterise the plastic nurdles (Fig. 5). Table 1 and Fig. 5 show the wave numbers and the respective IR transmittance peak assignments of each type of nurdles. These FTIR spectra (Fig. 5) are characteristic of high-density polyethylene (HDPE), low-density polyethylene (LDPE), and linear-low-density polyethylene (LLDPE) (Brandon et al., 2016). The peaks ascribed for $–CH_2$ deformation (1380–1350 cm^{-1}) and $–CH_2$ rocking (around 720 cm^{-1}) can be used to distinguish types of polyethylene (Bolduc et al., 2018; Sewwandi et al., 2022). According to Smith (2021), HDPE consists of a split $–CH_2$ rocking vibration peak whereas, LDPE and LLDPE consist of an un-split $–CH_2$ rocking vibration peak around 720 cm^{-1} (Figs. 5 and 6). In addition, HDPE has bi-split IR transmittance peaks whereas, LDPE and LLDPE have un-split IR transmittance peaks around 1460 cm^{-1} (Figs. 5 and 6). Furthermore, LLDPE consists of a $–CH_3$ peak around 1378 cm^{-1} (Smith, 2021). Consequently, FTIR peak distributions suggest that the plastic nurdles are LDPE. Furthermore, the transmittance bands corresponding to –C=O, –C–O–C, and –S=O can be used as indicators to distinguish the alteration/deformation of the chemical composition of plastic nurdles in the coastal/marine environment (Sewwandi et al., 2022).

The transmittance band around 1030 cm^{-1} in Fig. 5 (e.g., absent in white colour nurdles and present in light yellow and black colour nurdles) can suggest the formation of new –S=O bonds in the polymer chain (Hofko et al., 2017; Sewwandi et al., 2022). This is mainly due to the polymerisation reaction of LDPE and LLDPE with sulfur that was present in the vessel during the explosion (Hassan et al., 2021). Therefore, the change of colour of nurdles from white to yellow can indicate the mixing of sulfoxide into the polyethylene chain. In addition, vibrations such as –OH stretching, $–CH_2$ wagging, and –C–O–C symmetric stretching present in the spectra of black colour nurdles and absent in spectra of other nurdles indicate deformation of nurdles and the reduction of characteristics of polymer bonds (Kerr et al., 2013; Sewwandi et al., 2022). The bands in the range 1600–1800 cm^{-1} can be ascribed to the addition of oxygen into the polyethylene chain followed by the formation of ester and ketone groups (Yang et al., 2005; Sudhakar et al., 2007). Moreover, the IR transmittance spectrum of remnants of burnt plastics is almost similar to those of the nurdles (Fig. 5). Consequently, the remnants of burnt and/or completely melted nurdles can also be considered LDPE or LLDPE. However, the IR spectrum of plastic wires is different from other IR spectra (Fig. 5). Accordingly, the peak assignments suggest that the plastic wires are polyester or styrene materials containing aromatic chains.

3.4.2. Changes in nurdles upon exposure to heat

Table 2 and Fig. 3 show the changes in nurdles under exposure to different temperatures. The white colour opaque nurdles become transparent/clear on heating. When the nurdles are exposed to a temperature of 180 °C, they open up and become sheet-like polyethylene material (Fig. 3). It turns into dark yellow colour at 240 °C and burns at

Table 3
Heavy metals concentration in beach sand, nurdles, and burnt plastic samples.

Sample	Concentration (ppb) ± standard deviation (SD)									
	Cr	Ni	Cu	Zn	As	Cd	Pb	Se	Ag	Fe
Nurdles	389.33	144.04	35.33	554.30	101.31	14.62	161.89	4879.02	37.24	2071.32
Burnt plastics	397.59	149.11	120.48	1336.95	127.32	9.16	162.39	4870.09	11.62	4804.06
Beach sands (n = 19)	404.8 ± 77.0	351.4 ± 129.8	39.1 ± 24.8	604.3 ± 336.3	112.4 ± 41.5	9.4 ± 4.6	142.7 ± 54.5	4484.8 ± 238.5	104.2 ± 343.7	25,727.9 ± 12,431.8

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300 °C becoming black in colour.

Fig. 6 shows the FTIR spectra of nurdles heated to different temperatures. The occurrence of new peaks in the spectra of nurdles heated at 60 °C and above suggests the alteration of the polymer chain (Fig. 6). The band stretch around 1350 cm^{-1} suggests $–CH_2$ deformation upon heating (Fig. 6). The reduction of the peak intensity of IR transmittance spectra of nurdles upon heating is also an indication of the deformation of the polymer chain of plastic nurdles (Fig. 6). Furthermore, the peak doublet in the range 2330–2360 cm^{-1} can be ascribed to the surficial attachment of O=C=O on the polyethylene chain.

3.4.3. Chemical behaviours of nurdles

Table 3 shows heavy metals concentration in beach sand, nurdles, and burnt plastic samples. Heavy metals, such as arsenic (As), cadmium (Cd), chromium (Cr), copper (Cu), mercury (Hg), nickel (Ni), lead (Pb), zinc (Zn), iron (Fe), copper (Cu), and the platinum group elements (e.g., selenium: Se), are toxic or poisonous metallic elements even at low concentration. Heavy metals are divided as essential/micronutrients (i.e., having important controlling roles in biological processes: Cu, Zn, Ni, Fe), and non-essential (i.e., having no known biological functions: Cd, Hg, Pb) elements. These heavy metals are bio-accumulated due to their long biological half-lives and non-biodegradability (Sarwar et al., 2017; Weissmannová and Pavlovský, 2017). In general, heavy metal accumulation is low in the swash zone due to continuous wave run-up. Most of the heavy metals can be washed out and accumulated in shallow marine environments. In addition, non-essential heavy metals are very harmful at low concentrations. Therefore, heavy metals (Table 3) are a great threat to marine ecosystems and, later, human health through the consumption of contaminated plants and animals. In this study, Se concentration is very high in analysed sand, nurdles, and burnt plastic samples. Consequently, enrichment of Se can be linked to the MV X-Press Pearl marine disaster. Although Se is an essential micronutrient for humans and other organisms, excessive Se causes severe environmental pollution and damages human health (Sakamoto et al., 2012; He et al., 2018).

3.5. Possible short- and long-term environmental and socioeconomic damages

We observed a substantial amount of nurdles even one year after the MV X-Press Pearl catastrophic event (Appendix 2), and it may take several centuries for these coastlines to be fully recovered. Plastic nurdles accumulate continuously in certain areas in the surf zone due to prominent panning activities (Appendix 4). Manual and mechanised cleaning operations add extra cost to the economy of Sri Lanka. Most of these plastics are complex polymers and take several centuries to decay naturally (Chamas et al., 2020; Sewwandi et al., 2022). Therefore, these plastics will stay in the marine and coastal environments for a considerable period.

The MV X-Press Pearl disaster occurred in a rich fishing zone, and the government of Sri Lanka temporarily restricted fishing in the area. This considerably made an impact on the livelihoods of the local fishermen (Hassan et al., 2021; Ratnayake and Perera, 2022; Sewwandi et al., 2022). Many marine and coastal animals, including endangered turtle species, lost life after this maritime accident (Fig. 1 and Appendix 2). For example, nurdles were found in the gills of stranded fish (Hassan et al., 2021). In contrast, contamination of partially burnt epoxy resin can release bisphenols (Gibson, 2017; Cantoni et al., 2021), and the ingestion of these chemicals (e.g., bisphenols) is directly responsible for the malfunctioning of endocrine systems of aquatic animals (Campbell et al., 2006; Aris et al., 2014). Therefore, these chemicals directly impact reproduction, reduce fertility and quality of sperms, increase mortality, and change sex ratio (Liu et al., 2011). Therefore, it causes long-term impacts on aquatic animals through genetic modification (e.g., DNA disorders).

Plastics deform and degrade on exposure to heat, chemicals, and UV irradiation (Cai et al., 2018; Iñiguez et al., 2018). The stranded and buoyant plastics are continuously exposed to saltwater and UV irradiation. Therefore, there is a high possibility to degrade plastics on the surface waters and/or on the coasts. Plastics can be degraded into microplastics. These microplastics are a threat to aquatic and coastal animals through ingestion (Sewwandi et al., 2022). The ingested plastics can be bio-accumulated in the gut and stomach of animals (Oliveira et al., 2013). Humans can also ingest microplastics via the consumption of seafood and salt (Sewwandi et al., 2022). Deep-sea animals feed on differently coloured seaweeds (Rochman et al., 2019). These creatures can consume small and degraded nurdles and differently coloured microplastics (Boerger et al., 2010; Cole et al., 2013; Choy et al., 2019). Microplastics can attach to various pollutants, triggering their longer stay and transportation in seawater (Koelmans et al., 2016; Godoy et al., 2019; Purwiyanto et al., 2020; Zhang et al., 2020). Consequently, the direct or indirect consumption of microplastics causes adverse health effects in the human body including carcinogens (Brandt-Rauf et al., 2012; Barboza et al., 2018; Seth and Shriwastav, 2018; Gruber et al., 2022).

4. Conclusions

This study monitored marine pollution after the MV X-Press Pearl accident. Sarakkuwa and Epamulla beaches were identified as the most polluted beaches by plastic nurdles during the disaster in May 2021. Thermal exposure controlled the colour changes of plastic nurdles from light yellow to black at 300 °C. FTIR results concluded the alteration of the polymer chain of unburnt white colour plastic nurdles at temperatures as low as 60 °C.

We observed well-rounded plastic nurdles during the post-disaster field excursions one year after the incident. Therefore, the degradation of plastic nurdles under the influence of UV irradiation, wave action, and abrasion had already added a significant amount of microplastics to the Indian Ocean. We also detected toxic heavy metals, such as Cu, Zn, Ni, Pb, Cd, Cr, and As, in beach sediments from the swash zone. Consequently, these toxic heavy metals and microplastics can, directly and indirectly, cause environmental problems and impose health risks for human and marine biota. In recommendation, future research should focus on quantifying released microplastics into the ocean.

CRediT authorship contribution statement

U.L.H.P. Perera: Conceptualization, Methodology, Writing
H.C.S. Subasinghe: Methodology, Writing
Amila Sandaruwan Ratnayake: Conceptualization, Methodology, Writing and revision, Supervision
W.A.D.B. Weerasingha: Methodology, Writing
T.D.U. Wijewardhana: Methodology.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

Data will be made available on request.

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FSO VERIFIED -18

Appendices. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.marpolbul.2022.114301.

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FSO VERIFIED -18

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THE HIGH COURT OF KERALA
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FSO VERIFIED -18

195

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Determination of Environmental Compensation to be recovered for violation of Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016

THE HIGH COURT OF KERALA

May 2019

Central Pollution Control Board
(Ministry of Environment, Forest & Climate Change, Government of India)
Parivesh Bhawan, East Arjun Nagar,
Shahdara, Delhi – 110032

2

196

2

Contents

Sl. No.	Item	Page No.
1.	Background	1
2.	Salient features of the Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016 pertaining to occupiers	1
3.	Provisions about financial penalty and liability for damages caused to the environment under the Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016	5
4.	Categorization of violations and financial penalty & environmental compensation thereof	6
5.	Methodology for Assessing Financial Penalty and Environmental Compensation	8
6.	Annexure I "Guidelines on Implementing Liabilities for Environmental Damages due to Handling & Disposal of Hazardous Waste and Penalty" published by CPCB	
7.	Appendix A List of various violations vis-à-vis provisions of Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016	

FSO VERIFIED -18

Determination of Environmental Compensation to be recovered for violation of Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016

1. Background

Hazardous wastes are wastes which by reason of characteristics such as physical, chemical, biological, reactive, toxic, flammable, explosive or corrosive, causes danger or is likely to cause danger to health or environment, whether alone or in contact with other wastes or substances. Such wastes are generated from most of the industries engaged in manufacturing process and require to be managed without having impact on human health and environment.

The Govt. of India has notified Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016, as amended thereof, (herein after called as HOWM Rules, 2016) for the safe and environmentally sound management of hazardous wastes. The Rules lay down provisions for storage, packaging, transportation, recycling, utilization, pre-processing, co-processing, treatment, import, export, offering for sale, transfer or disposal, etc. of the hazardous and other wastes ("other wastes" has been defined under the said Rules).

In the matter of Original Application No. 804/2017 (Earlier O.A. No. 36/2012) With M.A. No. 1302/2018 in Interlocutory Application No. 63 in W. P. (C) No. 657/199; Rajiv Narayan & Anr Versus Union of India & Ors. With The Research Foundation for Science, Technology And Natural Resource Policy Versus Union of India & Ors., the Hon'ble National Green Tribunal, Principal Bench, New Delhi directed CPCB, vide orders dated 12/4/2019, to determine within one month the scale of compensation to be recovered for violation of the Rules. These guidelines have been prepared in compliance of the same and include methodology for calculating financial penalty and compensation for various violations of provisions of the HOWM Rules, 2016, in cases of the facilities requiring authorisation under the said Rules, 2016.

2. Salient features of the Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016 pertaining to occupiers

The occupier of any factory or premises as defined under Rule 3(1)(21) of the Rules, *means a person who has, control over the affairs of the factory or the premises and includes in relation to any hazardous and other wastes, the person in possession of the hazardous or other waste."*

The salient features of the HOWM Rules, 2016, applicable to the occupiers are as follow:

Determination of Environmental Compensation to be recovered for violation of Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016

A. Responsibilities of the occupier

Responsibility for safe and environmentally sound management of hazardous and other wastes remains with occupier as per Rule 4 of the HOWM Rules, 2016.

The Rule also stipulates waste management hierarchy that an occupier is required to follow i.e. prevention, minimization, reuse, recycling, recovery, utilisation including co-processing as preferential steps over disposal of hazardous and other waste. Sending/ selling/ transportation/ recycling/ disposing of the hazardous wastes shall be in accordance with the provisions laid down under the Rules. Further, occupier shall take all the steps while managing hazardous and other wastes to contain contaminants and prevent accidents and limit their consequences on human beings and the environment and provide persons working in the site with appropriate training, equipment and the information necessary to ensure their safety.

B. Requirement of authorization

Handling, generation, storage, packaging, transportation, use, treatment, processing, recycling, recovery, pre-processing, co-processing, utilisation, offering for sale, transfer or disposal of the hazardous and other wastes are to be carried out by every occupier (requiring Consent to Establish or Consent to Operate under the Water (Prevention and Control of Pollution) Act, 1974 and Air (Prevention and Control of Pollution) Act, 1981) after obtaining authorization from the concerned SPCB/PCC. Further, the SPCBs/PCCs are required to grant the same after such enquiry as it considers necessary, and on being satisfied that the applicant possesses appropriate facilities as stipulated under Rule 6.

C. Storage of hazardous or other wastes

Hazardous and other wastes are not to be stored for more than ninety days in the premises and a record of such wastes should be maintained and made available for the inspection. SPCBs/PCCs can extend the said period of ninety days in cases of small generators (up to 10 Tonnes/Annum), actual users and disposal facility operators, occupiers not having access to any common treatment, storage, disposal facility in the concerned State, etc., which have also been laid down under Rule 8 of the HOWM Rules, 2018.

D. Utilisation of hazardous or other wastes

Procedures for utilisation of hazardous and other wastes as a resource or after pre-processing either for co-processing or for any other use have been laid down under Rule 9 of the HOWM Rules, 2016, and the same are to be carried

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out only after obtaining authorization from the concerned SPCB/PCC on the basis of standard operating procedures or guidelines provided by CPCB.

E. Import and Export (Transboundary Movement) of hazardous and other wastes

Import of hazardous and other wastes from any country is permitted only for recycling/reuse/recovery and utilisation including co-processing and list of wastes which are prohibited for import to the country has also been stipulated. Ministry of Environment, Forest and Climate Change (MoEF&CC) has been stipulated as the nodal Ministry to deal with the transboundary movement of the hazardous and other wastes.

Procedures for import and export of hazardous and other wastes have been prescribed such as making an application to MoEF&CC, furnishing information to custom department, etc. It also lays down conditions where Import/Export shall be deemed illegal and the role of Customs authority and SPCB/PCC in such cases. Rule 11 to Rule 14 of the HOWM Rules, 2016, lays down provisions with regard to the said import and export.

F. Treatment, storage and disposal facility for hazardous waste

State government, occupier, operator of facility or any association of occupiers are individually or jointly or severally be responsible for identification of sites for establishment of facility for treatment, storage and disposal of hazardous and other wastes in the State.

Operator of common facility or occupier of captive facility is required to set up the same as per technical guidelines issued by CPCB and obtain approval for design and layout from the SPCB/PCC. Occupier/Operator of facility is also responsible for maintaining records, safe and environmentally sound operation of facility and its closure and post-closure phases as per CPCB guidelines. SPCB/PCC is required to monitor setting up and operation of the common facility, regularly. Such provisions have been stipulated under Rule 16 of the HOWM Rules, 2016.

G. Packaging, Labelling and Transportation of hazardous waste

Procedures for packaging have been prescribed for safe handling, packaging, storage and transportation of hazardous wastes under Rule 17 of the HOWM Rules, 2016. Procedures for transportation of hazardous wastes such as in accordance with Motor Vehicles Act, 1988; providing relevant information regarding hazardous nature of wastes, emergency measures, labelling, obtaining no objection certificate from SPCB/PCC in case of transportation

FSO VERIFIED -18

for final disposal to other State, transportation by sender or receiver, etc. have been laid down under Rule 18 of the HOWM Rules, 2016.

H. Manifest System (Movement Document) for movement of hazardous waste

The Rule 19 lays down provisions of Manifest System (Movement Document) in various colour-coded manifest (07 colour codes) prescribed as Form 10 which travels with hazardous waste from the point of generation, through transportation, to the final recycling, utilization or disposal facility, as the case may be, as well as intimation of the same to the sender, transporter, receiver and the concerned SPCB/PCC at various stages such as at the time of handing over the waste to transporter and transporter to the receiver.

I. Records and returns

Occupier/Operator is required to maintain date wise records of handling and management of hazardous wastes and send annual returns to SPCB/PCC by 30th June of every financial year about hazardous wastes generation, storage, recycling, utilisation, disposal, etc. Based on which SPCBs/PCCs are required to prepare annual inventory of the waste generated, recycled, utilized, disposed, etc. for the respective State/UT and submit the same to CPCB by 30th September of every financial year. CPCB is required to prepare consolidated report on management of hazardous wastes and submit the same to the Ministry of Environment, Forest and Climate Change before 30th December once in every year. The SPCBs/PCCs shall prepare an annual inventory of the waste generated, recycled, recovered, utilised including co-processed; re-exported, disposed, etc. and submit by 30th day of September every year along with the inventory of hazardous waste generators, actual users, and common and captive disposal facilities to CPCB every two years. CPCB shall prepare the consolidated review report on management of hazardous and other wastes and forward it to the Ministry of Environment, Forest and Climate Change along with its recommendations before 30th day of December once in every year. Provisions in these regards have been stipulated under Rule 20 of the HOWM Rules, 2016.

J. Liability of occupier, importer or exporter and operator of a disposal facility and Financial Penalty

The occupier, importer or exporter and operator of the disposal facility is liable for all damages caused to the environment or third party due to improper handling and management of hazardous and other wastes. Further, occupier and operator of a disposal facility are also liable to pay financial penalty levied

FSO VERIFIED -18

by SPCBs/PCC for violation of provisions under these Rules with prior approval of CPCB, as laid down under Rule 23.

K. Accident reporting

Occupier/Operator of facility is required to immediately intimate the SPCB/PCC through telephone/ e-mail/ about the accident and subsequently send a report as stipulated under Rule 22 of the HOWM Rules, 2016.

3. Provisions about financial penalty and liability for damages caused to the environment under the Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016

Rule 23 of the HOWM Rules, 2016, lays down provisions with regard to liability for damages caused to the environment or third party including financial penalty for violation of provisions of the Rules and the same is reproduced as below:

"23. Liability of occupier, importer or exporter and operator of a disposal facility.-

(1) The occupier, importer or exporter and operator of the disposal facility shall be liable for all damages caused to the environment or third party due to improper handling and management of the hazardous and other waste.

(2) The occupier and the operator of the disposal facility shall be liable to pay financial penalties as levied for any violation of the provisions under these rules by the State Pollution Control Board with the prior approval of the Central Pollution Control Board."

CPCB has issued "Guidelines on Implementing Liabilities for Environmental Damages due to Handling & Disposal of Hazardous Waste and Penalty" for implementing the aforesaid provisions of Rule 23. The guidelines include description of liabilities, approach for valuation of the same, methodology for levying financial penalty, role of SPCB/PCC and other stakeholders etc. SPCBs/PCCs are required to follow procedures laid down under these guidelines while enforcing the aforesaid provisions of Rule 23. Copy of the said guidelines is given at **Annexure I** and is also available at CPCB website **http://cpcb.nic.in/uploads/hwmd/Guidelines_Environmenal_Damages_Costs_200116.pdf**

4. Categorization of violations and financial penalty & environmental compensation thereof

For the purpose of imposing financial penalty and environmental compensation, various violations of HOWM Rules, 2016, can be broadly classified into the following two categories:

A. Category A: Only procedural violations of HOWM Rules, 2016, which has not caused damage to environment or third party

Certain violations of HOWM Rules, 2016, are procedural violations in nature and do not cause any damage to environmental or third party.

For instance, an authorised occupier has collected, stored, packaged, transported and handed over all his hazardous or other wastes generated to authorised recyclers/utilizers in environmentally safe manner but has not sent annual return within the stipulated time period to SPCB/PCC (as required under Rule 20(2) of the HOWM Rules, 2016) or has not given prior intimation to SPCB of the States of transit in case of inter-state movement (as required under Rule 18(5) of the HOWM Rules, 2016), etc. In such cases, though there have been violations of provisions of the Rules which are procedural requirements in nature but has not caused damaged to the environment. However, financial penalty would be applicable in such cases for violations of each and every relevant provision of the HOWM Rules, 2016, as outlined under section 5 of this document.

B. Category B: violations causing environmental damage including procedural violations

These are violations of the HOWM Rules, 2016, causing environmental damages including procedural violations of the Rules. The same may further be classified into two categories as below:

(i) Category B1: Cases where mismanagement of hazardous or other waste has resulted or resulting into environmental damage and such damages liability including assessment of remediation required can be assessed in terms of cost also by applying provisions laid down under CPCB's "Guidelines on Implementing Liabilities for Environmental Damages due to Handling & Disposal of Hazardous Waste and Penalty".

For example, disposal of hazardous or other waste on land or surface/ground water by an occupier, operator, transporter, importer, exporter, etc. as the case may be, has been identified by SPCB/PCC and damages to the environment and remediation work as well as cost thereof can also be assessed by SPCB/PCC in accordance with the said

guidelines. In such cases, liability of the responsible party (occupier, operator, transporter, importer, exporter, etc., as the case may be) can be fixed in terms of various required activities and amount of money required in such activities (i.e. taking up immediate Emergency Response Plan Measures such as containment of hazardous or other waste; assessment of contamination and required remediation work, and; execution of selected remediation plan) in accordance with provisions laid down under the said CPCB's "Guidelines on Implementing Liabilities for Environmental Damages due to Handling & Disposal of Hazardous Waste and Penalty". The responsible party (occupier, operator, transporter, importer, exporter, etc., as the case may be) is required to pay bank guarantee to SPCB/PCC and compensation liability (loss of property, loss of crop, loss of life, treatment cost towards human health impacts, etc.) as suggested in the guidelines. Copy of the said guidelines is given at **Annexure I.**

Besides, financial penalty would also be imposed as given under section 5 of this document

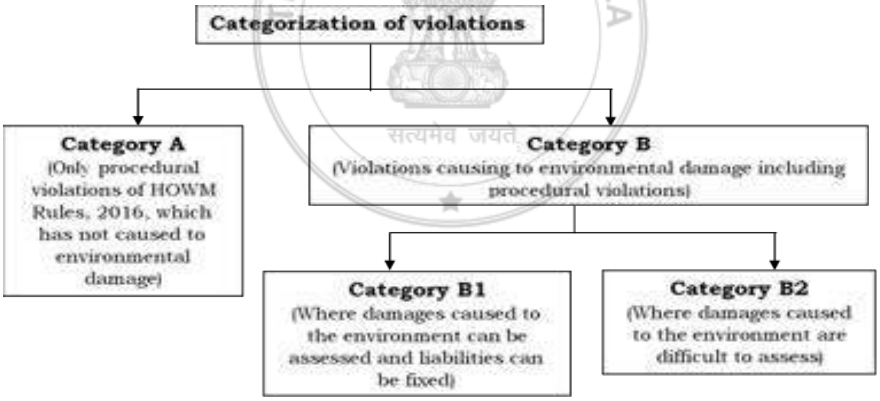

Figure1: Categorization of violations

(ii) **Category B2**: Cases where mismanagement of hazardous or other waste may have caused environmental damage and such damages & remediation required including cost thereof are difficult to assess.

For example, an authorised occupier, operator, transporter, importer, exporter, etc., as the case may be, of hazardous or other wastes has illegally disposed hazardous or other waste on place which is unidentifiable or even if identified, damages to the environment and

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remediation work as well as cost thereof is difficult to be assessed by SPCB/PCC. Such difficulty may arise due to very small quantity of wastes involved in such acts, wastes disposed along with municipal solid waste, wastes may have been washed off with runoff water, etc. In such cases, it may be difficult to assess damages caused to the environment and liability of the responsible party (occupier, operator, transporter, importer, exporter, etc., as the case may be) as well as cost thereof.

Under such circumstances, methodology for imposing financial penalty and environmental compensation are given under section 5 of this document.

5. Methodology for Assessing Financial Penalty and Environmental Compensation

A. Financial Penalty

In accordance with provisions under Rule 23(2) of HOWM Rules, 2016 and section 15 of the Environment (Protection) Act, 1986, CPCB guidelines on "Implementing Liabilities for Environmental Damages due to Handling & Disposal of Hazardous Waste and Penalty" (given at **Annexure I**) stipulate that financial penalty to be levied by the concerned SPCB/PCC for any violation may be limited to maximum of one lakh rupees per provision violated so as to ensure that levying of financial penalty remain within the brief of the Environment (Protection) Act, 1986, since the said Rules have been notified under the Environment (Protection) Act, 1986. However, non-compliance may attract violation of one or several provisions of the said Rules and thus the total financial penalty amount may be arrived by adding up number of provisions violated. Further, additional fine up to Rupees five thousand rupees for every day may also be imposed in case of failure continues by the responsible party beyond period by which remedial/corrective measures would have been implemented as suggested by the SPCB/PCC.

Therefore, financial penalty requires to be imposed and collected from the violators as maximum of Rs. 1 lakh for violation of each provision stipulated under HOWM Rules, 2016 (in addition to the environmental compensation which has been discussed in section B below). List of various violations vis-à-vis provisions of HOWM Rules, 2016 is given at **Appendix A** for ready reference.

Total numbers of violation will vary on case to case basis. For instance (indicative only), unit found generating any hazardous or other waste

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and disposing or handing over their waste to unauthorized person/places without complying any provisions of the HOWM Rules, 2016, may attract violation of 25 numbers of provisions (at S. No. 1, 2, 3, 4, 5(a), 5(b), 6 number of violations at 6(A), 6(D), 8, 31, 32, 33, 34, 39, 40, 41, 42, 49, 47 and 50 of Appendix A). There could be other several scenarios, therefore, total financial penalty amount be derived using the said approach.

B) Environmental Compensation-

For category B1 violations, steps as suggested in the above section 4(B)(i) may be followed in accordance with provisions laid down under the said CPCB's "Implementing Liabilities for Environmental Damages due to Handling & Disposal of Hazardous Waste and Penalty" (given at **Annexure I**). For category B2 violations, environmental compensation as suggested below may be considered.

Quantity of hazardous or other wastes, which may have caused environmental damages, may be proportionate to extent of damages thereof. Environmental compensation may, therefore, be directly correlated with the quantity of hazardous or other waste under reference. It may be difficult to assess extent of damages which may have been caused elsewhere or the damages which have been assimilated by nature. At the same time, sometimes it may not be practically feasible to know quantity of hazardous or other wastes which have been disposed illegally. For instance, a facility, particularly unauthorised unit, is operating for certain years who has never assessed or documented hazardous or other wastes generated by them and has no document to support that the same have been disposed in environmentally sound manner in compliance with the regulations existing since 1989. Further, such facility may have changed their industrial process or raw materials or products, thereby variation in quantity of the wastes generated during such period. Whereas a facility possessing authorization under the Rules is granted the authorisation specifying categories and quantity of the hazardous or other wastes based on declarations made by the unit while making application for the same.

Determination of Environmental Compensation to be recovered for violation of Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016

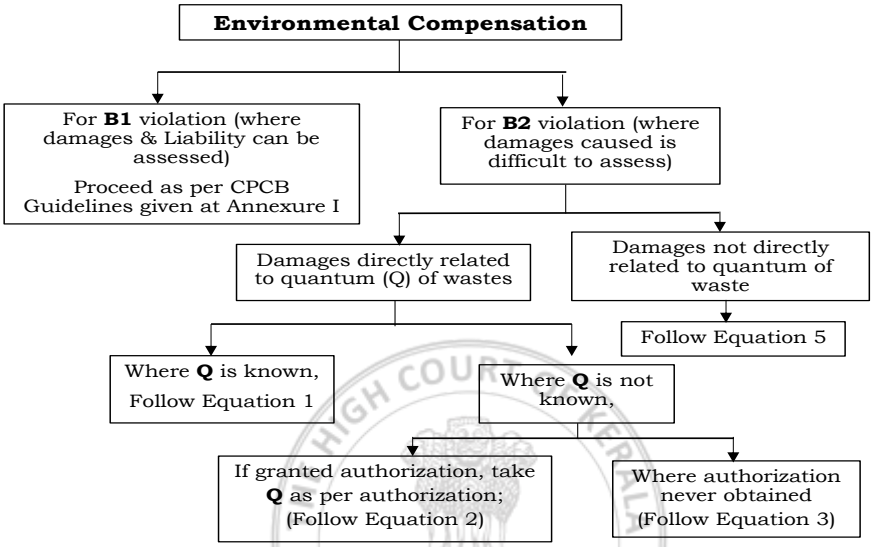

Figure 2. Approach for calculating environmental compensation in brief

Under such wide variables, the following quantity based environmental compensation calculation in Rupees may be used and be imposed on violating facility operator:

Environmental Compensation (EC) = Q x ERF x R

[……Equation 1]

Where,

Q is noticed[1] or observed[1] quantity (in tonne) of hazardous or other wastes which have not been managed in compliance with various provisions of the Acts/Rules/Guidelines/conditions of the

[1] Noticed or observed quantity is the reported quantity or that has come to the notice of SPCB/PCC/CPCB/MOEF&CC. For instance, an authorised utilizer has authorisation to utilise 100 tonnes of certain hazardous waste/annum from which 200 tonnes of product is derived whose use has been specified in SOP issued by CPCB for industrial use only. He may have produced say 150 tonnes of product but it has come to the notice (through inspection or complain verification) of SPCB/PCC/CPCB that he has sold 10 tonnes of the product in open market and not to any industry. Here, Q would be 5 tones. Similarly, an authorised industrial unit authorised for 100 tonne of per annum generation of waste has not sent such waste to common TSDF or any other authorised facility nor is found stored in his premise. Here Q would be 100 tonne.

authorisation/directions issued by CPCB/SPCB/PCC/MoEF&CC (barring procedural violations which have not caused environmental damage)

ERF = Environmental Risk Factor which is a number (as given in Table 1 below) denoting the increasing degree of risk to the environment and human health due to the scenarios as given in the Table 1.

Table 1: Environmental Risk factor (ERF)

S. No.	Violation	ERF	
		For Hazardous Waste	For Other* Waste
1.	When hazardous and other wastes is disposed at unauthorised place or handed over or sold to unauthorised party	1.5	0.3
2.	When treatment has not been imparted , as required, but only partial treatment has been given (by TSDF/Actual user)	1.0	0.2
3.	When product (derived from hazardous or other waste) is not confirming to prescribed specification or is specified for restricted use but sold in open market against (in case of actual user)	1.0	0.2
4.	Wastes found stored beyond the stipulated period (refer Rule 8 of the HOWM Rules, 2008)	0.1	0.05

******Applicable to waste generated indigenously only.*

R= Environmental Compensation factor, which may be taken as Rs. 30,000.

Note:

(i) For facility engaged in generation/ recycling/ utilizing/ disposing of hazardous or other waste and such wastes have never been handed over to common TSDF/ actual user:

Determination of Environmental Compensation to be recovered for violation of Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016

Case I: *If authorisation has been taken at any point of time, in such cases, Q may be taken as below:*

Q= Quantity in terms of tone/per year, as specified in authorisation (one year =300 days) x **Y**

[……Equation 2]

Where, **Y** is Number of years of operation of the facility and may be considered as given in Table 6 below. In case authorisation is given in quantity/day, then convert in tone/year by multiplying the same with 300 days.

Case II: *If authorisation has not been taken at any point of time for all or any given category of hazardous or other waste being generated/utilized*

When above scenario comes to the notice of SPCB/PCC/CPCB, it may be difficult to find Q as records pertaining to quantity of generation/utilization of hazardous or other waste may not be available. In such case, a generalised way of calculating Environmental Compensation (EC) in Rupees may be used as below:

EC (in Rupees) = T x S x C x ECF x Y

[……Equation 3]

Where,
T = Type of facility factor and may be taken as below from Table 2 below:

Table 2: Type of facility factor

Sl. No.	Scale of operation	Factor
1.	(i) Actual user procuring hazardous waste from outside their premises including importing hazardous or other waste from other country	1.5
2.	(i) Actual user engaged in utilizing/ recycling of only other wastes which are generated indigenously, and; (ii) All facility other than at Sl. No. (1) and 2(i) above	1

S = Scale of Operation factor of the facility and may be taken from Table 3 as below:

Table 3: Scale of operation of the facility

Scale of operation	Scale Factor
Large	1.5
Medium	1
Small or Micro	0.5

ECF = Environmental Compensation Factor, which is summation of one or more ECF, as applicable, as given in Table 4 below:

Table 4: Environmental Compensation Factor

S. No	Type of operations from where waste is generated	ECF
1.	Main Process (when significant quantity of waste generation like spent acid, process sludge, spent solvent, etc.)	45,00,000
2	Pollution control equipment like ETP, APCDs, etc. such as ETP sludge, incineration bottom residues, cyclone residue, etc.	35,00,000
3	Ancillary equipment used for supporting the industrial process such as DG set, etc.	10,00,000
4	Handling of hazardous chemicals and wastes (waste packaging materials like emptied drums/bags/etc. contaminated with hazardous chemicals/wastes) and Cleaning activities like cotton/cloth waste contaminated with oil/grease/grease, hazardous chemical storage tank, etc.	20,00,000
5.	Other operations not listed above	10,00,000

C = Category of Facility factor and be taken from Table 5 as given below;

Table 5: Category of Facility Factor

Type of Facility	T Factor
Red Category	1
Orange Category	0.2
Green Category	0.05

Y = Number of years of operation of the facility and may be considered from Table 6 as below:

Table 6: Number of days of operation of the facility

S.No	Years of Operations	Factor to be taken
1.	More than 03 years	5
2.	Equal to less than 03 years	Actual duration of operation in months/12

(ii) In cases where non-compliances have been observed for known period wherein quantity (Q) of hazardous or other waste correlated to such violations is also known – e.g. in-adequate storage facility in cases of authorised facility or failure to comply with any directions of SPCB/PCC/CPCB (say directions issued w.r.t. non-compliance of incinerator emission standards and facility continued to

operate). Amount of EC for such cases may be calculated based on Q associated with such violations period and number of days for which violation took place. Such number of days for which violation took place is the period between the day of violation observed/ due date of compliance of directions and the day of compliance verified by CPCB/ SPCB/ PCC.

EC = EC (as derived from Equation 1) + (Rs. 5000 x Nos. of days for which violation took place]

[……Equation 4]

(iii) Apart from the above cases, there could be following violations or other similar type violations (which are not covered in the various above mentioned scenarios) in hazardous waste TSDF or actual user facility:

a. The leachate is illegally disposed or send to unauthorised party
b. Violations in leachate management or the leachate management facility requires upgradation as per direction of CPCB/ SPCB/ MoEF&CC
c. Waste Water generated during the process is disposed illegally or not as per the consent conditions
d. Effluent Treatment Plant is not meeting the norms stipulated under EPA, 1986 or CTO issued by SPCB/PCC
e. Effluent Treatment Plant exist but requires upgradation so as to meet the conditions specified under CTO or CPCB' guidelines/SoP
f. Treated effluent not managed as per the conditions specified under CTO or CPCB' guidelines/SoP

Under such circumstances, the environment compensation may be calculated as below:

Environmental Compensation (EC) = PI×N×R×S×LF

…..Equation 5]

Where,

PI is Pollution index (based on the CPCB guidelines on Revised Classification of Industrial Sectors under Red, Orange, Green and White Categories) and to be taken from Table 7 below:

Table 7: Classification of industrial sector

Category	Pollution Index
Red	80
Orange	50
Green	30

N is Number of days for which violation took place is the period between the day of violation observed/ due date of compliance of directions and the day of compliance verified by CPCB/ SPCB/ PCC.

R is Environmental Compensation factor in Rupees R to be taken as 250

S = Scale of Operation of the facility and may be taken from Table 8 below;

Table 8: Scale of operation

Scale of operation	Factor
Micro or small	0.5
Medium	1.0
Large	1.5

LF could be based on population of the city/town and location of the industrial unit. For the industrial unit located within municipal boundary or up to 10 km distance from the municipal boundary of the city/town, following factors (LF) may be taken from Table 9 below:

Table 9: Location factor based on population

S. No.	Population* (million)	Location Factor#
1	Less than 1	1.0
2	1 to < 5	1.25
3	5 to <10	1.5
4	10 and above	2.0

*population of the city/town as per the latest Census of India

LF will be 1.0 in case unit is located > 10km from municipal boundary

For critically populated areas/Ecologically sensitive areas, the scope of LF may be examined further.

C. Deterrent Factor

(a) In case of non-timely submission of Environmental Compensation and Financial Penalty

The Environmental Compensation Charges and Financial Penalty shall be deposited by the violating facility within the stipulated time period specified under directions issued by CPCB/SPCB/PCC. In case, such facility does not submit the same within the stipulated time frame the amount will be exponentially increased. The details of exponential increase are given below:

Determination of Environmental Compensation to be recovered for violation of Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016

Table 10: Environmental Compensation Charges and Financial Penalty w.r.t. non-timely submission

Sl. No.	Amount Deposition time period	Environmental Compensation and Financial Penalty Amount
1.	Within 15 days from the stipulated time period as directed by CPCB/SPCB/PCC	Original amount with interest @ 12% per annum for number of days delayed after the stipulated date of amount deposition
2.	After 15 days but within 03 months after the stipulated time period as directed by CPCB/SPCB/PCC	Two times the original amount with interest @ 12% per annum for number of days delayed after 15 days of the stipulated date of
3.	After 03 months and up to 06 months from the stipulated time period	Four times the original amount with interest @ 12% per annum for number of days delayed after three months of the stipulated date of amount deposition
4.	After 06 month	Closure of unit/facility and court

(b) In case of repeated violations

In case the violators found repeatedly non-complying with previous violations or new violations, the amount of Environmental Compensation and Financial Penalty be exponentially increased. The details of exponential increase in such cases are given below:

Table 11: Environmental Compensation Charges in case of repeated violation

Sl. No.	Time Period for compliance	Environmental Compensation and Financial Penalty Amount
1.	First time violation	Original amount
2.	Second time violation	Two times the original amount
3.	Third time violation	Four times the original amount
4.	Fourth time violation	Closer of unit and Court case

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213

19

Annexure-I

Hazardous Waste Management
Series : HAZWAMS/40/2015-16

Guidelines on Implementing Liabilities for Environmental Damages due to Handling & Disposal of Hazardous Waste and Penalty

CPCB

January 2016

Central Pollution Control Board
(Ministry of Environment, Forest & Climate Change, Government of India)
Parivesh Bhawan, East Arjun Nagar,
Shahdara, Delhi – 110032

20

214

20

Guidelines on Implementing Liabilities for Environmental Damages due to Handling & Disposal of Hazardous Waste and Penalty

THE HIGH COURT OF KERALA
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21

215

21

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22

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CENTRAL POLLUTION CONTROL BOARD

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FOREWORD

Hazardous waste is required to be stored, packaged, transported or recycled/utilized/disposed in an environmentally sound manner in compliance with the provisions stipulated under the Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, 2008, notified under the Environment (Protection) Act, 1986. Improper handling or disposal of hazardous waste may lead to environmental damages and violations of provisions laid down under the Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, 2008. Rule 25 of the said Rules lays down provisions for liability of occupier, transporter, operator of a facility and importer. The Rule 25(1) stipulates that the occupier, importer, transporter and operator of the facility shall be liable for all damages caused to the environment or third party due to improper handling of the hazardous wastes or disposal of the hazardous wastes. Further, Rule 25(2) stipulates that the occupier and the operator of the facility shall be liable to pay financial penalties as levied for any violation of the provisions under these Rules by the State Pollution Control Board with the prior approval of the Central Pollution Control Board.

Incidences of fire, spillage, illegal disposal, etc. of hazardous waste are being noticed regularly which necessitates systematic imposition of liability on occupier, importer, transporter and operator of the facility, as the case may be, for damages caused to the environment or third party as well as levy financial penalty for violation of the provisions of the Rules so as to enforce Rule 25. However, assessing various types of liabilities and translating the same in terms of monetary value are challenges before the implementing agencies such as State Pollution Control Boards (SPCBs)/ Pollution Control Committees (PCCs). Similar difficulties have also been faced in arriving at financial penalties to be levied for various kind of violations on the occupier, importer, transporter and operator of a facility.

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With an objective to address the above, these guidelines have been prepared along with description of liabilities, approach for valuation, methodology for levying financial penalties, role of SPCB/PCC and other stakeholders etc. Consultations were held with industries, experts, academic institutes, SPCBs/PCCs etc. The Ministry of Environment, Forest & Climate Change, Govt. of India, has accorded its approval to these guidelines. I am sure these guidelines shall be very helpful to SPCBs/PCCs and other stake holders in implementing provisions of the Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, 2008.

I shall like to put on record my appreciation for work done by my colleagues Shri Bharat K Sharma, Scientist 'E', Shri B. Vinod Babu, Scientist E & I/c HWMD, and Smt. Deepti Kapil, Scientist 'C'.

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INDEX

Section	Description of Item	Page Number
1.0	**Background**	1
2.0	**Legal Framework**	2
3.0	**Description of Impacts**	7
	3.1 Impacts on Soil	8
	3.2 Impacts on Groundwater	9
	3.3 Impacts on Surface water	9
	3.4 Impacts on Human Health	10
	3.5 Impacts on Flora/Fauna	10
	3.6 Impacts on Crops	10
	3.7 Impacts on Property	10
4.0	**Environmental Liabilities**	11
	4.1 Liability for taking up Immediate Emergency Response Plan Measures	12
	4.2 Liability for assessment of contamination	14
	4.3 Liability for Remediation of Contaminated sites	19
	4.4 Compensation Liability	20
5.0	**Approach for valuation of Direct Liability**	22
	5.1 Indicative Cost of liabilities for Site Assessment and Remediation	23
6.0	**Enforcement of Penalty**	26
7.0	**Role of State Pollution Control Board/Pollution Control Committee**	27
	List of Tables	
Table 1	Parameter for assessing Compensation Liability	24
Table 2	Indicative cost for Site Assessment and Remediation	24
	List of Annexure	
Annexure I	Schedule II of Rule, 12 of the Environment (Protection) Rules, 1986	32
Annexure II	Schedule II of the section 15 & 17 on the National Green Tribunal Act, 2010	34
Annexure III	Format for Accident Reporting (Form 14)	35
Annexure IV	Format for Environment Pollution Incident Report	36
Annexure V	Factors to be accounted for estimating liability for Remediation of Soil, Groundwater, Surface water and Sediment Contaminate Sites	39

HIGH COURT OF KERALA

1 BACKGROUND

For safe handling and management of hazardous waste in an environmentally sound manner, Government of India (GOI) has notified the Hazardous Waste (Management & Handling) Rules, 1989, under the Environment (Protection) Act, 1986. However, these Rules were suppressed with re-notification of the Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, 2008.

Under the said Rules, hazardous waste has been defined as those wastes which by reason of any of its physical, chemical, reactive, toxic, flammable, explosive or corrosive characteristics causes danger or is likely to cause danger to health or environment, whether alone or when in contact with other wastes or substances, and shall include wastes as specified in Schedules of the Rules.

The Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, 2008, lays down provisions for requirement of authorization from the concerned State Pollution Control Board (SPCB)/ Pollution Control Committee (PCC) for generation, processing, treatment, package, storage, transportation, use, collection, destruction, conversion, offering for sale, transfer or the like of the hazardous waste, packaging, labeling, transportation, treatment, recycling, disposal, etc. of hazardous waste. The Rules also stipulate provision of liability of occupier, transporter, operator of a facility and importer for all damages caused to the environment or third party due to improper handling or disposal of the hazardous wastes as well provision to pay financial penalties as levied for any violation of provisions under the Rules.

In order to enforce the aforesaid provision of the Rules, assessment of damages caused to the environment or third party due to improper handling or disposal of the hazardous wastes (such as but not limited to, illegal disposal/ spillage of hazardous waste or fire from improper handling/disposal of hazardous waste) is the foremost requirement besides taking immediate measures for control/containment of impacts upon such incidences. Liability to occupier or importer or transporter or operator of the facility, as the case may be, can be assigned for immediate response, site assessment and remediation and also for compensating the damages caused to third parties. Upon immediate reporting of such incidences, every State Pollution Control Board (SPCB)/ Pollution Control Committee (PCC) is expected to have a well-defined system in place to deal with such emergency along with protocol to be followed. A well-defined system will help in adopting a systematic approach towards reporting/inspection of such incidences of spillages/ disposal/ fire because of improper handling/disposal of hazardous wastes and also in implementing environmental damage liability and financial penalty for violation, if any.

This document outlines various liabilities to be imposed on a responsible party for causing environmental damages arising from improper handling/disposal of hazardous waste. These liabilities are applicable to the occupier, transporter, operator of a facility and importer as the case may be, hereinafter referred to as responsible party. The guidelines also identify the compensation liabilities on a responsible party for causing impacts such as injury, loss of life, effects on flora and fauna, loss of livelihood, reduced yield from crops, property loss, etc. However, evaluation and implementation of the same are not covered in the scope of this document, which may be dealt with by the concerned agency of respective State/UT Government. Role of the responsible party and the concerned SPCB/PCC have been outlined in the event of occurrence of incidences. Further, an attempt has also been made to provide an indicative cost for assessment and

remediation, which may, however, vary case to case. The document also provides guidelines for evaluating and implementing financial penalty for violation of provisions stipulated under the Hazardous Waste (Management, Handling & Transboundary Movement) Rules, 2008.

This document is in compliance with the order dated 18/2/2014 of the Hon'ble National Green Tribunal, (Western Zone) Bench, Pune, in the matter of Application No. 87/2013(WZ), Ramubhai Kariyabhai Patel& others versus Union of India& others, wherein it has been ordered that "Gujarat Pollution Control Board and Central Pollution Control Board shall immediately undertake efforts for capacity building within their organizations and also, other SPCBs for scientific handling of such accidents, through training and preparation of guidelines and manuals, particularly enforcement of Rule 25 (1) and (2) of HW Rules, 2008. This is utmost essential to develop such capacity in SPCBs and CPCB as they are the scientific and technical organizations having responsibility to handle such environmental hazards and therefore, it is necessary to ensure adoption of suitable scientific tools and techniques to develop suitable response to such accidents".

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2 LEGAL FRAMEWORK

The National Environment Policy was published by the Ministry of Environment, Forests & Climate Change, GOI, in 2006. This policy is intended to be a guide to action: in regulatory reform, programmes and projects for environmental conservation; and review and enactment of legislation, by agencies of the Central, State, and Local Governments. One of the guiding principles of the National Environment Policy is legal liability. It stipulates that civil liability for environmental damage would deter environmentally harmful actions, and compensate the victims of environmental damage. Conceptually, the principle of legal liability may be viewed as an embodiment in legal doctrine of the "polluter pays" approach, itself deriving from the principle of economic efficiency.

The Section 9 of the Environment (Protection) Act, 1986, stipulates provision about furnishing of information to authorities and agencies and remedial measures where discharge of any environmental pollutant in excess of the prescribed standards occurs or is apprehended to occur due to any accident or other unforeseen act or event. The same is reproduced as below:

9. *Furnishing of information to authorities and agencies in certain cases*

(1) Where the discharge of any environmental pollutant in excess of the prescribed standards occurs or is apprehended to occur due to any accident or other unforeseen act or event, the person responsible for such discharge and the person in charge of the place at which such discharge occurs or is apprehended to occur shall be bound to prevent or mitigate the environmental pollution caused as a result of such discharge and shall also forthwith--

(a) intimate the fact of such occurrence or apprehension of such occurrence; and

(b) be bound, if called upon, to render all assistance, to such authorities or agencies as may be prescribed.

(2) On receipt of information with respect to the fact or apprehension on any occurrence of the nature referred to in sub-section (1), whether through intimation under that sub-section or otherwise, the authorities or agencies referred to in sub-section (1) shall, as early as practicable, cause such remedial measures to be taken as necessary to prevent or mitigate the environmental pollution.

(3) The expenses, if any, incurred by any authority or agency with respect to the remedial measures referred to in sub-section (2), together with interest (at such reasonable rate as the Government may, by order, fix) from the date when a demand for the expenses is made until it is paid, may be recovered by such authority or agency from the person concerned as arrears of land revenue or of public demand.

In exercise of powers conferred under Sections 6 and 25 of the Environment (Protection) Act, 1986, GOI has notified Environment (Protection) Rules, 1986. The Rule 12 of the said Rules and amendments made thereof lays down the aforesaid authorities who shall be intimated about the said occurrence or apprehension of such occurrence. The said provision is reproduced as below:

12. *Furnishing of information to authorities and agencies in certain cases*

Where the discharge of environmental pollutant in excess of the prescribed standards occurs or is apprehended to occur due to any accident or other unforeseen act or event, the person in charge of the place at which such discharge occurs or is apprehended to occur shall forth with intimate the fact of such occurrence or apprehension of such occurrence to all the following authorities or agencies, namely:-

(i) The officer-in-charge of emergency or disaster relief operation in a district or other region of a state or Union territory specified by whatever designation by the Government of the said State or Union territory, and in whose jurisdiction the industry, process or operation is located.

(ii) Central Board or a State Board as the case may be and its regional officer having local jurisdiction who have been delegated powers under section 20, 21, 23 of the Water (Prevention and Control of Pollution) Act 1974 (6 of 1974)- and section 24 of the Air (Prevention and Control of Pollution) Act, 1981 (14 of 1981).

(iii) The statutory authorities or agencies specified in column 3 in relation to places mentioned in column 2 against thereof of the Schedule II.

The said Schedule II is given at Annexure I.

The Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, 2008, has been notified by GOI exercising the powers conferred by Sections 6, 8 and 25 of the Environment (Protection) Act, 1986. Besides laying down provisions for handling and management of hazardous waste, it also stipulates provision of accident reporting and liability of occupier, transporter, operator of a facility and importer with regard to damages caused to the environment or third party due to improper handling of hazardous wastes. Provision of paying financial penalty for any violation of the provisions under the Rules has also been stipulated. The same is reproduced as below:

24. *Accident reporting and follow-up.- Where an accident occurs at the facility or on a hazardous waste site or during transportation of the hazardous waste, the occupier or operator of the facility or the transporter, as the case may be, shall report immediately to the State Pollution Control Board about the accident in Form14.*

25. *Liability of occupier, transporter, operator of a facility and importer.-*

(1) The occupier, importer, transporter and operator of the facility shall be liable for all damages caused to the environment or third party due to improper handling of the hazardous wastes or disposal of the hazardous wastes.

(2) The occupier and the operator of the facility shall be liable to pay financial penalties as levied for any violation of the provisions under these rules by the State Pollution Control Board with the prior approval of the Central Pollution Control Board.

Under the National Green Tribunal Act 2010, the National Green Tribunal has been established for effective and expeditious disposal of cases relating to environmental protection and conservation of forests and other natural resources including enforcement of any legal right relating to environment and giving relief and compensation for damages to persons and property and for matters connected therewith or incidental thereto. The principles of sustainable development, the precautionary principle and the polluter pays principle are applied for passing any order or decision or award by the Tribunal. The National Green

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Tribunal Act 2010, lays down provisions for Relief, compensation, restitution and liability vide section 15 and 17 and the same are reproduced as below:

15.(1) The Tribunal may, by an order, provide,-

a. relief and compensation to the victims of pollution and other environmental damage arising under the enactments specified in the Schedule I (including accident occurring while handling any hazardous substance);

b. for restitution of property damaged;

c. for restitution of the environment for such area or areas, as the Tribunal may think fit.

(2) The relief and compensation and restitution of property and environment referred to in clauses (a), (b) and (c) of sub-section (1) shall be in addition to the relief paid or payable under the Public Liability Insurance Act, 1991.

(3) No application for grant of any compensation or relief or restitution of property or environment under this section shall be entertained by the Tribunal unless it is made within a period of five years from the date on which the cause for such compensation or relief first arose:

Provided that the Tribunal may, if it is satisfied that the applicant was prevented by sufficient cause from filing the application within the said period, allow it to be filed within a further period not exceeding sixty days.

(4) The Tribunal may, having regard to the damage to public health, property and environment, divide the compensation or relief payable under separate heads specified in Schedule II so as to provide compensation or relief to the claimants and for restitution of the damaged property or environment, as it may think fit.

(5) Every claimant of the compensation or relief under this Act shall intimate to the Tribunal about the application filed to, or, as the case may be, compensation or relief received from, any other court or authority.

17(1) Where death of, or injury to, any person (other than a workman) or damage to any property or environment has resulted from an accident or the adverse impact of an activity or operation or process, under any enactment specified in Schedule I, the person responsible shall be liable to pay such relief or compensation for such death, injury or damage, under all or any of the heads specified in Schedule II, as may be determined by the Tribunal.

(2) If the death, injury or damage caused by an accident or the adverse impact of an activity or operation or process under any enactment specified in Schedule I cannot beat attributed to any single activity or operation or process but is the combined or resultant effect of several such activities, operations and processes, the Tribunal may, apportion the liability for relief or compensation amongst those responsible for such activities, operations and processes on an equitable basis.

(3) The Tribunal shall, in case of an accident, apply the principle of no fault.

The said Schedule II is given at Annexure II.

The National Green Tribunal Act, 2010, has also provisions of penalty for failure to comply with orders of Tribunal. Section 26 of the Act stipulates that whoever, fails to comply with any order or award or decision

FSO VERIFIED -18

of the Tribunal under this Act, he shall be punishable with imprisonment for a term which may extend to three years, or with fine which may extend to ten crore rupees, or with both and in case the failure or contravention continues, with additional fine which may extend to twenty-five thousand rupees for every day during which such failure or contravention continues after conviction for the first such failure or contravention. However, the fine payable by Companies may extend to twenty five crore rupees and one lakh rupees a day in case of continuing default.

Thus, regulatory framework exists in the country that requires a potential polluter to be liable for all damages caused to the environment or third parties due to improper handling of the hazardous wastes or disposal of the hazardous wastes. Further, provisions have also been laid down in respect of financial penalties associated with improper handling or disposal of hazardous wastes.

THE HIGH COURT OF KERALA
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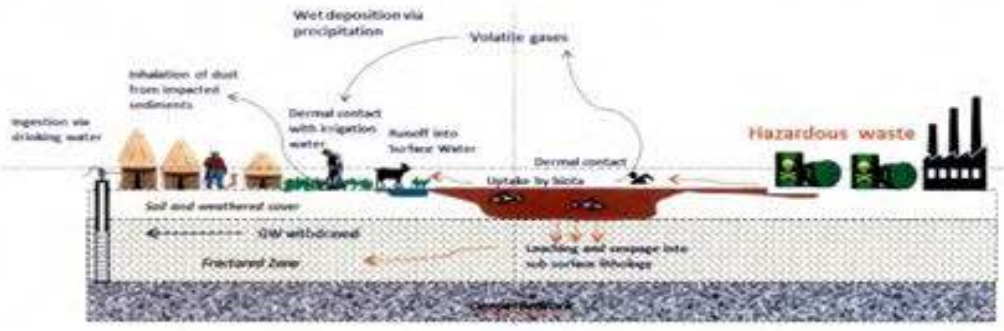
3 DESCRIPTION OF IMPACTS

Impacts to the environment can be caused through a variety of mechanisms. It is not the intent of this guideline document to capture all possible contamination scenarios that may occur in a multitude of permutations and combinations (e.g. leaking underground storage tanks, unlined drains, waste dumping, spillage of wastes, leaking pipes, etc.) that may impact the natural resources i.e. soil, groundwater and surface water bodies. However, this document mainly focuses on the issues pertaining to environmental impacts arising from dumping of hazardous wastes in open land, inappropriate handling of hazardous wastes at operating facilities, spillage of hazardous wastes during handling or transportation, failures of various engineering systems that would otherwise contain a hazardous waste (e.g. secure landfills, storage sumps/containers, etc.), etc.

Contamination to soil, groundwater and surface water are the main media of contamination covered under this document (impacts on media such as air, sea/ oceans etc., are currently not covered under this document). Contaminated natural resources (soil, groundwater and surface water) have impacts on various receptors, which need to be addressed when dealing with the liabilities that have to be allocated to the polluters.

Impacts also include long term effects on the natural resources themselves, which if affected by contamination, become unusable by the general public. Once contaminated, natural resources require an inordinately long time to replenish and revert back to original status. In most cases, in spite of active remediation efforts, a contaminated resource does not typically revert back to its original (pre-contaminated) state.

The figure below shows an indicative conceptual site model, depicting the different pathways and receptors that run the risk of being exposed to any contaminant in soil, groundwater and surface water due to impact from hazardous waste dumping/leakages.



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3.1 Impacts on Soil

Typical examples of how soils are impacted by hazardous wastes include, but are not limited to:

- Clandestine illegal dumping of hazardous waste on open parcels of land;
- Discharge of liquid hazardous waste onto open parcels of land;
- Breaches of landfill wherein hazardous wastes might either get spilled onto open parcels of adjoining land, and/ or sub grade breaches where hazardous wastes and/ or landfill leachate seeps into the subsoil and potentially into the aquifer;
- Spills/ leaks of hazardous wastes during transportation, leakages from trucks, tanks, pipelines, other fixed or mobile storage containers etc.

Impacted soils can lead to indirect impacts to environment including rendering the land not fit for agricultural purposes, serving as a secondary continuous source of contamination to groundwater, serve as a direct exposure pathway to humans who may come into contact with the contaminated soil media (most significantly children who are most susceptible to health risks).

Soils that are contaminated provide a variety of exposure pathways to various receptors including but not limited to, humans, Livestock, including cattle, poultry, etc. These exposure pathways include, but are not limited to

- Dermal contact with contaminated soils;
- Incidental ingestion of contaminated soils;
- Ingestion of crops that are grown on contaminated soils;
- Inhalation of vapours from the hazardous wastes that are dumped on land

A case example for illustration is where hazardous wastes have been surreptitiously dumped outside plant facilities, and in close vicinity to residential areas. Children will get in touch with this contaminated media, farmers may harvest crops on these parcels of land, all of which cause an immediate exposure of the hazardous (which may be carcinogenic, mutagenic etc.) constituents to human receptors. In India, there are no comprehensive soil quality regulations and standards to ascertain the severity of contamination, however, internationally adopted standards can be applied selectively for setting screening and response levels for contaminated soils in the country.

The table below illustrates the typical source-pathway-receptor linkages that may exist in the event of soil being contamination by hazardous wastes.

Potential Source (primary and secondary)	Potential Exposure Pathways	Receptors		
		Human receptors Including Residents and Workers within the impacted area	Human receptors outside the impacted site, exposed indirectly	Indirect receptors such as cattle, flora, fauna
Soil impacted by Hazardous waste	Incidental ingestion or Dermal contact	✓	X	✓
	Inhalation of dust	✓	X	✓
	Inhalation of volatiles	✓	✓	✓

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The impact on soil may further have associated impact on groundwater, surface water, flora, fauna, etc. which has been discussed in subsequent sections below.

3.2 Impacts on Groundwater

Aquifers being the source of vital element of life (drinking water), tend to be the most vulnerable and sensitive natural resources.

Typical examples of how aquifers are impacted with hazardous wastes include, but are not limited to:

- Leaching of contaminants from hazardous wastes dumped onto open parcels of land;
- Leaching of contaminants from hazardous waste storage tanks or leaking underground storage tanks;
- Leaching of contaminants from landfills that are leaking below ground;
- Reverse injection of liquid hazardous waste into deep injection wells;
- Leaching of contaminants from underground leaking pipelines carrying liquid hazardous waste

Typically for aquifers to get contaminated, overlying soils will tend to be contaminated first. Therefore, soil and groundwater contamination often occur simultaneously and are therefore assessed at the same time.

Contaminated aquifers provide a variety of exposure pathways to various receptors, including but not limited to, most importantly Humans, Livestock, including cattle, poultry, flora, fauna etc. These pathways include, but are not limited to

- Dermal contact with contaminated groundwater;
- Ingestion of contaminated groundwater by humans;
- Ingestion of contaminated groundwater by livestock and its potential bio-accumulation in the food chain;
- Ingestion of crops that are irrigated with contaminated groundwater;

Once a groundwater resource (aquifer) is contaminated, the contamination will migrate and spread in the direction of flow of the local/ regional groundwater. If not addressed early enough, and if the source of contamination is allowed to exist, large areas (regional scale) of the aquifer can easily get contaminated, thereby impacting various facets of life in a much larger area.

3.3 Impacts on Surface Water

Surface waters are a common affected natural resource due to illegal disposal or improper handling of hazardous wastes. Surface water, are a highly sensitive receptor in the Indian context (used for bathing purposes, washing purposes, irrigation purposes, in some cases drinking purposes etc.). As mentioned above, surface water bodies in India are used for a multitude of reasons by various human and ecological receptors, and therefore the risk of damage to the environment and human health is very high.

Typical examples of how surface water bodies are impacted with hazardous wastes include, but are not limited to:

- Runoff from hazardous waste dumps entering surface water bodies;
- Discharge of liquid hazardous waste directly into nearby streams or nalla's that ultimately discharge into larger surface water bodies;

Contaminated aquifers provide a variety of exposure pathways to various receptors, including but not limited to, most importantly Humans, Livestock, including cattle, poultry, flora, fauna etc. These pathways include, but are not limited to

- Dermal contact with contaminated surface water;
- Ingestion of contaminated surface water;
- Ingestion of contaminated surface water by livestock and its potential bio-accumulation in the food chain;
- Ingestion of aquatic species that live in contaminated surface waters; etc.

3.4 Impacts on Human Health

Hazardous waste spillage may cause direct effects that could potentially have a long term health impact on humans, long term impacts on flora and fauna, etc. Acute effects could include injury due to direct contact with hazardous waste or inhalation of noxious gases emanated from hazardous wastes. Loss of life may occur in rare cases due to improper handling or disposal of highly reactive wastes such as wastes containing reactive cyanide, reactive sulfide, long term exposure to wastes containing carcinogenic constituents, etc.

Indirect impacts on health may occur to human receptors from incidental ingestion of impacted soils (especially by children), consumption of vegetables grown on soil that is contaminated or irrigated with contaminated water, inhalation of vapors that migrate from contaminated soils/ aquifers into basements of buildings, drinking of contaminated groundwater etc.

3.5 Impact on Flora and Fauna (Biodiversity)

Disposal of hazardous waste on open land may threaten species, populations or endangered ecological communities, or their habitats, known on the site or likely to occur in the locality of the site.

Examples of indirect and direct impacts that are common impacts to biodiversity include clearing/ fragmentation/alteration/destruction of native vegetation and animal habitats, pollution of watercourses and wetlands, sediment, nutrient and pollutant run-off into adjacent vegetation and animal habitats, loss of hollows, nesting and feeding habitats for birds, etc.

Indirect adverse effects on animals may occur from grazing on hazardous waste dumpsites, ingestion of plants grown on contaminated sites, dermal exposure to contaminated ground, drinking of surface water, etc. Contamination in surface water may affect aquatic flora and fauna.

3.6 Impact on Crops

Hazardous waste if disposed on crop lands may potentially change the characteristics of the soil being used for agricultural purposes thus resulting in reduction or total loss of yield of the crop and further indirect losses to livelihood. Spills of hazardous substances on land may cause negative impact on plant productivity depending on quantity and type of constituents. For example, Waste oil spills creates anaerobic conditions in the soil, coupled to water logging and acidic metabolites, the result is high accumulation of aluminum and manganese ions, which are toxic to plant growth. Soil contaminated with hazardous waste may affect mineral and organic matter content, and the geochemistry (e.g., the cation exchange capacity, redox properties) and physical properties (e.g., pH, electrical conductivity etc.) in soil.

3.7 Impact on Property

Accidental spillage of hazardous wastes may result into damage to the public buildings or private property. Adverse effects may include corrosion of structures/walls due to acid spillage, release of gaseous inside the basements of houses. Fires or explosion in incinerable hazardous waste may cause damage to adjoining properties.

FSO VERIFIED -18

4 ENVIRONMENTAL LIABILITY

Liability losses can be incurred through tort, contractual obligations, or violations of statutes. In addition to these traditional sources of liability, there is a unique legal aspect to environmental liability that makes these risks more difficult to manage. An environmental liability is a legal obligation to make a future expenditure due to the past or ongoing manufacture, use, release or threatened release of a particular substance or other activities that adversely affect the environment or human health. Environmental liability is required to be imposed retroactively with strict liability for clean-up costs as per the provisions under environmental protection Acts and Rules notified thereof.

The environmental liability is applicable for the actual environmental damages or alleged releases of pollutants that makes the responsible party obligated to pay for environmental remediation expenses. Environmental liabilities refer to the cleanup obligations and may also refer to potential for fines, penalties for violations of environmental laws.

Environmental liabilities arise from a variety of sources. A detailed list of environmental liabilities would be very lengthy; however, focusing on the environmental liabilities arising from handling and disposal of hazardous wastes, the following are the broad categories of environmental liabilities:

- Compliance obligations related to environmental regulations and Act/Rules that apply for generation, handling, storage, transportation, disposal etc. of hazardous wastes;
- Remediation obligations (existing and future) related to soil/groundwater/surface water contamination or air pollution that pose an environmental risk or potential risk to human health;
- Obligations to compensate the third parties for personal injury, property damage, and economic loss;
- Obligations to pay punitive damages for paying fines/penalties for gross negligence and criminal penalty for statutory or regulatory non-compliance; and
- Obligations to pay for natural resource damages.

The liabilities are applicable to the occupier, transporter, importer of hazardous waste or operator of a facility, as the case may be, referred as responsible party in this document. The liabilities for damages caused to the environment or third party arising due to improper handling, storage, transportation, disposal etc. of hazardous wastes as per the provisions under Rule 25(1) of Hazardous Waste (Management, Handling and Transboundary Movement) Rules, 2008 have broadly been classified into the following:

a) Liability for taking up immediate measures
b) Liability for assessment of contamination
c) Liability for remediation of contaminated sites
d) Liability to pay for natural resource damages and compensation to the third parties for personal injury, property damage, and economic loss (i.e. compensation liability).

The principle of strict liability shall be exercised on the responsible party while implementing environment damage liabilities. Strict liability is the imposition of liability on the responsible party without finding a fault (such as negligence or tortious intent). In cases where two or more persons are liable in respect of same liability, the principle of "joint and several liability" shall be imposed. Under joint and several liability, a claimant may pursue an obligation against any one party as if they were jointly liable and it becomes responsibility of the defendants to sort out their respective proportions of liability and payment.

The obligations to pay punitive damages for paying fines/penalties for gross negligence and criminal penalty for statutory or regulatory non-compliance of the provisions under HWMH&TM) Rules, 2008 have been discussed under chapter "Enforcement of Penalty" of this document.

4.1 Liability for taking up immediate Emergency Response Plan Measures

The most possible scenarios that may occur while handling or disposal of hazardous waste are listed below.

i. Fire due to inflammable nature of hazardous wastes

ii. Explosion due to improper handling of hazardous waste

iii. Incompatible nature of waste, noxious, corrosive, toxic, poisonous, flammable and/ or fire takes place

iv. Leakages of hazardous gases from hazardous waste due to improper operation and / or installation problems

v. Spillages due to failure of piping systems (pipes, pumps, flanges, couplings, hoses, and valves) in handling of hazardous wastes

vi. Leakages or spillages due to external corrosion and structural failure of transporting or storage system (including landfills)

vii. Spills and overfills due to manual error

viii. Leaks or spillages during pumping of liquids or gases from truck or rail car to a storage tank or vice versa

ix. Spillages due to road accidents of trucks or tankers carrying hazardous waste

x. Illegal dumping insider outside the facilities of industries

xi. Spills or leakages due to flooding of hazardous waste containment

xii. Spills or leakages or fire due to hazardous material shifting

xiii. Spills/ leakages or fire due to other technical problems

xiv. Improper storage and disposal of hazardous waste

All occupier, transporter, operator or importer of hazardous waste, as the case may be, are liable for taking up immediate emergency response measures in the event of spillage, improper disposal, fire or mishandling of hazardous waste. The main objective of the emergency response measures is to secure immediate human & environmental safety and contain/control further spillage or release of hazardous waste or release of fumes/gases. Each occupier, transporter, operator or importer of hazardous waste, as the case may be, shall, therefore, develop their own Emergency Response Plan (ERP) in this regard for all

FSO VERIFIED -18

potential spillage/release/fire scenarios, which may vary case to case. Requisite basic safety equipment/ Personal Protective Equipment shall be made available at the site/transportation vehicle and concerned persons shall be trained in implementing ERP. Mock drill shall also be performed time to time.

As discussed above, the ERP may vary from one case to another. However, an ERP should address procedures for dealing with emergency situations and shall comprise the following, but not limited to:

- Containing and controlling incidents so as to minimise the effects and to limit danger to persons, the environment and property;
- Implementing the measures necessary to protect persons and the environment;
- Description of the actions which should be taken to control the conditions at events and to limit their consequences, including a description of the safety equipment and resources available;
- Arrangements for training staff in the duties they will be expected to perform;
- Arrangements for informing concerned authorities and emergency services; and
- Arrangements for providing assistance with off-site mitigatory action.

Detailed instructions shall be prescribed for evacuation, removal of the waste/contaminated substances to safe place, stabilisation, dilution to safe condition etc., wherever applicable. The ERP should be simple and straightforward, flexible and achieve necessary compliance with legislative requirements. Furthermore separate on-site and off-site ERP should be prepared.

Upon incidence, the responsible party shall immediately report the accident in the prescribed Form 14 along with relevant information to the concerned SPCB/PCC. The said Form 14 is given at Annexure III. Further, (i) the officer-in-charge of emergency or disaster relief operation of the district or other region of the state or Union territory specified by whatever designation by the Government of the said State or Union territory, and in whose jurisdiction the industry, process or operation is located; and (ii) the statutory authorities or agencies specified in column 3 in relation to places mentioned in column 2 against thereof of the Annexure I of this document, as applicable, shall also be intimated the fact of such occurrence or apprehension of such occurrence. Fire department, Police department, Hospitals etc. shall also be informed by the responsible party depending upon type of incidence and the emergency phone numbers of such shall be identified and be made available to the concerned person and emergency response team.

Removal of substance to safe place

The emergency spill control procedure should include the following key sections:

- Spills involving hazardous waste should first be contained to prevent spread of the material to other areas. This may involve the use of temporary diking, sand bags, dry sand, earth or proprietary booms / absorbent pads etc.;
- Wherever possible the waste/contaminated substances should be rendered safe by treating with appropriate chemicals (refer to stabilisation / dilution to safe condition given in succeeding paragraph);
- Waste/contaminated substances in a fine dusty form should not be cleared up by dry brushing. Vacuum cleaners should be used in preference, and for toxic materials one conforming to type H (BS 5415) should be used;
- Treated waste/contaminated substances should be absorbed onto inert carrier material to allow

FSO VERIFIED -18

the material to be cleared up and removed to a safe place for disposal or further treatment as appropriate.

- Waste should not be allowed to accumulate. A regular and frequent waste removal procedure should be adopted.

Stabilisation / dilution to safe condition

Once the hazardous waste has been contained to prevent spread of the material to other areas, the waste/ contaminated substances should be treated wherever possible to render it safe. Acidic and alkaline may be treated with appropriate neutralising agents. Due to the differing properties/characteristics of the various categories of hazardous waste, an appropriate treatment strategy with suitable chemicals should be established in each case. For example, highly concentrated spent acid bath will fume when spilled so prior to neutralisation the spill may be diluted with a water spray. However, such dilution shall be carried out preventing spread of diluted waste and emphasising minimal waste generation. Waste specific neutralizing substances/foam should readily be available, as part of the ERP.

Storage and Disposal of spilled waste/ treated waste/contaminated substances/contaminated water

Accumulation of spilled waste/ treated waste/contaminated substances/contaminated water shall not be allowed at the site for long periods. Arrangement shall be made to transport such wastes to secured storage facilities and transferring the same to authorised/permitted treatment and disposal facilities like common hazardous waste treatment, storage and disposal facilities for hazardous wastes or common effluent treatment plant. Inside an industry premise, an incidence may lead to abnormal loading on the effluent treatment plant/common treatment, storage and disposal facilities and in any such situation, the operators of such facilities are reported with suitable information so that appropriate arrangements/preparations can be adopted by them.

Initial Sampling

The responsible party shall carry out sampling of hazardous waste indulged in the incident and spilled/ spread waste at various suitable locations for analysis to identify constituents of concern. Samples of soil, surface water, sediment, ground water at appropriate locations, as the case may be, shall also be carried out which shall help in identifying impact. Wherever applicable, air quality monitoring shall also be carried out in upwind, down wind and source area. Responsible party shall submit a report on immediate response taken by them to SPCBs/PCCs within 48 hours of completion of immediate response measures.

Illegal dumping

In case of illegal dumping, the Regional offices of concerned SPCBs/PCC of a State/UT shall be made nodal agencies for inspection of incident sites, reporting to the officer-in-charge of emergency or disaster relief operation, Fire department, Police department, Hospitals etc. depending upon type of incidence. For this purpose, each SPCB shall identify a response team for each Regional Office and impart necessary training on dealing with the situations. Each regional office of SPCB shall maintain a minimum inventory of safety gadgets, spillage containing material & equipment, sampling tools etc or arrangement of an agency for dealing with such situations at any given time.

4.2 Liability for Assessment of Contamination

Note: For de-minimis environmental release situations (specifically, very small and localised spillages of hazardous wastes, cases of improper disposal of very small quantities of hazardous waste or minor fires involving hazardous wastes), wherein the resultant environmental impact or human health risk is deemed to

be very low in the judgement of either the District Magistrate and/ or Regional Officer of State Pollution Control Board, the Responsible Party may be held liable to take up only the immediate emergency response measures and if the same is completed in a satisfactory manner, may be exempted from undertaking detailed assessment or remediation works. It may be noted that the operative principle in all such situations shall be the potential for environmental impact or risk to human health and not simply the quantity of waste involved. As a starting point for further defining the de-minimis release criteria, it may be assumed that wherein the resultant environmental impact or human health risk is deemed to be very low in the judgement of District Magistrate and/ or Regional Officer of State Pollution Control Board, a release (accidental, negligent or otherwise) not exceeding 50 Litres of a liquid hazardous waste or 200 Kilograms of a solid hazardous waste may not necessarily trigger a requirement to undertake detailed assessments or remediation works. However, these criteria should be considered on a site specific basis, taking into consideration the type of contaminant (for example, the toxicity and exposure of waste), depth to groundwater table, sensitive receptors in the vicinity of the spill/ dump etc. It shall be considered that following the emergency response undertaken by the Responsible Party (specifically, very small and localised spillages of hazardous wastes, cases of improper disposal of very small quantities of hazardous waste or minor fires involving hazardous wastes), there shall still be a need to undertake a validation assessment to confirm that the entire contaminated mass has been removed and that natural resources (Soil, surface water and groundwater) are not impacted. In the event that the validation assessment indicates residual contamination in any of the environmental matrices, exceeding the nominated screening criteria (in the absence of an Indian specific criteria, alternative accepted criteria such as the Dutch Standards, Canadian Standards and/ or USEPA standards may be used), then the Responsible Party shall be held liable to undertake further assessment of contamination and remediation (if warranted) of the impacted area.

Example: A truck that is transporting hazardous wastes in bags, accidently drops a bag on the side of the highway. The authorities may consider case by case, that such small incidents (not exceeding the above mentioned trigger criteria), may only require an emergency response (i. e. pick up the wastes and the underlying soils and transport to the TSDF). However, it shall remain the responsibility of the Responsible Party to document and satisfy the regulatory authorities (SPCB/ PCC's) that the underlying soils and/ or other environmental media are not contaminated.

For events involving significant release of hazardous wastes into the environment, the following guidance shall be implemented by the Responsible Party:

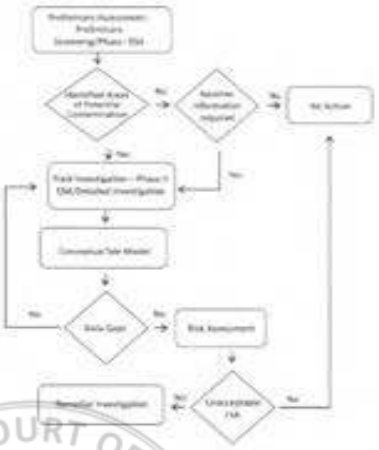
(i) Upon occurrence of an incident, the Responsible Party shall initiate immediate response measures to minimize the environmental impacts as per the guidance laid down in Section 4.1 of this document.

(ii) The Responsible Party is liable to undertake environmental site assessment to characterise the extent of contamination. Such investigations shall be undertaken by engaging consultant(s) or organization having relevant experience. The said investigations shall also include risk to receptors and based on risk assessment study, various remedial plans shall be outlined.

(iii) A typical flow chart that may be considered in assessing whether a subject site is contributing to contamination of natural resources and posing a potential risk to the environment and human receptors is provided below.

FSO VERIFIED -18

(iv) The responsible party shall engage a well-established and experienced professional/ organisation to undertake Phase-I and Phase-II environmental site assessment, as given in subsequent paragraphs. As far as possible, the site assessment shall be carried out in line with locally applicable or - preferably - internationally accepted standards, like ASTM methods. The consultant shall have experience in the concerned industrial process or facility operations in which the incidence is reported.



Some of the key parameters that dictate the level of assessment are given below:

- Geology;
- Contaminant or Chemical of Concern;
- Carcinogenic or non-carcinogenic;
- Single contaminant (e.g., Chromium VI) or multiple contaminants (e.g., Chromium VI, Lead and Mercury), single class of contaminants (metals) or multiple class of contaminants (Metals, Benzene, Toluene and Polynuclear Aromatic Hydrocarbons);
- Impacted matrix (only soil, only groundwater, soil & groundwater, sediments, surface water, and combinations thereof);
- Current and future land use (industrial, commercial, agricultural, residential and combinations thereof);
- Offsite migration of contamination or localised to onsite impacts;
- Impacted receptors (drinking water receptors, agricultural fields, marine waters etc., and combinations thereof);
- Impacted media volumes;
- Duration of contamination;
- Free phase liquids in the case of volatile organic compounds and total petroleum hydrocarbons;

It is evident from the list above and the various potential combinations which make each site unique, initial investigation and assessment is of utmost importance and serve as a foundation for all further actions, penalties, remedial actions to be undertaken, liabilities to be assessed etc.

Phase I Environmental Site Assessment (ESA I)

The responsible party shall submit a Phase I Soil and Groundwater assessment report to the concerned SPCB/PCC within four (04) weeks from date of occurrence of the incidence. This Phase-I assessment report shall provide a description of the incident, land-use, geological and hydrogeological characterization and identify the potential for soil and/or groundwater contamination. This assessment includes limited sampling

FSO VERIFIED -18

and analysis of soil, groundwater and/or surface water samples to identify constituents of concern. Phase-I assessment shall include review of the following aspects:

- Relevant Permits and licenses issued to or held by the Responsible Party
- Site layout plans on suitable maps
- Details type of land use at which the incident occurred including historical use of the land
- Site vicinity/neighbours which may have active or suffer passive impact
- Site situation geographic (including climate conditions, surface waters, geology, hydrology, groundwater flow etc.)
- Cadastral information and ownership documents
- Details of surface water drainage, sewerage and nearby water bodies. Present and former underground structures, including sewers, drains, interceptors and storm water pipes.
- Impacts on air quality and discharge of effluent form incident site
- Presence of nearby wetlands
- Incident report (fires, spills, etc. due to hazardous waste handling)
- Historical maps, plans, photographs
- Records pertaining to generation, storage, transportation or handling of hazardous wastes
- Waste Management practices currently and in the past
- Details of site management, technical staff, employment history of persons involved in handling or management of hazardous wastes
- Neighbours and owners of adjacent properties, if relevant
- The location of the site in relation to sensitive receptors which could drive remedial liabilities shall be identified. Examples include potable water supplies, surface water bodies, sensitive ecosystems (i.e. wetlands), and residential housing location

All analysis of constituent parameters shall be analysed by laboratories accredited under EPA/NABL for those parameters.

In case, the ESA I report reveals non-exceedance of the nominated screening criteria (in the absence of an Indian specific criteria, alternative accepted criteria such as the Dutch Standards, Canadian Standards and/or USEPA standards may be used), then Phase II Environmental Site Assessment may not be required and neither risk assessment or remediation is warranted. However, decision on the same shall be taken by the respective SPCB/PCC of their own or constituting an expert committee thereof, wherein samples taken by the SPCB/PCC during the spill, leakages etc. shall also be taken into consideration.

Phase II Environmental Site Assessment (ESA II)

The purpose of a Phase II environmental site assessment is to build on ESA I findings by collecting soil, groundwater, surface water and sediment samples and chemical analysis data from Areas of Concern (AOCs) identified in the ESA I in order to determine if impacts are present that could pose a risk to human

health and the environment. The ESA II will also identify costs for obtaining ultimate goal to determine liabilities associated with remediation.

The exact number of intrusive soil and groundwater sampling points will be related to the size of the site, the findings from the ESA I and the overall potential for environmental risk .As a minimum, a ESA II shall include the following objectives, or scope of work items:

- Assessment of potential releases of hazardous waste and impact from such releases. Requisite sampling and analysis of soil, surface water, ground water etc., as applicable, shall be carried out in this regard.
- Media specific (soil, groundwater, surface water and sediment) analytical data shall be collected and analysed in an overall framework of identifying risks and potential pathways and receptors – i.e., direct contact and inhalation pathways for soil and groundwater, ingestion of groundwater, degradation of sensitive ecologies and acute risks (for example potential for spontaneous ignition or explosive decomposition) of hazardous constituents. Soil and groundwater sampling locations should be chosen not only to detect contaminated source areas but also to account for risk pathways toward identified receptors.
- Groundwater flow directions shall be derived and documented for the site, if impacts are known or suspected for groundwater. Both upstream (i.e. background) and downstream (i.e. leaving the site) groundwater quality shall be documented.
- Analysis of soil and groundwater samples shall utilize generally acceptable laboratory techniques (an appropriately certified lab) and include the suite of constituents (which consists of a comprehensive analysis of several groups or classes of constituents such as, but not limited to Metals, volatile organic compounds, semi-volatile organic compounds, petroleum hydrocarbons) for analysis that have been utilized on site particularly if these constituents could pose as a risk driver for damage to the environment and/ or human health.
- Analytical techniques should have method detection limits that are at least, lower than concentrations that could pose a risk (i.e. lower than screening values, intervention values etc.).
- All intrusive work should also include a Health and Safety Plan to ensure that safe practices are followed by personnel in the field, and a plan for dealing with emergencies is documented before any field work is initiated.
- Soil samples should be collected from the surface and from the vadose zone (i.e. above the water table). Screening techniques might be used to focus a subset of samples for laboratory analysis, thereby minimizing a large number of samples for broad analytical suites (i.e. PID screening, headspace analysis, use of NAPL indicator dyes, visual and olfactory observations, etc.).
- Groundwater samples should be collected from different depths to account for potential impacts in different aquifers and/or stratigraphic horizons. Well construction (whether temporary or permanent) should be consistent with the chosen standards and biased vertically to account for the presence of non-aqueous phase liquids if they are suspected (i.e. floating Light NAPLs or sinking Dense NAPLs).

The responsible party shall submit site assessment plan for ESA II along with the estimated cost for review/ approval by SPCB/PCC. The responsible party shall proceed for ESA II as per the approval from the concerned

SPCB/PCC followed by risk assessment and, as required, remediation plan.

Risk Assessment

Risk based approach for arriving at site specific target or clean-up levels for an intended land use (which shall be decided by SPCBs/PCCs) shall be adopted. Assessment of human health risk is necessary to support the decision on arriving at site specific target levels for remediation.

Risk Assessment provides an evaluation of the potential threat to human health and the environment. It provides the basis for determining whether or not remedial action is necessary and the justification for performing remedial actions.

A tiered approach to Risk Assessment should be undertaken:

a) Generic Quantitative Risk Assessment (Tier 1 Risk Assessment) - Risk assessment is carried out after ESA II using generic assessment criteria based on local, regional or national screening criteria, international criterion such as Dutch intervention values or US EPA Regional Screening Level.

b) Site-specific Quantitative Risk Assessment (Tier 2 Risk Assessment) – A site specific assessment criteria shall be developed.

The major components of Risk Assessment are summarized below:

Contaminants – The first step in the Risk Assessment is to identify the type and constituent of concerns (COCs) present at the site as the level of risk posed by COCs is a function of type of contaminants, their impact on human health and environment, toxicity and their concentration at a site.

Receptors – The sensitive receptors to which the contamination at the site can reach are identified through receptor survey. Examples of receptors considered in the risk assessment include people (local residents, industrial employee, agricultural worker etc.), animals (cattle), properties (school, hospital etc.), water bodies (groundwater, surface water, etc.).

Components of Risk assessment

Exposure Pathways – The various pathways through which the contamination at the site can reach the identified sensitive receptors are determined though developing the Conceptual Site Model.

The responsible party shall submit their assessment report including ESA I and II reports, along with risk assessment report and, wherever applicable, remediation plan specifying remedial alternatives and selected remedial technologies, proposed Site Specific Targets Levels (SSTL) indicating remedial costs in executing remedial plan for approval of SPCBs/PCCs.

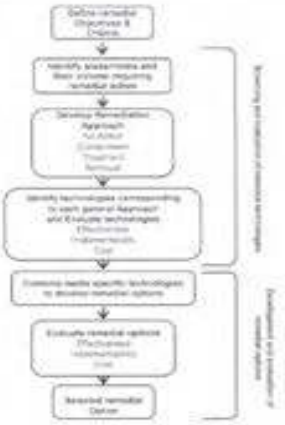
It is imperative that any assessment/ investigations undertaken by the responsible party should have a formal report with third party analytical reports. Any reports should also be reviewed and finally approved by SPCB/PCC or a third party auditor appointed by SPCB/PCC having expertise on the same.

4.3 Liability for Remediation of Contaminated Sites

Having completed the environmental site assessment (ESA I and II) and risk assessment, as above, the Responsible Party is also liable to undertake remediation activity, as applicable. With regard to selection

FSO VERIFIED -18

and implementation of remediation activity, the Responsible Party shall submit to SPCBs/PCCs a detailed report based on ESA I and ESA II along with risk assessment report, remediation plan specifying most applicable remedial technology to bring the site-specific contamination levels down to no risk or an accepted risk level (based on environment/ human health scenario) and estimated costs for remediation. Upon review of the same, the concerned SPCB/PCC shall fix and impose remediation objective and Site Specific Target Levels of requisite constituents of concerns along with intermediate target levels of each of the constituent vis-à-vis time schedule so as to monitor the progress of remediation in between also. Evaluation and fixation of the same may be carried out by the concerned SPCB/PCC of their own or by constituting Expert Committee thereof. An indicative approach for arriving at an appropriate remediation option is given in the flow sheet in this section.



Once the said remediation plan with site specific target levels is approved by the SPCBs/PCCS, responsible party shall undertake site remediation accordingly.

The key parameters that ultimately dictate the level and costs of remediation activities are same as identified for ESA i.e. ecology, CoCs, number of contaminants, Impact matrix, Current and intended future land use (industrial, commercial, agricultural, residential and combinations thereof), migration of contamination, Impacted receptors, Impacted media volumes, Free phase liquids etc.

4.4 Compensation Liability

In the cases where handling or disposal of hazardous waste has resulted into contamination that impacted appropriate loss to livelihood, health related effects and impacts or damages to third party etc.; the responsible party is liable to compensate for such losses by paying costs as decided by the District Magistrate or the concerned agency of the State/UT Govt., as the case may be. Compensations shall be applicable in case of loss of property, loss of crop, reduce yield of product, loss of life, hospitalization costs, loss of flora and fauna etc., resulting out of such handling or disposal of hazardous wastes.

The following compensations are envisaged, but not limited to;

a) Loss of property
b) Loss of crop
c) Reduce yield of product
d) Loss of life
e) Treatment cost towards human health impacts
f) Loss of flora and fauna (including cattle and livestock)

Contaminated natural resources (soil, groundwater, surface water and sediments) may have impacts on various receptors, which need to be addressed when dealing with the costs and liabilities that have to be allocated to the responsible party. These may include compensation for Loss of property, loss of crop, reduce yield of product, loss of life and hospitalization treatment cost; cost liability for compensating for damages caused to flora and fauna, etc.

It is not in the scope of this document to prescribe a detailed methodology for assessing aforesaid

compensation liability However, an indicative list of possible impacts and recovery measures which may help in assessing compensation liability is given in the following table:

Table-1 : Parameters for assessing indirect Compensation Liability

Indirect impact	Environment	Economy	Society	Potential indirect impact (detail)	Possible recovery measure
Drinking water			×	Deterioration of the drinking water quality (groundwater, surface water) next to the site or in a distance from the site	Provide replacement drinking water supply, i.e. supplying through piping, tankers or provide treatment stations and develop monitoring systems. Potential liability cost depends on the extent of the impact and magnitude of the recovery measures
Ecology	×			Destruction/perturbation of fauna/flora species and habitats	Develop monitoring, protection and conservation systems
Agriculture		×	×	Loss of crops due to contamination or irrigation with contaminated water	Provide monetary compensation for the loss of crops, provide replacement irrigation systems, provide replacement lands
Infrastructures/ property	×	×		Disturbance or damage of public or private infrastructures (schools, roads, sewage, etc.), interruption of public services	Provide replacement infrastructures, repair damaged infrastructures, build new structures
Resettlement/ Relocation			×	Deterioration of the well-being of populations and living conditions due to adverse effects of the contamination	Definitive or temporary resettlement/relocation
Health			×	Disease, allergies, emotional and psychological effect	Provide monetary compensation, health structures and health monitoring program
Injury			×	Burns, toxic inhalation, physical impact by blast waves	Move the victim from the immediate area of fire, explosion, or spill (if this can be done without further injury to the victim or you). Locate nearest emergency eyewash or safety shower. Remove any contaminated clothing from the victim and flush all areas of the body contacted by chemical constituents with water. Provide first aid as appropriate and seek medical attention.
Loss of life			×	Death due to chemical spill or occurrence of fire	Provide monetary compensation, employment to the any one member of the family

Assessment of compensation liability and cost thereof for compensating the loss of livelihood, injury, treatment/hospitalization costs, loss of life, damage to property, damage to crop and reduced yield of crops may be imposed by the District Magistrate or the concerned agency of the State/UT Govt., as the case may be.

5 APPROACH FOR VALUATION OF LIABILITIES (IMMEDIATE RESPOSNE, SITE ASSESSMENT & REMEDIATION)

a) Upon receipt of information and site inspection, SPCBs/PCCs taking cognizance of a suspected impact to the environment and/or potential risk to human health, an immediate response liability of not less than INR 10,00,000/- may be levied upon the responsible party for the incident. This would capture only the cost of immediate response and Phase-I environmental assessment. Allocating a liability of INR 10,00,000/- may not mean that the responsible party has to pay this amount, but that he is liable to pay for this. This approach would be to encourage the responsible party to investigate on his own (through a third party auditor and appropriately validated by the regulator), the impacts to the environment/ human health that have occurred on his account. In case the immediate response is initiated by SPCBs / PCCs, the responsible party has a liability to pay two times the immediate response liability i.e. INR 20,00,000/- and interest as decided by the SPCB/PCC.

b) SPCBs/PCCs shall also impose legal and financial liability for undertaking ESA II, risk assessment and remediation work.

c) As described in Section 4.2, the scope of assessment varies largely depending on the constituent, extent of contamination, location, nature of physical setting, etc. and, therefore, it is not possible to derive a simplistic formula for allocating a financial liability for assessment on the responsible party. It is, therefore, recommended that initially, SPCBs/PCCs may include a minimum assessment liability of INR 20,00,000/- (in addition to the immediate response liability) which may be increased up to a maximum of INR 4,50,00,000/- depending on the type and extent of contamination. The indicative cost for assessment and remediation works as given in Table 2 may be referred. Further, in addition to assessment liability, SPCB/PCC may impose the remediation liability based on remediation technology and indicative costs thereof given in Table-2. The responsible party shall submit a bank-guarantee equivalent to the sum of liabilities for the assessment and remediation or for the amount as specified by SPCB/PCC. This however does not include compensatory liabilities that may still be present.

d) Upon finalization of remediation objective and SSTL, the responsible party may approach SPCBs/ PCCs for deduction of site assessment liabilities from the total liabilities imposed upon him in the form of bank guarantee.

e) In the event that the responsible party does not undertake any of the above actions, in spite of the SPCBs/PCCs directions, then SPCB shall undertake the immediate response, assessments and remediation work to the desired clean-up levels (in the larger interest of safe guarding the environment, public health and other relevant mandates under Central/State government regulations) and fix the liability for the same by imposing two to three times the costs incurred along with interest, as decided by the SPCB/PCC. This will serve as a deterrent for operators to follow the status quo of their contamination issue, and encourage them to act by themselves. Further, in case the responsible party does not respond, SPCBs/PCCs shall file FIR under Code of Criminal Procedure (CrPC) or approach National Green Tribunal or appropriate courts, as deemed fit, for initiating proceedings and recovery of the said amount from the responsible party along with the interest.

22

FSO VERIFIED -18

f) In the event that the responsible party is not traceable, then the SPCBs/PCCs may undertake the immediate response, assessments and remediation on their own or by engaging third party. In case funds are not available, they may approach respective State / UT Government for the same. Further, in such circumstances, FIR may be filed by SPCBs/PCCs under the Code of Criminal Procedure (CrPC) for necessary investigation and for identifying the responsible party and initiate recovery of liability equivalent to three times the cost incurred.

g) The occupier, transporter, importer or operator of a facility, may insure for an appropriate amount (depending on types of hazardous waste, quantum, possible impacts etc.) with insurance company to meet various environmental damage liabilities including compensation liability in the event of environmental damages due to handling and disposal of disposal of hazardous waste.

5.1 Indicative Cost of liabilities for Site Assessment and Remediation

It is to be noted that in the absence of any detailed database of sites having been assessed and remediated and the associated costs, a simplistic approach is adopted for assessing the cost of liabilities. Therefore the cost range will vary widely from case to case.

Liability for remediation cannot be calculated or judged without undertaking preliminary assessments and investigations. However, in order to aid the SPCBs/PCCs in setting a baseline yardstick with which they can hold the operator financially accountable, based on current Indian scenarios, a reasonable and worst case likely costs (or liability) estimations are possible. It is expected that the initial assessments and liability allocations, may be large, varying and at times inaccurate. Once a database of such liabilities is created, with more data, the ability to allocate these costs/ liabilities more precisely will increase. As a guidance tool and for indicative purposes, in order to assist the SPCB/ PCC's, a very broad order of magnitude cost matrix for allocating direct liability under some common Indian Hazardous Waste release scenarios has been presented in Table 2. It is emphasized that these costs are indicative in nature, will vary on a case to case basis, between different States, for different type of wastes, site physical setting, etc.

Table 2: Indicative cost for Site Assessment and Remediation

Scenario (onsite and offsite)	Site Assessment/ Risk Assessment		Remediation	
	Cost of liability (INR)	Notes	Cost of liability (INR)	Notes
Landfill breach and release of hazardous waste into environment	20,00,000 to 15,000,000	Costs can vary depending on volume of breach, whether the breach is above ground surface or below ground surface, whether the groundwater resources have been contaminated etc. Costs can vary in relation to the quantity of waste released, type of wastes, etc.	1,0000,000 to 250,000,000 and higher	Low range is applicable for basic excavation of above ground wastes and high range is applicable for situations where breach has occurred below ground contaminating groundwater resources. These complex situations of below ground breach can further be complicated and costly depending on the type of contaminant leaching into the groundwater, the sensitive receptors using that groundwater resource etc.

FSO VERIFIED -18

Guidelines for Implementing Liabilities for Environmental Damages due to Handling and Disposal of Hazardous Waste and Penalty

Scenario (onsite and offsite)	Site Assessment/ Risk Assessment		Remediation	
	Cost of liability (INR)	Notes	Cost of liability (INR)	Notes
Spillage of liquid hazardous waste due to transportation incident, including pipeline failures, spillage from drums, tanks etc also included	20,00,000 to 22,500,000	Costs can vary depending on what type of environmental receptors are located in the immediate spill vicinity (lake, river, stream, shallow potable groundwater aquifer, flora/ fauna, human receptors, etc.)	10000,000 to 200,000,000 and higher	Low costs may be applicable to sites where the groundwater table is very deep and the overlying strata is confining (example thick clay layer, competent rock with no weathering or fractures etc.). High costs may be applicable where the liquid hazardous waste immediately finds it to sensitive receptors including groundwater resources, surface water bodies used by humans, flora and fauna, etc.
Dumping of hazardous waste on open grounds without secondary containment	20,00,000 to 35,000,000	Costs will vary from a small dump (not exceeding 100 kg) to a large dump covering more than 100 m2 spatial extent (not considering the vertical depth). Costs will be higher for sites where groundwater table is shallow, where contaminants are carcinogenic, etc.	10000,000 to 250,000,000 and above.	
Costs less than 10,000,000 may be applicable to small volumes of less than 1 ton and immediate lifting and transportation to TSDF and not residual waste further contaminating the subsurface	Low costs may be applicable to sites where the groundwater table is very deep and the overlying strata is confining (example thick clay layer, competent rock with no weathering or fractures, etc.). High costs may be applicable where the liquid hazardous waste immediately finds it to sensitive receptors including groundwater resources, surface water bodies used by humans, flora and fauna, etc.			

THE HIGH COURT OF KERALA

24

Scenario (onsite and offsite)	Site Assessment/ Risk Assessment		Remediation	
	Cost of liability (INR)	Notes	Cost of liability (INR)	Notes
Improper handling and storage of hazardous waste	10,00,000 to 10,000,000	Low costs are applicable for small spatial impacts (less than 10,000 m2), whereas higher costs are for larger spatial impacts (greater than 10,000 m2). Costs will also vary depending upon the local site settings, geology, hydrogeology, etc.	5,000,000 to 75,000,000 and higher	Low costs may be applicable to sites where the groundwater table is very deep and the overlying strata is confining (example thick clay layer, competent rock with no weathering or fractures, etc). High costs may be applicable where the liquid hazardous waste immediately finds it to sensitive receptors including groundwater resources, surface water bodies used by humans, flora and fauna, etc. Costs are also dependent on the type of contaminant etc.
Fire incident leading to spillage of hazardous waste/ contaminated runoff water	20,00,000 to 10,000,000		10000,000 to 75,000,000 and higher	Low costs may be applicable to sites where the water runoff is low and contact with hazardous wastes has been minimal. Higher costs would be applicable to situations where large volume of contaminated runoff has migrated offsite, spills of hazardous wastes have occurred due to the fire, etc. The costs will also get magnified based on the local site settings, depth to groundwater etc.

Note: The factors that should be accounted for in estimating remediation liabilities based on the remediation technologies are given at Annexure-V. This Annexure may be referred by SPCBs/PCCs to estimate remediation liability.

THE HIGH COURT OF KERALA
सत्यमेव जयते

6 ENFORCEMENT OF PENALTY

The Rule 25(2) of the Hazardous Waste (Management, Handling & Transboundary Movement) Rules, 2008 stipulates that *"The occupier and the operator of the facility shall be liable to pay financial penalties as levied for any violation of the provisions under these rules by the State Pollution Control Board with the prior approval of the Central pollution Control Board."*

Section 15 of the Environment (Protection) Act, 1986, lays down provision for penalty for contravention of the provisions of the Act and the Rules, orders and directions issued thereunder. The same is reproduced as below:

15. PENALTY FOR CONTRAVENTION OF THE PROVISIONS OF THE ACT AND THE RULES, ORDERS AND DIRECTIONS

(1) Whoever fails to comply with or contravenes any of the provisions of this Act, or the rules made or orders or directions issued thereunder, shall, in respect of each such failure or contravention, be punishable with imprisonment for a term which may extend to five years with fine which may extend to one lakh rupees, or with both, and in case the failure or contravention continues, with additional fine which may extend to five thousand rupees for every day during which such failure or contravention continues after the conviction for the first such failure or contravention.

(2) If the failure or contravention referred to in sub-section (1) continues beyond a period of one year after the date of conviction, the offender shall be punishable with imprisonment for a term which may extend to seven years.

In view of above, financial penalty to be levied by the concerned SPCB/PCC for any violation may be limited to maximum of one lakh rupees per provision violated so as to ensure that levying of financial penalty remain within the brief of the Environment (Protection) Act, 1986, since the said Rules have been notified under the Environment (Protection) Act, 1986. However, non-compliance may attract violation of one or several provisions of the said Rules and thus the total financial penalty amount may be arrived by adding up number of provisions violated. Further, additional fine up to Rupees five thousand rupees for every day may also be imposed in case of failure continues by the responsible party beyond period by which remedial/corrective measures would have been implemented as suggested by the SPCB/PCC.

SPCBs/PCCs shall, therefore, send proposals of imposing financial penalty to be levied on defaulting party, as above, to CPCB for their approval. Such proposals shall include background and details of each and every violation of various provisions laid down under the Hazardous Waste (Management, Handling & Transboundary Movement) Rules, 2008, and financial penalty for each of such violations including the additional fine for continuing failures, wherever applicable. CPCB, upon examining the violations, may approve the same.

SPCB/PCC shall also ensure that case is filed in the court for invoking criminal case as stipulated under section 15 of the Environment (Protection) Act, 1986, especially in cases of gross violations of the provisions of the said Act/Rules.

7 ROLES OF STATE POLLUTION CONTROL BOARD / POLLUTION CONTROL COMMITTEE

(i) Every SPCB/PCC shall constitute an in-house team which may be named as "Hazardous Waste Incident Response Team" comprising officials having expertise in the field of hazardous waste management, soil, hydrogeology, water pollution, air pollution, and sampling/analysis. The objective of the aforesaid team shall be to collect all relevant data/samples/information which shall help in estimating/ implementing environmental damage liability and financial penalty. In case adequate analysis facility is not available with SPCB/PCC, an arrangement may be made with EPA/NABL accredited laboratory for this purpose to handle such situation at any given time. The team shall develop its own protocol for immediate response assigning role of each of the officials/laboratory personnel etc. like team leader, sampling equipment mobilization (such as hand held X-Ray Fluorescence (XRF) tool for metals, hand held Photo-Ionization Detector (PID)for VOCs, soil-sampling tools, oil-water interface probe, water level meter, etc.), field reconnaissance, data/information collection, etc. The cost incurred in this regard shall be recovered from the responsible party.

(ii) In cases of receiving information about any illegal disposal of hazardous waste, that has occurred but not been reported by the responsible party, the concerned SPCBs/PCCs shall act immediately on receipt of such information as per the protocol identified in Section 4.1 of these guidelines.

(iii) The following data/samples/information (including but not limited to) may be collected by the said Hazardous Waste Incident Response Team:

(a) Basic information of incident as per format given in Annexure IV;

(b) Background and possible causes of incident;

(c) Estimated quantification of each of the affected media such as land, surface water, ground water, air quality, human population, flora, fauna, third party properties, etc. in terms of area (m2), volume (m3), numbers, percentage etc., as applicable and possible. In case air quality is affected, the same may be reported based on physical observation in terms of area and population under direct impact, physical observation on air quality etc.;

(d) Collection of hazardous waste samples (minimum 03 samples at different location) indulged in the incident for characterisation and analysis of parameters of concern (w.r.t. impacts/ contamination to land/surface water/ ground water etc.) based on preliminary investigation;

(e) Minimum 03 samples each of soil, surface water, sediment, ground water, ambient air etc., as the case may be, at different locations of affected areas as per the judgement of the Hazardous Waste Incident Response Team. However, more number of samples may be required depending on nature of incidence/site conditions;

(f) Sampling of atleast one sample in unaffected area/up-gradient, as the case may be, of soil, surface water, sediment, ground water, ambient air etc. for comparison of contamination/ impacts and estimating liability;

(g) Total number of provisions of the HWM Rules, 2008 and conditions of authorisation granted by the concerned SPCB/PCC that violated in the said incident with elaboration of each of such violations. The same shall help in estimating/ implementing the financial penalty, and;

(h) Note on emergency measures taken by responsible party to alleviate the effect of incident.

More samples/data/information may require to be taken depending upon nature of incidence and site conditions.

(iv) The Hazardous Waste Incident Response Team shall also co-ordinate with the officer-in-charge of emergency or disaster relief operation of the district or other region of a state or Union territory specified by whatever designation by the Government of the said State or Union territory, and in whose jurisdiction the industry, process or operation is located. It shall also co-ordinate with the statutory authorities or agencies, as the case may be, specified in column 3 in relation to places mentioned in column 2 against thereof of the Annexure I of this guidelines.

(v) Based on the report of the Hazardous Waste Incident Response Team and accident reporting (submitted by the responsible party), the SPCB/PCC shall ensure that the immediate response measures are taken by the responsible party to contain further environmental damage. In case the said measures are not being taken by the responsible party adequately, SPCB/PCC shall undertake such measures on its own or engaging a third party and two times the amount incurred in this regard along with interest shall be recovered from the responsible party as immediate response liability (as part of direct liability).

(vi) The SPCB/PCC shall obtain bank guarantee, equivalent to estimated assessment (including risk assessment) and remediation cost liabilities or for the amount as decided by SPCB/PCC, from the responsible party as early as possible but not later than three weeks from day of the incidence. The cost in this regard may be estimated separately (i.e. for assessment and remediation work) by the SPCB/PCC on case to case basis. However, an indicative cost in this regard is given in Section 5.1 which may be helpful.

(vii) SPCB/PCC shall ensure that ESA I report is received from the responsible party within four weeks of the incidence and shall impose ESA II activity, wherever required, also taking into account of data/information/sampling results provided by the Hazardous Waste Incident Response Team. Upon receipt of sampling (ESA II) and assessment plan by the responsible party along with the estimated cost, the SPCB/PCC shall examine the same. SPCB/PCC may approve the same by modifying or adding to the scope of the said sampling and assessment plan, if required.

The approval of the aforesaid plan, including risk assessment, shall be accorded by the SPCB/PCC to the responsible party and the work of assessment thereof shall be monitored by the SPCB/PCC.

Upon receipt of the assessment report, which shall also comprise of risk assessment, proposed remediation objective and remediation plans along with the cost and time schedule, SPCB/PCC shall examine the same and set remediation objective/standard. If required, SPCB/PCC may ask the responsible party to submit any alternate remediation plan along with cost which has not been given in the said assessment report. The approved remediation objective/standard shall be executed by the responsible party which shall be monitored by SPCB/PCC as per the time schedules and phase wise concentration targets thereof as declared in the assessment report so as to meet the said remediation objective/standard. During such monitoring, few sampling and analysis thereof shall also be carried out by the SPCB/PCC for validation.

Upon satisfactory completion of sampling and assessment work and acceptance of the same along with

FSO VERIFIED -18

finalization of remediation objective and remediation plan and cost thereof, the SPCB/PCC may return the part of bank guarantee retaining the said remediation cost. In case submitted bank guarantee value is lesser than estimated remediation cost or the amount specified by SPCB/PCC, the responsible party shall submit additional bank guarantee within a stipulated time.

(viii) Upon satisfactory completion and validation of the remediation objective and standards (SSTL), SPCB/PCC may return the remaining bank guarantee submitted by the responsible party.

(ix) For examining the assessment report, setting remediation objectives/standards, remediation plan and closure reports, SPCB/PCC may carry out the same of their own or constituting an expert committee thereof. Further, to monitor work of assessment and remediation, SPCB may engage a consultant having experience in the field of contaminated site remediation. The cost incurred in this regard shall be paid to SPCB/PCC by the responsible party.

(x) In case the responsible party fails to undertake timely assessment and remediation work, SPCB/PCC shall carry out the same of its own or by engaging a consultant/contractor. In such case, SPCB/PCC shall impose liability equivalent to two times the cost incurred on the same to the responsible party. The said liability amount shall be recovered with interest as applicable. Further, in case the responsible party does not respond, SPCBs/PCCs shall file FIR under Code of Criminal Procedure (CrPC) or approach National Green Tribunal or appropriate courts, as deemed fit, for initiating proceedings and recovery of the said amount from the responsible party.

(xi) In the event that the responsible party is not traceable, then the SPCBs/PCCs may undertake the immediate response, assessments and remediation on their own or by engaging third party. In case funds are not available, they may approach respective State / UT Government for the same. Further, in such circumstances, FIR may be filed by SPCBs/PCCs under the Code of Criminal Procedure (CrPC) for necessary investigation and for identifying the responsible party and initiate recovery of liability equivalent to three times the cost incurred.

(xii) For imposing rate of interest on liability amount to be recovered from the date when the same is raised, SPCB/PCC shall ensure that such rate of interest is fixed by the Government through order in compliance with the provisions stipulated under section 9 of the Environment (Protection) Act, 1986.

(xiii) SPCB/PCC shall impose following conditions in the existing and new authorisation issued to the occupier, transporter, importer or operator of a facility under the Hazardous Waste (Management, Handling and Transboundary Movement) Rules, 2008:

(a) Evolve and implement Emergency Response Plan (ERP) for hazardous wastes for which this authorisation is being granted considering all site specific possible scenarios such as spillages, leakages, fire etc. and their possible impacts. Mock drill in this regard shall be carried out at regular interval of time; and

(b) Provisions outlined in these guidelines shall be followed by the unit/person, whom authorisation is hereby granted.

A declaration on non-judicial stamp paper shall be obtained from authorised person/unit that they will follow all provisions including the scope of submitting bank guarantee stipulated in this guidelines in the

FSO VERIFIED -18

event of spillage, leakage or fire while handling hazardous waste by them. All new authorisations shall be granted only after obtaining the said declaration on non-judicial stamp paper.

For ease in implementing environmental damage liability on responsible party, all SPCBs/PCCs may pursue with respective Government for delegation of power to the SPCB/PCC for recovering amount, as mentioned in this document, as land revenue from the responsible party in case immediate response/ site assessment/ risk assessment/ remediation work, as applicable, is carried out by the SPCB/PCC.

THE HIGH COURT OF KERALA
सत्यमेव जयते

Annexure I

The Environment (Protection) Rules, 1986

[SCHEDULE V]

(See rule 12)

S.No	Place at which the discharge of any environmental Pollutant in excess of prescribed standards occurs or is apprehended to occur	Authorities or agencies to be intimated	Appointed under
	2	3	4
1.	Factories as defined under the factories Act, 1948		
	(a) owned by Central Government and engaged in carrying out the purposes of the Atomic Energy Act, 1962;	I. the atomic energy regulatory Board (AERB)	The Atomic Energy Act, 1962
		II. The Ministry of Environment and forests.	
	(b) Factories other than those mentioned in paragraph (a)	I. The chief Inspector of Factories.	
2.	Mine as defined under the Mines and Minerals (Regulation and Development) Act, 1957	II. The Inspector of Factories having local jurisdiction.	The Factories Act, 1948
		III. The Ministry of Environment and Forests.	do
3.	Port as defined under the Indian Ports Act, 1908	I. Conservator of Ports	The Indian Ports Act, 1908
		II. The Ministry of Environment & Forests	-
4.	Plantations as defined under the Plantations Labour Act, 1951	I. The Chief Inspector of Plantations.	The Plantations Labour Act, 1951
		II. The Inspector of Plantation having local jurisdiction.	-
		III. the Ministry of Environment & Forests.	-

THE HIGH COURT OF KERALA
सत्यमेव जयते

249

55

5.	Motor Vehicles as defined under the Motor Vehicles Act, 1939	I. State Transport Authority	The Motor Vehicles Act, 1939
		II. Regional Transport Authority having regional jurisdiction.	
		III. The Ministry of Environment & Forests	
6.	Ship as defined under the Merchant Shipping Act, 1958	I. Director General of Shipping	The Merchant Shipping Act, 1958
		II. Surveyor having jurisdiction	-do-
		III. The Ministry of Environment & Forests	

1 *Schedule II relating to rule 12 re-numbered as Schedule V vide G.S.R. 422 (E) dated 19.05.1993, published in the Gazette No. 174 dated 19.05.1993.*

HIGH COURT OF KERALA
सत्यमेव जयते

32

56

250

56

Annexure II

Schedule II [See Sections 15(4) and 17(1)] Heads under Which Compensation or Relief for Damage May Be Claimed

a. Death;

b. Permanent, temporary, total or partial disability or other injury or sickness;

c. Loss of wages due to total or partial disability or permanent or temporary disability;

d. Medical expenses incurred for treatment of injuries or sickness;

e. Damages to private property;

f. Expenses incurred by the Government or any local authority in providing relief, aid and rehabilitation to the affected persons;

g. Expenses incurred by the Government for any administrative or legal action or to cope with any harm or damage, including compensation for environmental degradation and restoration of the quality of environment;

h. Loss to the Government or local authority arising out of, or connected with, the activity causing any damage;

i. Claims on account of any harm, damage or destruction to the fauna including milch and draught animals and aquatic fauna;

j. Claims on account of any harm, damage or destruction to flora including aquatic flora, crops, vegetables, trees and orchards;

k. Claims including cost of restoration on account of any harm or damage to environment including pollution of soil, air, water, land and eco-systems;

l. Loss and destruction of any property other than private property;

m. Loss of business or employment or both;

n. Any other claim arising out of, or connected with, any activity of handling of hazardous substance.

THE HIGH COURT OF KERALA
सत्यमेव जयते

33

57

251

57

Annexure III

Form 14

(See rule 24)

FORMAT OF ACCIDENT REPORT

[To be submitted by the occupier or operator of a facility and the transporter to the SPCB/PCC]

1. The date and time of the accident. :
2. Sequence of events leading to accident. :
3. The hazardous waste involvement in accident. :
4. The date for assessing the effects of the accident on health or the environment.
5. The emergency measures taken. :
6. The steps taken to alleviate the effects of accidents. :
7. The steps taken to prevent the recurrence of such an accident :

THE HIGH COURT OF KERALA
सत्यमेव जयते

Place: **Signature:**

Date: **Designation**

FSO VERIFIED -18

252

58

Annexure IV

ENVIRONMENT POLLUTION INCIDENT REPORT

INCIDENT REPORTED BY (NAME): ORGANISATION/ AGENCY:
CONTACT No.:

INCIDENT LOCATION:

RESPONSIBLE PARTY'S NAME: PHONE & ADDRESS:

HAZARDOUS WASTE INVOLVED

FORM: SOLID ☐ TARRY ☐ SLURRY ☐ LIQUID ☐ OTHERS(Please Specify) ☐

QUANTITY OF HAZARDOUS WASTE INDULGED:

CHARACTERISTICS OF HAZARDOUS WASTE INDULGED:

EXPLOSIVE ☐ CORROSIVE ☐ TOXIC ☐ FLAMMABLE ☐

OTHER(Please Specify) ☐

SOURCE OF HAZARDOUS WASTE INDULGED:

NAME OF HAZARDOUS WASTE INDULGED (INCLUDING COMMON & TRADE NAME):

CATEGORY AS PER THE SCHEDULE OF THE HWM RULES, 2008:

DATE/TIME INCIDENT OCCURRED:

TYPE OF INCIDENT: FIRE ☐ ACCIDENT ☐ SPILLAGES ☐ BREACH OF CONTAINMENT ☐

OTHER(Please Specify) ☐

DURATION OF TIME:

THE HIGH COURT OF KERALA

35

59

MEDIA POSSIBLY AFFECTED: AIR ☐ GROUND WATER ☐ SOIL ☐ SURFACE WATER ☐

SUSPECTED LOSS OF AQUATIC LIFE: Yes ☐ No ☐

TOP SOIL CHARACTERISTIC IN THE AREA BASED ON PHYSICAL APPEARANCE (silty, clayey, sandy, etc.)

AQUIFER CHARACTERISTICS: LOCAL POPULATION IN THE VICINITY:

SITUATION DESCRIPTION: Below points may be answered, if possible, in addition to any other information that might be available)

GEOLOGY TYPE: (Sand, Clay, Silt, Weathered rock, fracture rock, competent rock)

DEPTH TO GROUNDWATER: (M BELOW GROUND SURFACE)

GROUNDWATER USAGE IN VICINITY: (Drinking, agricultural, bathing, washing, industrial use)

GROUNDWATER VULNERABILITY : (Likelihood of contaminants reaching the groundwater)

GROUNOWATER SENSITIVITY: (potential significance of any impact)

OTHER WATER RESOURCES VULNERABILITY & SENSITIVITY:

RECEPTORS IN VICINITY: (Residential, industrial, agricultural, marine life, wetlands, etc)

CONDITION

LEAKAGE ☐ LEAKING ☐ FIRE ☐ ACCIDENT ☐ SPILLAGES ☐ OVERFLOW ILLEGAL ☐ DUMP ☐

ANY OTHER, PLEASE SPECIFY:

EVACUATION CONDUCTED: Yes ☐ No ☐ IF YES, AT WHAT DISTANCE:

HUMAN INJURIES: Yes ☐ No ☐ IF YES, HOW MANY AND WHAT TYPE:

HUMAN CASUALTY: Yes ☐ No ☐ IF YES, HOW MANY:

EXTENT OF SPILLAGE/FIRE/ACCIDENT:

POSSIBLE SCENARIOS

FIRE DUE TO INFLAMMABLE NATURE OF HAZARDOUS WASTE ☐ EXPLOSION DUE TO IMPROPER HANDLING ☐

FIRE/EXPLOSION DUE TO INCOMPATIBLE NATURE OF HAZARDOUS WASTE ☐ LEAKAGES/SPILLAGES DUE TO CORROSION ☐

SPILLAGES DUE TO FAILURE OF PIPING SYSTEMS ☐ LEAKAGES/SPILLAGES DURING TRANSFER OF HAZARDOUS WASTES ☐

THE HIGH COURT OF KERALA

254

60

SPILLS/OVERFILLS DUE TO MANUAL ERROR ☐ SPILLS/FIRE DUE TO ACCIDENTS ☐ ILLEGAL DUMPING ☐

SPILLS/LEAKAGES DUE TO FLOODING OF HAZARDOUS WASTE CONTAINMENTS ☐ IMPROPER STORAGE/DISPOSAL ☐

SPILLS/LEAKAGES/FIRE DUE TO TECHNICAL ERROR ☐ LEAKAGE OF HAZARDOUS WASTE LANDFILL PRESENT ON-SITE ☐

ANY OTHER, PLEASE SPECIFY:

ANY KNOWN OR ANTICIPATED RISK:

COMMENTS/REMARKS:

DATE:	TIME:	INITALS:	HAZARDOUS CLASS:

NAME & DESIGNATION OF THE OFFICIAL REPORTING THE INCIDENT:

TELEPHONE #:

SIGNATURE:

THE HIGH COURT OF KERALA
सत्यमेव जयते

61

Annexure V

Factors to be accounted for estimating liability for remediation of soil, groundwater, surface water and sediment contaminate sites based on the remediation technologies

Note: Considering large number of parameters that ultimately dictate the liability and costs for clean-up to the recommended levels, it is currently not possible to generate a complete table with exact costs. Each case/ site is unique in itself as each site has very different key critical parameters, each of which has a different weightage in terms of gravity or impact.

Sr No	Remediation Technologies	Applicability	Assumptions	Comments
In- Situ Biological Treatments for Soil and Sediment Contaminated Sites				
1.	**Bioventing** Oxygen is delivered to contaminated unsaturated soils by forced air movement (either extraction or injection of air) to increase oxygen concentrations and stimulate biodegradation.	Bioventing techniques have been successfully used to remediate soils contaminated by petroleum hydrocarbons, nonchlorinated solvents, some pesticides, wood preservatives, and other organic chemicals.	Key Cost Drivers 1) Surface area is the primary cost driver impacts the number of injection/extraction wells that are installed. The number of wells installed (and cost) increases with surface area. 2) Soil containing sand and gravel produced significantly lower costs by reducing the number of injection/extraction wells that needed to be installed. 3) Other factors include contaminant type and concentration, soil permeability, well spacing and number, pumping rate, and off-gas treatment. This technology does not require expensive equipment and relatively few personnel are involved in the operation and maintenance of a bioventing system. Periodic maintenance monitoring is conducted.	1. Low degree of Operation & Maintenance (O&M) intensity 2. Low degree of capital investment 3. High reliability & low maintenance 4. Low degree of general costs

Sr No	Remediation Technologies	Applicability	Assumptions	Comments
2.	**Bioremediation** The activity of naturally occurring microbes is stimulated by circulating water-based solutions through contaminated soils to enhance in situ biological degradation of organic contaminants or immobilization of inorganic contaminants. Nutrients, oxygen, or other amendments may be used to enhance bioremediation and contaminant desorption from subsurface materials.	Bioremediation techniques have been successfully used to remediate soils, sludges, and ground water contaminated with petroleum hydrocarbons, solvents, pesticides, wood preservatives, and other organic chemicals	Factors that affect cost include the soil type and chemistry, type and quantity of amendments used, and type and extent of contamination	1. High degree of Operation & Maintenance (O&M) intensity 2. Average degree of capital investment 3. Average reliability & low maintenance 4. Low degree of general costs
3.	**Phytoremediation** Phytoremediation is a process that uses plants to remove, transfer, stabilize, and destroy contaminants in soil and sediment. Contaminants may be either organic or inorganic.	Phytoremediation may be applicable for the remediation of metals, pesticides, solvents, explosives, crude oil, PAHs, and landfill leachates	Key Cost Drivers 1) Scale of effort Area of contamination is the primary cost driver 2) Density of sampling Primary cost driver of sampling cost; may be directed by regulatory requirements.	1. Low degree of Operation & Maintenance (O&M) intensity 2. Low degree of capital investment 3. Low reliability & low maintenance 4. Low degree of general costs
In- Situ Physical/Chemical Treatments for Soil and Sediment Contaminated Sites				
4.	**Chemical Oxidation** Oxidation chemically converts hazardous contaminants to non-hazardous or less toxic compounds that are more stable, less mobile, and/or inert. The oxidizing agents most commonly used are ozone, hydrogen peroxide, hypochlorites, chlorine, and chlorine dioxide.		Data can be gathered from Chemical Oxidation for Groundwater	1. High degree of Operation & Maintenance (O&M) intensity 2. Average degree of capital investment 3. Average reliability & low maintenance 4. Average degree of general costs

Sr No	Remediation Technologies	Applicability	Assumptions	Comments
5.	**Soil Vapor Extraction** Vacuum is applied through extraction wells to create a pressure/concentration gradient that induces gas-phase volatiles to be removed from soil through extraction wells. This technology also is known as in situ soil venting, in situ volatilization, enhanced volatilization, or soil vacuum extraction.	The target contaminant groups for in situ SVE are VOCs and some fuels. The technology is typically applicable only to volatile compounds with a Henry's law constant greater than 0.01 or a vapor pressure greater than 0.5 mm Hg (0.02 inches Hg). Other factors, such as the moisture content, organic content, and air permeability of the soil, will also affect in situ SVE's effectiveness.	Key Cost Drivers 1) Economy of Scale Quantity of material treated has a large impact 2) Soil Type Based on the number of wells required 3) Can be radically different if no airflow treatment is required 4) The cost of in situ SVE is site-specific, depending on the size of the site, the nature and amount of contamination, and the hydrogeological setting (EPA, July 1991). These factors affect the number of wells, the blower capacity and vacuum level required, and the length of time required to remediate the site. A requirement for off-gas treatment adds significantly to the cost. Water is also frequently extracted during the process and usually requires treatment prior to disposal, further adding to the cost.	1. High degree of Operation & Maintenance (O&M) intensity 2. Average degree of capital investment 3. High reliability & low maintenance 4. Low degree of general costs
6.	**Solidification/ Stabilization** Contaminants are physically bound or enclosed within a stabilized mass (solidification), or chemical reactions are induced between the stabilizing agent and contaminants to reduce their mobility (stabilization).	The target contaminant group for in situ Solidification/Stabilization is generally inorganics (including radionuclides).	Costs for Solidification/ Stabilization processes vary widely according to materials or reagents used, their availability, project size, and chemical nature of contaminants (e.g., types and concentration levels for shallow applications). The major factor driving the selection process beyond basic waste compatibility is the availability of suitable reagents.	1. Average degree of Operation & Maintenance (O&M) intensity 2. High degree of capital investment 3. High reliability & low maintenance 4. Low degree of general costs
In- Situ Thermal Treatment for Soil and Sediment Contaminated Sites				

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Sr No	Remediation Technologies	Applicability	Assumptions	Comments
7.	**Thermal Treatment** Steam/hot air injection or electrical resistance/ electromagnetic/fiber optic/radio frequency heating is used to increase the volatilization rate of semi volatiles and facilitate extraction.	High moisture content is a limitation of standard SVE that thermally enhancement may help overcome. Heating, especially radio frequency heating and electrical resistance heating can improve air flow in high moisture soils by evaporating water. The system is designed to treat SVOCs but will consequently treat VOCs. Thermally enhanced SVE technologies also are effective in treating some pesticides and fuels, depending on the temperatures achieved by the system.	Key Cost Drivers 1) Soil Type The primary cost driver is soil type, which once again determines soil permeability. For thermal treatment, soils of lower permeability (silts/silty-clays) are less expensive to remediate as they require less gas flow. 2) Depth to Top/Thickness of Contaminated Area The secondary cost drivers are depth to the top and thickness of the contaminated zone. A deeper and thicker region of contaminated soils has higher remedial costs.	1. High degree of Operation & Maintenance (O&M) intensity 2. High degree of capital investment 3. High reliability & low maintenance 4. Average degree of general costs
Ex- Situ Biological Treatment for Soil and Sediment Contaminated Sites (assuming excavation)				
8.	**Biopiles** Excavated soils are mixed with soil amendments and placed in aboveground enclosures. It is an aerated static pile composting process in which compost is formed into piles and aerated with blowers or vacuum pumps.	Biopile treatment has been applied to treatment of nonhalogenated VOCs and fuel hydrocarbons. Halogenated VOCs, SVOCs, and pesticides also can be treated, but the process effectiveness will vary and may be applicable only to some compounds within these contaminant groups.	Costs are dependent on the contaminant, procedure to be used, need for additional pre- and post-treatment, and need for air emission control equipment. Biopiles are relatively simple and require few personnel for operation and maintenance.	1. Low degree of Operation & Maintenance (O&M) intensity 2. Low degree of capital investment 3. High reliability & low maintenance 4. Low degree of general costs
Ex- Situ Physical/Chemical Treatments for Soil and Sediment Contaminated Sites (assuming excavation)				
9.	**Chemical Reduction/ Oxidation** Reduction/oxidation chemically converts hazardous contaminants to non-hazardous or less toxic compounds that are more stable, less mobile, and/or inert. The oxidizing agents most commonly used are ozone, hydrogen peroxide, hypochlorites, chlorine, and chlorine dioxide.			

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Sr No	Remediation Technologies	Applicability	Assumptions	Comments
10.	**Soil Washing** Contaminants sorbed onto fine soil particles are separated from bulk soil in an aqueous-based system on the basis of particle size. The wash water may be augmented with a basic leaching agent, surfactant, pH adjustment, or chelating agent to help remove organics and heavy metals.	The target contaminant groups for soil washing are SVOCs, fuels, and heavy metals. The technology can be used on selected VOCs and pesticides. The technology offers the ability for recovery of metals and can clean a wide range of organic and inorganic contaminants from coarse-grained soils.	Key Cost Drivers 1) Economy of Scale Quantity of material treated has a large impact 2) Processor speed Also depends on the amount of waste being processed	1. High degree of Operation & Maintenance (O&M) intensity 2. High degree of capital investment 3. High reliability & low maintenance 4. Average degree of general costs
11.	**Solidification/ Stabilization** Contaminants are physically bound or enclosed within a stabilized mass (solidification), or chemical reactions are induced between the stabilizing agent and contaminants to reduce their mobility (stabilization).	The target contaminant group for ex situ S/S is inorganics, including radionuclides. Most S/S technologies have limited effectiveness against organics and pesticides, except vitrification which destroys most organic contaminants	Key Cost Drivers 1) Type of Waste Moisture content in the sludge drives up costs compared to solid Contaminant concentration and type determine the amount of reagents added to the waste to attain the required treatment standards 2) Size of the mobile s/s system Choosing the correct size mobile s/s system to adequately handle the throughput of waste volume	1. Average degree of Operation & Maintenance (O&M) intensity 2. High degree of capital investment 3. High reliability & low maintenance 4. Low degree of general costs
Ex- Situ Thermal Treatments for Soil and Sediment Contaminated Sites (assuming excavation)				
12	**Incineration** High temperatures, 870-1,200 °C, are used to combust (in the presence of oxygen) organic constituents in hazardous wastes	Incineration is used to remediate soils contaminated with explosives and hazardous wastes, particularly chlorinated hydrocarbons, PCBs, and dioxins.	Key Cost Drivers 1) Type of waste Debris < Soil < Sludge < Sediment 2) Quantity There is only a INR 18000 - INR 24000 gap in cost for quantities ranging from 5,000 – 100,000.	1. High degree of Operation & Maintenance (O&M) intensity 2. High degree of capital investment 3. Average reliability & low maintenance 4. High degree of general costs

Sr No	Remediation Technologies	Applicability	Assumptions	Comments
13	**Thermal Desorption** Wastes are heated to volatilize water and organic contaminants. A carrier gas or vacuum system transports volatilized water and organics to the gas treatment system.	Thermal desorption systems have varying degrees of effectiveness against the full spectrum of organic contaminants. The target contaminant groups for Low Temperature Thermal Desorption (LTTD) systems are nonhalogenated VOCs and fuels. The technology can be used to treat SVOCs at reduced effectiveness. The target contaminants for High Temperature Thermal Desorption (LTTD) are SVOCs, PAHs, PCBs, and pesticides; however, VOCs and fuels also may be treated, but treatment may be less cost-effective.	Key Cost Drivers 1) Economy of Scale Quantity of material treated has a large impact 2)Moisture content Increases required heat input (increasing fuel costs)	1. High degree of Operation & Maintenance (O&M) intensity 2. High degree of capital investment 3. Average reliability & low maintenance 4. Average degree of general costs
Containment for Soil and Sediment Contaminated Sites				
14.	**Landfill Cap** Landfill caps are used for contaminant source control.	Landfill Caps may be temporary or final. Temporary caps can be installed before final closure to minimize generation of leachate until a better remedy is selected. They are usually used to minimize infiltration when the underlying waste mass is undergoing settling. A more stable base will thus be provided for the final cover, reducing the cost of the post-closure maintenance. Landfill caps also may be applied to waste masses that are so large that other treatment is impractical.	Landfill caps are generally the least expensive way to manage the human health and ecological risks effectively	1. Average degree of Operation & Maintenance (O&M) intensity 2. High degree of capital investment 3. High reliability & low maintenance 4. Low degree of general costs
Other Treatment for Soil and Sediment Contaminated Sites				
15.	**Excavation, Retrieval, and Off-Site Disposal** Contaminated material is removed and transported to permitted off-site treatment and disposal facilities. Pretreatment may be required.	Excavation and off-site disposal is applicable to the complete range of contaminant groups with no particular target group. Excavation and off-site by relocating the waste to a different (and presumably safer) site	These estimates include excavation/removal, transportation, and disposal at an authorized TSDF. Additional cost of treatment at disposal facility may also be required. Excavation and off-site disposal is a relatively simple	1. Low degree of Operation & Maintenance (O&M) intensity 2. Low degree of capital investment 3. High reliability & low maintenance

Sr No	Remediation Technologies	Applicability	Assumptions	Comments
			process, with proven procedures. It is a labor-intensive practice with little potential for further automation. Additional costs may include soil characterization and treatment to meet land ban requirements.	
In- Situ Biological Treatments for Groundwater and Surface Water Contaminated Sites				
16.	**Bioremediation** The rate of bioremediation of organic contaminants by microbes is enhanced by increasing the concentration of electron acceptors and nutrients in ground water, surface water, and leachate. Oxygen is the main electron acceptor for aerobic bioremediation. Nitrate serves as an alternative electron acceptor under anoxic conditions.	Target contaminants for enhanced biodegradation processes are nonhalogenated VOCs, nonhalogenated SVOCs, and fuels. Pesticides also should have limited treatability. Nitrate enhancement has primarily been used to remediate ground water contaminated by BTEX.	Variables affecting the cost are the nature and depth of the contaminants, use of bioaugmentation and/ or hydrogen peroxide or nitrate addition, and ground water pumping rates.	1. High degree of Operation & Maintenance (O&M) intensity 2. Average degree of capital investment 3. Average reliability & low maintenance 4. Low degree of general costs
17.	**Monitored Natural Attenuation** Natural subsurface processes—such as dilution, volatilization, biodegradation, adsorption, and chemical reactions with subsurface materials—are allowed to reduce contaminant concentrations to acceptable levels.	Target contaminants for natural attenuation are VOCs and SVOCs and fuel hydrocarbons. Fuel and halogenated VOCs are commonly evaluated for natural attenuation. Pesticides also can be allowed to naturally attenuate, but the process may be less effective and may be applicable to only some compounds within the group.	There are costs for modeling and monitoring. Modeling determines whether natural attenuation is a feasible remedial alternative. The most significant costs associated with natural attenuation are most often due to monitoring requirements, which include two major parts - site characterization and performance monitoring. Site characterization determines the extent of contamination and contaminant degradation rates. Performance monitoring tracks down contaminants migration and degradation and cleanup status	1. High degree of Operation & Maintenance (O&M) intensity 2. Average degree of capital investment 3. Average reliability & low maintenance 4. Low degree of general costs

Sr No	Remediation Technologies	Applicability	Assumptions	Comments
18.	**Phytoremediation** Phytoremediation is a set of processes that uses plants to remove, transfer, stabilize and destroy organic/ inorganic contamination in ground water, surface water, and leachate.	Phytoremediation can be used to clean up organic contaminants from surface water, ground water, leachate, and municipal and industrial wastewater.	Key Cost Drivers 1) Scale of effort Area of contamination is the primary cost driver 2) Tree size (maturity) is the secondary cost driver.	1. Low degree of Operation & Maintenance (O&M) intensity 2. Low degree of capital investment 3. Low reliability & low maintenance 4. Low degree of general costs
In- Situ Physical/Chemical Treatments for Groundwater and Surface Water Contaminated Sites				
19.	**Air Sparging** Air is injected into saturated matrices to remove contaminants through volatilization.	The target contaminant groups for air sparging are VOCs and fuels.	Key Cost Drivers 1) Surface area (contaminant orientation) Surface area of contamination is the primary cost driver, and directly affects the quantity of air sparge points. 2) Depth to Contamination Depth is the secondary cost driver. Cost increases with depth since it impacts the drilling costs.	1. Low degree of Operation & Maintenance (O&M) intensity 2. Low degree of capital investment 3. High reliability & low maintenance 4. Low degree of general costs
20.	**Bioslurping** Bioslurping combines the two remedial approaches of bioventing and vacuum-enhanced free-product recovery. Bioventing stimulates the aerobic bioremediation of hydrocarbon-contaminated soils. Vacuum-enhanced free-product recovery extracts LNAPLs from the capillary fringe and the water table.	Bioslurping can be successfully used to remediate soils contaminated by petroleum hydrocarbons. It is a cost-effective in situ remedial technology that simultaneously accomplishes LNAPL removal and soil remediation in the vadose zone. Bioslurping is also applicable at sites with a deep ground water table (>30ft.).		1. Low degree of Operation & Maintenance (O&M) intensity 2. Low degree of capital investment 3. Average reliability & low maintenance 4. Low degree of general costs
21.	**Chemical Oxidation** Oxidation chemically converts hazardous contaminants to non-hazardous or less toxic compounds that are more stable, less mobile, and/or inert. The oxidizing agents most commonly used are ozone, hydrogen peroxide, hypochlorites, chlorine, and chlorine dioxide.		Key Cost Drivers 1) Economy of Scale Quantity of material treated has a large impact 2) Moisture content in waste Slight increase in costs between soil and sludge 3) Contaminant concentrations High influent and low effluent concentrations will drive up costs	1. High degree of Operation & Maintenance (O&M) intensity 2. Average degree of capital investment 3. Average reliability & low maintenance 4. Average degree of general costs

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Sr No	Remediation Technologies	Applicability	Assumptions	Comments
22.	**Dual Phase Extraction** A high vacuum system is applied to simultaneously remove various combinations of contaminated ground water, separate-phase petroleum product, and hydrocarbon vapor from the subsurface.	The target contaminant groups for dual phase extraction are VOCs and fuels (e.g., LNAPLs). Dual phase vacuum extraction is more effective than SVE for heterogeneous clays and fine sands.	Key Cost Drivers 1) Soil Type Soil type determines permeability, which is the primary cost driver. Dual phase extraction works best for permeable sand-silt mixtures. Impermeable (clayey) or excessively permeable (gravel/sand) soils are more recalcitrant. 2) Depth to Base of Contamination Depth to the base of contamination is the secondary driver, as an increased thickness and depth of contaminated groundwater increases cost.	1. High degree of Operation & Maintenance (O&M) intensity 2. High degree of capital investment 3. Average reliability & low maintenance 4. Average degree of general costs
23.	**In-Well Air Stripping** Air is injected into a double screened well, lifting the water in the well and forcing it out the upper screen. Simultaneously, additional water is drawn in the lower screen. Once in the well, some of the VOCs in the contaminated ground water are transferred from the dissolved phase to the vapor phase by air bubbles. The contaminated air rises in the well to the water surface where vapors are drawn off and treated by a soil vapor extraction system.	The target contaminant groups for vacuum vapor extraction are halogenated VOCs, SVOCs, and fuels.	Data Not Available	1. Average degree of Operation & Maintenance (O&M) intensity 2. High degree of capital investment 3. Average reliability & low maintenance 4. Average degree of general costs
24.	**Passive/Reactive Treatment Walls** These barriers allow the passage of water while causing the degradation or removal of contaminants.	Target contaminant groups for passive treatment walls are VOCs, SVOCs, and inorganics. The technology can be used, but may be less effective, in treating some fuel hydrocarbons.	Key Cost Drivers 1) Economy of Scale 2) Quantity of material treated has a large impact 3) Width of the plume to be treated - Choice of supplemental amendments - Additional monitoring required by regulators	1. Average degree of Operation & Maintenance (O&M) intensity 2. High degree of capital investment 3. Low reliability & low maintenance 4. Average degree of general costs

FSO VERIFIED -18

Sr No	Remediation Technologies	Applicability	Assumptions	Comments
In- Situ Thermal Treatment for Groundwater and Surface Water Contaminated Sites				
25.	**Thermal Treatment** Steam is forced into an aquifer through injection wells to vaporize volatile and semivolatile contaminants. Vaporized components rise to the unsaturated zone where they are removed by vacuum extraction and then treated.	The target contaminant groups for hot water or steam flushing/stripping are SVOCs and fuels. VOCs also can be treated by this technology, but there are more cost-effective processes for sites contaminated with VOCs.	The most significant factor affecting cost is the time of treatment or treatment rate. With the mobile system, treatment rate is influenced primarily by the soil type, waste type, and on-line efficiency. Cost estimates for this technology are strongly dependent on the treatment rate and range.	1. High degree of Operation & Maintenance (O&M) intensity 2. High degree of capital investment 3. Average reliability & low maintenance 4. Average degree of general costs
Ex- Situ Biological Treatment for Groundwater and Surface Water Contaminated Sites				
26.	**Constructed Wetlands** The constructed wetlands-based treatment technology uses natural geochemical and biological processes inherent in an artificial wetland ecosystem to accumulate and remove metals, explosives, and other contaminants from influent waters.	Constructed wetlands have most commonly been used in wastewater treatment for controlling organic matter, nutrients, such as nitrogen and phosphorus, and suspended sediments.	Data Not Available	1. Average degree of Operation & Maintenance (O&M) intensity 2. High degree of capital investment 3. NA 4. Average degree of general costs
Ex- Situ Physical/Chemical Treatment for Groundwater and Surface Water Contaminated Sites				
27.	**Adsorption/Absorption** In liquid adsorption, solutes concentrate at the surface of a sorbent, thereby reducing their concentration in the bulk liquid phase.	The target contaminants groups for adsorption/ absorption processes are most organic contaminants and selected inorganic contaminants from liquid and gas streams.		1. High degree of Operation & Maintenance (O&M) intensity 2. Average degree of capital investment 3. Average reliability& low maintenance 4. High degree of general costs
28.	**Advanced Oxidation Processes** Advanced Oxidation Processes including ultraviolet (UV) radiation, ozone, and/or hydrogen peroxide are used to destroy organic contaminants as water flows into a treatment tank. If ozone is used as the oxidizer, an ozone destruction unit is used to treat collected off gases from the treatment tank and downstream units where ozone gas may collect, or escape.	Practically any organic contaminant that is reactive with the hydroxyl radical can potentially be treated.	Factors that influence the cost to implementing UV/ oxidation include: - Types and concentration of contaminants (as they affect oxidizer selection, oxidizer dosage, UV light intensity, and treatment time). - Degree of contaminant destruction required. - Desired water flow rates. - Requirements for pretreatment and/or post-treatment.	1. High degree of Operation & Maintenance (O&M) intensity 2. High degree of capital investment 3. Average reliability & low maintenance 4. Average degree of general costs

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Sr No	Remediation Technologies	Applicability	Assumptions	Comments
29.	**Air Stripping** Volatile organics are partitioned from extracted ground water by increasing the surface area of the contaminated water exposed to air. Aeration methods include packed towers, diffused aeration, tray aeration, and spray aeration.	Air stripping is used to separate VOCs from water. It is ineffective for inorganic contaminants. Henry's law constant is used to determine whether air stripping will be effective. Generally, organic compounds with constants greater than 0.01 atmospheres - m3/mol are considered amenable to stripping.	Key Cost Drivers • Influent flow rate • Relative contaminant volatility • Off-gas treatment (when necessary)	1. High degree of Operation & Maintenance (O&M) intensity 2. Average degree of capital investment 3. High reliability & low maintenance 4. Low degree of general costs
30.	**Granulated Activated** Carbon (GAC)/Liquid Phase Carbon Adsorption Ground water is pumped through a series of canisters or columns containing activated carbon to which dissolved organic contaminants adsorb. Periodic replacement or regeneration of saturated carbon is required.	The target contaminant groups for carbon adsorption are hydrocarbons, SVOCs and explosives.	Costs associated with GAC are dependent on wastestream flow rates, type of contaminant, concentration of contaminant, mass loading, required effluent concentrations, and site and timing requirements.	1. High degree of Operation & Maintenance (O&M) intensity 2. Average degree of capital investment 3. High reliability & low maintenance 4. Average degree of general costs
31.	**Groundwater Pumping/ Pump and Treat** Ground water pumping is a component of many pump-and-treat processes, which are some of the most commonly used ground water remediation technologies at contaminated sites.		Cost varies from site to site for ground water pump and treat technology.	1. High degree of Operation & Maintenance (O&M) intensity 2. High degree of capital investment 3. High reliability & low maintenance 4. High degree of general costs
32.	**Ion Exchange** Ion exchange removes ions from the aqueous phase by exchange with counter ions on the exchange medium.	Ion exchange can remove dissolved metals and radionuclides from aqueous solutions. Other compounds that have been treated include nitrate, ammonia nitrogen, and silicate.	Key cost factors include: -Pretreatment requirements. -Discharge requirements and resin utilization. -Regenerant used and efficiency.	1. High degree of Operation & Maintenance (O&M) intensity 2. High degree of capital investment 3. High reliability & low maintenance 4. Average degree of general costs
33.	**Precipitation/ Coagulation/Flocculation** This process transforms dissolved contaminants into an insoluble solid, facilitating the contaminant's subsequent removal from the liquid phase by sedimentation or filtration.	Precipitation is used mainly to convert dissolved ionic species into solid-phase particulates that can be removed from the aqueous phase by coagulation and filtration. Remedial application of this technology usually involve removal of dissolved toxic	Key Cost Drivers • No sensitivity analysis possible as only variable is influent flow rate.	1. Average degree of Operation & Maintenance (O&M) intensity 2. High degree of capital investment 3. High reliability & low maintenance 4. Average degree of general costs

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Sr No	Remediation Technologies	Applicability	Assumptions	Comments
	The process usually uses pH adjustment, addition of a chemical precipitant, and flocculation.	metals and radionuclides. Depending on the process design, sludges may be amenable to metal recovery		
34.	**Separation** Separation techniques concentrate contaminated waste water through physical and chemical means.	The ex situ separation process is used mainly as a pretreatment or post-treatment process to remove contaminants from waste water.		1. Average degree of Operation & Maintenance (O&M) intensity 2. High degree of capital investment 3. High reliability & low maintenance 4. High degree of general costs
Containment for Groundwater and Surface Water Contaminated Sites				
35.	**Physical Barriers** These subsurface barriers consist of vertically excavated trenches filled with slurry. The slurry, usually a mixture of bentonite and water, hydraulically shores the trench to prevent collapse and retards ground water flow.	Slurry walls contain the ground water that thus treating no particular target group of contaminants. They are used to contain contaminated ground water, divert contaminated ground water from drinking water intake, divert uncontaminated ground water flow, and/or provide a barrier for the ground water treatment system.	Factors that have the most significant impact on the final cost of soil-bentonite slurry wall installation include: -Type, activity, and distribution of contaminants. -Depth, length, and width of wall. -Geological and hydrological characteristics. -Distance from source of materials and equipment. -Requirements for wall protection and maintenance. -Type of slurry and backfill used. -Other site-specific requirements as identified in the initial site assessment (e.g., presence of contaminants or debris). -Planning, permitting, regulatory interaction, and site restoration.	1. Average degree of Operation & Maintenance (O&M) intensity 2. High degree of capital investment 3. High reliability & low maintenance 4. Low degree of general costs

Appendix A

List of various violations vis-à-vis provisions of Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016

A. Management of Hazardous and other waste:

1) Not managing hazardous and other wastes in safe and environmentally sound manner.

...[Rule 4(2)]

2) Occupier not sending hazardous and other wastes or selling to an authorised actual user or disposing in an authorised disposal facility.

...[Rule 4(3)]

3) Occupier not transporting hazardous and other wastes to an authorised actual user or to an authorised disposal facility in accordance with the provisions of HOWM Rules, 2016.

...[Rule 4(4)]

4) Occupier not giving specific information (as may be needed for safe storage and disposal of hazardous and other waste) to the operator of treatment, storage and disposal facility.

...[Rule 4(5)]

5) Occupier not taking all the steps while managing hazardous and other wastes to:

   a. contain contaminants and prevent accidents and limit their consequences on human beings and the environment; and

...[Rule 4(6)(a)]

   b. provide persons working in the site with appropriate training, equipment and the information necessary to ensure their safety.

...[Rule 4(6)(b)]

B. Authorization

6) (A) Occupier (requiring Consent to establish or operate under the Water (Prevention and Control of Pollution) Act, 1974 and Air (Prevention and Control of Pollution) Act, 1981) operating facility without making application for authorisation or without obtaining[1] authorisation or operating with the suspended /cancelled authorisation or refused for each of the following activities pertaining to hazardous and other wastes, as applicable:

   (i) handling;

[1] In cases where application for fresh or renewal authorisation application has been made by occupier as per requirement of the HOWM Rules, 2016, and no communication has been made by SPCB/PCC within 120 days of receipt of the said application, violation may not be considered on part of the occupier.

FSO VERIFIED -18

(ii) generation;
(iii) collection;
(iv) storage;
(v) packaging;
(vi) transportation;
(vii) treatment;
(viii) processing;
(ix) recycling;
(x) pre-processing
(xi) co-processing;
(xii) utilisation, and;
(xiii) offering for sale, transfer or disposal

(Each violation among the 13 above would be considered as one violation)

...[Rule 6(1)]

(B) Violations of conditions of authorisation

...**[Rule 6(2) read with items listed in Form 2]**

(a) The person authorised has rented, lent, sold, transferred or otherwise transported the hazardous and other wastes except what is permitted through the authorisation.

...[Item no. 3 of A of the Form 2]

(b) Unauthorised change in personnel, equipment or working conditions as mentioned in the application by the person authorised.

...[**Item no. 4 of A of the Form 2]**

(c) Not implemented Emergency Response Procedure (ERP) for which the authorisation has been granted and carried out mock drill at regular interval of time;

...[Item no. 5 of A of the Form 2]

(d) Not complied with each of the following liabilities, as outlined in the CPCB guidelines on "Implementing Liabilities for Environmental Damages due to Handling and Disposal of Hazardous Waste and Penalty":

(a) Liability for taking up immediate Emergency Response Plan;
(b) Liability for assessment of contamination, and;
(c) Liability for remediation of contaminated site.

..[Item no. 6 of A of the Form 2]

(e) Closing down the facility without taking prior permission of SPCB/PCC.

...[Item no. 7 of A of the Form 2]

(f) Imported hazardous and other wastes not fully insured for transit as well as for any accidental occurrence and its clean-up operation.

...[Item no. 8 of A of the Form 2]

(g) Not maintained record of consumption and fate of the imported hazardous and other wastes

...[Item no. 9 of A of the Form 2]

(h) Application for renewal of authorisation not made three months before the expiry of such authorisation along with other requisite documents

...[Item no. 12 of A of the Form 2]

(i) Non-compliance of each of the other conditions under head "Specific Conditions" laid down under the authorisation, as applicable.
(Each such violation to be considered as one violation)

...[Items under B of the Form 2]

(C) The authorised actual user of hazardous and other wastes not maintaining records of hazardous and other wastes purchased in passbook issued by SPCB/PCC along with the authorisation.

...[Rule 6(7)]

(D) Occupier not handing over the hazardous and other wastes to the authorised actual user by making the entry into the passbook of the actual user.

...[Rule 6(8)]

7) Occupiers, whose authorisation has been cancelled or suspended, not complying with directions of SPCB/PCC for safe storage and management of the hazardous and other wastes.

...[Rule 7(2)]

C. Storage of hazardous and other waste

8) Occupiers storing the hazardous and other wastes for more than 90 days (or other periods specified in case specified by SPCB/PCC, as applicable) or not maintaining record of sale, transfer, storage, recycling, recovery, pre-processing, co-processing and utilisation of such wastes or making these records available for inspection:

...[Rule 8]

D. Utilisation of hazardous and other wastes

9) Utilisation of hazardous and other wastes including within the premises of the generator (if it is not part of process) is not carried out after obtaining authorisation from SPCB/PCC and in respect of waste on the basis of SOP or guidelines provided by CPCB.

...[Rule 9(1)]

10) Cement plant operator not complying with standards notified under the Environment (Protection) Act, 1986 while co-processing hazardous or other waste.

...[Rule 9(3)]

FSO VERIFIED -18

270

76

E. Import and Export of Hazardous and other waste to India

11) Import of hazardous and other wastes from any country to India has been done for disposal.

...[Rule 12(1)]

12) Hazardous and other wastes imported from any country other than recycling, recovery, reuse and utilisation including co-processing.

...[Rule 12(2)]

13) Import of hazardous waste listed in Part A of Schedule III by actual users without the prior informed consent of the exporting country and permission* of MoEF&CC.

...[Rule 12(3)]

14) Other wastes in Part B of Schedule III have not been imported by actual users or if by actual users then without permission* of the MoEF&CC.

...[Rule 12(4)]

15) The import of other wastes in Part D of Schedule III will be allowed as per procedure given in rule 13 and as per the note below the said Schedule.

16) Hazardous and other wastes specified in Schedule VI have been imported.

...[Rule 12(6)]

17) Export of hazardous and other wastes from India listed in Part A and Part B of Schedule III and Schedule VI has not been done with the permission of MoEF&CC.

...[Rule 12(7)]

18) Import or transit for transboundary movement of hazardous and other wastes specified in Part A and Part B of Schedule III has been by declaring wrong information in Form 5 (each of such items of Form 5, which has been wrongly declared, would be considered as one number of corresponding violation for calculating financial penalty)

...[Rule 13(1) read with various items in Form 5 and corresponding item of Form 5]

19) Importer not furnish the required information as per Form 6 of the custom authority accompanied with the document as stipulated under Rule 13(2)

...[Rule 13(2)]

20) Import of used electrical and electronic assemblies or spares or part or component or consumables as listed under Schedule I of the E-Waste (Management and Handling) Rules, 2011, as amended from time to time, has been done without obtaining extended producer responsibility-authorisation as producer under the said E-Waste (Management and Handling) Rules, 2011, as amended.

...[Rule 13(3)]

77

FSO VERIFIED -18

21) Shipment for import is not accompanied with the movement document as given in **Form 6** and the test report of analysis of the waste, consignment, wherever applicable, from a laboratory accredited or recognised by the exporting country. Or, the analysis report does not match with report of customs, if done.

...[Rule 13(10)]

F. Export of hazardous and other wastes from India

22) Occupier exported waste specified in Part A of Schedule III, Part B of Schedule III and Schedule VI of the HOWM Rules, 2016, with wrong declarations in **Form 5** or without insurance cover or without prior informed consent in writing from the importing country in respect of wastes specified in Part A of Schedule III and Schedule VI. (each of such items of Form 5, which has been wrongly declared, would be considered as one number of corresponding violation for calculating financial penalty)

...[Rule 14(1) read with various items in Form 5 and corresponding item of Form 5]

23) Waste specified in Part A of Schedule III, Part B of Schedule III and Schedule VI of the HOWM Rules, 2016, has been exported without permission of MoEF&CC

...[Rule 14(2)]

24) Consignment is shipped for export before the prior informed consent is received from the importing country, wherever applicable.

...[Rule 14(4)]

25) Shipment for export is not accompanied with movement document in Form 6.

...[Rule 14(5)]

26) Records of the hazardous or other waste exported by exporter is not maintained him in Form 3.

...[Rule 14(6)]

27) Illegal import of the hazardous or other waste has not been re-exported by the importer (when traceable) at his cost within a period of ninety days from the date of its arrival into India

...[Rule 15(2)]

G. Import and Export of Hazardous and other waste

28) Import or export of hazardous and other wastes not specified in Schedule III, but exhibiting the hazardous characteristics outlined in Part C of Schedule III has been done without written permission[2] of the MoEF&CC.

...[Rule 12(8)]

[2] Not applicable incase of import of samples of hazardous and other wastes being for testing or research and development purposes up to 1000 gm or 1000 ml shall be exempted from need of taking permission for import under these rules.

FSO VERIFIED -18

H. Operator of Common or Captive Treatment, storage and disposal facility operator

29) Operator of common treatment, storage and disposal facility (TSDF) or occupier of captive TSDF has not set up the common/ captive facility as per technical guidelines issued by CPCB from time to time and without obtaining approval from the SPCB/PCC

...[Rule 16(2)]

30) Operator of common TSDF or occupier of captive TSDF is not operating the facility in safe and environmentally sound manner and its closure and post closure phase, as per guidelines or standard operating procedures issued by CPCB.

...[Rule 16(4)]

I. Packaging and Labelling

31) Any occupier handling hazardous or other wastes and operator of the treatment, storage and disposal facility not packaging in a manner suitable for safe handling, storage and transport as per the CPCB guidelines.

...[Rule 17(1)]

Or

The labelling has not done as per **Form 8.**

...[Rule 17(1)]

32) The label was washable material, weather proof and not easily visible.

...[Rule 17(2)]

J. Transportation

33) The transport of the hazardous and other waste not in accordance with the provisions of these rules and the rules made by the Central Government under the Motor Vehicles Act, 1988.

...[Rule 18(1)]

Or

The transportation of the hazardous and other waste was not in accordance with the guidelines issued by CPCB.

...[Rule 18(1)]

34) The occupier not provided the transporter with the relevant information in **Form 9,** regarding the hazardous nature of the wastes.

...[Rule 18(2)]

Or

The occupier not taken any measures in case of an emergency

...[Rule 18(2)]

Or

The occupier has not labeled the hazardous and other wastes containers as per **Form 8**.

...[Rule 18(2)]

FSO VERIFIED -18

35) Not obtained 'No Objection Certificate' from the State Pollution Control Board of both the States, for transportation of hazardous and other waste for final disposal to a facility existing in a State other than the State where the waste is generated.

...[Rule 18(3)]

36) Not intimated to both SPCBs for recycling or utilisation including co-processing before handing over the waste to the transporter.

...[Rule 18(4)]

37) Not given prior intimation to concerned SPCB, in case of transit of hazardous and other waste for recycling, utilisation including co-processing or disposal before handing over the wastes to the transporter to the States of transit.

...[Rule 18(5)]

38) Not taken authorization from SPCB for safe transport in case of transportation of hazardous and other waste by sender

...[Rule 18(6)]

Or

Not taken authorization from SPCB for safe transport in case of transportation of hazardous and other waste by receiver

...[Rule 18(6)]

39) Not taken authorisation for transport either by the sender or the receiver on behalf the transport is being arranged.

...[Rule 18(7)]

K. Manifest system

40) The sender has not complied with preparation of the requisite seven copies of the manifest in **Form 10** comprising of colour code indicated

...[Rule 19(1)]

Or

The sender has not signed all seven copies

...[Rule 19(1)]

41) The sender has not sent copy 1 (white) to SPCB after signing (requirement of copy 1 (white) manifest as laid down under Rule 19).

...[Rule 19(1a)]

42) The sender has not retained copy 2 (yellow) after taking signature on it from transporter (requirement of copy 2 (yellow) manifest as laid down under Rule 19).

...[Rule 19(1b)]

FSO VERIFIED -18

43) The receiver (actual user or treatment storage and disposal facility operator) has not retained copy 3 (pink) after receiving the waste (requirement of copy 3 (pink) manifest as laid down under Rule 19)

...[Rule 19(1c)]

44) The receiver has not given copy 4 (orange) to transporter after receiving the waste (requirement of copy 4 (orange) manifest as laid down under Rule 19)

...[Rule 19(1d)]

45) The receiver has not sent copy 5 (green) to SPCB (requirement of copy 5 (green) manifest as laid down under Rule 19).

...[Rule 19(1e)]

46) The receiver has not sent copy 6 (blue) to sender (requirement of copy 6 (blue) manifest as laid down under Rule 19).

...[Rule 19(1e)]

47) Transporter accepted waste from the sender for transport without signed copies 3 to 7 of the manifest.

...[Rule 19(3)]

48) The transporter has not submitted copies 3 to 7 of the manifest duly signed with date to the receiver along with the waste consignment.

...[Rule 19(4)]

L. Records and returns.-

49) The occupier handling hazardous or other wastes and operator of disposal facility not maintain records of such operations in **Form 3.**

...[Rule 20(1) or 16(5) or 13(7) or 6(5)]

50) The occupier handling hazardous and other wastes and operator of disposal facility not submitted annual returns to SPCB in **Form 4.**

...[Rule 20(2) or 16(6) or 13(8) or 6 (5)]

M. Accident reporting. –

51) Occupier has not intimated to SPCB about accident through telephone, e-mail and subsequently in **Form 11.**

...[Rule 22]

FSO VERIFIED -18

275

81

Annexure B

Item No. 04 & 05 Court No. 1

BEFORE THE NATIONAL GREEN TRIBUNAL
PRINCIPAL BENCH, NEW DELHI
(Through Video Conferencing)

Original Application No. 804/2017
(Earlier O.A. No. 36/2012)
WITH
M.A. No. 1302/2018
IN
Interlocutory Application No. 63
IN
W. P. (C) No. 657/1995

Rajiv Narayan & Anr Applicant(s)

Versus

Union of India & Ors. Respondent(s)

With

The Research Foundation for Science, Technology
And Natural Resource Policy Applicant(s)

Versus

Union of India & Ors. Respondent(s)

Date of hearing: 12.04.2019

CORAM: HON'BLE MR. JUSTICE ADARSH KUMAR GOEL, CHAIRPERSON
HON'BLE DR. NAGIN NANDA, EXPERT MEMBER

For Applicant(s): Mr. Raj Panjwani, Senior Advocate
Ms. Meera Gopal, Advocate
Mr. Rahul Choudhary, Advocate
For Respondent (s): K. Enatoli Sema and Mr. Amit Kumar Singh Advocates for State of Nagaland
Mr. Manish Kumar, Advocate
Mr. Sriansh Prakash and Mr. Raj Kumar Maurya, Advocates for EDMC
Mr. Daleep Dhyani, Advocate for UPPCB
Mr. Amit Tiwari, Advocate for SOUP
Mr. Raj Kumar, Advocate for CPCB

ORDER

1. The issue for consideration is non-compliance of the Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016. The status reports filed by the States were considered with reference to the following:

82

1

FSO VERIFIED -18

"1. As to what is the total generation of hazardous waste in their respective States.

2. Which agencies have been authorized in terms of rules to collect, transport, disposed of and the process of the hazardous wastes.

3. What is the capacity of the plants which have been given due authorization for that purpose.

4. What happens and how the remnant hazardous waste is being dealt with.

5. The members who have been allotted any of the authorized plants and are not sending hazardous waste to those plants. What action the concerned authorities i.e. the State Government and the respective States and State Pollution Control Boards have taken so far, against such members.

These details should be filed within one week from today."

2. Vide order dated 30.07.2018, the Tribunal found that Central Pollution Control Board (CPCB) was required to prepare a consolidated review report every year under Rule 20, based on reports of the State Pollution Control Boards (SPCBs). The Tribunal directed as follows:

"(i) All the States, where the hazardous waste is being generated must set up Treatment, Storage and Disposal Facility (TSDF) facility of adequate capacity at appropriate locations within three months from today and forthwith imitate action against erring units.

(ii) Central Government and Central Pollution Control Board must forthwith monitor the compliance of the rules by reviewing the need for action in all the states.

(iii) The Central Pollution Control Board may forthwith constitute a monitoring Committee for the purpose it may appoint a Nodal Officer exclusively to oversee the compliance of the rules. The Member Secretary CPCB may act as a Nodal Officer till a substitute is found. The action taken must be placed on the website of the Central Pollution Control Board within 3 months from today. Compliance report be filed before this Tribunal on or before 30th November, 2018, which will be treated as a separate application."

FSO VERIFIED -18

3. Setting up of Treatment, Disposal and Storage Facility (TSDF) being an urgent and important requirement which was required to be monitored as above. In compliance of the directions of the Tribunal, an affidavit has been filed on 08.02.2019 by the CPCB stating that on 09.08.2018 a Monitoring Committee was constituted headed by Dr. Ajay A. Deshpande, former Expert Member, NGT. CPCB also issued directions under Section 5 of the Environment (Protection) Act, 1986 on 30.01.2019 for all the SPCBs/Pollution Control Committees (PCCs) as follows:

"a) Ensure that all the solvent recovery industries in the state have mandatory Authorisation for the same in compliance with the SOP and Checklist issued by CPCB for solvent recovery units, within one month. The said SOP and checklist have been circulated to all SPCBs/PCCs vide letter no. B29016/(SC)/1(55-IV)/17-18/WM-II/18152-86 dated 08/3/2018 and is also available at CPCB website http://cpcb.nic.in/uploads/hwmd/utilizaionspent solvent.pdf.

b) Ensure that these solvent recovery industries shall immediately follow the SOP, for safe and scientific spent solvent handling, processing and storage.

c) Ensure that such solvent recovery units shall comply with the provisions of HOWM Rules, 2016, in terms of interstate transport of Hazardous waste and manifest document prescribed under Rule 18 and 19 of the HOWM Rules, 2016, with immediate effect. Stringent action be taken against the erring industries who are giving the spent solvent to such recycling industries without following the manifest systems.

d) Conduct industry interaction programs within a month to create awareness and sensitization on HOWM Rules, 2016 with all the stakeholder industries of Spent Solvent generation/utilization.

e) Prepare an inventory of such solvent recovery units and publish the same on their website for information of all, stakeholders within one month with copy to CPCB within one month."

4. The Monitoring Committee furnished its interim report in compliance of orders of this Tribunal after reviewing the various aspects of enforcement of the Rules proposing actions as follows:

" | **Sl.** | **Observations** | **Proposed Actions (Responsible** 84

FSO VERIFIED -18

No.		Agency and timeline of action)
1	**Hazardous waste identification: - Uniformity in assessment, Byproducts and solvents (Details in Chapter 4 – Section 4.1.1)** a. The Rules define by-products very categorically linking it to its intended use. Presently, there is no verification or appraisal of such continuous intended use before classifying certain waste as a byproduct. There is a need for SOP/guidelines for identification of by-products based on the manufacturing process as well as intended use. b. Applicability of various clauses of the HW Rules to the 'other waste' also needs to be defined clearly in the Rules itself. c. Presently, there is hardly any scientific examination or scrutiny for identification and quantification of HW prior to grant of authorisation. d. The HW Rules basically focuses on a close loop approach for the HW Management which is reflected in the adoption of manifest system in order to ensure that the HW movement is continuously tracked till its final disposal (Cradle to Grave approach). e. However, in case of spent solvent sent for solvent recovery, such manifest system seems to be ending at the door step of the spent solvent recycler. It would be advisable to continue this manifest system right upto the actual user of such recovered solvent from solvent recovery plant to ensure appropriate regulation of spent solvent plant performance and appropriate accounting and use of recovered solvent. The similar approach is also required to be adopted in all cases of recycling/recovery/ utilisation such as used oil, waste oil, lead scrap, spent acid, spent catalyst, etc.	1. There is a need to urgently prepare a guidelines or protocol on how to decide the by-product on specific criteria. This can be done based on chemical process involved in order to bring consistency in approach. (MoEF&CC and CPCB: 06 months) 2. Other waste is presently missing from all the regulatory actions, including inventory. It is necessary to bring such waste in regulatory domain, as envisaged in the rules. (SPCBs/PCCs: inventory of 2018-19 onwards). 3. SPCBs/PCCs need to take steps to ensure closing of the manifests received and reconcile the HW handling data. This work is humungous and need support in terms of software and online submissions. (SPCBs/PCCs). 4. Pan India IT based solution is suggested for tracking HW. Such integrated data handling and management solution is under implementation by CPCB which the committee would like to review in next phase. 5. The pre-processing and recycling/utilisation facilities need to be treated as critical environmental infrastructure facilities for sound environmental management of hazardous waste so as to ensure enhanced level and frequency of enforcement and environmental monitoring. Elaborate protocols are needed to be developed. (SPCBs/PCCs: continuous activity). 6. According to Rules, the identification and quantification of the hazardous waste generation is to be done at the authorisation stage itself and therefore, it is necessary that SPCBs shall adopt the scientific principles as enumerated for such identification and quantification of HW. (SPCB/PCCs: Immediate)

2.	**Grant of Authorisation by SPCBs/PCCs (Details in Chapter 4 – Section 4.1.2)** a. The Rules stipulates requirement of enclosing field inspection report while granting authorisation b. The committee observed that only in few cases the SPCBs are enclosing the said field inspection report alongwith authorisation granted. c. Further, such filed inspection report lacks details w.r.t to adequacy of the facilities on storage, transportation, treatment, recycling/utilisation, disposal, etc.	1. Uniform format for visits and inspections of HW handling facilities is necessary to ensure comprehensive inspections as per the provisions of the Rules. A format is proposed by the Committee which is given at **Annexure XVI**. 2. The authorisation document should clearly stipulate respective mode of management (such as common or captive incineration/secured landfilling or pre-processing or recycling or utilization or export or captive storage, as applicable) for each category of HW being generated. (SPCB/PCCs: immediate)
3.	**Inventory (Details in Chapter 4 – Section 4.2)** a. Inventories are based on reporting by the generators/occupiers through annual report as well as authorisation. b. The inventory data do not cover all the industries who have been granted authorisation. It also does not cover the hazardous waste from domestic sources, interstate movement, import/export of hazardous waste, and other waste. c. The inventories are not verified and validated based on the scientific principles by the State Pollution Control Boards/Pollution Control Committees (SPCBs/PCCs). d. There is a substantial variation in the quantity declared in the authorisation and actual quantity of hazardous waste generation declared in the annual report. e. Quantities reported in the captive utilisation of hazardous waste appear to be on higher side and are not verified. f. There are no standard protocol/guidelines for preparation of HW inventory based on sound scientific principles and approach which is a basic necessity to ensure uniform and consistent preparation of HW inventory by different	1. Standard guidelines and protocol based on scientific fundamentals for preparation of inventory should be prepared by CPCB and strictly followed by the SPCBs/PCCs to ensure reliable and credible inventory. (SPCBs/PCCs and CPCB/: inventory of 2018-19 onwards) 2. SPCBs/PCCs shall verify and scientifically validate the HW data and facilities before grant or renewal of authorisation. (SPCBs/PCCs: inventory of 2018-19 onwards) 3. There is an emergent need to develop sectoral process based reasonable HW generation range to have uniformity in assessing the HW generation from industries and benchmarking the same with its peers, rather than solely depending on industry data. (SPCBs/PCCs: continuous activity) 4. All occupiers who have authorisations shall submit the Annual report and in case of non-compliance, action needs to be taken by SPCB/PCC. (SPCBs/PCCs: inventory of 2018-19 onwards) 5. The timelines for inventory preparation as envisaged in Rules be strictly complied with by SPCBs/PCCs. Preparation of country's inventory by CPCB is dependent on such timely submission by SPCBs/PCCS. (SPCBs/PCCs and CPCB)

	SPCBs/PCCs.	
4.	**Enforcement actions. (Details in Chapter 5)** a. Though there have been several incidents on record of noncompliance of HW Regulations resulting in discharge of HW in environment, the powers vested with the CPCB/SPCBs/PCCs for recovering environmental damages under Rules 23(1) has not been invoked. b. Only three States namely Maharashtra, Telangana and Madhya Pradesh have reported prosecution actions under Section 15 of EP Act, 1986. c. There are hardly few cases where the SPCBs/PCCs have invoked provisions related to revocation and/or refusal of authorisation in view of the observed noncompliances. d. Inspection report, mostly is not attached along with the authorisation granted. Wherever inspection reports have been attached such reports lack in required information for appraisal.	1. SPCBs/PCCs shall invoke the powers conferred under clause 23 (1) and (2) of the Rules, related to all damages caused to the environment or third party due to improper handling and management of the hazardous and other wastes, and non-compliance respectively. CPCB has already issued guidelines for Liability assessment, for invoking clause 23(1) and (2) of HW Rules. CPCB shall also take consequential actions under clause 23 (1) as per the said guidelines wherever directions under section 5 of the E(P) Act have been issued by CPCB, noticing environmental damages. (SPCBs/PCCs and CPCB: Immediate). 2. The habitual and serious defaulters shall be prosecuted under provisions of the Environment (Protection) Act, 1986. Other alternative regulatory actions including refusal and revocation of Authorisation can also be explored following the due process. (SPCBs/PCCs: Immediate) 3. Non-compliance to be documented while processing authorisation for renewal or inspections in order to invoke powers of refusal or revocation of Authorisation as per Rules. (SPCBs/PCCs: Immediate) 4. Urgent updation of concerned websites of SPCBs/PCCs/CPCB with respect to all enforcement actions along with details of industries and action taken. (SPCBs/PCCs/ CPCB: Immediate) 5. There is need to have an enforcement framework for effective enforcement of Rules based on principle of proportionality and also, precautionary principle. Such framework will remove ambiguity in regulatory actions and bring transparency, predictability and consistency in enforcement for actions. (SPCBs/PCCs/CPCB: within 06 months)
5.	**Hazardous waste utilisation and recycle. Issues and need of improvements (Details in Chapter 4 – Section 4.3)** a. The inventory data shows skewed variation in utilisation of HW pattern among different	1. The inventory data needs to be verified and validated before accepting the same. The states shall adopt the proposed guidelines immediately while preparation of HW inventory. (SPCBs/PCCs: Immediate)

FSO VERIFIED -18

	States. For example in Gujarat about 36 % of the HW generated is either recycled or utilised, whereas in Maharashtra 0.98 % HW generated is recycled and utilised. b. Maharashtra is not authorising and promoting the co-processing which is one of the major option of utilisation of HW, although the HW Rules provided hierarchy of waste management promoting recycle and utilisation of the HW. There is a need to have a consistent and scientific approach to promote the HW recycle and reuse in consonance of the objective of the HW Rules expressed in terms of hierarchy, throughout the country. c. There are certain environmental risks associated with the recycle and utilisation of the HW in case of non-compliance. It is therefore necessary that such recycle and utilisation of HW is strictly regulated in terms of the performance of such recycle and utilisation. d. There is need to immediately prepare guidelines for high volume low impact waste like slags from pyrometallurgical operations, fly ash, red mud, Jarosite, mine tailings and ore beneficiation rejects. e. More clarity is required on the application of Rule 9 particularly in case of captive utilisation. Presently, it is very difficult for SPCB/PCC field staff to investigate and analyse such claims of industry. Therefore, presently, the data given by industry is relied upon in totality. f. The pre-processing facilities collect the HW from different industries and carry out the homogenization/blending activities to achieve the required calorific value and other desired specification for co-processing. As this industry sector indulge in handling the wide range of	2. There is emergent need of consistent approach in recycle and utilisation of HW in terms waste management hierarchy mandated in the rules across all the States in order to ensure the level playing field for the industry. This can be achieved by advocacy programme such as concept of waste exchange banks, know your waste programme, circular economy, documentation of the success stories along with regulatory interventions wherever required. (SPCBs/PCCs) 3. It is also necessary to develop certain benchmarks/guidelines for the possibilities of HW recycle/utilization on case to case basis. For example, for co-processing at Cement plants the Thermal Substitution Ratio (TSR) can be an objective criterion to decide the potential to use HW for utilisation purpose. The range of TSR at different cement plants can be collated to develop a database for sound coprocessing practices. (SPCBs/PCCs) 4. The concept of environmental benchmarking among the similar industries generating HW can be useful to ensure consistency and uniformity. The emerging trend of circular economy would be a key intervention for rationalising the HW generation and reuse/utilisation (SPCBs/PCCs: continuous activity)

	wastes from different industries, it would be prudent to have improved enforcement regime in terms of number of inspections, detailing of inspection, environmental monitoring and reporting of waste receive/disposed etc. on the lines of common facilities.	
6.	**Common Treatment, Storage and Disposal facilities: reporting. (Details in Chapter 4 – Section 4.5)** a. The Committee has observed that in some cases the TSDF rejects the consignment received from the waste generator for non-compliance of acceptance criteria. This consignment is returned back to the waste generator. b. The site selection criteria, design and layout are the critical parameters for establishment of the TSDF. In addition, waste storage, stabilization, landfilling, incineration and leachate management are critical operations. The committee has observed non-compliance of these guidelines For example TSDF at Balotra, Roorkee, Kanpur, etc. c. Of 18 SPCBs/PCCs having common secured landfills, 06 SPCBs have still not opened Escrow Account provision for postclosure monitoring of common SLF. d. Compliance of the Hon'ble NGT orders dated 30/07/2018 with regard to setting of TSDFs and taking imitating actions against erring units- Only Goa and Odisha have submitted action plan with timeframe for setting of Common SLF + Incinerator and Common Incinerator respectively. Only Odisha has taken action against erring units	1. The practice of returning the HW consignment needs to be immediately stopped and the consignment needs to be stored within the TSDF with information to the waste generator and also the concerned SPCB. The TSDF shall take appropriate measures to dispose this waste at the risk and cost of the waste generator under due information to the SPCB immediately on priority. Though the present guidelines prescribed that the waste shall be sent back to the waste generators, this practice needs to be immediately discontinued in view of non-accounting of the waste once it is out of manifest protocol and the associated environmental risks. (SPCBs/PCCs/TSDFs: immediate) 2. SPCBs/PCCs shall conduct environmental audit including the site selection criteria, design and layout for the TSDFs in next one year. They can engage expert institutes for the purpose and seek CPCB's technical advice on the ToR of the study, if required. (SPCBs/PCCs: 01 year) 3. All the Common SLF shall disclose the mandatory amount deposited in Escrow Account annually to SPCB/PCC, CPCB and display on their website. SPCB/PCC to take action in case of non-compliance. (SPCBs/PCCs: immediate) 4. It is necessary that the Hon'ble NGT orders dated 30/07/2018 with regard to setting up of TSDF and taking imitate actions against erring units be strictly complied with by the concerned State/UT Government and SPCBs/PCCs. (State/UT Governments and SPCBs/PCCs: immediate)
7.	**Contaminated sites: Status, identification, need of urgent action, investment, capacity building,**	1. It is necessary that such contaminated site database is developed after due verification by SPCBs/PCCs and validation by

	guidelines. (Details in Chapter 4 – Section 4.7) The Committee has initiated work on monitoring of direction of the Hon'ble Supreme Court with regard to contaminated site WP 657/1995 and has discussed the matter with SPCBs/PCCs/CPCB and the petitioner Shri Sanjay Parikh, Adv. The Committee recognised the monitoring of this aspect has a large scope and the committee intends to focus on this specific issue in coming days. In the mean-time committee has made following preliminary observations and record the need of immediate interventions. a. MoEF&CC/CPCB have identified total 329 potentially hazardous waste contaminated sites and subjected them for screening based on verification by the SPCBs. After the verification by SPCBs, the total 144 sites have been identified as contaminated sites and 57 sites are still under evaluation. The Committee is of the opinion that the identification of the contaminated sites is an elaborate process involving objective criteria and standard protocols. It is expected that SPCBs and CPCB shall follow such objective criteria and standard protocol to identify the contaminated sites and also to assess their scope and extent of contamination. b. Out of 144 identified contaminated sites, CPCB has prioritised 8 sites for which DPR for assessment and remediation has been prepared. However, there is an urgent need to execute this remediation plan on top priority. The Committee has been informed that the required financial resources for such remediation have not been mobilised so far. c. There is a change in number of such identified sites over the period which	CPCB or some expert third party, so as to ensure the reliability of such data base. The entire process of screening, verification and validation needs to be as per standard protocol and the data needs to be owned by both SPCB/PCC and CPCB, not leaving the things at state level alone. (SPCBs/PCCs/CPCB: continuous activity) 2. CPCB should update national priority list of such confirmed contaminated sites. (CPCB: continuous activity) 3. Concerned SPCBs/PCCs shall identify the responsible person/industry, for each of these contaminated sites for suitable application for polluter pays principle for the remediation programme in line with the CPCB guidelines 'Implementing Liabilities for Environmental Damages & Disposal of Hazardous Waste and Penalty'. (SPCBs/PCCs: Immediate and continuous activity) 4. Both SPCBs and CPCB shall continue the process of identification of probable contaminated sites and subject them to identification criteria and decide their status as well as scope and extent of such contamination. This process is a dynamic and need to be a regular feature of enforcement. (SPCBs/PCCs and CPCB: continuous activity) 5. In case of the contaminated sites where the polluter is not identified, the State/UT Government would be required to finance remediation of such sites to safeguard the people living in contaminated areas from adverse health effects, in terms of their constitutional responsibility to protect and improve the environment. (States/UTs Government and SPCBs/PCCs) 6. SPCBs/PCCs need to initiate immediate intervention measures for containing immediate threats from existing contaminated sites (in both active and inactive sites) and also further ingress of HW. (SPCBs/PCCs: immediate)

	could be due to listing/ delisting of probable contaminated sites as a result of increased enforcement and monitoring activities, and variations in criteria.	
8.	**Impact of other regulations (Details in Chapter 4 – Section 4.2)** The committee notes that HW resulting from enforcement of other regulations like E-waste, SW rules etc are presently not accounted in the HW management plans under HW rules. Committee finds a need to consider impact of other regulations while planning HW management including preparation of inventory and assessing the impacts. a. As per E-waste regulation, in case of fluorescent and other mercury containing lamp where recyclers are not available, such waste is channelized to common TSDF for disposal after pretreatment/immobilization of mercury. Such waste should also be accounted into HW inventorisation. b. In case of solid waste rules, there is a separate category of domestic HW which is expected to be disposed in the Common Hazardous facility, however, there is no data or information available on the quantity and quality of such domestic HW available so far.	SPCBs/PCCs and CPCB need to take cognizance of these aspects while enforcing the relevant rules and also, preparation of HW inventory and other interventions. (SPCBs/PCCs and CPCB)
9.	**Import and export. (Details in Chapter 4 – Section 4.6)** a. Harmonization of Basel codes with ITC (HS codes): The Ministry (MOEF) provides permission on the basis of Basel codes while DGFT uses HS codes. There is a need to synchronize the two codes to avoid confusion. b. Risk management assessment: The customs authorities use the risk management system (RMS) to enable low risk consignments to be cleared based on the acceptance of the importer's self-assessment and without examination. Roughly 30 percent of containers covered under risk management out of	Committee would deliberate on this issue further for making detailed recommendations. Still however, following recommendations on co-ordination and data management are made; 1. There is need to synchronise Basel code and HS codes to cover all scheduled items as per HW rules in customs verification and control more effectively. (MoEF&CC, Custom and Port Authorities) 2. CAG has come out with details of illegal HW import and its storage in ports and ICDs. This needs to be verified on priority and action be taken for disposal of the same in terms of earlier orders of Hon'ble Supreme Court. (Custom and Port Authorities) 3. Improve traceability of importers:

	which 10 percent are physically verified. There are different types of waste streams which have not been integrated in the RMS. There is a need to review the import/export data of various waste streams and include them in RMS. Further, waste streams in Schedule III – Parts A, B and D and Schedule VI that are often mis-declared by importers need to be identified and added to the RMS. c. Collaboration between regulating authorities: Regular interaction between the Ministry of Environment, Forest and Climate Change, CPCB, SPCBs/PCCs, customs and ports authorities should take place with frequent consultative meetings and trainings in order to avoid working in silos.	The Customs authorities could make the registration process of importers more stringent as there have been cases where importers have never been able to be traced when their illegal imports were intercepted (MoEF&CC, DGFT, Custom and Port authorities)
10	**Capacity building in CPCB and SPCBs/PCCs and other agencies (trained adequate manpower, laboratory, budget) (Details in Chapter 4 – Section 4.7 and 4.8)**	1. Each of the SPCBs/PCCs/Custom/TSDF, as listed in report, need to have at least one laboratory where all HW parameters as required under the Rules can be analysed. (SPCBs/PCCs/Custom/TSDF: 06 months) 2. Capacity building in SPCBs/PCCs for rapid preliminary assessment of contaminated sites, which may include practical training on use of tools for soil and groundwater screening such as hand-held XRF instruments, Colorimeter, PID for VOCs/ SVOCs, hand operated augers, groundwater pumps, level meters, etc. (CPCB: 06 months) 3.SPCBs/PCCs and CPCB needs capacity building in terms of qualified and experienced manpower and also, tools and techniques for effective governance. Committee is informed about steps being taken by SPCBs and would review the same in detail. (MoEF&CC, State/UT Government, CPCB and SPCBs / PCCs: Immediate)
11.	**Duties performed by State/UT Govt. as stipulated under the HOWM Rules, 2016 (Details in Chapter 5)** The State Govts. have been	1. There is need to sensitize State/UT Govts. about duties required to be performed by the concerned department/agency as stipulated under Rule 5(1), 5(2),

92

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	entrusted with duties of authorising Dept. of Industry/other Govt. agency and Dept. of Labour/other Govt. agency with regard to allocation/earmarking of industrial space, recognition/ registration/ health & safety/etc. of workers involved in recycling/ preprocessing/ other utilization activities of HW and submission of integrated plan under Rule 5(1), (2) and (3) respectively: The State Govt. has also been entrusted with duties of identification and notification of sites for common TSDF and publishing periodically inventory of disposal sites as stipulated under Schedule VII of the HOWM Rules, 2016. It has been observed that actions have not been taken on the above (except identification and notification for common TSDFs in few States) by the State/UT Govt. and there is lack of awareness among them in this regard.	5(3) and Schedule VII of the HOWM Rules, 2016. Hon'ble NGT may issue appropriate directions in this regard. (All State/UT Govts.: Immediate)

5. Having regard to the sensitiveness of the issue and impact of non-compliance on environment and public health, the above recommendations need to be fully implemented and monitored by the Chief Secretaries at State Level and by the MoEF&CC and CPCB at national level.

6. The affidavit of CPCB further states that the Committee has not covered all the aspects and certain other aspects which remain to be considered include contaminated site, capacity building of regulators, issues related to import and export of hazardous waste etc. for which further time of six months is required.

7. We are of the view that the Committee must complete its task expeditiously within three months from today. In view of the fact that

two months have already gone by after the affidavit was filed, its final report may now be submitted on or before 31.07.019.

8. It is made clear that if the progress in implementation of the Rules is not found to be adequate, the States may be required to furnish performance guarantees to comply with the Rules in a time bound manner.

9. CPCB may determine the scale of compensation to be recovered for violation of the Rules within one month from today and furnish a report to this Tribunal by-email at ngt.filing@gmail.com. CPCB may furnish final action taken report in the matter on or before 15.08.019 by e-mail at ngt.filing@gmail.com.

10. The Chief Secretaries may look into the issue of capacity building of the SPCBs/PCCs to deal with the issue of compliance of the Rules.

List for further consideration on 26.08.2019.

Adarsh Kumar Goel, CP

Dr. Nagin Nanda, EM

April 12, 2019
Original Application No. 804/2017
(Earlier O.A. No. 36/2012)
DV

288

94

Gmail Aagney Sail <aagneysail@gmail.com>

Appeal No. 58/2022 - Wanksons Chemical Industries Pvt. Ltd. Vs Gujarat Pollution Control Board & Anr. - CPCB Report

Aagney Sail <aagneysail@gmail.com> Wed, Jan 11, 2023 at 9:26 AM
To: ms-gpcb@gujarat.gov.in, "membersecretarygpcb@gmail.com" <membersecretarygpcb@gmail.com>, maulik@nanavatico.com, "mahavirchem09@gmail.com" <mahavirchem09@gmail.com>, Sudhir Patil <sudhirpatil285@gmail.com>

To,

1. Gujarat Pollution Control Board
Through its Member Secretary,
paryavaran Bhavan, Sector- 10-A,
Gandhinagar-382010, Gujarat.
Email:- ms-gpcb@gujarat.gov.in Respondent No. 1

2. Shekhawati Transport Co.
Through its proprietor,
212,2nd Floor, Dhuri Commerce Plaza,
Vasai (E), District Palghar, Maharashtra,
Email:- mahavirchem09@gmail.com Respondent No. 2

Sir / Madam,

Please find attached the CPCB Report which will be e-filed today in the above mentioned matter.

Best

Adv. Aagney Sail,
Counsel for Appellant
Mobile: +91.9810076618

CPCB Report.pdf
6373K

Government of Kerala

Directorate of Environment & Climate Change

4th Floor KSRTC Bus Terminal, Thampanoor, Thiruvananthapuram- 695 001

Ph 0471-2326264 (Off)

e-mail: environmentdirectorate@gmail.com web: www.envt.kerala.gov.in

No. DOECC/288/2025-E4 Date: 01-07-2025

To

The Special Secretary,
Environment Department.

Sir,

Sub : Report on the Assessment of Environmental compensation and Remediation cost

Ref : Letter No.ENVT-B2/65/2025-ENVT-Part (1)

Kind attention is invited to the reference cited. A Report on the Environmental Compensation and Remediation cost for the MSC ELSA 3 shipwreck which occurred on the Kerala Coast on 25th May 2025 is submitted herewith for information and further necessary action.

Yours faithfully,

DIRECTOR

DIRECTORATE OF ENVIRONMENT & CLIMATE CHANGE
Directorate
Thampanoor.P.O.,
Thiruvananthapuram 01
GOVT.OF KERALA

Encl : as above

Report on the Assessment of Environmental Compensation Liability for Marine Pollution from MSC Elsa 3 Shipwreck off the coast of Kerala

This report presents a comprehensive calculation of environmental compensation and remediation costs for the MSC Elsa 3 shipwreck, which occurred off the coast of Kerala in May 2025 and caused the release of plastic waste, hazardous chemicals, oil, and other pollutants into the marine environment. The environmental compensation (EC) is calculated based on the methodology suggested by Central Pollution Control Board (CPCB) for calculating Environmental Compensation (EC), as outlined in its 2019 guideline document titled *"*Determination of Environmental Compensation to be recovered for violation of Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016*"*. The assessment is critical for determining the financial liability associated with environmental damage caused by unmanaged plastic pollutants. It incorporates pollutant-specific remediation costs, exposure period, and applies maximum Environmental Risk Factors (ERFs) based on pollutant severity and persistence.

1. Environmental Compensation and Remediation Cost for Hazardous Chemical Pollution

In the event of a shipwreck involving the release of hazardous chemicals into the marine environment, the environmental and socio-economic consequences can be substantial. In the present case, the vessel was carrying 1,502.5 tonnes of hazardous substances, including highly reactive and toxic compounds such as Calcium Carbide and Hydrazine. The container-wise list is given in Annexure I. These chemicals are categorised under Red-category wastes due to their acute toxicity, potential to react violently with water, and long-term ecological risks. As per the CPCB guideline, EC is calculated using the formula:

$$EC=Q\times ERF\times R+(5000\times N)$$

Where Q is the quantity of hazardous waste (in tonnes), ERF is the Environmental Risk Factor (ranging from 0.1 to 2 depending on severity), R is the base compensation rate (₹100,000 per tonne), and N is the number of days of violation. Given that the hazardous chemicals were disposed of into the marine environment, ERF is considered as 2, the maximum for disposal to unauthorised sites.

Plugging in the values (Q = 1,502.5 tonnes; ERF=2; R =1,00,000/- and N = 730 days), the EC is calculated as follows:

EC = 1502.5 × 2 × 100000 + (5000 × 730)

EC = ₹ 304,150,000/- (Rupees 30.42 crore)

A remediation fund equivalent to five times the calculated Environmental Compensation (EC) has been allocated to cover all reasonable and necessary restoration measures in response to the discharge of these toxic chemicals into the marine environment.

Remediation cost for hazardous chemical pollution = 30.42 × 5 = ₹ 152.1 crore

The combined amount of Environmental Compensation and remediation cost for hazardous chemical pollution totals ₹ 182.52 crore.

2. Environmental Compensation and Remediation Cost for Plastic Pollution

The container-wise list and the quantity of various types of plastic products onboarded on the ship are given in Annexure II. Given the reported total quantity of plastic from the shipwreck is 1981.59 tonnes, the total environmental compensation (EC) is calculated using the formula:

EC=Q×ERF×R+(5000×N)

Where Q is the quantity of hazardous waste (in tonnes), ERF is the Environmental Risk Factor (ranging from 0.1 to 2 depending on severity), R is the base compensation rate (ranging from ₹30,000- 1,00,000 per tonne), and N is the number of days of violation.

Plastic waste is treated as red-category non-hazardous waste, but with long-term persistence. Hence, an ERF value of 1.5 is applied. Plugging in the values (Q = 1981.59 tonnes; R= 1, 00,000/- and N = 730 days), the EC is calculated as follows:

EC = 1981.59 × 1.5 × 100000) + (5000 × 730)

EC = ₹ 300,888,500/- (Rupees 30.09 crore)

A remediation fund equivalent to five times the calculated Environmental Compensation (EC) is also calculated to cover the costs of all reasonable and necessary measures for ecological restoration resulting from the discharge of plastic into the marine environment. This multiplier adheres to the well-established 'polluter-pays' principle, under which responsible parties must fully internalise the costs of environmental damage.

Remediation cost for plastic pollution = 30.09 × 5= ₹ 150.45 crore

Consequently, the sum of Environmental Compensation and remediation cost for plastic pollution amounts to **₹ 180.54 crore.**

3. Environmental Compensation and Remediation cost for other pollutants

Annexure III contains the cargo details for pollutants other than plastic products, hazardous chemicals, and oil carried aboard the ship. The Environmental Compensation for discharge of these pollutants (wastes other than oil, hazardous and plastic waste) is calculated using the formula:

EC = (Q x ERF x R) + (5000 x N)

Quantity Q: 12268.2 tonnes; ERF: 0.3; R: ₹30,000 per tonne; N: 365

EC = 12268.2 × 0.3 × 30000 + (5000 × 365)

EC = ₹ 112,238,800/- (Rupees 11.22 crore)

A remediation fund equal to five times the calculated Environmental Compensation (EC) has been allocated to cover all reasonable and necessary restoration measures resulting from the discharge of these pollutants into the marine environment.

Remediation cost for pollution caused by other wastes: 11.22× 5 = ₹ 56.1 crore

The combined amount for Environmental Compensation and Remediation Costs for other wastes is **₹67.32 Crore.**

Total Environmental Compensation and Remediation cost for marine pollution

The total environmental compensation (EC) and Remediation cost calculations for the shipwreck involving the discharge of plastic waste, hazardous chemicals, and other pollutants, based on Central Pollution Control Board (CPCB) guidelines, is as follows.

Total = ₹182.52 Crore (Chemical) + ₹180.54 Crore (Plastic) + ₹67.32 Crore (Other Waste) = ₹430.38 Crore

Director
Directorate of Environment & Climate Change

THE HIGH COURT OF KERALA
सत्यमेव जयते

Annexure I

Annexure I: Details of Containers with Hazardous Chemicals

Sl No.	Cntr No.	Chemical	Weight (Tonne)
1	GLDU3752928	CALCIUM CARBIDE	28.9
2	MEDU6618806	CALCIUM CARBIDE	28.8
3	TCLU2550703	CALCIUM CARBIDE	28.8
4	MSDU1913339	CALCIUM CARBIDE	28.8
5	AXIU2227284	CALCIUM CARBIDE	28.8
6	MEDU5372298	CALCIUM CARBIDE	26.1
7	MSMU1837390	CALCIUM CARBIDE	26
8	FCIU4619879	CALCIUM CARBIDE	28.8
9	SEGU1488630	CALCIUM CARBIDE	28.8
10	DFSU2681951	CALCIUM CARBIDE	28.8
11	TCLU2570422	CALCIUM CARBIDE	28.8
12	DFSU2765179	CALCIUM CARBIDE	28.8
13	MSNU1198797	HYDRAZINE	25.2
14	MEDU3694335	HYDRAZINE	25.3
15	MSDU1542813	HYDRAZINE	25.3
16	MEDU3565169	HYDRAZINE	25.3

FSO VERIFIED -18

17	MEDU2940856	HYDRAZINE	25.3
18	GLDU9454849	HYDRAZINE	25.2
19	TLLU3260369	HYDRAZINE	25.2
20	MEDU5711766	HYDRAZINE	25.3
21	DFSU1142277	HYDRAZINE	25.3
22	DFSU2936965	HYDRAZINE	25.3
23	MSNU1128803	HYDRAZINE	25.2
24	GLDU9792316	HYDRAZINE	25.3
25	DRYU2963086	HYDRAZINE	25.3
26	MSDU2524199	HYDRAZINE	25.3
27	MSDU1932220	HYDRAZINE	25.3
28	MEDU6890054	HYDRAZINE	25.3
29	MEDU2917223	HYDRAZINE	25.4
30	MEDU3174101	HYDRAZINE	25.4
31	MEDU3929810	HYDRAZINE	25.4
32	MSDU2528738	HYDRAZINE	25.3
33	MSNU1864640	HYDRAZINE	25.2
34	MSCU6014477	HYDRAZINE	25.4
35	CAXU6391333	HYDRAZINE	25.3
36	MSDU1964980	HYDRAZINE	25.2

THE HIGH COURT OF KERALA

37	MSMU1185137	HYDRAZINE	25.3
38	TGBU3835950	HYDRAZINE	25.2
39	PGRU2312104	HYDRAZINE	25.2
40	FCIU5592350	HYDRAZINE	25.2
41	FTAU1353002	HYDRAZINE	25.2
42	MSNU3015508	HYDRAZINE	25.2
43	MEDU1182411	HYDRAZINE	25.3
44	CAIU6734343	HYDRAZINE	25.2
45	MSNU3630805	HYDRAZINE	25.2
46	MSNU2958940	HYDRAZINE	25.2
47	TRHU1596526	HYDRAZINE	25.2
48	MSDU2079977	HYDRAZINE	25.3
49	MEDU5584532	HYDRAZINE	25.2
50	MSCU6984579	HYDRAZINE	25.3
51	MSNU2215060	HYDRAZINE	25.3
52	MSMU2660669	HYDRAZINE	25.3
53	MEDU5402113	HYDRAZINE	25.3
54	MSDU1472742	HYDRAZINE	25.3
55	MSMU2711494	HYDRAZINE	25.3
56	UETU2877109	HYDRAZINE	25.2

THE HIGH COURT OF KERALA

57	GAOU2440550	HYDRAZINE	25.2
58	TRHU1265683	HYDRAZINE	25.2
		Total Quantity	**1502.5**

Annexure II

Annexure II: Details of Containers with Plastic Materials

Sl. No.	Cntr No.	Cargo	Weight (Tonne)
1	MSMU6844392	POLYMERS OF PROPYLENE OR OF OTHER OLEFINS, IN PRIM	29
2	MSMU7076149	POLYMERS OF PROPYLENE OR OF OTHER OLEFINS, IN PRIM	29.1
3	UETU6122498	POLYMERS OF PROPYLENE OR OF OTHER OLEFINS, IN PRIM	29
4	TGBU4622923	POLYMERS OF PROPYLENE OR OF OTHER OLEFINS, IN PRIM	28.9
5	MSNU8699677	POLYMERS OF PROPYLENE OR OF OTHER OLEFINS, IN PRIM	29
6	TRHU6548665	POLYMERS OF PROPYLENE OR OF OTHER OLEFINS, IN PRIM	29
7	MSDU6376438	POLYMERS OF PROPYLENE OR OF OTHER OLEFINS, IN PRIM	29
8	MEDU7409919	POLYMERS OF PROPYLENE OR OF OTHER OLEFINS, IN PRIM	29.1
9	TGHU6048708	POLYMERS OF PROPYLENE OR OF OTHER OLEFINS, IN PRIM	29.2
10	MSMU4192926	POLYMERS OF ETHYLENE, IN PRIMARY FORMS- POLYETHYL	29
11	TIIU4199195	POLYMERS OF ETHYLENE, IN PRIMARY FORMS POLYETHYL	29

12	MSDU5453170	POLYMERS OF ETHYLENE, IN PRIMARY FORMS-POLYETHYL	29
13	MSDU6901460	POLYMERS OF ETHYLENE, IN PRIMARY FORMS-POLYETHYL	29
14	FFAU1988937	POLYMERS OF ETHYLENE, IN PRIMARY FORMS-POLYETHYL	29
15	MSMU4766222	MOPLEN HP 456J	29.2
16	THRU6546404	POLYMERS OF ETHYLENE, IN PRIMARY FORMS-POLYETHYL	29
17	MSDU6902764	POLYMERS OF ETHYLENE, IN PRIMARY FORMS-POLYETHYL	29
18	FFAU3986002	POLYMERS OF ETHYLENE, IN PRIMARY FORMS-POLYETHYL	29
19	MSMU6531340	POLYMERS OF ETHYLENE, IN PRIMARY FORMS-POLYETHYL	29
20	MSDU6902759	POLYMERS OF ETHYLENE, IN PRIMARY FORMS-POLYETHYL	29
21	MSDU8486959	POLYMERS OF ETHYLENE, IN PRIMARY FORMS-POLYETHYL	29.1
22	MSDU6902609	POLYMERS OF ETHYLENE, IN PRIMARY FORMS-POLYETHYL	29
23	TRHU6850799	POLYMERS OF ETHYLENE, IN PRIMARY FORMS-POLYETHYL	29
24	MSNU7311935	POLYMERS OF ETHYLENE, IN PRIMARY FORMS-POLYETHYL	29
25	CAIU7753517	POLYMERS OF ETHYLENE, IN PRIMARY FORMS-POLYETHYL	29
26	MSMU4358278	POLYMERS OF ETHYLENE, IN PRIMARY FORMS-POLYETHYL	29.1
27	MSMU4799268	POLYETHYLENE LUPOLEN 2421H	29.1
28	MSDU5708733	POLYETHYLENE LUPOLEN 2421H	29.1
29	TCLU1709051	LINEAR LOW DENSITY POLY ETHYLENE	29.1

THE HIGH COURT OF KERALA

30	MSMU6697497	LINEAR LOW DENSITY POLY ETHYLENE	29.1
31	TRHU5078187	LINEAR LOW DENSITY POLY ETHYLENE	29.1
32	MSBU5449363	LINEAR LOW DENSITY POLY ETHYLENE	29.2
33	MSMU5243355	LINEAR LOW DENSITY POLYETHYLENE	29.1
34	DFSU6579758	POLYPROPELENE	31.9
35	TCLU5276371	POLYPROPELENE	32
36	MSNU9657336	MOPLEN HP 456J	29.1
37	MSMU5916883	MOPLEN HP 456J	29.1
38	MSNU5262702	MOPLEN HP 456J	29.1
39	MSDU6596920	MOPLEN HP 456J	29.1
40	TGBU7799825	MOPLEN HP 456J	29.1
41	MSMU5710320	MOPLEN HP 456J	29.1
42	TLLU7953443	MOPLEN HP 456J	29.1
43	MEDU7082019	MOPLEN HP 456J	29.1
44	GLDU9832039	HDPE LUBAN	29.1
45	MSNU5589104	HDPE LUBAN	29
46	TRHU7691412	HDPE LUBAN	29
47	MSDU5851997	HDPE LUBAN	29

THE HIGH COURT OF KERALA सत्यमेव जयते

48	CAAU8148550	HDPE LUBAN	29
49	TIIU4259870	HDPE LUBAN	29
50	MSMU7932610	MOPLEN HP 456J	29.2
51	MSDU7779905	POLYMERS OF ETHYLENE	29
52	MEDU7466755	RE420MO POLYPROPYLENE	28.09
53	MSDU8999479	LINEAR LOW DENSITY POLYETHYLENE	29.2
54	MSNU9045285	HE125MO POLYPROPYLENE	29.2
55	MSCU5091490	BE961MO PROPYLENE COPOLYMERS	29.1
56	MSNU8621560	LINEAR LOW DENSITY POLYETHYLENE	29.1
57	MSMU6221134	HE125MO POLYPROPYLENE	29.2
58	MSMU8315206	RE420MO POLYPROPYLENE	28.9
59	MSNU8668423	MOPLEN HP456J	29.1
60	MSMU5750220	LUPOLEN 2427K,BG25BC	29.2
61	TRHU8731799	LINEAR LOW DENSITY POLYETHYLENE	29.1
62	MEDU7069547	BE961MO PROPYLENE COPOLYMERS	29.1
63	UETU6084398	LINEAR LOW DENSITY POLYETHYLENE LLDPE	29.1
64	TRHU8651456	LINEAR LOW DENSITY POLYETHYLENE	29.1
65	TLLU7582790	LINEAR LOW DENSITY POLYETHYLENE LLDPE	29.1

THE HIGH COURT OF KERALA

66	MSDU8493979	LUPOLEN 2427K,BG25BC	29.2
67	MSNU6118808	MOPLEN HP456J,BG25BC	29.1
68	MSMU7213869	LINEAR LOW DENSITY POLYETHYLENE LLDPE	29.2
		Total Quantity	**1981.59**

Annexure III

Annexure III: Details of Containers with Materials other than hazardous chemicals and plastic

Sl.No.	Cntr No	Weight (Tonne)
1	GLDU5046345	25
2	GLDU9700990	28.6
3	MSMU8237551	32
4	MSMU5828102	32.1
5	TGBU4300980	28.6
6	MSMU7436625	31.5
7	MSMU7559105	13.8
8	CAIU8084859	32.4
9	TRHU8270418	29
10	ICLU5704422	13.6
11	FFAU2394781	25
12	TGHU6492646	30.8
13	CAAU7858855	15.5
15	MEDU7910999	28.5
16	MSMU6329324	13.5
18	MSDU5484865	13.2
19	MSMU5562603	28.8

THE HIGH COURT OF KERALA सत्यमेव जयते

20	MSDU7394462	14.3
21	IGBU7810040	30.8
22	MSEU5356639	13.8
23	MSDU644527	32.1
24	FSCU3510856	24.9
26	MEDU3865839	28.9
29	DFSU2231960	25
32	TRHU2413764	23
33	IFXU3585748	28
34	MEDU5451524	29.5
37	MSNU2728654	23.1
38	MSMU1988490	25.3
40	FBIU0260644	22.4
41	MEDU3645731	22.6
42	MSDU1465743	25.6
43	MSMU1694031	22.4
44	MEDU2563881	22
45	BMOU2619296	22.5
46	MSNU1776719	23.1
47	HPCU2286769	22.4
48	TEMU3396821	25.3
49	MEDU5456697	25.3
50	CRXU3062703	22.8
69	MSNU2431579	26.9
70	MEDU5533279	25.3
71	MEDU2513432	25.3
73	TGHU3305741	25.3
74	MSCU6523999	25.4
76	MSNU1340113	25.2
77	TGBU3207825	25.1
78	MSDU2860110	25.3

THE HIGH COURT OF KERALA

79	MSDU2580438	25.2
80	MSNU2119447	23.2
81	MSNU2432106	27.3
83	FTAU1969256	22.8
84	MSDU1673346	22.7
85	MSNU2433165	27.3
86	MSNU2095073	23.2
87	MSNU2002466	23.1
88	SEKU1329020	23
90	MSDU1118528	22.5
91	UETU2647575	25.2
93	TCLU2443731	22.5
94	CORU2426800	24.5
95	TEMU5053400	24.9
96	SEGU3108092	28.7
97	CAIU6911963	28
98	MSDU7438935	30.8
99	TGBU6376120	29.6
100	MSMU8511277	28.7
101	BMOU6743638	30.2
103	MSMU8311664	30.2
104	CRSU9163535	28.6
105	MSNU9570832	32.4
106	MSDU8103176	29.3
107	FFAU1968376	30.9
108	MSDU5020340	28.8
109	MSNU9569174	28.8
111	BMOU5634083	29.6
112	GAOU6717598	31.8
113	MSNU5736458	29.1
115	TIIU4006260	29

THE HIGH COURT OF KERALA

116	MSBU5494845	28.9
118	MSDU7272464	29.1
119	MSDU6586389	30.2
120	MSMU8820548	30.7
121	MSDU7745525	28.7
122	CAIU7391022	29.6
123	MSMU4130842	29.5
124	MSMU8663602	29.9
125	MSNU6129741	29.9
126	CAAU5517525	32.4
127	MSMU8487226	29
129	TGBU7944970	28.1
130	TCNU3185367	28.8
132	MSDU7734011	25.9
133	TGBU5843981	29.8
135	FSCU8333075	30.2
136	GAOU7402949	30
137	MSMU6896544	28.7
138	MEDU9438710	27.3
139	FFAU2173245	23.6
140	MSMU8184805	28.9
142	MSDU7030964	28.7
144	MSMU4975979	29.8
145	MSNU7461684	28.5
146	TRHU8022849	29.3
147	MSDU6985136	23.7
148	CAAU7262721	32.5
149	TRHU7720995	28.9
150	MSDU73238623	19.6
151	MSDU5396830	29.6
153	MSMU5762427	19.3

THE HIGH COURT OF KERALA

155	MSNU2067289	25
158	MSBU1495139	26.5
159	MSNU3694965	23
160	MSMU2959752	28
162	MSMU1796705	29.2
163	MSMU2978243	27.9
164	HPCU2318758	29
165	MSMU24221225	27.3
166	MSMU4243427	25.2
167	MSCU5260347	29.7
168	BMOU6117552	28.5
169	MSNU5275649	29
170	MSDU7920000	29
171	MEDU4556979	24.2
172	MSBU5488349	29.2
173	MSMU4069700	29.2
174	MSMU4267537	29
175	CAAU8115710	29.8
177	TGBU8008683	26.6
178	CAAU7366120	29.1
179	MSDU6396136	28.9
180	MSDU5935655	29.7
181	MSMU5928307	29
182	MSNU7324254	29.8
183	CRSU9238038	25.5
184	MSNU7084322	29
185	MEDU7587335	30.2
186	SEGU4102822	28.5
187	FFAU1152443	30.1
188	MSDU77213317	28.5
189	TXGU5490721	28.8

THE HIGH COURT OF KERALA

190	MSMU8539633	30.9
191	CLHU9096854	30.1
192	SEKU6756679	28.2
193	MSNU6641850	29.1
194	MSNU5878853	29
195	MSDU8256088	28.8
196	FFAU3929785	29.9
197	MSMU6125697	29.4
198	FFAU3835198	29
199	MSDU7961442	28.9
201	MSMU7377923	28.9
202	MSDU8659519	30.1
203	MSDU6543392	30.1
205	MSBU8157196	297
206	TGBU5732458	29.8
209	TGBU5569090	28.2
210	MSMU7751885	29.2
213	TEMU7962275	28.8
217	CXDU2015607	28.8
218	MSBU6514118	28
219	MSDU6063270	29
220	MSNU2149708	29
223	MSMU1207880	27.5
224	GLDU5626220	28.2
225	MSMU2708757	28.9
226	TEMU2390217	28.1
228	MSDU2362462	25
230	MSCU6973595	29.8
232	TCNU3559512	31.8
234	MSDU8655154	29
235	MSMU7556620	29.7

THE HIGH COURT OF KERALA

236	FFAU1922317	28.5
238	MSDU8980278	32.1
239	MSMU5586082	32
240	MSDU7215335	30.5
241	MSDU8647396	29.9
242	MSDU6251410	28.9
243	FFAU169132	31.6
244	MSCU5380661	32.3
245	MSMU5579416	29.1
247	MEDU8952828	30.4
248	MSDU7574253	28.5
249	MSNU6114886	28.9
250	MSNU6794335	29.9
251	MSDU5928595	29
252	TCLU7727160	29.9
253	FBLU0090922	29.1
255	BEAU4259321	28.5
256	TCLU5663663	32
258	MSDU8251255	29
260	MSMU8766811	29.3
261	FBLU0063531	28.5
262	MSCU5412840	28.7
263	MSDU8601380	30
264	MSDU5949319	29.7
265	TCNU2916220	29.8
266	MSDU7069204	30.4
267	MSDU5950325	32.1
268	MSMU5110820	28.5
269	MSDU5526699	23.7
270	CAAU7417206	32.4
271	MSNU5528492	30.2

THE HIGH COURT OF KERALA

272	FFAU2077806	29.9
273	MSMU5808750	29.2
274	MEDU7994900	30.3
275	MSDU6094856	30.1
276	FFAU4142006	32.2
277	MSMU8961525	31.9
278	BMOU5933145	31
279	MSMU7221463	30.8
280	MEDU4793060	30.2
281	CAIU7605762	29.2
282	MSMU7843410	29
283	MSMU4137195	31.3
285	MSMU4269150	28.5
286	CAIU4607479	24.1
287	MSMU7180770	29.1
288	FFAU3824608	28.5
292	CAIU2703977	27.5
293	MSDU2942820	27.5
294	TRHU1269930	25
295	TENU2040501	28
296	MSMU1459264	16.7
298	TRHU1570624	4.6
300	MSNU2295560	2.5
301	FTAU1518118	25.3
302	MSMU3453692	23
303	MSMU1907878	25.2
304	MSMU1487158	28.5
305	TEMU5860973	25.5
306	MSMU1409237	27
307	MSBU3051616	23
308	MSNU2420933	28

THE HIGH COURT OF KERALA

310	CAIU3197826	25.4
311	MEDU5780387	26.8
312	TGBU1192367	26.8
313	MEDU5849293	23
314	MEDU6139763	23
315	FCIU6368730	26
316	MSDU1187405	25.4
318	MEDU5746720	25.4
320	FBIU0412407	28
321	TEMU3811901	23
322	MSNU2431162	23.6
323	CAIU2783795	23
324	MSDU1720258	27
326	MSDU1525375	25
327	TGBU3222049	23
328	TGBU1195108	26.7
329	MEDU6204365	23
330	MEDU3440330	23
331	MSDU2473893	23
332	MSNU2420548	27.1
335	MEDU5227860	23
336	MSNU5326849	29.1
339	MSMU4723637	30.1
340	MEDU8593435	30.4
341	MSCU5358014	29.8
342	FDCU0241538	29.1
343	MSMU8295687	28.3
344	MSMU5309724	28.8
345	FFAU2841410	30.6
346	MSDU6166956	28.8
347	TCNU1313622	28.5

THE HIGH COURT OF KERALA

348	GLDU7653986	30.5
349	FFAU1994014	29
350	MSNU6582803	28.5
352	MEDU7947299	29.1
353	CAAU5917898	29.5
355	TGBU7867133	28.3
356	CAAU7460162	29.1
358	TCNU4327661	28.3
359	MSMU8660814	28.5
361	MSNU8507898	29
362	CAIU7737100	28.3
364	TRHU6806667	28.7
365	MSBU8176128	29.6
366	TXGU5344558	28.5
367	MSDU5813641	12.9
368	MSDU5457730	29.7
369	CAAU6763101	29
370	MSMU8660795	29.5
371	FSCU9885968	28.5
372	MSDU8553168	29
374	FFAU2290489	28.8
375	MSBU31442621	28
376	MSDU1412527	22.4
377	GLDU5051830	23
378	MSCU6300233	24.9
379	MSBU1487473	27.5
381	BMOU2055597	23
382	MSNU3547619	23
383	GLDU51216686	26.5
385	MEDU6313073	25
386	MSCU6867485	25

THE HIGH COURT OF KERALA

387	MSMU3385767	25
389	CAIU3142952	27.1
390	UETU2642486	26
391	MSNU3557197	25
392	MEDU5672422	23
393	FIAU1392797	23
394	MSNU2417647	23
395	MSNU3653577	29.2
397	MEDU6350842	23
398	MSMU2760354	23
399	TEMU5104235	26
400	MEDU2488751	23
401	FCIU2073367	22.4
402	MSDU2246077	23
403	MSNU2420419	27.3
405	MEDU3512261	25.3
406	MSMU1218800	25
407	MEDU2076590	22.6
408	MSNU2654741	22.5
409	MSMU1878126	22.8
411	MSDU1590982	25.3
412	MSNU1564237	23
413	MSNU3700250	22.4
415	CAXU3381959	25.3
417	MSMU2191793	25.2
419	CAXU3305476	25.3
420	MSMU1686036	25.2
421	TGBU3937530	19.3
422	FCGU2267880	25.3
423	MEDU1436579	25.4
424	MSMU3295128	22.5

THE HIGH COURT OF KERALA

425	FCIU5964268	25.3
426	MSMU2560741	25.2
427	CORU2612039	25.2
429	MSDU1076968	25.3
431	MSDU7193848	28.8
437	MSMU8785684	26.7
441	BMOU6908527	28.8
446	FFAU2505674	30.4
461	TEMU8185971	4.4
478	MEDU2520982	21.4
480	MEDU3937749	22.6
481	FCIU4295511	22.5
482	MSMU2212303	23
483	MSNU2402061	25.3
487	FCIU6423484	25.2
488	IGBU1194415	27.2
490	CAIU6235093	25.2
491	MSNU3323645	25.2
492	INBU3896815	25.3
494	MEDU2343660	22.6
496	MEDU3005462	25.4
497	CAIU2523764	22.5
498	BMOU2765095	22.5
499	TGHU1013041	22.5
500	FCIU2736259	25.3
501	MSMU6691605	32.3
502	MSMU7525980	28.7
503	MSBU5363486	28.4
505	MSNU7166652	29.1
506	TEMU8622407	29.1
507	TRHU7331210	28.6

THE HIGH COURT OF KERALA

508	UETU6280528	30.1
509	MSNU6046668	29.9
510	MSNU5922124	28.8
511	MSMU8003065	27.9
512	MSBU5203092	32.1
514	MSNU9610730	29.3
515	TIIU5564306	30.2
516	MSDU5586189	30.2
517	TEMU6906826	28.2
520	MSMU8666772	28.8
521	FBLU0053195	28.5
522	CAAU7119310	32.4
523	MSDU7392460	31.9
524	MSMU4201859	30.1
525	TEMU7962275	29.1
526	MSMU6919911	28.5
528	CAIU7764830	28.5
529	MSMU4829357	32.4
531	MEDU4902074	29
534	MSNU5292610	29.1
535	UETU6863612	29.5
536	MSMU8809467	32.2
537	MSDU6992686	30.1
538	MSDU8716075	30
539	TEMU7978271	30.6
540	MSDU8943818	30.3
541	MSDU5067115	30.7
543	TIIU4778242	32.1
547	TIIU4796230	28.3
549	TIIU4801569	28.9
550	MEDU8562630	30

THE HIGH COURT OF KERALA

551	CAAU7516092	28.8
552	MSMU5815738	30.4
553	MSNU7161096	28.5
554	UETU5581194	29.1
556	MEDU4479189	28.5
557	FSCU7995082	9.6
558	CAIU9482517	30.9
559	MSMU6438557	28.7
560	TGCU5017406	28.5
561	MSMU4287467	30
562	MSDU5532460	30.2
564	MSMU1199249	25.3
565	MSDU1772626	29.8
566	MSNU1989083	29.7
569	MSNU2421610	27.1
570	MSMU1547236	25.3
571	MEDU6386486	25.4
572	DFSU2829144	29.7
573	MSMU1682200	25.2
574	MSBU5176145	29
575	MSMU7909292	24.5
578	TGBU5982333	28.8
582	MSMU4989838	28.6
583	MSDU5612879	28.8
586	MSMU7809117	28.8
590	MSMU7378956	28.6
591	FFAU1376124	25
596	MSNU7822940	26.6
600	MSMU8868686	27.7
609	MSNU2421673	27.2
610	MSNU1070569	25.2

THE HIGH COURT OF KERALA

611	TGBU3615283	25.2
612	MSNU2431455	27.2
613	MSNU2433123	27.2
614	MSMU1103545	22.4
616	FBIU0191374	25.2
619	MEDU5727839	25.3
621	MSDU2261657	5.2
622	MSDU7092673	29.1
623	BMOU6881025	28.6
625	MSNU7136745	29.1
626	MSMU6678579	29
627	CAAU7379220	28.8
628	MEDU7336849	29.1
629	TGLU5649644	28.5
630	MSDU6369803	29
632	MSMU6961275	29
634	CAAU7841003	29.7
635	MSMU8505850	29.2
637	MSDU6954053	28.9
638	MEDU7999815	28.6
639	CAIU4864796	28.5
640	MSMU5054428	25.8
641	MSMU5651296	32.3
642	CRXU5299926	3
643	MSCU3627900	3
	Total	12268.2

THE HIGH COURT OF KERALA

☎: General: 0471- 2312910, 2318153, 2318154, 2318155 Chairman: 2318150 Member Secretary: 2318151
e-mail: chn.kspcb@gov.in; ms.kspcb@gov.in FAX: 2318152 web: kspcb.kerala.gov.in
KERALA STATE POLLUTION CONTROL BOARD
കേരള സംസ്ഥാന മലിനീകരണ നിയന്ത്രണ ബോർഡ്
Pattom P.O., Thiruvananthapuram – 695 004
പട്ടം പി.ഒ., തിരുവനന്തപുരം – 695 004

KSPCB/460/2022-EE-5 Date: 27.06.2025

Action taken by the Kerala State Pollution Control Board in view of the Shipwreck incident on 24.05.2025:

Information received from the Special Secretary Environment Department on the evening of 24thMay 2025, that a Liberian-flagged vessel namely *MSC ELSA-3* sank in the Arabian Sea, approximately 38 nautical miles southwest of Kochi. The vessel was reported to be carrying 643 containers, including hazardous materials.

As an immediate response to the incident, this respondent Board undertook the following actions on 24.05.2025.

a. Indian Coast Guard (ICG) was requested to take urgent action to contain the oil spill, if any, so that the spill does not cause contamination in the sea, coast, or beaches. As per that, action shall be taken for containment by usingappropriate equipment such as booms, suckers/skimmers, and dispersants. Action shall be taken in coordination with Cochin Port Trust, Cochin Shipyard, and BPCL Kochi Refinery.

b. Chief Environmental Engineer, Regional Office and District Office, Ernakulum were alerted to be prepared for shoreline cleanup.

c. Seven District Collectors (Chairman, Disaster Management Authority) of coastal districts were requested to take urgent action on the following:

- Activation of District/Local level crisis management groups.
- Arrangement of equipment/support facilities/oil spill dispersants for shoreline cleanup, recovery, storage, and disposal of pollutants.
- To place a request before the Indian Coast Guard, Kochi to coordinate/guide the District Disaster Management (DDMA) Authority of Ernakulam district to keep the pollution prevention and oil spill cleanup equipment in a state of readiness to meet any emergency.
- To give necessary instructions to the Indian Coast Guard, Kochi to coordinate with the DDMAs/KSPCB of the coastal districts, Mercantile Marine Department, Kochi and Kerala Maritime Board for urgent action.

d. Cochin Port Trust, Oil companies such as Indian Oil Corporation (IOCL), Bharat Petroleum Corporation Limited (BPCL), Hindusthan Petroleum Corporation Limited (HPCL), Petronet LNG and AdaniVizhinjam Port were requested to take urgent

action to keep their Pollution Response (PR) team, equipment, absorbents, and support facilities in a state of readiness, and share the same with the State Government in case of any emergency for shore line cleanup.They were also requested to share the same with their sister concerns in Kerala having Pollution Response facilities.

e. Kerala Maritime Board was requested to take urgent action to alert the ports in coastal districts to be ready with the equipment and support facilities required for shoreline cleanup, recovery, storage, and disposal of pollutants.

f. Mercantile Marine Department was requested to take immediate action and precautionary measures.

District Officers of the Board are the members of the Rapid Response Team (RRT) constituted by District Administration, in the wake of the ship wreckage incident, and they are stationed near the locations where the oil slick is expected to beach.

The Disaster Management Authority informed vide letter no. REV-k1/99/2017/DMD dated: 28.03.2017 that, as per the directions issued by Government of India and as per the directions of the Government of Kerala, the portfolio of Oil spill Contingency Management is entrusted with the State Pollution Control Board. Hence the Board had prepared a Standard Operating Procedure (SOP) in February, 2018 for shoreline cleanup.The Board officials had frequently attended seminars and mock drills being done by the Indian Coast Guard with respect to oil spill contingency and are aware with the preparedness to be taken in consultation with the District Administration. Accordingly, beach clean-up materials like sacks, saw dust, lime and necessary tools, labourers were sourced as part of preparedness in case of any casualty at beaches where the contaminants are expected to reach.

The document outlining the Dos and Don’ts regarding oil spill management was circulated to District Officers of the Board to raise public awareness and ensure protection of the local population from possible risks.

As a further step of action, directions/instructions were given to following offices/departments to take urgent actions for preparedness/ mitigation of the anticipatedenvironmental damages:

- Member Secretary, Kerala State Disaster Management Authority
- Principal Director, Local Self Government Departments , Thiruvananthapuram
- The Director, Directorate of Factories and Boilers, Thiruvananthapuram.
- Director General of Shipping, Mumbai
- General Manager, MSC Ship Management Limited, Cyprus
- District Collectors, Trivandrum, Kollam and Alappuzha
- Officer in Charge, Maritime Rescue Sub- Centre(MRSC)

- Chief Environmental Scientist,Central Laboratory, KSPCB, Ernakulam
- Environmental Engineers of the concerned District Offices of the Board

Water Quality Monitoring carried out by the Board to assess pollution:

Inorder to assess the pollution, sea water and sediment sampling was commenced on 25.05.2025 itself. A sampling protocol specific to this issue has been preparedby the Board.Sampling was carried out at various locations along the shoreline across coastal districts like, Thiruvananthapuram, Kollam, Alappuzha, Ernakulam, Kannur, Kozhikode, and Kasaragod. The analysis reports obtained so far reveals that there is no noticeable variation in sea water quality with respect to shipwreck issue.Sampling and analysis are going on and final and conclusive inference on the extent of pollutionthat may be caused by the ship wreck can be made only after the entire analyses are over.

Air Quality Monitoring:

Air Quality Monitoring was also done in the beach areas as per the protocol prepared. Results show that the air quality is not varied with respect to shipwreck incident.

Response of the Board on the instances of container and other pollutants reaching the beaches:

Board officials had inspected various sites where the containers were beached. It has been observed that more than 40 containers including empty, sealed and partially damaged containing cotton, paper, wood and plastic nurdles were reported to be beached in southern coastal region. Board had extended water sampling of those locations where beaching of containers or its contents happened and a final and conclusive inference can be made only after the completion of the analysis.The Board will take all earnest efforts to complete the analysis and the same can be completed in fast track mode.

Responsibilities of the Board in beach clean-up:

At the beaches in Kollam and Thiruvananthapuram districts, plastic nurdles were found deposited. KSDMA had developed a protocol for beach cleanup. The salvaging company on behalf of the shipping company as well as the volunteers engaged by LSG's was carrying out the beach cleanup under the supervision of the various Government Departments including the Boarding Thiruvananthapuram district, no suitable godown could be identified. Therefore, the nurdles mixed with sand are being collected in sacks and temporarily stored along the shore. A total of 1,623 bags of nurdles, weighing 32,922 kg, were transported from Groove Beach, Kovalam to Kollam Port in four trucks on 24.06.2025 and 25.06.2025.In Kollam district, plastic nurdles were collected, and approximately 950 bags containing nurdles mixed with sand have been removed from the coastal areas. These are currently stored at the Kollam Port godown, where MERC is carrying out the separation of nurdles by sieving.No plastic nurdles have been found in Alappuzha district.

A meeting was held on 07.06.2025, with all stakeholder departments, officials of the salvaging company and technical advisors, chaired by the Chairperson of the Board, to discuss the temporary storage and removal of plastic nurdles from the beaches. During the meeting, it was decided to transfer the materials to a temporary storage identified by the respective LSGs and in turn to KEIL, Ambalamugal for secure storage until final disposal is decided upon.

OIL SPILL CONTINGENCY PLAN(OSCP)

Status Of Oil Spill Contingency Plan:

The review meeting chaired by the Additional Chief secretary, Environment Dept.on 16.06.2016 to review the level of preparedness of major accident hazard units to deal with chemical accidents. In the meeting it was decided that Kerala PCB in association with the Central Coast Guard shall prepare Oil Spill Emergency Plan for the state and furnish it to the Govt. for approval. Hence notice inviting Expression of Interest from competent parties was published in the dailies on 18.10.2016 and a committee was constituted for verifying the proposals.And interested parties were invited for a presentation on 29.11.2016. Committee meeting was conducted and the committee members opined that since the scope of the study needed to be expanded further, the bids submitted if any might be returned without opening and to go for e-tendering.

An agency accredited for doing Project Management Consultancy expressed interest for consultancy services for preparation of Oil Spill Contingency Plan. KSPCB conducted meeting with the agency on 09.07.2019. They submitted a budgetary proposal for Rs. 60 lakhs on 01.08.2019. After negotiation, the amount was reduced to Rs. 51 lakhs. This was placed in the plan scheme of 2021-2022 requesting the Govt. to award the work on nomination basis without tendering as the work has to be completed in a short period in that financial year. But the Government advised to go for tendering. Accordingly comments/ suggestions of various departments and agencies were collected to prepare tender document and based on that (Terms of Reference) TOR and tender document were prepared. E-tender was called for in 2022 with news paper publicity. Committee was constituted for evaluating the tenders technically & financially with the officials from Indian Coast Guard, Kerala Maritime Board, Cochin Port Trust, India Gateway Terminal Private Ltd., Mercantile Marine Department, KSPCB. E-tender date was extended. Three firms participated. Committee evaluated the tenders. The lowest bidder had quoted an amount of Rs. 1,74,88,830.15/- (Rupees One Crore Seventy Four Lakh Eighty Eight Thousand Eight Hundred and Thirty and 15 paise only) which is very high when compared to the sanctioned amount of Rs. 51 Lakhs in the plan scheme. The bidder informed that the high cost was due to the inclusion of additional activities such as Oil Spill Modelling & Net Environmental Benefit Analysis as mandated by subsequent circulars of Indian Coast Guard. But it was decided to rework the proposal and re-tender the project. Tender document and TOR were modified and finalised in June 2024. But only two firms participated in the bidding. Accordingly details of new members were collected from different offices through letters & e-mails and additional member from the Directorate of Environment & Climate Change Dept. of Environment was also nominated to the committee. Accordingly the expert committee constituted earlier was reconstituted in May 2025 for evaluating the tenders for the preparation of Oil Spill Contingency Plan technically and financially.

There were only two bidders. The committee has approved both the technical bids. The financial bids were opened. The Board has awarded the work of preparing Oil Spill Contingency Plan (OSCP) to M/s. Environ Software Pvt. Ltd.

SREEKALA S
Digitally signed by SREEKALA S
Date: 2025.07.01 18:32:08 +05'30'
CHAIRPERSON

THE HIGH COURT OF KERALA
सत्यमेव जयते

☎: General: 0471- 2312910, 2318153, 2318154, 2318155 Chairman: 2318150 Member Secretary: 2318151
e-mail: chn.kspcb@gov.in; ms.kspcb@gov.in FAX: 2318152
web: kspcb.kerala.gov.in

KERALA STATE POLLUTION CONTROL BOARD

കേരള സംസ്ഥാന മലിനീകരണ നിയന്ത്രണ ബോർഡ്
Pattom P.O., Thiruvananthapuram – 695 004
പട്ടം പി.ഒ., തിരുവനന്തപുരം - 695 004

KSPCB/460/2022-EE-5 Date: 26.06.2025

From
Chairperson

To
The Special Secretary
Environment Department
Secretariat, Trivandrum
Email - envtkerala@gmail.com

Sub: - MSC Elsa 3 shipwreck incident that occurred on 24.05.2025 in the Arabian sea - Admiralty suit filing - reg.

Ref: - 1) Letter no. ENVT-B2/65/2025-ENVT-Part (1) dated 20.06.2025
2) This office letter of even no. dated 23.06.2025
3) G.O. (Rt)No.363/2025/DMD dated 30.05.2025
4) G.O. (Rt)No.62/2025/ENVT dated 11.06.2025
5) Terms of Reference (ToR) for assessing the extent of environmental damage caused by the shipwreck of the capsized vessel MSC Elsa 3 on the coastal and marine ecosystem of Kerala
6) This office proceedings of even no. dated 20.06.2025

Sir,

Kind attention is invited to the subject cited above. In continuation to the letter referred (2), the following details are submitted:

i. The expenditure statement submitted vide the referred letter (2) covered the expenses from 25.05.2025 to 18.06.2025.
ii. Elaborate sampling of water, air and soil in the shoreline / possible impact areas have to be continued until the ship and its contents are salvaged, in consultation with the Government.
iii. Since the earlier intimated probable timeline for commencement of salvaging of the ship is from July 2025, the anticipated expenditure for continued sampling for two more months is approximately Rs. 3 Crore
iv. As per Government Order dated 30.05.2025 (ref. 3), Government have declared the ship wreckage of ship M/s ELSA 3 in the Arabian Sea 14.6 nautical miles off the Kerala coast as a State-Specific disaster, considering the potentially serious environmental, social, and economic impact of the ship wreckage. Futher, as per Government Order dated 11.06.2025 (ref. 4), it was also ordered that all the procedural requirements for impact assessment, restoration and remediation across

sectors in accordance with the law as well as for engaging with various scientific and research institutions/experts with the aim to procure their services for such studies shall be housed in the Environment Department. The Kerala State Pollution Control Board (KSPCB) was authorized to engage National Institute of Oceanography (NIO) for the Environmental Damage Assessment and a Long-Term Study to assess the extent of environmental damage caused due to the shipwreck incident. KSPCB was also directed to prepare the ToR of the proposed study. in consultation with the Government. Accordingly, KSPCB in consultation with the Government has prepared the ToR (ref. 5) of the proposed study and requested NIO to submit the proposal. Subsequently, NIO has submitted a proposal for Rs. 15 Crores (excluding GST). A multi-disciplinary committee was constituted vide order dated 20.06.2025 (ref. 6) for evaluating the proposal submitted by NIO. The first meeting of the committee was held on 25.06.2025. Evaluation of the proposal is yet to be finalized.

v. Environmental compensation, if applicable, in consultation with Central Pollution Control Board (CPCB).

vi. In addition to the amount to be incurred for getting the study conducted through NIO, expenses with regard to damage assessment as per the NIO report and remediation cost is also liable to be claimed from the shipping company under Section 4 of the Admiralty (Jurisdiction and Settlement of Maritime Claims) Act 2017.

An abstract of the total claim is tabulated below:

Sl No.	Item	Amount (Rs.)
1	Water and Soil analysis charges	1,32,32,940/-
2	Expenses incurred by District Offices (Purchase of lab equipments, Transportation, Loading and Unloading, Stationary, etc.)	5,30,105/-
	Sub Total (actual incurred as on 18.06.2025)	***1,37,63,045/-***
3	Anticipated expenditure for continued sampling for two more months	3,00,00,000/-
4	Amount to be incurred for getting the study conducted through NIO	15,00,00,000/- (yet to be finalized)
5	Environmental Compensation (if applicable)	Based on NGT orders and in consultation with CPCB
6	Environmental damage assessment	To be assessed by NIO as part of study report
7	Mitigation & Remediation cost	To be assessed by NIO as part of study report

This is submitted for further consideration of claims under Section 4 of the Admiralty (Jurisdiction and Settlement of Maritime Claims) Act 2017.

Yours faithfully,

CHAIRPERSON

Encl: Copies of all references

11-6-25 PCB authorized to engage NIO-TOR GO

GOVERNMENT OF KERALA

Abstract

Environment Department - Ship (MSC ELSA3) wreckage in the Arabian Sea near Kochi- Engaging National Institute of Oceanography (NIO) for the Assessment of Environmental Damage - orders issued.

ENVIRONMENT (B) DEPARTMENT

G.O.(Rt)No.62/2025/ENVT Dated,Thiruvananthapuram, 11-06-2025

Read : G.O.(Rt)No.363/2025/DMD dated 30/05/2025

ORDER

As per the Government Order read above the Special Secretary, Environment Department has been designated as Principle Impact Assessment Officer in connection with the Ship (MSC ELSA3) wreckage incident in the Arabian Sea.Further it is also ordered that all the procedural requirements for impact assessment, restoration and remediation across sectors in accordance with the law as well as for engaging with various scientific and research institutions/experts with the aim to procure their services for such studies shall be housed in the Environment Department.

2. In the circumstances the Kerala State Pollution Control Board (KSPCB) is authorized to engage National Institute of Oceanography (NIO) for the Environmental Damage Assessment and a Long-Term Study to assess the extent of environmental damage caused due to the shipwreck incident. The KSPCB shall prepare the

TOR of the proposed study in consultation with the Government. Director Environment is authorized to coordinate the activities related to on-boarding of NIO and works related to Environment damage assessment by the organization.

(By order of the Governor)
SEERAM SAMBASIVA RAO I A S
SPECIAL SECRETARY

To:

Director, National Institute of Oceanography, Kochi.
Principal Secretary, Science and Technology Department
Principal Secretary,Disaster Management (A) Department
Special Secretary, Fisheries Department
Director,Environment Department
Member Secretary, Disaster Management Authority
Member Secretary, Kerala State pollution Control Board
I&PRD Web & New Media
Principal Accountant General, (A&E/Audit), Kerala
Stock File/Office copy

Forwarded /By order
Signed by
Nalan A T
Date: 11-06-2025 17:52:48
Section Officer

Terms of Reference (ToR) for assessing the extent of environmental damage caused by the shipwreck of the capsized vessel MSC Elsa 3 on the coastal and marine ecosystem of Kerala.

1. Background

A Liberian-flagged cargo vessel, MSC Elsa 3, sank on May 24, 2025, approximately 14.6 nautical miles off the Kerala coast near Thottapally, Alappuzha, while en route from Vizhinjam Port to Kochi. The ship was carrying 643 containers with various materials, including cotton, polymers, wood, food items, waste and scrap, calcium carbide, hydrazine, hydroxylamine, quick lime, and large quantities of diesel and furnace oil. The diesel and furnace oil remain contained, and government agencies are actively working to recover them from the ocean. Additionally, efforts are underway to retrieve plastic and cotton materials that have been released from open containers, as well as those that have reached the shore in floating containers. The incident has raised significant concerns regarding oil spills, hazardous debris, and potential long-term ecological damage, prompting coordinated response efforts from relevant authorities like Maritime Board, Kerala Coastal Zone Management Authority, Fisheries Department, Mercantile Marine Department, Port Trust, Harbour Engineering Department, Local Self Government Department, Water Resource Department, Tourism Department, Industries Department, Agriculture Department, Health and Family Welfare Department, Forest and Wildlife Department and various Government agencies under Environment Department.

2. Objectives of the Study

The objectives of this assessment may include, but are not limited to, the following:

- Environmental Damage Assessment & Socio-Economic Impact Assessment
    - Quantify the extent of environmental damage, including short-term and long-term impacts on marine biodiversity, coastal ecosystems, water bodies including Ramsar sites (proximity), fishing zone, marine protected areas, water, air and sediment quality.
    - Assess socio-economic consequences, particularly on fisheries, tourism, and coastal livelihoods, agriculture, industries and commerce, coastal infrastructure sector including harbour and port.
    - Conduct baseline environmental assessments to compare pre-and post-incident conditions.
- Pollutant Dispersion Modelling

- Assess the seasonal variations in the dispersion and transport of pollutants released from the ship using hydrodynamic modelling and computational fluid dynamics modelling. For chemical dispersion in sea, it has to be coupled with CFD models
- Evaluate the potential contamination zones and their impact on marine and coastal ecosystems.
- Assess synergistic effects of mixed pollutants (e.g., hydrocarbons + calcium carbide).

➢ Risk Identification & Long-Term Monitoring

- Identify and evaluate short-term and long-term risks to marine biodiversity, coastal communities, and ecosystem services.
- Establish a monitoring framework for tracking ecological recovery and pollutant persistence over time.

➢ Ecological, Environmental & Economic Restoration Plan

- Develop a comprehensive restoration strategy, including:
  - Scientific and economic valuation of environmental damage.
  - Environmental compensation mechanisms following the 'Polluter Pays Principle'.
  - Cost estimates for restoration, remediation and recovery efforts and identification of implementing Departments/ Agencies.
- Recommend adaptive management strategies for mitigating ongoing environmental risks.

➢ Regulatory, Institutional & Preventive Measures

- Review existing maritime regulations, emergency response protocols, and liability frameworks.
- Propose institutional improvements for better preparedness and response to future marine incidents.
- Recommend preventive measures, including strengthening oil spill contingency plans, hazardous cargo handling protocols, and coastal resilience strategies.

➢ Stakeholder Engagement & Public Awareness

- Facilitate consultations with affected communities, fisheries, environmental groups, and policymakers.

THE HIGH COURT OF KERALA

- Develop public awareness campaigns on marine pollution risks and response strategies.

3. Scope of Work

1. Pollutant and Wreck Assessment

The study aims to assess and delineate the extent of pollution and debris along the Kerala coast using numerical modelling and insitu measurement approaches specifically, the existing data from INCOIS. It will :

1) Identify, quantify and characterize the types of pollutants released from the sunken vessel, including oil, hazardous chemicals, plastic nurdles, major contaminants and any solid debris, and evaluate their dispersion and dilution in coastal waters and sediments;

2) Map the spatial distribution of pollutants and debris along the coastline, identifying high-risk zones for environmental and socio-economic impacts;

3) Analyse pollutant transport mechanisms, considering seasonal variations, ocean currents, and meteorological influences to predict long-term contamination risks;

4) Assess the interaction of pollutants with marine biodiversity, coastal ecosystems, and human settlements, integrating biological, chemical, and physical monitoring techniques.

2. Environmental Impact Assessment

This study aims to assess the impact of the pollutants released from the capsized ship on the air, water, sediment, flora, and faunal diversity of the region, including sensitive, endemic or endangered species.The study should verify the presence of invasive species and microbial pathogens in ballast water, which may disrupt the local marine ecosystem and pose a risk to public health.

Evaluate immediate and long-term damage tomarine and coastal ecosystems (e.g., coral reefs, plankton communities, benthic organisms, fish stocks) and coastal habitats (e.g., beaches, intertidal zones, mangroves, estuaries), including sensitive or endangered species. Ensure compliance with national and international regulations such as IMO, MARPOL, etc..

3. Socio-Economic, Public Health, and Environmental Liability Assessment

The study may include the assessment of the socio-economic and public health impacts, which may include but are not restricted to the livelihood losses among fishing communities, fish processing business, homestay and tourism operators (assessement like quantifying losses using occupancy rates, visitor surveys, and stakeholder interviews), economic downturns, and assess and identify public health hazards arising from contaminated seafood, water resources, and airborne pollutants, including potential long-term health risks associated with hazardous material exposure. The study will also quantify environmental damage using scientific valuation and estimate the financial cost of ecological restoration. Furthermore, it will recommend environmental compensation (EC) strategies aligned with statutory frameworks and National Green Tribunal (NGT) guidelines, ensuring accountability through the "Polluter Pays Principle" and supporting long-term recovery efforts.

4. Restoration and Mitigation Plan

The report will recommend short-term (immediate) and long-term (5-year) ecological (define timelines for Immediate Oil containment, debris collection., Medium-term Sediment remediation and Long-term Biodiversity recovery programs) restoration measures to mitigate the environmental and socio-economic impacts of the MSC Elsa 3 sinking. This will include rehabilitation programs for marine biodiversity, coastal ecosystems, and habitats, such as coral reefs, mangroves, estuaries,and intertidal zones. To support affected communities, the study will outline costed interventions for public health and livelihood recovery. Furthermore, an adaptive management framework will be developed, integrating scientific monitoring, stakeholder engagement, and policy recommendations to ensure long-term sustainability and resilience.

5. Institutional and Policy Framework including Environmental monitoring plan Duties/Roles and Responsibilities of entrusted agencies in environment management and monitoring plan

The study will define the roles and responsibilities of line departments and institutions in implementing environmental restoration, marine safety, and disaster response measures.It will propose improvements in marine safety, surveillance, and emergency response protocols, ensuring better preparedness for future maritime incidents. Additionally, the study will suggest capacity-building programs for marine disaster management, focusing on training, resource allocation, and institutional coordination including setting up a real-time incident reporting system using GIS for tracking and quick response defining how data shall be collected, stored, and shared among agencies. Formulation of a maritime environmental management protocol to prevent and handle such incidents in future shall also be focused upon

.

The above Terms of Reference are indicative and not all-encompassing. The Institute, in consultation with the Kerala State Pollution Control Board and based on field realities and scientific judgment, may include additional parameters or assessments deemed necessary for a comprehensive evaluation of the environmental and socio-economic impact of the incident. The institute should also consider studies commissioned by other departments of the Government, andmay also collaborate with other reputable institutions as needed.

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PROCEEDINGS

Sub: Constitution of committee for evaluation of proposal submitted by National Institute of Oceanography for the Environmental Damage Assessment and Long Term Study to assess the extent of environmental damage caused due to the shipwreck incident of vessel MSC Elsa 3 – Orders issued.

KERALA STATE POLLUTION CONTROL BOARD

No. KSPCB/460/2022-EE-5 Date: 20/06/2025

Read: 1. G.O.(Rt)No.363/2025/DMD dated 30.05.2025
2. G.O.(Rt)No.62/2025/ENVT dated 11.06.2025
3. Terms of Reference (ToR) for assessing the extent of environmental damage caused by the shipwreck of the capsized vessel MSC Elsa 3 on the coastal and marine ecosystem of Kerala

ORDER

As per Government Order read above, Government have declared the ship wreckage of ship M/s ELSA 3 in the Arabian Sea 14.6 nautical miles off the Kerala coast as a State-Specific disaster, considering the potentially serious environmental, social, and economic impact of the ship wreckage.

Further, it is also ordered that all the procedural requirements for impact assessment, restoration and remediation across sectors in accordance with the law as well as for engaging with various scientific and research institutions/experts with the aim to procure their services for such studies shall be housed in the Environment Department. In the circumstances the Kerala State Pollution Control Board (KSPCB) was authorized to engage National Institute of Oceanography (NIO) for the Environmental Damage Assessment and a Long-Term Study to assess the extent of environmental damage caused due to the shipwreck incident. KSPCB was also directed to prepare the ToR of the proposed study in consultation with the Government. Accordingly, KSPCB in consultation with the Government has prepared the ToR of the proposed study and requested NIO to submit the proposal.

The proposal submitted by NIO has to be evaluated by a technical committee of multi-disciplinary nature with expertise of various departments and agencies. Accordingly an expert committee is hereby constituted with the following members.

1. Member Secretary, Kerala State Pollution Control Board - Chairperson
2. Representative from Water Resource Department - Member
3. Representative from Finance Department - Member

4. Representative from Health and Family welfare Department - Member
5. Representative from Forest and Wild Life - Member
6. Representative from Science and Technology Department - Member
7. Representative from Industries Department - Member
8. Representative from Agriculture Department - Member
9. Representative from Local Self Government Department - Member
10. Representative from Revenue and Disaster Management Department - Member
11. Representative from Tourism Department - Member
12. Representative from Department of Fisheries and Ports - Member
13. Representative from Harbour Engineering Department - Member
14. Representative from Kerala Coastal Zone Management Authority - Member
15. Representative from Mercantile Marine Department - Member
16. Representative from Cochin Port Trust - Member
17. Representative from Kerala Maritime Board - Member
18. Representative from Environment and Climate Change – Member
19. Chief Environmental Engineer, Head Office, Kerala State Pollution Control Board – Member
20. Senior Environmental Engineer - 2, Head Office, Kerala State Pollution Control Board – Member Convenor

Each member has the liberty to be accompanied by their Department's expert member for committee meeting. The committee shall evaluate and make definite recommendation on the acceptance of the proposal.

The expenditure of the above committee shall be met from the fund provided under 'Contingency' (Non plan-) for the financial year 2025-26.

Sd/-
CHAIRPERSON

Forwarded by Order

Senior Environmental Engineer – 2

To

1. Additional Chief Secretary, Water Resource Department

2. Additional Chief Secretary, Finance Department
3. Additional Chief Secretary, Health and Family welfare Department
4. Additional Chief Secretary, Forest and Wild Life
5. Principal Secretary, Science and Technology Department and Executive Vice President KSCSTE
6. Principal Secretary, Industries Department
7. Principal Secretary, Agriculture Department
8. Principal Secretary, Local Self Government Department
9. Principal Secretary, Revenue and Disaster Management Department
10. Secretary, Tourism Department
11. Special Secretary, Department of Fisheries and Ports
12. Chief Engineer, Harbour Engineering Department
13. Chairman, Kerala Coastal Zone Management Authority
14. Principal Officer, Mercantile Marine Department
15. Chairperson, Cochin Port Trust
16. Chairman, Kerala Maritime Board
17. Director, Environment and Climate Change

HIGH COURT OF KERALA
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Copy to,

1. Administrative Officer
2. Accounts Officer
3. Senior Environmental Engineer – 2
4. CA to Chairperson
5. CA to Member Secretary
6. CA to Chief Environmental Engineer

MSC ELSA 3 എന്ന ചരക്ക് കപ്പൽ കേരള തീരത്ത് മുങ്ങിയതുമായി ബന്ധപ്പെട്ട വിഷയം ചർച്ച ചെയ്യുന്നതിന് 28/05/2025 -ന് മത്സ്യബന്ധന വകുപ്പ് മന്ത്രിയുടെ അദ്ധ്യക്ഷതയിൽ ചേർന്ന യോഗത്തിന്റെ നടപടിക്കുറിപ്പ്

വൈലോപ്പള്ളി സംസ്കൃതി ഭവനിൽ രാവിലെ 11:50 -ന് ഹൈബ്രിഡ് മോഡിൽ യോഗം ആരംഭിച്ചു. ശ്രീ. പി.പി. ചിത്തരഞ്ജൻ എം. എൽ. എ. സന്നിഹിതനായിരുന്നു. കൃഫോസ്, മാരിടൈം ബോർഡ്, CIFT, മലിനകരണ നിയന്ത്രണ ബോർഡ്, കോസ്റ്റ് ഗാർഡ് എന്നീ സ്ഥാപനങ്ങളിലെ പ്രതിനിധികൾ ഓൺലൈനായി യോഗത്തിൽ പങ്കെടുത്തു. യോഗത്തിൽ പങ്കെടുത്ത മറ്റുള്ളവരുടെ വിവരം അനുബന്ധമായി ചേർക്കുന്നു.

2. MSC ELSA 3 എന്ന ചരക്കുകപ്പൽ കേരളത്തീരത്ത് മുങ്ങിയ വിഷയം വളരെ ഗൗരവമായാണ് സർക്കാർ കാണുന്നതെന്നും മത്സ്യത്തൊഴിലാളികളുടെ എല്ലാ ആശങ്കകളും പരിഹരിക്കുന്നതിനുള്ള നടപടികൾ സ്വീകരിക്കുന്നുണ്ടെന്നും യോഗത്തിൽ ആമുഖമായി ബഹു ഫിഷറീസ് വകുപ്പ് മന്ത്രി അറിയിച്ചു. ഈ വിഷയത്തിൽ മത്സ്യത്തൊഴിലാളികളുടെ ആശങ്കകൾ എന്തെല്ലാമാണെന്ന് അവതരിപ്പിക്കുവാൻ ട്രേഡ് യൂണിയൻ പ്രതിനിധികളോട് ബഹു ഫിഷറീസ് വകുപ്പ് മന്ത്രി ആവശ്യപ്പെട്ടു.

3. തുടർന്ന് യോഗത്തിൽ പങ്കെടുത്ത് സംസാരിച്ച ട്രേഡ് യൂണിയൻ പ്രതിനിധികൾ ചുവടെ പറയുന്ന ആവശ്യങ്ങളിന്മേൽ നടപടി സ്വീകരിക്കണമെന്ന് ആവശ്യപ്പെട്ടു.

(1) MSC ELSA 3 എന്ന ചരക്കുകപ്പൽ കേരളത്തീരത്ത് മുങ്ങിയതുമായി ബന്ധപ്പെട്ട് ഉണ്ടാകാവുന്ന പാരിസ്ഥിതിക ആഘാതങ്ങളേപ്പറ്റിയും അവ മത്സ്യത്തൊഴിലാളികളെയും, മറ്റു തീരദേശവാസികളെയും, മത്സ്യസമ്പത്തിനേയും എങ്ങനെ ബാധിക്കും എന്നതിൽ ടി വിഷയത്തിൽ വിദഗ്ധരായവരെയും ഫിഷറീസ് വകുപ്പ് ഉദ്യോഗസ്ഥരെയും ഉൾകൊള്ളിച്ചു ഒരു വിദഗ്ധ സമിതി രൂപീകരിച്ചു സമഗ്രമായ പഠന റിപ്പോർട്ട് തയ്യാറാക്കണം.

(2) ടി ചരക്കുകപ്പലിലെ ഏതാനും കണ്ടയിനറുകളിൽ രാസവസ്തുക്കൾ ഉൾപ്പെടെയുള്ള അപകടകരമായ വസ്തുക്കൾ ഉണ്ടായിരുന്നുവെന്നും ആയതു മത്സ്യസമ്പത്തിനെ പ്രതികൂലമായി ബാധിക്കുമെന്നും, കടൽ മത്സ്യം ഭക്ഷിക്കുന്നത് ആരോഗ്യപ്രശ്നങ്ങൾ ഉണ്ടാക്കും എന്നുള്ള ഓൺലൈൻ മാധ്യമങ്ങളുടെ അടക്കമുള്ളവരുടെ പ്രചാരണം മൂലം കടലിൽ നിന്നും പിടിച്ചെടുക്കുന്ന മത്സ്യം വിറ്റഴിക്കാനാവാത്ത സാഹചര്യം മത്സ്യത്തൊഴിലാളികൾക്കും മത്സ്യ കച്ചവടക്കാർക്കും വലിയ ബുദ്ധിമുട്ട് സൃഷ്ടിച്ചിരിക്കുകയാണെന്നും അഭിപ്രായപ്പെട്ടു. മത്സ്യവിപണനം സുഗമമായി നടക്കുന്നതിന് കടൽ മത്സ്യം ഭക്ഷിക്കുന്നതുമായി ബന്ധപ്പെട്ട് അനാവശ്യമായ ആശങ്കകൾ പ്രചരിപ്പിക്കുന്നവർക്കെതിരെ നിയമ നടപടികൾ സ്വീകരിക്കണം.

(3) ടി ചരക്ക് കപ്പൽ മുങ്ങിയത് മൂലം പ്രദേശത്ത് മത്സ്യബന്ധനത്തിൽ ഏർപ്പെടുമ്പോൾ മത്സ്യബന്ധനത്തിന് ഉപയോഗിക്കുന്ന വല കേടാകാൻ സാധ്യതയുണ്ടെന്നും അതിനാൽ മത്സ്യബന്ധനം നിരോധിച്ചിരിക്കുന്ന മേഖലയിൽ ബോയെ -കൾ സ്ഥാപിച്ച് ടി പ്രദേശം വേർതിരിക്കണമെന്നും, എത്രയും വേഗം ചരക്ക് കപ്പലും കണ്ടെയിനറുകളും കടലിന്റെ അടിത്തട്ടിൽ നിന്നും നീക്കുന്നതിനുമുള്ള നടപടികൾ ഉടൻ സ്വീകരിക്കണം.

(4) ടി ചരക്കുകപ്പൽ മുങ്ങിയതുമായി ബന്ധപ്പെട്ട് മത്സ്യത്തൊഴിലാളികൾക്ക് തൊഴിൽ ദിനം നഷ്ടപെട്ടതിനും, കടൽ മത്സ്യം വിൽക്കാനാവാതെ വന്ന നഷ്ടവും, ഇത് മൂലം ഉണ്ടാകുന്ന മറ്റു നഷ്ടങ്ങളും കണക്കാക്കി സംസ്ഥാന സർക്കാർ ധനസഹായ പാക്കേജ് പ്രഖ്യാപിക്കണം. സമാന രീതിയിലുള്ള ധനസഹായ പാക്കേജ് കേന്ദ്രസർക്കാരിൽ നിന്നും ലഭ്യമാക്കുന്നതിനായി കേന്ദ്രസർക്കാരിൽ സമ്മർദ്ദം ചെലുത്തണം. കൂടാതെ അന്താരാഷ്ട്ര നിയമങ്ങൾക്ക് അനുസൃതമായി കപ്പൽ കമ്പനിയിൽ നിന്നും നഷ്ടപരിഹാരത്തുക ലഭ്യമാകുന്നതിനുള്ള നടപടികൾ സ്വീകരിക്കണം.

(5) കപ്പൽ മുങ്ങിയ ഭാഗത്തെ എണ്ണപ്പാട നീക്കുന്നതിനും കപ്പലിൽ ഉണ്ടായിരുന്ന മറ്റു വസ്തുക്കൾ കടലിൽ നിന്നും തീരത്ത് നിന്നും മാറ്റുന്നതിനുള്ള നടപടികൾ സ്വീകരിക്കണം.

(6) കപ്പലിലെ കണ്ടെയ്നറുകളിൽ ഉണ്ടായിരുന്ന വസ്തുക്കളുടെ വിവരങ്ങൾ പ്രസിദ്ധപ്പെടുത്തണം.

4. കപ്പൽ മറിഞ്ഞതുമായി ബന്ധപ്പെട്ട് ഭയാനജനകമായ ആശങ്കയുടെ ആവശ്യമില്ലെന്നും കപ്പൽ പ്രവർത്തിപ്പിക്കുന്നതിനുള്ള 365 ടൺ ഇന്ധനം മാത്രമേ കപ്പലിൽ ഉണ്ടായിരുന്നുള്ളൂ എന്നും, ഇന്ത്യൻ കോസ്റ്റ് ഗാർഡ് -ന്റെ ഡിസാസ്റ്റർ മാനേജ്മെന്റ് വിഭാഗം oil spill തടയാനുള്ള പ്രവർത്തനങ്ങൾ തുടങ്ങി കഴിഞ്ഞുവെന്നും, മൺസൂൺ സമയമായത് കൊണ്ട് ജലത്തിന്റെ ഗതി തെക്ക് പടിഞ്ഞാറ് ദിശയിൽ ആയതിനാൽ ആലപ്പുഴ, കൊല്ലം, തിരുവനന്തപുരം ജില്ലകളുടെ തീരപ്രദേശത്ത് കണ്ടയിനറുകൾ എത്തിച്ചേരുമെന്നും KUFOS-നെ പ്രതിനിധീകരിച്ച് ഡോ. വി. എൻ. സഞ്ജീവൻ യോഗത്തെ അറിയിച്ചു. കൂടാതെ, കാൽസ്യം കാർബൈഡിന്റെ 12 കണ്ടയിനറുകൾ കപ്പലിന്റെ കൂടെ താഴേക്ക് പോയിരിക്കാനാണ് സാധ്യതയെന്നും, ഇത് ലീക്ക് ചെയ്താൽ കാൽസ്യം കാർബൈഡ് ജലവുമായി ചേർന്ന് അസറ്റലൈൻ ഗ്യാസും, കാൽസ്യം ഹൈഡ്രോക്സൈഡ് ആയി മാറുമെന്നും, ആയത് തീപിടിത്തതിനും, കടൽ വെള്ളത്തിന്റെ പി.എച്ച് മൂല്യത്തെ ബാധിക്കാനിടയുണ്ടെന്നും അദ്ദേഹം കൂട്ടിച്ചേർത്തു. ഇന്റർനാഷണൽ മാരിടൈം ഓർഗനൈസേഷന്റെ MARPOL കൺവെൻഷൻ അനുസരിച്ച് നഷ്ടപരിഹാരം ലഭ്യമാക്കുന്നതിനുള്ള നടപടികൾ സ്വീകരിക്കാവുന്നതാണെന്നും ഡോ. വി. എൻ. സഞ്ജീവൻ അറിയിച്ചു.

5. ഈ യോഗം നടക്കുമ്പോൾ തന്നെ ടി വിഷയവുമായി ബന്ധപ്പെട്ട് ഷിപ്പിംഗ് ഡയറക്ടർ ജനറലിന്റെ അധ്യക്ഷതയിൽ കൊച്ചിയിൽ മറ്റൊരു യോഗം ചേരുന്നുണ്ടെന്നും ടി യോഗത്തിൽ കേരളത്തിന്റെ എല്ലാ ആശങ്കയും ആവശ്യങ്ങളും അറിയിച്ചിട്ടുണ്ടെന്നും എണ്ണപ്പാട മാറ്റുന്നതിനും കാൽസ്യം കാർബൈഡ് അടങ്ങുന്നതുൾപ്പടെയുള്ള കണ്ടെയ്നറുകൾ നീക്കം ചെയ്യുന്ന വിഷയം യോഗത്തിൽ അവതരിപ്പിച്ചിട്ടുണ്ടെന്നും മാരിടൈം ബോർഡ് ചീഫ് എക്സിക്യൂട്ടീവ് ഓഫീസർ യോഗത്തിൽ അറിയിച്ചു. എണ്ണപ്പാടയും മറ്റു വസ്തുക്കളും കരയിലേക്കു എത്തിയിട്ടില്ലെന്നും അവ തീരത്ത് എത്തിയാൽ പോലും ഉടനെ നിർമാർജനം ചെയ്യുന്നതിനുള്ള മുന്നൊരുക്കങ്ങൾ സ്വീകരിച്ചിട്ടുണ്ടെന്നും മലിനീകരണ നിയന്ത്രണ ബോർഡ് സീനിയർ എഞ്ചിനീയർ യോഗത്തിൽ അറിയിച്ചു.

6. ചരക്കുകപ്പലിൽ നിന്നുള്ള ഇന്ധന ചോർച്ചയും കണ്ടെയ്നറുകളിൽ നിന്നുള്ള ചോർച്ചയുടെ സാധ്യതയും സ്ഥിരമായി നീരിക്ഷിച്ച് വരികയാണെന്നും നിലവിൽ 3 കപ്പലുകൾ ടി വസ്തുക്കൾ ശേഖരിക്കുന്നതിനായി കപ്പൽ മുങ്ങിയ പ്രദേശത്ത് പ്രവർത്തിക്കുന്നുണ്ടെന്നും, ഒരു സ്പെഷ്യൽ പൊല്യൂഷൻ കോൺട്രോളിങ് വെസ്സൽ മുംബൈയിൽ നിന്നും ഉടനെ എത്തിച്ച് കണ്ടെയ്നറിലെ വസ്തുക്കളും, എണ്ണപ്പാടയും നീക്കം ചെയ്യുന്നതിനുള്ള പ്രവർത്തികൾ ത്വരിതപ്പെടുത്തുന്നതാണെന്നും കോസ്റ്റ് ഗാർഡ് പ്രതിനിധികൾ യോഗത്തിൽ അറിയിച്ചു. മത്സ്യം ഭക്ഷ്യയോഗ്യമാണോ എന്ന്

പരിശോധിക്കുന്നതിനും കടൽ വെള്ളത്തിന്റെ ഗുണനിലവാരം പരിശോധിക്കുന്നതിനും എല്ലാ സഹരണവും നൽകുന്നതാണെന്ന് CIFT പ്രതിനിധികൾ അറിയിച്ചു.

7. ആകെ 643 കണ്ടെയ്നറുകൾ ആണ് കപ്പലിൽ ഉണ്ടായിരുന്നതെന്നും അവയിൽ കുറെയധികം കാലിയായിരുന്നുവെന്നും അനാവശ്യമായ ആശങ്കകളുടെ ആവശ്യമില്ലെന്നും നഷ്ടപരിഹാര തുക കപ്പൽ കമ്പനിയിൽ നിന്നും ഈടാക്കുന്നതിനുള്ള എല്ലാ നടപടികളും സ്വീകരിക്കുന്നതാണെന്നും ഫിഷറീസ് വകുപ്പ് സ്പെഷ്യൽ സെക്രട്ടറി അറിയിച്ചു.

8. മേൽ വിഷയത്തിൽ ആരോഗ്യ വകുപ്പ് മന്ത്രി പങ്കെടുത്ത യോഗത്തിൽ ബന്ധപ്പെട്ട ഉദ്യോഗസ്ഥരുമായി വിഷയത്തിൽ വിശദമായി ചർച്ച ചെയ്തിരുന്നുവെന്നും, ആവശ്യമായ എല്ലാ നടപടികളും സ്വീകരിക്കുവാൻ നിർദ്ദേശം നൽകിയിട്ടുണ്ടെന്നും ഫിഷറീസ് വകുപ്പ് മന്ത്രി യോഗത്തെ അറിയിച്ചു. കപ്പൽ മുങ്ങിയതുമായി ബന്ധപ്പെട്ട് സർക്കാർ ദ്രുതഗതിയിൽ നടപടികൾ സ്വീകരിച്ചിട്ടുണ്ടെന്നും, പൊതുജനങ്ങളും മത്സ്യത്തൊഴിലാളികളും ശ്രദ്ധിക്കേണ്ട കാര്യങ്ങൾ മാധ്യമങ്ങൾ മുഖേന അറിയിച്ചിട്ടുണ്ടെന്നും, കേന്ദ്ര ഫിഷറീസ് വകുപ്പ് സഹമന്ത്രിയുമായി സംസാരിച്ചിട്ടുണ്ടെന്നും എല്ലാ സഹായ സഹകരണങ്ങളും നൽകാമെന്ന് കേന്ദ്ര ഫിഷറീസ് വകുപ്പ് സഹമന്ത്രി അറിയിച്ചതായും ഫിഷറീസ് വകുപ്പ് മന്ത്രി കൂട്ടിച്ചേർത്തു.

9. തുടർന്ന് നടന്ന വിശദമായ ചർച്ചകൾക്ക് ശേഷം ചുവടെ പറയുന്ന തീരുമാനങ്ങളെടുത്തു;

(1) ഫിഷറീസ് വകുപ്പ് സ്പെഷ്യൽ സെക്രട്ടറി കോ-ഓർഡിനേറ്ററായും, ഫിഷറീസ് ഡയറക്ടർ ജോയിന്റ് കോ-ഓർഡിനേറ്ററായും ഡിസാസ്റ്റർ മാനേജ്മെന്റ്, KUFOS, CMFRI, CIFT, മലിനീകരണ നിയന്ത്രണ ബോർഡ്, ഭക്ഷ്യ സുരക്ഷാ വകുപ്പ്, കോസ്റ്റൽ പോലീസ്, ആരോഗ്യ വകുപ്പ് എന്നീ സ്ഥാപനം/ വകുപ്പുകളിലെ പ്രതിനിധികളെ ഉൾപ്പെടുത്തി ഒരു സമിതി രൂപീകരിക്കുന്നതിനും പ്രസ്തുത കമ്മിറ്റി നിലവിലെ സ്ഥിതിഗതികൾ വിലയിരുത്തി മത്സ്യ ഉപഭോഗം സംബന്ധിച്ച് പൊതുജനങ്ങളിലുള്ള ഭീതി ഒഴിവാക്കുന്നതിന് ആവശ്യമായ Sampling, Testing എന്നിവ സ്റ്റാന്റേർഡ് പ്രോട്ടോകോൾ പ്രകാരം നടത്തി പ്രാഥമിക റിപ്പോർട്ട് അടിയന്തരമായി സമർപ്പിക്കണമെന്ന 27/05/2025 തീയതിയിലെ യോഗ തീരുമാനം ദ്രുതഗതിയിൽ നടപ്പാക്കേണ്ടതാണ്. **[നടപടി : ഫിഷറീസ് വകുപ്പ്]**

(2) മത്സ്യ സമ്പത്തിന്റെയും, ആവാസ വ്യവസ്ഥയുടെയും സുരക്ഷ ഉറപ്പാക്കുന്നതിന് KUFOS, CMFRI, CIFT, ഭക്ഷ്യ സുരക്ഷാ വകുപ്പ്, മലിനീകരമ നിയന്ത്രണ ബോർഡ്, ആരോഗ്യ വകുപ്പ് എന്നിവർ ചേർന്ന് കടൽ വെള്ളത്തിന്റെ പി. എച്ച്. മൂല്യം, മത്സ്യത്തിന്റെ ഗുണനിലവാരം എന്നിവ ഉറപ്പാക്കുന്നതിന് ഒരു ജോയിന്റ് പ്രോട്ടോകോൾ തയ്യാറാക്കി പരിശോധിക്കണമെന്ന 27/05/2025 തീയതിയിലെ യോഗ തീരുമാനം ദ്രുതഗതിയിൽ നടപ്പാക്കേണ്ടതാണ്. **[നടപടി : 1. ഫിഷറീസ് ഡയറക്ടർ, 2. KUFOS രജിസ്ട്രാർ, 3. ഭക്ഷ്യ സുരക്ഷാ വകുപ്പ്, 4. മലിനീകരണ നിയന്ത്രണ ബോർഡ്, 5. ആരോഗ്യ വകുപ്പ്]**

(3) ചരക്കുകപ്പൽ മുങ്ങിയതുമായി ബന്ധപ്പെട്ട് കപ്പലും കണ്ടെയിനറുകളും എത്രയും വേഗം നീക്കുന്നതിനും, മത്സ്യത്തൊഴിലാളികൾക്ക് തൊഴിൽ ദിനം നഷ്ടപെട്ടതിനും, കടൽ മത്സ്യം വിൽക്കാനാവാതെ വന്ന നഷ്ടത്തിനും, മറ്റു നഷ്ടങ്ങളും പരിഹരിക്കുന്നതിന് ധനസഹായ പാക്കേജ് അനുവദിക്കുന്നതിന് കേന്ദ്ര സർക്കാരിൽ സമ്മർദ്ദം ചെലുത്തേണം. **[നടപടി : ഫിഷറീസ് വകുപ്പ്]**

(4) ചരക്ക് കപ്പൽ മുങ്ങിയത് കാരണം മത്സ്യമേഖലയിൽ ഉണ്ടാകുന്ന നഷ്ടങ്ങൾക്ക് MSC ELSA 3 കപ്പൽ ഉടമകളിൽ നിന്നും നഷ്ടപരിഹാരം ഈടാക്കുന്നതിന് നിയമ നടപടികൾ സ്വീകരിക്കണം **[നടപടി : ഫിഷറീസ് വകുപ്പ്]**

(5) മത്സ്യ ഉപഭോക്താക്കളിലും മത്സ്യ വില്പനക്കാരിലും നിലവിലുള്ള ഭീതി ഒഴിവാക്കുന്നതിന് ജില്ലാതലത്തിൽ ക്യാമ്പയിൻ സംഘടിപ്പിക്കേണ്ടതാണ്. **[നടപടി : ഫിഷറീസ് ഡയറക്ടർ]**

(6) കപ്പൽ മുങ്ങിയ ഭാഗത്ത് ബോയെ -കൾ സ്ഥാപിച്ച് വേർതിരിച്ചറിയുന്നതിനുള്ള നടപടി സ്വീകരിക്കേണ്ടതാണ്. **[നടപടി : 1. ഫിഷറീസ് വകുപ്പ്, 2. കോസ്റ്റൽ പോലീസ്, 3. ഇന്ത്യൻ കോസ്റ്റ് ഗാർഡ്]**

(7) കപ്പൽ മുങ്ങിയ ഭാഗത്തും കണ്ടെയിനറുകൾ അടിഞ്ഞ ഭാഗത്തും നിന്ന് പിടിക്കുന്ന മത്സ്യം CIFT -ൽ പരിശോധിച്ച് ഗുണനിലവാര റിപ്പോർട്ട് അടിയന്തരമായി ലഭ്യമാക്കുന്നതിനുള്ള നടപടികൾ സ്വീകരിക്കേണ്ടതാണ് **[നടപടി : മത്സ്യഫെഡ്]**

SAJI CHERIAN
MINISTER

അനുബന്ധം

യോഗത്തിൽ ഹാജരായവർ

പേര്	പദവി
ശ്രീ. അബ്ദുൾ നാസർ ബി IAS	സ്പെഷ്യൽ സെക്രട്ടറി, മത്സ്യബന്ധന വകുപ്പ്
ശ്രീമതി. സഫ്ന നസറുദ്ദീൻ IAS	ഫിഷറീസ് ഡയറക്ടർ
ശ്രീ. കെ. എസ്. സുദർശൻ ഐ. പി. എസ്.	ജില്ലാ പോലീസ് മേധാവി, തിരുവനന്തപുരം റൂറൽ
ശ്രീ. എം.പി. മോഹനചന്ദ്രൻ ഐ. പി. എസ്.	ജില്ലാ പോലീസ് മേധാവി, ആലപ്പുഴ
ശ്രീ. ഫറാഷ് റ്റി. ഐ. പി. എസ്.	ഡി.സി.പി (ലോ & ഓർഡർ), തിരുവനന്തപുരം
ശ്രീ. ടി മനോഹരൻ	ചെയർമാൻ, മത്സ്യഫെഡ്
ശ്രീമതി. സ്മിത ആർ നായർ	അഡീഷണൽ ഡയറക്ടർ, ഫിഷറീസ് വകുപ്പ്
ശ്രീ. സലിം എച്ച്.	കമ്മീഷണർ, ക്ഷേമനിധി ബോർഡ്
ഡോ. എ. നാസിം	പോലീസ് സൂപ്രണ്ട്, മറൈൻ എൻഫോഴ്സ്മെന്റ് വിംഗ്.
ശ്രീ. പ്രസാദ് എ	പോലീസ് അസിസ്റ്റന്റ് കമ്മീഷണർ, തിരുവനന്തപുരം
ശ്രീ. കെ സ്റ്റുവർട്ട് കീലർ	പോലീസ് അസിസ്റ്റന്റ് കമ്മീഷണർ, കന്റോൺമെന്റ്, തിരുവനന്തപുരം
ഡോ. വി. എൻ. സഞ്ജീവൻ	പ്രൊഫസർ, കുഫോസ്
ഡോ കുഞ്ഞിമമ്മു പറവത്ത്	സീനിയർ എഞ്ചിനീയർ, ഹാർബർ എഞ്ചിനീയറിംഗ് വകുപ്പ്
ശ്രീമതി ശ്രീകല എസ്	സീനിയർ സയന്റിസ്റ്റ്, കേരള മലിനീകരണ നിയന്ത്രണ ബോർഡ്

FSO VERIFIED -18

ഡോ.പി. സഹദേവൻ	മാനേജിംഗ് ഡയറക്ടർ, മത്സ്യഫെഡ്
ശ്രീ. സതീഷ് കുമാർ എ.പി.	ഫിഷറീസ് ജോയിന്റ് ഡയറക്ടർ
ശ്രീ. സുധീർ കൃഷ്ണൻ	ഫിഷറീസ് ജോയിന്റ് ഡയറക്ടർ
ശ്രീമതി. ബേബി ഷീജ കോഹൂർ	ഫിഷറീസ് ജോയിന്റ് ഡയറക്ടർ
ഡോ. ആഷാ അഗസ്റ്റിൻ	ഫിഷറീസ് ജോയിന്റ് ഡയറക്ടർ
ശ്രീമതി. സ്മിത ബി. എസ്.	ജോയിന്റ് ഡയറക്ടർ, അഡാക്ക്
ശ്രീമതി. മാജ ജോസ്	ഫിഷറീസ് ഡെപ്യൂട്ടി ഡയറക്ടർ.
ശ്രീ. രമേഷ് ശശിധരൻ	ഫിഷറീസ് ഡെപ്യൂട്ടി ഡയറക്ടർ.
ശ്രീ. എസ്. പ്രിൻസ് എസ്	ഫിഷറീസ് ഡെപ്യൂട്ടി ഡയറക്ടർ.
ശ്രീ. സജീവ് കുമാർ എ ആർ	ഫിഷറീസ് ഡെപ്യൂട്ടി ഡയറക്ടർ.
ശ്രീ. അനിൽകുമാർ എസ്	ഫിഷറീസ് ഡെപ്യൂട്ടി ഡയറക്ടർ.
ഡോ.സോഫിയ. എം.ജെ	ഫിഷറീസ് ഡെപ്യൂട്ടി ഡയറക്ടർ.
ശ്രീ. രാജീവ് എസ്. ഐ	റീജിയണൽ എക്സിക്യൂട്ടീവ്, മത്സ്യബോർഡ്
ശ്രീ. വി. ദിനകരൻ മുൻ എം. എൽ. എ.	ട്രേഡ് യൂണിയൻ പ്രതിനിധി
ശ്രീ. ബിനു പൊന്നൻ	ട്രേഡ് യൂണിയൻ പ്രതിനിധി
അഡ്വ. അഡോൾഫ്. ജി. മൊറൈസ്	ട്രേഡ് യൂണിയൻ പ്രതിനിധി
ശ്രീ. ലീലാകൃഷ്ണൻ	ട്രേഡ് യൂണിയൻ പ്രതിനിധി
ശ്രീ. നെപ്പോളിയൻ	ട്രേഡ് യൂണിയൻ പ്രതിനിധി
ശ്രീ. കെ. ശിശുപാലൻ	ട്രേഡ് യൂണിയൻ പ്രതിനിധി
ശ്രീ. ചാൾസ് ജോർജ്ജ്	ട്രേഡ് യൂണിയൻ പ്രതിനിധി
ശ്രീ. സോളമൻ വെട്ടുകാട്	ട്രേഡ് യൂണിയൻ പ്രതിനിധി
ശ്രീമതി. സീറ്റാ ദാസൻ	ട്രേഡ് യൂണിയൻ പ്രതിനിധി
ശ്രീമതി. സോണിയ ജോർജ്ജ്	ട്രേഡ് യൂണിയൻ പ്രതിനിധി
ശ്രീ. ടോംസൺ ഗിൽബർട്ട്	ട്രേഡ് യൂണിയൻ പ്രതിനിധി
ശ്രീ. രാജു പി	ട്രേഡ് യൂണിയൻ പ്രതിനിധി
ശ്രീ. പീറ്റർ മാത്യൂസ്	ട്രേഡ് യൂണിയൻ പ്രതിനിധി
ശ്രീ. ആന്റണി കുരിശുങ്കൽ	ട്രേഡ് യൂണിയൻ പ്രതിനിധി
ശ്രീ. രാധാകൃഷ്ണൻ	ട്രേഡ് യൂണിയൻ പ്രതിനിധി
ശ്രീ. ജോസഫ് സേവ്യർ കളപ്പുരക്കൽ	ട്രേഡ് യൂണിയൻ പ്രതിനിധി
ശ്രീ. ഉമ്മർ ഒട്ടുമ്മൽ	ട്രേഡ് യൂണിയൻ പ്രതിനിധി
ശ്രീ. പി. ബൈജു	ട്രേഡ് യൂണിയൻ പ്രതിനിധി

CENTRE FOR AQUATIC RESOURCE MANAGEMENT & CONSERVATION (CARMC)

Sub. MSC Elsa-3 container mishap: Impact assessment studies – Fish eggs & larvae

1. As informed by the Registrar, KUFOS, the University has been directed by the State Fisheries Department to conduct a detailed impact assessment of the said mishap on the fishery including fish eggs and larvae. It is understood that the Fishery Dept. has in principle approved an allocation of Rs.45 lakh for the proposed six months survey and assessment. Measurement Protocols of CARMC is attached.

2. As a first step towards this, I have requested the CMLRE (FORV. Sagar Sampada) to collect surface water samples from 4 closest stations from the sunken ship and from 4 stations 20 NM away from this site and from one station off Kochi (referral stn.). The concentration of hazardous chemicals at and 20 NM away from the site, together with actual current velocity (speed & direction) can help us approximate the leaching and dilution rates. This will be carried out today (2.06.25) and tomorrow.

3. It is proposed that the following CARMC team may be assigned the responsibility of undertaking this work. Dr. V.N.Sanjeevan (Prof. Chair, CARMC – Lead); Dr. Anu Gopinath (Prof. & Head – Water and sediment chemistry); Dr. Prabhakaran (Asst. Prof. – sediment analysis and macrobenthos), Dr. Limna mol (Asst. Prof.- Pico & nano planktons), Dr. Vimal kumar (Project scientist,CARMC – physical oceanography), Dr. Gireesh Raghavan,(Project scientist, CARMC- Plankton) and Sh. Jayeesh, (TA, CARMC- logistic support). In addition, we request provision of 3 interns (for enumeration of fish eggs/larvae, zooplankton, benthos etc) to facilitate time-bound analysis of the samples collected. Project duration is 6 months; from June 2025 to November 2025. Field surveys will be undertaken weekly during June and once in two weeks from July to November. Final report will be submitted by end December 2025. The first survey is planned along the Kollam transect (10m, 30 m & 50 m stns.) on the 5th of June 2025 (8AM to 5 PM).

4. Another critical requirement for this study, is the miniaturization of our Sea Bird CTD (detaching the sensor unit from the mainframe) without which, CTD operations from hired boats is impossible during rough sea-conditions. For the field survey on 5th June, we will be borrowing their CTD sensor unit from NIO-Kochi after they complete their Kollam survey on the 4th June evening. For the ensuing surveys of CARMC, it is imperative that the CTD is miniaturized at a cost of Rs.1.25 lakh as already proposed by CARMC.

5. Approval of the competent authority is sought towards;

(i) The tour program of Dr. V.N.Sanjeevan, Dr.Vimal Kumar, Dr. Gireesh Raghavan and Sh. Jayeesh to Kollam and back (Kochi to Kollam on 4th A/N , survey on-board 8AM to 5PM and ETD Kochi 5.30 PM on 5th June.

(ii) Transport (Bolero) from University (2PM) to Kollam on 4th June and return from Kollam to Kochi (5.30 PM) on 5th June. (K/A: Registrar/ KUFOS)

(iii) Hiring/ arranging a fishing boat for the survey through the Fisheries Department (K/A: Registrar, KUFOS).

(iv) Permission to hire one field labourer to support data collection, if need be

(v) Providing a tour advance of Rs. 10,000 (without boat hiring charges) or Rs. 20,000 (with boat hiring charges)

Dr.V.N.Sanjeevan
Prof. Chair, CARMC
02.06.2025

Director (R)/ Registrar-KUFOS

MSC Elsa-3 drowning: Impacts on the Fishery with focus on fish eggs/larvae

CARMC Measurement Protocols

1. **Transects & stations:** Off Kollam transect 10m, 30m and 50 m depth stations. One referral station off Kochi (30 m depth). Duration: 6 months from June to November. Sampling frequency: Weekly in June and once in two weeks thereafter. Accurate geo-location (GPS). Satellite data analysis for detection of propagating eddies.

2. **Physical parameters:** Vertical profiles (Sea Bird CTD) of temperature, salinity, alkalinity, DO, Chl-a, and nutrients (Nitrate, Nitrite, Phosphate, Ammonia). Measurement of surface currents (Current meter). Estimation of MLD, thermocline, upwelling (Upsloping of D_{24})

3. **Chemical parameters:** Analytical estimates of suface/ sediment DO, salinity, nutrients (for validation), pH, BOD, COD, POC, hazardous chemicals and their derivatives (with focus on hydrocarbons, Calcium carbide and Phenyl-P-phenylin diamine).

4. **Sediment samples:** Collection using Van-Veen Grab. Analysis of macrobenthos and sediment texture. Analysis of organic carbon, POM and other chemical parameters.

5. **Ecological parameters:** N: P ratios, composition and abundance of micro-phytoplankton (including pico and nano plankton), microzooplankton (including bacterioplankton) – HydroBios Bongo nets of 200µ and 300µ mesh size. Elucidation of trophic status.

6. **Fishery parameters:** Fish samples from landing stations: Fish gills for oil contamination, condition of gonads (atrophy), length-weight relationships, morphological abnormalities. Eggs & larvae (composition & abundance of small pelagic fish), visible abnormalities if any. Comparison with past data on eggs & larvae.

GOVERNMENT OF KERALA

No.B3/174/2025/F&PD
Fisheries & Ports (B) Department
Thiruvananthapuram,
Dated:25-06-2025

U.O NOTE

Sub: Fisheries Department- Ship wreck incidents in the Arabian sea - Admiralty suit filing - reg

Ref: 1. Letter No. ENVT-B2/65/2025-ENVT- Part(1) dated 20.06.2025 from Environment (B) Department)
2. Letter No. DFTVM/1759/2025-G2 dated 25.06.2025 from the Director of Fisheries (copy enclosed)

Attention of the Environment (B) Department may be invited to the reference (1) cited and a copy of the ref (2) may be forwarded that department in which the Director of Fisheries has furnished details called for vide ref (1), for further necessary action.

ASBINA A V
UNDER SECRETARY

To:

Environment (B) Department

Forwarded / By order,

Signed by
Sabitha Shiju
Date: 25-06-2025 17:07:32
Section Officer.

GOVERNMENT OF KERALA

DFTVM/1759/2025-G2

Office of the Director of Fisheries,
Thiruvananthapuram.
Dated:**25-06-2025**
Phone: 0471-2305042
e-mail: fisheriesdirector@gmail.com

From
Director of Fisheries

To
The Special Secretary to Government,
Fisheries Department,
Government Secretariat,
Thiruvananthapuram.

Sir,

Sub:- Fisheries -Ship wreck incidents in the Arabian sea - Admiralty suit filing - Details providing -reg.

Ref:- Govt. Lr. No. B1/174/2025/F&PD dated 21/06/2025

Kind attention of the Government is invited to the subject and reference. The following details are submitted to the Government for information and necessary action regarding the filing of an Admiralty suit in connection with the sinking of a ship in the Arabian Sea.

1 . Compensation for damage caused by the vessel due to oil seepage to the coastline and marine environment of the State

In order to ensure that the fishes available along the coast of Kerala are safe for consumption and that the sea water quality is not affected and that no contaminants are causing damage to the marine ecosystem, the Central marine Fisheries Research Institute (CMFRI), Central Institute of Fisheries Technology (CIFT) and Kerala University of Fisheries & Ocean Studies (KUFOS), has initiated sampling studies of water and fish tissue at definite intervals through standard protocols.

Accordingly, an amount of Rs. 45 lakh is required towards the said studies by KUFOS for carrying for a span of 3 months :

i) Expenses for Chemical analysis & tissue analysis – Rs.25 lakh
ii)Vessel hiring charges &fuel cost- 20 trips @Rs.50000/- /trip – Rs.10 lakh
iii) Manpower support and other related expenses - for sampling- Rs.10 lakh

In the above circumstances, Rs.45 lakh is assessed as cost required for sampling studies by KUFOS for 3 months duration so as to ensure that, the fishes

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of the Kerala coast are safe for consumption, the sea water quality is conducive for marine life and also alleviate the fear among public for consuming fish and thereby protect the income source of the poor fishermen.

2. Costs of reasonable measures taken for restoration of the environment.

The possibility of contamination of the marine ecosystem due to the contents of the container and oil spill can adversely affect the marine life and thereby deprive the fishermen of their livelihood. Hence the Department proposes the following measures for **Rejuvenating fish stock through sea ranching, and installation of artificial reefs – Rs.20.79 crore which includes:**

- Stock enhancement- In order to enhance the stock of commercially important fishes fish seeds of Pompano/cobia/ sea bass etc can be ranched off the coasts of the affected four districts. For this an amount of Rs.100 lakh per district i.e. Rs.300 lakh is required towards cost of fish seed required for ranching.
- Deployment of artificial reefs of the coast of 27 fishing villages of Kollam district- Rs.837 lakh for deploying 4,050 reef modules @150 /fishing village.
- Deployment of artificial reefs of the coast of 30 fishing villages of Alappuzha district-942 lakh for deploying 4,500 reef modules @150 / fishing village.

3 . Costs or expenses related to raising, removal, recovery or destruction of Containers and cargos, washed ashore the coasts of Kerala.

No cost incurred by Department side.

4. Economic loss caused to the fisherman due to fishing ban, possible damage of boats and fishing gear or nets.

(a) Loss to mandays: In connection with MSC ELSA 3 ship wreck which occurred approximately 14.6 nautical miles off Thottappally, Alappuzha district, carrying 643 containers on May 24, 2025, the fishermen community especially those of Thiruvananthapuram, Kollam, Alappuzha and Ernakulam districts were highly affected depriving the fishermen from going for fishing. The average marine catch per day is estimated as 1773 tonnes and average value comes to Rs.36.09 crore. The Per Capita income of fishermen during 2023-24 is Rs.1,56,397/-. and the average income per day is calculated as Rs.156397/365 days i.e. Rs.428/-. **Accordingly, the income loss from livelihood to the fishermen of the said four districts for the period 25th May to 1st June 2025, calculated based on the per capita income comes to Rs.5493 lakh. The details are as follows:**

Loss of Livelihood to Fishermen from 25th May 2025 to 1st June 2025 based on per capita income Rs 156397/-				
	Marine Fisher folk	**Allied Fisher folk**	**Total**	**Income loss (in lakh) of fishermen for**

District	(No.)	(No.)	Fisher folk (No.)	8 days @ Rs 428/- day
Thiruvananthapuram	48437	7123	55560	1902
Kollam	18191	17295	35486	1215
Alappuzha	24286	22879	47165	1615
Ernakulam	11027	11179	22206	760
Total	**101941**	**58476**	**160417**	**5493**

Thus, a total of Rs.54.93 crore is submitted as an interim loss assessment for loss of mandays.

In addition to the above, the applications related to loss due to damage of boats and fishing gear is being received in districts viz. Thiruvananthapuram, Kollam, & Alappuzha and the same is being physically verified for assessing the extent of loss. Hence the particular loss data is not ready presently for submission.

(b) Economic loss due to market scare on fish quality

An interim report findings by the Kerala University of Fisheries and Ocean Studies regarding the MSC Elsa-3 shipwreck and its potential short-term impacts on the ecology and fisheries along the Kerala coast south of the wreck site (located 14.6 NM off Thottappally) is as follows:

(i) Economic loss due to market scare on fish quality :-

- Average daily fish catch data during May/June 2024= Cumulative landing/ 61 days [A].
- A = 49560 ton/ 61 days = 812.5 ton/day (assumed to represent 70% of the landing. Another 30% is assumed to have landed at minor fish landing centres).
- Total (major+ minor landing centres) daily fish landing = 812.5 x 1.43 = 1161.9 ton/day or 1161900 kg/day. [B]
- Expected fish landing (in ton) between 25th May and 8th June (15 days) = 1161.9 x 15 days = 17428.5 tons or 17428500 kg.
- Reports from different sources indicates a crash in sea fish price by 80% on the 25th of May 2025, following the market scare on fish quality created by the media. The market slowly recovered reducing the loss in sale price to 20% by the 8th of June 2025. Taking this into consideration, we have used a 50% loss in sale price averaged for the period 25th May to 8th June, 2025. The average (average of different varieties of fish) market price per kg sea fish was around Rs.400/kg prior to the shipwreck. Therefore a 50% price loss after the shipwreck account for a loss of Rs.200/kg of fish sold.

In economic terms, the loss therefore is = 17428500 x 200 = Rs.348,57,00,000 or Rs.349 crore.

(ii) Fishing Ban in 20 NM area around the shipwreck :-

- Fishing ban in the 20 NM area around the shipwreck was introduced on the 25th of May 2025, and may have to be continued till the sunken ship is salvaged (expected to take at least 6 months) to avoid damage and loss of fishing gears. The average monthly fish landing at Alappuzha is 412 tons and the total monthly landing (including the assumed 30% landing at minor landing centres) is expected to be 589.2 tons. It is assumed that the 20 NM fishing ban area represent 50% of the fishing area off Alappuzha. Based on these, the estimated loss from the fishing ban will be;
- (Monthly catch/ 2) x 6 months = (589.2/2) x 6 = 1767.6 ton or 1767600 kg fish.

At the average rate of Rs.400/kg fish, the economic loss will be;
1767600 x 400 = Rs. 70,70,40,000 or Rs. 71 crore
Total loss to the fishery sector [i + ii] due to market scare on fish quality = Rs.349 + 71 = 420.0 crore.

Hence, TOTAL LOSS ASSESSED = Rs.474.93 crore which includes:

(a) An interim loss assessment for loss of mandays = Rs.54.93 crore

(b) An interim loss assessment to the fishery sector due to market scare on fish quality = Rs.420.0 crore.

5. Economic loss caused to the recreational areas along the coasts of Kerala, due to beaching of Containers, of which some of them are hazardous goods.
NA

6. Any other loss that can be construed as Maritime Claim under Section 4 of the Admiralty Act, 2017.
NA

Yours faithfully,

SAFNA NAZARUDEEN IAS
DIRECTOR OF FISHERIES
Director of Fisheries.

Signed by Sophia Margaret Joseph
Date: 25-06-2025 14:12:31

Equasis - Company folder
ELSA 3 MARITIME INC

imo number : 6253356

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Company information

• Company particulars

Information	
IMO number :	6253356
Name of company :	ELSA 3 MARITIME INC
Address :	C/O: MSC Mediterranean Shipping Co SA chemin Rieu, 12-14, 1208, Geneva, Switzerland.
Last update :	02/07/2025

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Equasis - Company folder
CHLOE NAVIGATION LTD-LIB

imo number : 6352971

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सत्यमेव जयते

Company information

• Company particulars

Information	
IMO number :	6352971
Name of company :	CHLOE NAVIGATION LTD-LIB
Address :	C/O: MSC Mediterranean Shipping Co SA chemin Rieu, 12-14, 1208, Geneva, Switzerland.
Last update :	02/07/2025

• Synthesis of inspections

Company role	Nb ship in company	For this company in last 36 months		For all companies in last 36 months	
		Nb inspection	Nb detention	Nb inspection	Nb detention
Registered owner	1	4	0	4	0

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Company fleet

• Fleet

IMO	Ship	Gross tonnage	Ship type	Year of build	Current flag	Current class	Detention in last 3 years for this company	Detention in last 3 years for all company	Acting as (Since)
9318187	MSC CAGLIARI IV	40372	Container Ship	2007	Liberia	LRS			Registered owner (since 01/12/2022)

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Equasis - Ship folder
MSC CAGLIARI IV

imo: 9318187

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Ship informations

• Ship particulars

Information		Since
IMO number :	9318187	
Name of ship :	MSC CAGLIARI IV	(since 01/11/2022)
Call sign :	A8KW9	
MMSI :	636013143	
Gross tonnage :	40372	(since 01/09/2019)
DWT :	52943	
Type of ship :	Container Ship	(since 01/05/2007)
Year of build :	2007	
Flag :	Liberia	(since 01/04/2007)
Status of ship :	In Service/Commission	(since 13/02/2023)
Last update :	14/05/2025	

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• Management detail

IMO	Role	Name of company	Address	Date of effect
6352971	Registered owner	CHLOE NAVIGATION LTD-LIB	C/O: MSC Mediterranean Shipping Co SA chemin Rieu, 12-14, 1208, Geneva, Switzerland.	since 01/12/2022
0152944	Ship manager/ Commercial manager	MSC MEDITERRANEAN SHIPPING CO	chemin Rieu, 12-14, 1208, Geneva, Switzerland.	since 29/11/2022
1535947	ISM Manager	MSC SHIPMANAGEMENT LTD	MSC House, 8, Spyrou Kyprianou Avenue, 3070, Limassol, Cyprus.	since 10/11/2022

• Classification status

Classification society	Date change status	Status	Reason
Lloyd's Register (IACS)	since 01/05/2007	Delivered	
Other	during 02/2004	Not applicable	

• Classification surveys

Classification society	Date survey	Date next survey
Lloyd's Register (IACS)	12/04/2022	24/04/2027

• Safety management certificate

Classification society	Date survey	Date expiry	Date of status	Status	Reason	Type
Lloyd's Register (IACS)	19/05/2023	09/05/2028	19/05/2023	Delivered		Convention
Nippon Kaiji Kyokai (IACS)	24/07/2022	26/08/2027	02/07/2025	Withdrawn	company's request for other reasons	Convention

• P&I information

Name of P&I insurer	Recorded on
Britannia Steamship insurance Association Ld	01/07/2025

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• P&I information

Name of P&I insurer	Recorded on
Steamship Mutual Underwriting Association (Bermuda)	20/06/2025
UK P&I Club	10/11/2022

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Ship inspections

• List of port state control

Authority	Port of inspection	Date of report	Detention	PSC organisation	Type of inspection	Duration (days)	Number of deficiencies
Greece	Piraeus	11/06/2024	N	Paris MoU	Initial inspection	0	
Turkey	Izmir	14/05/2024	N	Mediterranean MoU	Initial inspection	0	
United Kingdom	Royal Portbury	17/05/2023	N	Paris MoU	More detailed inspection	0	3
Germany	Wilhelmshaven	07/01/2023	N	Paris MoU	Initial inspection	0	2
United States of America	Norfolk, Virginia.	07/06/2022	N	US Coast Guard	Standard Examination	0	1
Spain	Barcelona	07/01/2022	N	Paris MoU	Initial inspection	0	
Turkey	Izmir	27/12/2021	N	Mediterranean MoU	Initial inspection	0	
United States of America	Charleston, South Carolina	27/11/2021	N	US Coast Guard	Standard Examination	0	
United States of America	Portland, Oregon	26/09/2021	N	US Coast Guard	Expanded Examination	0	5
New Zealand	Bluff	26/07/2021	N	Tokyo MoU	Follow-up inspection		
New Zealand	Bluff	17/07/2021	N	Tokyo MoU	Follow-up inspection		
				Tokyo MoU	Initial inspection		3
Singapore	Singapore	12/03/2021	N	Tokyo MoU	Initial inspection		
New Zealand	Auckland	19/03/2020	N	Tokyo MoU	Follow-up inspection		
				Tokyo MoU	Initial inspection		1
China Peoples's Republic	Tianjin	09/01/2020	N	Tokyo MoU	Initial inspection		4
China Peoples's Republic	Tianjin	12/10/2019	N	Tokyo MoU	Initial inspection		15

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• List of port state control

Authority	Port of inspection	Date of report	Detention	PSC organisation	Type of inspection	Duration (days)	Number of deficiencies
Philippines	Subic	04/07/2019	N	Tokyo MoU	Initial inspection		
Singapore	Singapore	29/04/2019	N	Tokyo MoU	Initial inspection		1
United States of America	New York, New York	03/01/2018	N	US Coast Guard	Standard Examination	0	3
China Peoples's Republic	Shenzhen	20/08/2017	N	Tokyo MoU	Initial inspection		
Russia	Novorossiisk	18/07/2017	N	Black Sea MoU	More detailed inspection	0	3
Canada	Delta Port	26/05/2017	N	Tokyo MoU	Initial inspection		
				Paris MoU	More detailed inspection	0	
China Peoples's Republic	Shenzhen	08/05/2017	N	Tokyo MoU	Initial inspection		11
China Peoples's Republic	Shanghai	17/10/2016	N	Tokyo MoU	Follow-up inspection		
				Tokyo MoU	Initial inspection		5
China Peoples's Republic	Shenzhen	07/03/2016	N	Tokyo MoU	Initial inspection		12
Hong Kong, China	Hong Kong Marine Department	11/08/2015	N	Tokyo MoU	Initial inspection		2
China Peoples's Republic	Shenzhen	03/11/2014	N	Tokyo MoU	Initial inspection		1
China Peoples's Republic	Shanghai	10/07/2013	N	Tokyo MoU	Initial inspection		1
		18/06/2012	N	Tokyo MoU			
		05/08/2011	N	Tokyo MoU			
Romania	Constanta	28/01/2011	N	Paris MoU	More detailed inspection	0	
		10/03/2010	N	Tokyo MoU			

THE HIGH COURT OF KERALA

• List of port state control

Authority	Port of inspection	Date of report	Detention	PSC organisation	Type of inspection	Duration (days)	Number of deficiencies
United Kingdom	Southampton	11/11/2008	N	Paris MoU	More detailed inspection	0	3
United States of America	Savannah, Georgia	18/11/2007	N	US Coast Guard	Standard Examination	0	
United States of America	New York, New York	30/05/2007	N	US Coast Guard	Standard Examination	0	

• Human element deficiencies

PSC organisation	Authority	Port of inspection	Date of report	Human element deficiencies
Paris MoU	United Kingdom	Southampton	11/11/2008	1

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सत्यमेव जयते

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Ship history

• Current and former name(s)

Name of ship	Date of effect	Source
MSC CAGLIARI IV	since 01/11/2022	IHS Maritime
Genova	since 01/02/2018	IHS Maritime
Zim Genova	since 01/04/2007	IHS Maritime

• Current and former flag(s)

Flag	Date of effect	Source
Liberia	since 01/04/2007	IHS Maritime

• Current and former classification status

Classification society	Date of survey	Sources
Lloyd's Register (IACS)	12/04/2022	Lloyd's Register
Lloyd's Register (IACS)	25/04/2017	Lloyd's Register
Lloyd's Register (IACS)	25/04/2012	Lloyd's Register
Lloyd's Register (IACS)	01/04/2012	Lloyd's Register
Lloyd's Register (IACS)	01/01/2012	Lloyd's Register

• Company

Company	Role	Date of effect	Sources
CHLOE NAVIGATION LTD-LIB	Registered owner	since 01/12/2022	
MSC MEDITERRANEAN SHIPPING CO	Ship manager/ Commercial manager	since 29/11/2022	

THE HIGH COURT OF KERALA सत्यमेव जयते

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• Company

Company	Role	Date of effect	Sources
MSC SHIPMANAGEMENT LTD	ISM Manager	since 10/11/2022	
FORTUNE STEAMSHIP INC	Registered owner	since 12/11/2015	
DERONE MARITIME LTD	Registered owner	since 01/01/2008	
XT MANAGEMENT LTD	ISM Manager	since 23/10/2007	
UNKNOWN	ISM Manager	since 16/05/2007	
XT MANAGEMENT LTD	Ship manager/ Commercial manager	since 25/04/2007	

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सत्यमेव जयते

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Equasis - Company folder
ALION MARITIME LTD-LIB

imo number : 6233177

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Company information

• Company particulars

Information	
IMO number :	6233177
Name of company :	ALION MARITIME LTD-LIB
Address :	C/O: MSC Mediterranean Shipping Co SA chemin Rieu, 12-14, 1208, Geneva, Switzerland.
Last update :	02/07/2025

• Synthesis of inspections

Company role	Nb ship in company	For this company in last 36 months		For all companies in last 36 months	
		Nb inspection	Nb detention	Nb inspection	Nb detention
Registered owner	1	4	0	4	0

Company fleet

• Fleet

IMO	Ship	Gross tonnage	Ship type	Year of build	Current flag	Current class	Detention in last 3 years for this company	Detention in last 3 years for all company	Acting as (Since)
9238882	MSC MANASA F	13764	Container Ship	2002	Liberia	LRS			Registered owner (since 30/12/2021)

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सत्यमेव जयते

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Equasis - Ship folder
MSC MELISSA

imo: 9226918

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सत्यमेव जयते

Ship informations

• Ship particulars

Information		Since
IMO number :	9226918	
Name of ship :	MSC MELISSA	(during 2002)
Call sign :	H9VY	
MMSI :	354340000	
Gross tonnage :	73819	(since 01/01/2002)
DWT :	99394	
Type of ship :	Container Ship	(since 01/01/2002)
Year of build :	2002	
Flag :	Panama	(during 2002)
Status of ship :	In Service/Commission	(since 29/01/2002)
Last update :	14/05/2025	

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• Management detail

IMO	Role	Name of company	Address	Date of effect
0750415	ISM Manager	MEDITERRANEAN SHIPPING CO SRL	Via Francesco Ciampa 29, 80063, Piano di Sorrento NA, Italy.	since 11/09/2002
1977801	Registered owner	AVANTAGE ENTERPRISES INC	C/O: MSC Mediterranean Shipping Co SA chemin Rieu, 12-14, 1208, Geneva, Switzerland.	since 08/01/2002
0152944	Ship manager/ Commercial manager	MSC MEDITERRANEAN SHIPPING CO	chemin Rieu, 12-14, 1208, Geneva, Switzerland.	during 2002

• Classification status

Classification society	Date change status	Status	Reason
DNV-GL (ex GL) (IACS)	since 01/02/2012	Delivered	

• Classification surveys

Classification society	Date survey	Date next survey
DNV (IACS)	09/03/2022	31/01/2027

• Safety management certificate

Classification society	Date survey	Date expiry	Date of status	Status	Reason	Type
DNV (IACS)	02/05/2024	02/05/2029				Convention
DNV (IACS)	20/04/2022	26/05/2027				Convention

• P&I information

Name of P&I insurer	Recorded on
Britannia Steamship insurance Association Ld	01/07/2025
Steamship Mutual Underwriting Association (Bermuda)	20/06/2025
UK P&I Club	20/02/2025
North of England P&I Association	09/06/2022

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Ship inspections

• List of port state control

Authority	Port of inspection	Date of report	Detention	PSC organisation	Type of inspection	Duration (days)	Number of deficiencies
Oman	Sohar	07/04/2025	N	Indian Ocean MoU	Initial inspection	0	9
Togo	Port of Lome	05/11/2024	N	Abuja MoU	Initial inspection	0	
Italy	Gioia tauro	02/08/2024	N	Paris MoU	Initial inspection	0	
Turkey	Mersin	03/04/2024	N	Mediterranean MoU	Initial inspection	0	
Canada	Halifax	31/07/2023	N	Paris MoU	More detailed inspection	0	
United States of America	New York, New York	20/02/2023	N	US Coast Guard	Standard Examination	0	
Lithuania	Klaipeda	25/05/2022	N	Paris MoU	More detailed inspection	0	5
United States of America	New York, New York	23/03/2022	N	US Coast Guard	Standard Examination	0	
Israel	Ashdod	01/02/2022	N	Mediterranean MoU	More detailed inspection	0	4
Israel	Haifa	04/01/2022	N	Mediterranean MoU	More detailed inspection	0	7
Belgium	Zeebrugge	14/09/2021	N	Paris MoU	More detailed inspection	0	16
United States of America	Norfolk, Virginia.	02/09/2021	N	US Coast Guard	Standard Examination	0	2
Ivory Coast	Abidjan	01/04/2021	N	Abuja MoU	Initial inspection	0	
United States of America	Charleston, South Carolina	12/01/2021	N	US Coast Guard	Standard Examination	0	
Italy	Gioia tauro	20/08/2020	N	Paris MoU	Initial inspection	0	
United States of America	New Orleans, Louisiana	10/05/2020	N	US Coast Guard	Standard Examination	0	

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• List of port state control

Authority	Port of inspection	Date of report	Detention	PSC organisation	Type of inspection	Duration (days)	Number of deficiencies
China Peoples's Republic	Shanghai	25/03/2020	N	Tokyo MoU	Follow-up inspection		
China Peoples's Republic	Shanghai	16/03/2020	Y	Tokyo MoU	Initial inspection		3
Australia	Sydney	24/06/2019	N	Indian Ocean MoU	Initial inspection	0	2
				Tokyo MoU	Initial inspection		2
Australia	Sydney	26/11/2018	N	Indian Ocean MoU	Initial inspection	0	
				Tokyo MoU	Initial inspection		
Portugal	Sines	23/09/2018	N	Paris MoU	Initial inspection	0	
Australia	Fremantle	11/05/2018	N	Tokyo MoU	Follow-up inspection		
Australia	Sydney	27/04/2018	N	Indian Ocean MoU	Initial inspection	0	3
				Tokyo MoU	Initial inspection		3
Australia	Sydney	23/10/2017	N	Indian Ocean MoU	Initial inspection	0	
				Tokyo MoU	Initial inspection		
France	Le havre	15/09/2017	N	Paris MoU	More detailed inspection	0	3
United States of America	New York, New York	17/05/2017	N	US Coast Guard	Standard Examination	0	
United Kingdom	Felixstowe	10/11/2016	N	Paris MoU	More detailed inspection	0	3
Cyprus	Limassol	05/11/2015	N	Mediterranean MoU	More detailed inspection	0	
				Paris MoU	More detailed inspection	0	
Cyprus	Limassol	23/07/2015	Y	Mediterranean MoU	More detailed inspection	1	5

THE HIGH COURT OF KERALA सत्यमेव जयते

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• List of port state control

Authority	Port of inspection	Date of report	Detention	PSC organisation	Type of inspection	Duration (days)	Number of deficiencies
				Paris MoU	More detailed inspection	1	5
Lebanon	Beirut	19/06/2015	N	Mediterranean MoU	Initial inspection	0	2
Mexico	Veracruz Ver	11/11/2014	N	Vina Del Mar MoU	Initial inspection	0	
Germany	Bremerhaven	06/09/2014	N	Paris MoU	More detailed inspection	0	1
Belgium	Antwerp	15/07/2014	N	Paris MoU	More detailed inspection	0	6
United States of America	Charleston, South Carolina	30/03/2014	N	US Coast Guard	Standard Examination	0	
Bahamas	Freeport	11/03/2014	N	Caribbean MoU	Initial inspection	0	
Mexico	Veracruz Ver	22/01/2014	N	Vina Del Mar MoU	Initial inspection	0	
Germany	Bremerhaven	03/01/2014	N	Paris MoU	More detailed inspection	0	
Germany	Bremerhaven	27/09/2013	N	Paris MoU	More detailed inspection	0	8
Mexico	Veracruz Ver	22/05/2013	N	Vina Del Mar MoU	Initial inspection	0	
South Africa	Port Of Ngqura	07/06/2012	N	Indian Ocean MoU	Initial inspection	0	
		20/12/2011	N	Tokyo MoU			
Germany	Hamburg	12/09/2011	N	Paris MoU	Initial inspection	0	
United States of America	Charleston, South Carolina	11/11/2010	N	US Coast Guard	Standard Examination	0	1
Belgium	Antwerp	27/10/2010	N	Paris MoU	Initial inspection	0	
Germany	Bremerhaven	20/04/2010	N	Paris MoU	More detailed inspection	0	
United States of America	Houston, Texas	29/10/2009	N	US Coast Guard	Standard Examination	0	

THE HIGH COURT OF KERALA

• List of port state control

Authority	Port of inspection	Date of report	Detention	PSC organisation	Type of inspection	Duration (days)	Number of deficiencies
Italy	Napoli	28/09/2009	N	Paris MoU	More detailed inspection	0	4
		07/04/2009	N	Tokyo MoU			
Cyprus	Limassol	23/02/2009	N	Paris MoU	More detailed inspection	0	4
		23/06/2008	N	Tokyo MoU			
Cyprus	Limassol	16/11/2007	N	Paris MoU	Initial inspection	0	
		05/07/2007	N	Tokyo MoU			
		26/06/2006	N	Tokyo MoU			
Germany	Hamburg	04/05/2006	N	Paris MoU	More detailed inspection	0	
Germany	Hamburg	30/08/2005	N	Paris MoU	More detailed inspection	0	1
		30/05/2005	N	Tokyo MoU			
France	Le havre	29/12/2004	N	Paris MoU	Initial inspection	0	
		07/08/2004	N	Tokyo MoU			
Germany	Hamburg	20/04/2004	N	Paris MoU	Initial inspection	0	1
		07/11/2003	N	Tokyo MoU			
Germany	Bremerhaven	25/09/2003	N	Paris MoU	More detailed inspection	0	
		07/04/2003	N	Tokyo MoU			
Germany	Hamburg	18/12/2002	N	Paris MoU	Initial inspection	0	
Singapore	Singapore	23/08/2002	N	Tokyo MoU			
China Peoples's Republic	Shanghai	20/06/2002	N	Tokyo MoU			

• Human element deficiencies

PSC organisation	Authority	Port of inspection	Date of report	Human element deficiencies
Indian Ocean MoU	Oman	Sohar	07/04/2025	3

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Ship history

• Current and former name(s)

Name of ship	Date of effect	Source
MSC MELISSA	during 2002	IHS Maritime

• Current and former flag(s)

Flag	Date of effect	Source
Panama	during 2002	IHS Maritime

• Current and former classification status

Classification society	Date of survey	Sources
DNV (IACS)	09/03/2022	Det Norske Veritas
DNV (IACS)	29/04/2017	Det Norske Veritas
DNV-GL (ex GL) (IACS)	22/12/2006	Germanischer Lloyd

THE HIGH COURT OF KERALA सत्यमेव जयते

• Company

Company	Role	Date of effect	Sources
MEDITERRANEAN SHIPPING CO SRL	ISM Manager	since 11/09/2002	
AVANTAGE ENTERPRISES INC	Registered owner	since 08/01/2002	
MSC MEDITERRANEAN SHIPPING CO	Ship manager/ Commercial manager	during 2002	

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Equasis - Company folder
AVANTAGE ENTERPRISES INC

imo number : 1977801

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सत्यमेव जयते

Company information

• Company particulars

Information	
IMO number :	1977801
Name of company :	AVANTAGE ENTERPRISES INC
Address :	C/O: MSC Mediterranean Shipping Co SA chemin Rieu, 12-14, 1208, Geneva, Switzerland.
Last update :	02/07/2025

• Synthesis of inspections

Company role	Nb ship in company	For this company in last 36 months		For all companies in last 36 months	
		Nb inspection	Nb detention	Nb inspection	Nb detention
Registered owner	1	6	0	6	0

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Company fleet

• Fleet

IMO	Ship	Gross tonnage	Ship type	Year of build	Current flag	Current class	Detention in last 3 years for this company	Detention in last 3 years for all company	Acting as (Since)
9226918	MSC MELISSA	73819	Container Ship	2002	Panama	NV			Registered owner (since 08/01/2002)

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Equasis - Ship folder
MSC FLORA
imo: 9978937

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Ship informations

• Ship particulars

Information		Since
IMO number :	9978937	
Name of ship :	MSC FLORA	(since 01/05/2025)
Call sign :	5LVJ8	
MMSI :	636025014	
Gross tonnage :	101311	(since 01/05/2025)
DWT :	139897	
Type of ship :	Container Ship	(since 01/05/2025)
Year of build :	2025	
Flag :	Liberia	(since 01/05/2025)
Status of ship :	In Service/Commission	(since 12/05/2025)
Last update :	02/07/2025	

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• Management detail

IMO	Role	Name of company	Address	Date of effect
9991001	ISM Manager	UNKNOWN	Unknown	since 14/05/2025
0152944	Ship manager/ Commercial manager	MSC MEDITERRANEAN SHIPPING CO	chemin Rieu, 12-14, 1208, Geneva, Switzerland.	since 12/05/2025
0139131	Registered owner	MANDJET OCEANWAY LTD	C/O: MSC Mediterranean Shipping Co SA chemin Rieu, 12-14, 1208, Geneva, Switzerland.	since 12/05/2025

• Classification status

Classification society	Date change status	Status	Reason
American Bureau of Shipping (IACS)	since 12/05/2025	Delivered	

• Classification surveys

Classification society	Date survey	Date next survey
American Bureau of Shipping (IACS)	11/05/2025	11/05/2030

• P&I information

Name of P&I insurer	Recorded on
Britannia Steamship insurance Association Ld	01/07/2025
Steamship Mutual Underwriting Association (Bermuda)	20/06/2025
UK P&I Club	12/05/2025

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Ship history

• Current and former name(s)

Name of ship	Date of effect	Source
MSC FLORA	since 01/05/2025	IHS Maritime

• Current and former flag(s)

Flag	Date of effect	Source
Liberia	since 01/05/2025	IHS Maritime

• Current and former classification status

Classification society	Date of survey	Sources
American Bureau of Shipping (IACS)	11/05/2025	American Bureau of Shipping

• Company

Company	Role	Date of effect	Sources
UNKNOWN	ISM Manager	since 14/05/2025	
MSC MEDITERRANEAN SHIPPING CO	Ship manager/ Commercial manager	since 12/05/2025	
MANDJET OCEANWAY LTD	Registered owner	since 12/05/2025	

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Equasis - Ship folder
MSC MANASA F

imo: 9238882

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Ship informations

• Ship particulars

Information		Since
IMO number :	9238882	
Name of ship :	MSC MANASA F	(since 01/12/2021)
Call sign :	5LBN5	
MMSI :	636020949	
Gross tonnage :	13764	(during 2002)
DWT :	16742	
Type of ship :	Container Ship	(during 2002)
Year of build :	2002	
Flag :	Liberia	(since 01/12/2021)
Status of ship :	In Service/Commission	(since 26/11/2021)
Last update :	02/07/2025	

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• Management detail

IMO	Role	Name of company	Address	Date of effect
1535947	ISM Manager	MSC SHIPMANAGEMENT LTD	MSC House, 8, Spyrou Kyprianou Avenue, 3070, Limassol, Cyprus.	since 31/12/2021
0152944	Ship manager/ Commercial manager	MSC MEDITERRANEAN SHIPPING CO	chemin Rieu, 12-14, 1208, Geneva, Switzerland.	since 30/12/2021
6233177	Registered owner	ALION MARITIME LTD-LIB	C/O: MSC Mediterranean Shipping Co SA chemin Rieu, 12-14, 1208, Geneva, Switzerland.	since 30/12/2021

• Classification status

Classification society	Date change status	Status	Reason
Lloyd's Register (IACS)	since 01/01/2018	Delivered	
American Bureau of Shipping (IACS)	since 25/07/2002	Delivered	

• Classification surveys

Classification society	Date survey	Date next survey
Lloyd's Register (IACS)	22/02/2023	31/03/2027

• Safety management certificate

Classification society	Date survey	Date expiry	Date of status	Status	Reason	Type
Lloyd's Register (IACS)	16/06/2022	15/06/2027	16/06/2022	Delivered		Convention

• P&I information

Name of P&I insurer	Recorded on
Britannia Steamship insurance Association Ld	01/07/2025
Steamship Mutual Underwriting Association (Bermuda)	20/06/2025
UK P&I Club	30/12/2021

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Ship inspections

• List of port state control

Authority	Port of inspection	Date of report	Detention	PSC organisation	Type of inspection	Duration (days)	Number of deficiencies
Bangladesh	Chittagong	27/05/2025	N	Indian Ocean MoU	Initial inspection	0	4
Bangladesh	Chittagong	28/10/2024	N	Indian Ocean MoU	Initial inspection	0	2
Bangladesh	Chittagong	20/03/2024	N	Indian Ocean MoU	Initial inspection	0	3
India	Kolkata	05/09/2023	N	Indian Ocean MoU	Initial inspection	0	7
Bangladesh	Chittagong	15/05/2021	N	Indian Ocean MoU	Initial inspection	0	5
Maldives	Male	08/10/2020	N	Indian Ocean MoU	Initial inspection	0	9
Maldives	Male	23/06/2019	N	Indian Ocean MoU	Initial inspection	0	5
Maldives	Male	25/11/2018	N	Indian Ocean MoU	Initial inspection	0	3
Fiji	Suva	07/12/2017	N	Tokyo MoU	Follow-up inspection		
				Tokyo MoU	Initial inspection		2
Australia	Brisbane	10/07/2017	N	Tokyo MoU	Follow-up inspection		
Australia	Townsville	04/07/2017	N	Indian Ocean MoU	Initial inspection	0	4
				Tokyo MoU	Initial inspection		4
Papua New Guinea	Lae	16/05/2017	N	Tokyo MoU	Initial inspection		4
Vietnam	Ho Chi Minh City	08/08/2016	N	Tokyo MoU	Initial inspection		
Malaysia	Kota Kinabalu	09/09/2015	N	Tokyo MoU	Initial inspection		
Papua New Guinea	Port Moresby	25/09/2014	N	Tokyo MoU	Initial inspection		1
Papua New Guinea	Lae	14/07/2014	N	Tokyo MoU	Initial inspection		
Papua New Guinea	Madang	24/09/2013	N	Tokyo MoU	Initial inspection		

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• List of port state control

Authority	Port of inspection	Date of report	Detention	PSC organisation	Type of inspection	Duration (days)	Number of deficiencies
Philippines	Davao, Mindanao	18/05/2013	N	Tokyo MoU	Initial inspection		
		11/09/2012	N	Tokyo MoU			
		09/12/2011	N	Tokyo MoU			
India	Kolkata	02/03/2010	N	Indian Ocean MoU	Initial inspection	0	4
		16/03/2009	N	Tokyo MoU			
South Africa	Durban	28/04/2004	N	Indian Ocean MoU	Initial inspection	0	
Singapore	Singapore	25/04/2002	N	Tokyo MoU			
Malaysia	Kuantan	08/04/2002	N	Tokyo MoU			

• Human element deficiencies

PSC organisation	Authority	Port of inspection	Date of report	Human element deficiencies
Indian Ocean MoU	Bangladesh	Chittagong	20/03/2024	1
Indian Ocean MoU	India	Kolkata	05/09/2023	2
Indian Ocean MoU	Bangladesh	Chittagong	15/05/2021	3
Indian Ocean MoU	Maldives	Male	08/10/2020	2
Indian Ocean MoU	Maldives	Male	23/06/2019	2

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Ship history

• Current and former name(s)

Name of ship	Date of effect	Source
MSC MANASA F	since 01/12/2021	IHS Maritime
Alion	since 01/01/2018	IHS Maritime
Dorothy Trader	since 01/05/2014	IHS Maritime
PAC Aquarius	since 01/07/2008	IHS Maritime
Kota Mesra	since 01/07/2002	IHS Maritime
Pac Aquarius	since 01/04/2002	IHS Maritime

• Current and former flag(s)

Flag	Date of effect	Source
Liberia	since 01/12/2021	IHS Maritime
Malta	since 01/04/2017	IHS Maritime
Singapore	since 01/07/2002	IHS Maritime
Panama	during 2002	IHS Maritime
Singapore	during 2001	IHS Maritime

• Current and former classification status

Classification society	Date of survey	Sources
Lloyd's Register (IACS)	22/02/2023	Lloyd's Register
Lloyd's Register (IACS)	01/04/2017	Lloyd's Register
American Bureau of Shipping (IACS)	15/03/2012	American Bureau of Shipping

THE HIGH COURT OF KERALA सत्यमेव जयते

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• Current and former classification status

Classification society	Date of survey	Sources
American Bureau of Shipping (IACS)	10/03/2007	American Bureau of Shipping
American Bureau of Shipping (IACS)	31/03/2002	American Bureau of Shipping

• Company

Company	Role	Date of effect	Sources
MSC SHIPMANAGEMENT LTD	ISM Manager	since 31/12/2021	
ALION MARITIME LTD-LIB	Registered owner	since 30/12/2021	
MSC MEDITERRANEAN SHIPPING CO	Ship manager/ Commercial manager	since 30/12/2021	
UNKNOWN	ISM Manager	since 09/01/2018	
MERMAN MARITIME CO	Ship manager/ Commercial manager	since 09/01/2018	
LOMAR SHIPPING LTD	ISM Manager	since 24/04/2017	
LOMAR SHIPPING LTD	Ship manager/ Commercial manager	since 19/04/2017	
PACC SHIP MANAGERS PTE LTD	Ship manager/ Commercial manager	since 14/11/2016	
PACC SHIP MANAGERS PTE LTD	ISM Manager	since 14/11/2016	
PACCSHIP UK LTD	ISM Manager	since 06/04/2007	
PACCSHIP UK LTD	Ship manager/ Commercial manager	since 06/04/2007	

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Equasis - Ship folder
MSC AGRIGENTO

imo: 9618276

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THE HIGH COURT OF KERALA
सत्यमेव जयते

Ship informations

• Ship particulars

Information		Since
IMO number :	9618276	
Name of ship :	MSC AGRIGENTO	(since 01/06/2013)
Call sign :	3FYR9	
MMSI :	357096000	
Gross tonnage :	96375	(since 01/06/2024)
DWT :	127952	
Type of ship :	Container Ship	(since 01/06/2013)
Year of build :	2013	
Flag :	Panama	(since 01/06/2013)
Status of ship :	In Service/Commission	(since 15/07/2013)
Last update :	04/06/2025	

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• Management detail

IMO	Role	Name of company	Address	Date of effect
1535947	ISM Manager	MSC SHIPMANAGEMENT LTD	MSC House, 8, Spyrou Kyprianou Avenue, 3070, Limassol, Cyprus.	since 15/07/2013
0152944	Ship manager/ Commercial manager	MSC MEDITERRANEAN SHIPPING CO	chemin Rieu, 12-14, 1208, Geneva, Switzerland.	since 01/06/2013
5740620	Registered owner	WATTS SHIPPING INC	C/O: MSC Mediterranean Shipping Co SA chemin Rieu, 12-14, 1208, Geneva, Switzerland.	since 01/06/2013

• Classification status

Classification society	Date change status	Status	Reason
DNV-GL (ex GL) (IACS)	since 15/07/2013	Delivered	
DNV (IACS)	since 15/07/2013	Delivered	by society for other reasons

• Classification surveys

Classification society	Date survey	Date next survey
DNV (IACS)	25/08/2023	14/07/2028

• Safety management certificate

Classification society	Date survey	Date expiry	Date of status	Status	Reason	Type
DNV (IACS)	11/11/2023	27/12/2028				Convention

• P&I information

Name of P&I insurer	Recorded on
Britannia Steamship insurance Association Ld	01/07/2025
Steamship Mutual Underwriting Association (Bermuda)	20/06/2025
UK P&I Club	20/02/2025

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• P&I information

Name of P&I insurer	Recorded on
Standard P&I Club per Charles Taylor & Co	23/12/2024

THE HIGH COURT OF KERALA
सत्यमेव जयते

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Ship inspections

• List of port state control

Authority	Port of inspection	Date of report	Detention	PSC organisation	Type of inspection	Duration (days)	Number of deficiencies
United States of America	Houston, Texas	22/08/2024	N	US Coast Guard	Standard Examination	0	
Italy	Napoli	06/07/2024	N	Paris MoU	Initial inspection	0	
United States of America	New York, New York	27/10/2023	N	US Coast Guard	Standard Examination	0	
Spain	Barcelona	21/06/2023	N	Paris MoU	Initial inspection	0	
Singapore	Singapore	27/09/2022	N	Tokyo MoU	Initial inspection		1
Brazil	Navegantes	21/02/2022	N	Vina Del Mar MoU	Initial inspection	0	
China Peoples's Republic	Ningbo	10/01/2022	N	Tokyo MoU	Initial inspection		
Argentina	Dock Sud	24/08/2021	N	Vina Del Mar MoU	Initial inspection	0	
Italy	Gioia tauro	11/12/2020	N	Paris MoU	Initial inspection	0	
Uruguay	Montevideo	10/11/2020	N	Vina Del Mar MoU	Initial inspection	0	
Italy	Livorno	11/11/2019	N	Paris MoU	Initial inspection	0	
Brazil	Santos Sp	28/08/2019	N	Vina Del Mar MoU	Follow-up inspection	0	
Brazil	Navegantes	16/08/2019	N	Vina Del Mar MoU	Initial inspection	0	
China Peoples's Republic	Shanghai	08/07/2019	N	Tokyo MoU	Initial inspection		3
Turkey	Mersin	12/11/2018	N	Mediterranean MoU	Initial inspection	0	
Italy	Napoli	11/10/2018	N	Paris MoU	Initial inspection	0	1
Turkey	Mersin	13/04/2018	N	Mediterranean MoU	Initial inspection	0	2
United States of America	Philadelphia, Pennsylvania	03/02/2018	N	US Coast Guard	Standard Examination	0	

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• List of port state control

Authority	Port of inspection	Date of report	Detention	PSC organisation	Type of inspection	Duration (days)	Number of deficiencies
Peru	Callao	09/11/2017	N	Tokyo MoU	Initial inspection		
Netherlands	Rotterdam	11/10/2017	N	Paris MoU	More detailed inspection	0	1
Chile	Coronel	03/05/2017	N	Tokyo MoU	Initial inspection		
				Vina Del Mar MoU	Initial inspection	0	
Peru	Callao	30/09/2016	N	Vina Del Mar MoU	Initial inspection	0	
Belgium	Antwerp	24/08/2016	N	Paris MoU	Initial inspection	0	
Mexico	Manzanillo Col	18/05/2016	N	Vina Del Mar MoU	Initial inspection	0	
Hong Kong, China	Hong Kong Marine Department	22/03/2016	N	Tokyo MoU	Initial inspection		6
Korea (Republic of)	Busan	25/09/2015	N	Tokyo MoU	Initial inspection		
Brazil	Itajai Sc	12/08/2015	N	Vina Del Mar MoU	Initial inspection	0	
Hong Kong, China	Hong Kong Marine Department	12/03/2015	N	Tokyo MoU	Initial inspection		
South Africa	Durban	05/01/2015	N	Indian Ocean MoU	Initial inspection	0	
Singapore	Singapore	26/08/2014	N	Tokyo MoU	Initial inspection		1
Brazil	Itajai Sc	14/04/2014	N	Vina Del Mar MoU	Initial inspection	0	
Singapore	Singapore	12/02/2014	N	Tokyo MoU	Initial inspection		
Singapore	Singapore	14/11/2013	N	Tokyo MoU	Follow-up inspection		2
Spain	Las palmas	12/09/2013	N	Paris MoU	More detailed inspection	0	
Singapore	Singapore	05/08/2013	N	Tokyo MoU	Initial inspection		2

THE HIGH COURT OF KERALA सत्यमेव जयते

Ship history

• Current and former name(s)

Name of ship	Date of effect	Source
MSC AGRIGENTO	since 01/06/2013	IHS Maritime

• Current and former flag(s)

Flag	Date of effect	Source
Panama	since 01/06/2013	IHS Maritime

• Current and former classification status

Classification society	Date of survey	Sources
DNV (IACS)	25/08/2023	Det Norske Veritas
DNV (IACS)	09/07/2018	Det Norske Veritas

THE HIGH COURT OF KERALA सत्यमेव जयते

• Company

Company	Role	Date of effect	Sources
MSC SHIPMANAGEMENT LTD	ISM Manager	since 15/07/2013	
JESSICA NAVIERA SA	Registered owner	since 01/06/2013	
MSC MEDITERRANEAN SHIPPING CO	Ship manager/ Commercial manager	since 01/06/2013	
WATTS SHIPPING INC	Registered owner	since 01/06/2013	

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Equasis - Ship folder
MSC MICHELA
imo: 9720512

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THE HIGH COURT OF KERALA
सत्यमेव जयते

Ship informations

• Ship particulars

Information		Since
IMO number :	9720512	
Name of ship :	MSC MICHELA	(since 01/09/2016)
Call sign :	CQID5	
MMSI :	255805929	
Gross tonnage :	95514	(since 01/04/2020)
DWT :	131034	
Type of ship :	Container Ship	(since 01/09/2016)
Year of build :	2016	
Flag :	Portugal (MAR)	(since 01/09/2016)
Status of ship :	In Service/Commission	(since 19/09/2016)
Last update :	28/05/2025	

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• Management detail

IMO	Role	Name of company	Address	Date of effect
5778933	Registered owner	AMPLE POINTER LTD	C/O: MSC Mediterranean Shipping Co SA chemin Rieu, 12-14, 1208, Geneva, Switzerland.	since 11/11/2019
1535947	ISM Manager	MSC SHIPMANAGEMENT LTD	MSC House, 8, Spyrou Kyprianou Avenue, 3070, Limassol, Cyprus.	since 19/09/2016
0152944	Ship manager/ Commercial manager	MSC MEDITERRANEAN SHIPPING CO	chemin Rieu, 12-14, 1208, Geneva, Switzerland.	since 19/09/2016

• Classification status

Classification society	Date change status	Status	Reason
DNV (IACS)	since 19/09/2016	Delivered	by society for other reasons

• Classification surveys

Classification society	Date survey	Date next survey
DNV (IACS)	07/03/2025	01/06/2030

• Safety management certificate

Classification society	Date survey	Date expiry	Date of status	Status	Reason	Type
DNV (IACS)	04/01/2022	17/01/2027				Convention

• P&I information

Name of P&I insurer	Recorded on
Britannia Steamship insurance Association Ld	01/07/2025
Steamship Mutual Underwriting Association (Bermuda)	20/06/2025
UK P&I Club	20/02/2025

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Ship inspections

• List of port state control

Authority	Port of inspection	Date of report	Detention	PSC organisation	Type of inspection	Duration (days)	Number of deficiencies
Ivory Coast	Abidjan	23/11/2024	N	Abuja MoU	Initial inspection	0	
Italy	Gioia tauro	06/11/2024	N	Paris MoU	Initial inspection	0	
Turkey	Iskenderun	16/10/2024	N	Mediterranean MoU	More detailed inspection	0	
Italy	Livorno	21/10/2023	N	Paris MoU	Initial inspection	0	
Brazil	Rio De Janeiro Rj	11/07/2023	N	Vina Del Mar MoU	Follow-up inspection	0	
				Vina Del Mar MoU	Initial inspection	0	
Brazil	Navegantes	11/05/2023	N	Vina Del Mar MoU	Initial inspection	0	
Germany	Hamburg	16/11/2022	N	Paris MoU	Initial inspection	0	
Netherlands	Rotterdam	05/10/2021	N	Paris MoU	More detailed inspection	0	
Brazil	Navegantes	26/04/2021	N	Vina Del Mar MoU	Initial inspection	0	
Brazil	Navegantes	09/10/2020	N	Vina Del Mar MoU	Initial inspection	0	
France	Le havre	21/09/2020	N	Paris MoU	Initial inspection	0	
China Peoples's Republic	Shenzhen	02/08/2019	N	Tokyo MoU	Initial inspection		2
Panama	Balboa	07/02/2019	N	Vina Del Mar MoU	Initial inspection	0	
Italy	Gioia tauro	17/12/2018	N	Paris MoU	Initial inspection	0	
Panama	Rodman	12/06/2018	N	Vina Del Mar MoU	Initial inspection	0	
Mexico	Manzanillo Col	08/12/2017	N	Vina Del Mar MoU	Initial inspection	0	
United States of America	Long Beach, California	04/12/2017	N	US Coast Guard	Standard Examination	0	

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• List of port state control

Authority	Port of inspection	Date of report	Detention	PSC organisation	Type of inspection	Duration (days)	Number of deficiencies
France	Fos sur mer	26/10/2017	N	Paris MoU	More detailed inspection	0	
Panama	Balboa	08/02/2017	N	Vina Del Mar MoU	Initial inspection	0	
Italy	Civitavecchia	10/11/2016	N	Paris MoU	More detailed inspection	0	
United States of America	Long Beach, California	11/10/2016	N	US Coast Guard	Standard Examination	0	
China Peoples's Republic	Shanghai	27/09/2016	N	Tokyo MoU	Initial inspection		2

THE HIGH COURT OF KERALA
सत्यमेव जयते

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Ship history

• Current and former name(s)

Name of ship	Date of effect	Source
MSC MICHELA	since 01/09/2016	IHS Maritime

• Current and former flag(s)

Flag	Date of effect	Source
Portugal (MAR)	since 01/09/2016	IHS Maritime

• Current and former classification status

Classification society	Date of survey	Sources
DNV (IACS)	07/03/2025	Det Norske Veritas
DNV (IACS)	15/09/2021	Det Norske Veritas
DNV (IACS)	19/09/2016	Det Norske Veritas

THE HIGH COURT OF KERALA सत्यमेव जयते

• Company

Company	Role	Date of effect	Sources
AMPLE POINTER LTD	Registered owner	since 11/11/2019	
MSC SHIPMANAGEMENT LTD	ISM Manager	since 19/09/2016	
MSC MEDITERRANEAN SHIPPING CO	Ship manager/ Commercial manager	since 19/09/2016	
HAI KUO SHIPPING 1307 LTD	Registered owner	since 19/09/2016	

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Equasis - Ship folder
MSC KATIE
imo: 9467457

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सत्यमेव जयते

Ship informations

• Ship particulars

Information		Since
IMO number :	9467457	
Name of ship :	MSC KATIE	(since 01/11/2012)
Call sign :	3FMO6	
MMSI :	351848000	
Gross tonnage :	140096	(since 01/05/2021)
DWT :	175327	
Type of ship :	Container Ship	(since 01/11/2012)
Year of build :	2012	
Flag :	Panama	(since 01/10/2012)
Status of ship :	In Service/Commission	(since 12/11/2012)
Last update :	02/07/2025	

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• Management detail

IMO	Role	Name of company	Address	Date of effect
0152944	Ship manager/ Commercial manager	MSC MEDITERRANEAN SHIPPING CO	chemin Rieu, 12-14, 1208, Geneva, Switzerland.	since 12/11/2012
0750415	ISM Manager	MEDITERRANEAN SHIPPING CO SRL	Via Francesco Ciampa 29, 80063, Piano di Sorrento NA, Italy.	since 12/11/2012
5708430	Registered owner	FREDIA SHIPPING SA	C/O: MSC Mediterranean Shipping Co SA chemin Rieu, 12-14, 1208, Geneva, Switzerland.	since 12/11/2012

• Classification status

Classification society	Date change status	Status	Reason
DNV-GL (ex GL) (IACS)	since 12/11/2012	Delivered	
DNV (IACS)	since 12/11/2012	Delivered	by society for other reasons

• Classification surveys

Classification society	Date survey	Date next survey
DNV (IACS)	27/02/2023	11/11/2027

• Safety management certificate

Classification society	Date survey	Date expiry	Date of status	Status	Reason	Type
DNV (IACS)	28/02/2023	03/05/2028				Convention

• P&I information

Name of P&I insurer	Recorded on
Britannia Steamship insurance Association Ld	01/07/2025
Steamship Mutual Underwriting Association (Bermuda)	20/06/2025
UK P&I Club	20/02/2025
North of England P&I Association	09/06/2022

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Ship inspections

• List of port state control

Authority	Port of inspection	Date of report	Detention	PSC organisation	Type of inspection	Duration (days)	Number of deficiencies
Korea (Republic of)	Busan	15/01/2025	N	Tokyo MoU	Initial inspection		1
China Peoples's Republic	Xiamen	14/08/2024	N	Tokyo MoU	Follow-up inspection		
				Tokyo MoU	Initial inspection		5
Italy	Gioia tauro	06/06/2024	N	Paris MoU	Initial inspection	0	
United States of America	Long Beach, California	07/12/2023	N	US Coast Guard	Standard Examination	0	
China Peoples's Republic	Shanghai	22/09/2023	N	Tokyo MoU	Follow-up inspection		
				Tokyo MoU	Initial inspection		3
Canada	Delta Port	14/04/2023	N	Tokyo MoU	Initial inspection		2
				Paris MoU	More detailed inspection	0	2
United States of America	Long Beach, California	12/04/2022	N	US Coast Guard	Standard Examination	0	1
Korea (Republic of)	Busan	09/11/2021	N	Tokyo MoU	Initial inspection		1
China Peoples's Republic	Shenzhen	10/05/2021	N	Tokyo MoU	Initial inspection		
United States of America	San Francisco, California	16/09/2020	N	US Coast Guard	Standard Examination	0	3
Belgium	Antwerp	08/07/2020	N	Paris MoU	More detailed inspection	0	8
Mexico	Manzanillo Col	01/12/2019	N	Vina Del Mar MoU	Initial inspection	0	
Hong Kong, China	Hong Kong Marine Department	06/11/2019	N	Tokyo MoU	Initial inspection		4

THE HIGH COURT OF KERALA सत्यमेव जयते

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• List of port state control

Authority	Port of inspection	Date of report	Detention	PSC organisation	Type of inspection	Duration (days)	Number of deficiencies
Chile	San Antonio	28/06/2019	N	Tokyo MoU	Initial inspection		
				Vina Del Mar MoU	Initial inspection	0	
Chile	Lirquen	31/01/2019	N	Tokyo MoU	Follow-up inspection		
				Vina Del Mar MoU	Follow-up inspection	0	
Chile	Lirquen	08/01/2019	N	Tokyo MoU	Initial inspection		1
				Vina Del Mar MoU	Initial inspection	0	
Chile	San Antonio	20/07/2018	N	Tokyo MoU	Follow-up inspection		
				Tokyo MoU	Initial inspection		
				Vina Del Mar MoU	Initial inspection	0	
Chile	San Antonio	01/02/2018	N	Tokyo MoU	Initial inspection		1
Mexico	Lazaro Cardenas Mic	25/10/2017	N	Vina Del Mar MoU	Initial inspection	0	
China Peoples's Republic	Shenzhen	07/08/2017	N	Tokyo MoU	Initial inspection		
United States of America	Long Beach, California	01/05/2017	N	US Coast Guard	Standard Examination	0	
Singapore	Singapore	22/03/2017	N	Tokyo MoU	Initial inspection		2
Malta	Marsaxlokk	01/12/2016	N	Mediterranean MoU	Initial inspection	0	
				Paris MoU	Initial inspection	0	
Singapore	Singapore	19/10/2016	N	Tokyo MoU	Initial inspection		
China Peoples's Republic	Shenzhen	07/01/2016	N	Tokyo MoU	Initial inspection		
Germany	Hamburg	09/10/2015	N	Paris MoU	Initial inspection	0	1
China Peoples's Republic	Shenzhen	30/07/2015	N	Tokyo MoU	Follow-up inspection		

THE HIGH COURT OF KERALA

• List of port state control

Authority	Port of inspection	Date of report	Detention	PSC organisation	Type of inspection	Duration (days)	Number of deficiencies
China Peoples's Republic	Shenzhen	23/07/2015	N	Tokyo MoU	Initial inspection		8
United States of America	Long Beach, California	14/04/2015	N	US Coast Guard	Standard Examination	0	
Lebanon	Beirut	05/03/2015	N	Mediterranean MoU	Initial inspection	0	1
China Peoples's Republic	Xiamen	14/01/2015	N	Tokyo MoU	Initial inspection		3
Belgium	Antwerp	06/11/2014	N	Paris MoU	More detailed inspection	0	3
Singapore	Singapore	07/07/2014	N	Tokyo MoU	Follow-up inspection		2
Singapore	Singapore	26/03/2014	N	Tokyo MoU	Initial inspection		3
Belgium	Zeebrugge	18/11/2013	N	Paris MoU	Initial inspection	0	1
Hong Kong, China	Hong Kong Marine Department	03/10/2013	N	Tokyo MoU	Initial inspection		1
China Peoples's Republic	Xiamen	04/02/2013	N	Tokyo MoU	Initial inspection		4
Portugal	Sines	18/12/2012	N	Paris MoU	Initial inspection	0	

THE HIGH COURT OF KERALA सत्यमेव जयते

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Ship history

• Current and former name(s)

Name of ship	Date of effect	Source
MSC KATIE	since 01/11/2012	IHS Maritime

• Current and former flag(s)

Flag	Date of effect	Source
Panama	since 01/10/2012	IHS Maritime

• Current and former classification status

Classification society	Date of survey	Sources
DNV (IACS)	27/02/2023	Det Norske Veritas
DNV (IACS)	01/10/2017	Det Norske Veritas

• Company

Company	Role	Date of effect	Sources
MSC MEDITERRANEAN SHIPPING CO	Ship manager/ Commercial manager	since 12/11/2012	
MEDITERRANEAN SHIPPING CO SRL	ISM Manager	since 12/11/2012	
FREDIA SHIPPING SA	Registered owner	since 12/11/2012	

THE HIGH COURT OF KERALA
सत्यमेव जयते

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Equasis - Ship folder
MSC SABRINA III

imo: 8714205

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Ship informations

• Ship particulars

Information		Since
IMO number :	8714205	
Name of ship :	MSC SABRINA III	(since 01/10/2022)
Call sign :	3FMG8	
MMSI :	356101000	
Gross tonnage :	35598	(since 01/04/2011)
DWT :	43078	
Type of ship :	Container Ship	(since 01/02/1989)
Year of build :	1989	
Flag :	Panama	(since 01/05/1998)
Status of ship :	In Service/Commission	(since 16/04/2008)
Last update :	25/06/2025	

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• Management detail

IMO	Role	Name of company	Address	Date of effect
1535947	ISM Manager	MSC SHIPMANAGEMENT LTD	MSC House, 8, Spyrou Kyprianou Avenue, 3070, Limassol, Cyprus.	since 06/04/2012
5486841	Registered owner	FRESHEN CORP	C/O: MSC Mediterranean Shipping Co SA chemin Rieu, 12-14, 1208, Geneva, Switzerland.	since 03/08/2009
0152944	Ship manager/ Commercial manager	MSC MEDITERRANEAN SHIPPING CO	chemin Rieu, 12-14, 1208, Geneva, Switzerland.	during 04/1998

• Classification surveys

Classification society	Date survey	Date next survey
Registro Italiano Navale (IACS)	30/10/2022	19/06/2027

• Safety management certificate

Classification society	Date survey	Date expiry	Date of status	Status	Reason	Type
Registro Italiano Navale (IACS)	14/12/2022	16/09/2027				Convention

• P&I information

Name of P&I insurer	Recorded on
Britannia Steamship insurance Association Ld	01/07/2025
Steamship Mutual Underwriting Association (Bermuda)	20/06/2025
UK P&I Club	20/02/2025
North of England P&I Association	09/06/2022

THE HIGH COURT OF KERALA
सत्यमेव जयते

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Ship inspections

• List of port state control

Authority	Port of inspection	Date of report	Detention	PSC organisation	Type of inspection	Duration (days)	Number of deficiencies
India	Vishakhapatnam	28/04/2025	N	Indian Ocean MoU	Initial inspection	0	10
Madagascar	Tamatave (Toamasina)	29/04/2024	N	Indian Ocean MoU	Initial inspection	0	4
India	Jawaharlal Nehru (Nhava Sheva)	07/12/2023	Y	Indian Ocean MoU	Initial inspection		6
Kenya	Mombasa	29/12/2022	N	Indian Ocean MoU	Initial inspection	0	
Spain	Valencia	01/07/2022	N	Paris MoU	More detailed inspection	0	16
Kenya	Mombasa	14/01/2022	N	Indian Ocean MoU	Initial inspection	0	
Kenya	Mombasa	18/03/2021	N	Indian Ocean MoU	Initial inspection	0	2
Sudan	Port Sudan	30/11/2020	N	Indian Ocean MoU	Initial inspection	0	
Kenya	Mombasa	09/12/2019	N	Indian Ocean MoU	Initial inspection	0	
Ghana	Tema	23/07/2018	N	Abuja MoU	Initial inspection	0	
Belgium	Antwerp	04/02/2017	Y	Paris MoU	More detailed inspection	134	18
Morocco	Agadir	27/01/2017	N	Mediterranean MoU	More detailed inspection	0	
Belgium	Antwerp	06/01/2016	N	Paris MoU	More detailed inspection	0	4
United States of America	Long Beach, California	05/08/2015	N	US Coast Guard	Standard Examination	0	
Portugal	Sines	29/01/2015	N	Paris MoU	More detailed inspection	0	2
Belgium	Antwerp	14/08/2014	N	Paris MoU	Initial inspection	0	1
Italy	Gioia tauro	09/10/2013	N	Paris MoU	More detailed inspection	0	1

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• List of port state control

Authority	Port of inspection	Date of report	Detention	PSC organisation	Type of inspection	Duration (days)	Number of deficiencies
France	Fos sur mer	16/09/2013	N	Paris MoU	More detailed inspection	0	2
Turkey	Gemlik	27/02/2013	N	Mediterranean MoU	Initial inspection	0	3
Spain	Las palmas	17/10/2012	N	Paris MoU	Initial inspection	0	4
France	Le havre	28/09/2011	N	Paris MoU	Initial inspection	0	2
		14/06/2011	N	Tokyo MoU			
Australia	Melbourne	11/01/2011	N	Indian Ocean MoU	Initial inspection	0	
		11/01/2011	N	Tokyo MoU			
Italy	La spezia	16/11/2010	N	Paris MoU	More detailed inspection	0	4
Australia	Port Botany	14/06/2010	N	Indian Ocean MoU	Initial inspection	0	
France	Nantes	03/05/2010	N	Paris MoU	More detailed inspection	0	1
Spain	Valencia	26/01/2010	N	Paris MoU	More detailed inspection	0	
France	Nantes	21/01/2010	N	Paris MoU	More detailed inspection	0	2
Australia	Port Botany	26/11/2009	N	Indian Ocean MoU	Initial inspection	0	4
United States of America	Savannah, Georgia	02/09/2009	N	US Coast Guard	Standard Examination	0	
Spain	Las palmas	15/05/2009	N	Paris MoU	More detailed inspection	0	3
		12/09/2008	N	Tokyo MoU			
United Kingdom	Liverpool	12/11/2007	N	Paris MoU	More detailed inspection	0	
Belgium	Antwerp	21/11/2006	N	Paris MoU	Initial inspection	0	
United Kingdom	Liverpool	01/05/2006	N	Paris MoU	More detailed inspection	0	3

THE HIGH COURT OF KERALA सत्यमेव जयते

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• List of port state control

Authority	Port of inspection	Date of report	Detention	PSC organisation	Type of inspection	Duration (days)	Number of deficiencies
Belgium	Antwerp	15/09/2005	N	Paris MoU	Initial inspection	0	
Belgium	Antwerp	02/02/2005	N	Paris MoU	Initial inspection	0	
France	Le havre	12/07/2004	N	Paris MoU	Initial inspection	0	4
United States of America	MSO Boston	09/12/2003	N	US Coast Guard		0	
Germany	Bremerhaven	26/11/2003	N	Paris MoU	More detailed inspection	0	
Belgium	Antwerp	13/03/2003	N	Paris MoU	Initial inspection	0	
United Kingdom	Harwich	09/07/2002	N	Paris MoU	Initial inspection	0	1
United Kingdom	Harwich	26/09/2001	N	Paris MoU	Initial inspection	0	3
United States of America	MSO Charleston	28/08/2001	N	US Coast Guard		0	
Germany	Bremerhaven	13/08/2001	N	Paris MoU	Initial inspection	0	4
United States of America	MSO Houston-Galveston	26/07/2001	N	US Coast Guard		0	1
United States of America	MSO Charleston	15/11/2000	N	US Coast Guard		0	
Germany	Hamburg	16/10/2000	N	Paris MoU		0	7
United States of America	MSO Charleston	25/06/2000	N	US Coast Guard		0	
United Kingdom	Great yarmouth	14/06/2000	N	Paris MoU		0	8
United States of America	MSO Charleston	02/04/2000	N	US Coast Guard		0	
Belgium	Antwerp	17/03/2000	N	Paris MoU		0	6
United States of America	MSO Charleston	07/01/2000	N	US Coast Guard		0	

THE HIGH COURT OF KERALA

• List of port state control

Authority	Port of inspection	Date of report	Detention	PSC organisation	Type of inspection	Duration (days)	Number of deficiencies
United States of America	MSO New Orleans	21/10/1999	N	US Coast Guard		0	
United States of America	MSO Charleston	08/09/1999	N	US Coast Guard		0	
United States of America	MSO Charleston	23/07/1999	N	US Coast Guard		0	1
United States of America	Newport News, Virginia	02/07/1999	Y	US Coast Guard		1	2
Germany	Bremerhaven	20/05/1999	N	Paris MoU		0	
United States of America	MSO Charleston	31/03/1999	N	US Coast Guard		0	
United States of America	MSO Wilmington	20/01/1999	N	US Coast Guard		0	
United States of America	MSO Wilmington	02/01/1999	N	US Coast Guard		0	1
Germany	Bremerhaven	21/12/1998	N	Paris MoU		0	

• Human element deficiencies

PSC organisation	Authority	Port of inspection	Date of report	Human element deficiencies
Indian Ocean MoU	India	Vishakhapatnam	28/04/2025	6
Indian Ocean MoU	Madagascar	Tamatave (Toamasina)	29/04/2024	1
Indian Ocean MoU	India	Jawaharlal Nehru (Nhava Sheva)	07/12/2023	1
Indian Ocean MoU	Kenya	Mombasa	18/03/2021	1
Paris MoU	France	Le havre	12/07/2004	1
Paris MoU	Germany	Bremerhaven	13/08/2001	1
US Coast Guard	United States of America	MSO Houston-Galveston	26/07/2001	1
Paris MoU	United Kingdom	Great yarmouth	14/06/2000	1

THE HIGH COURT OF KERALA
सत्यमेव जयते

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• Human element deficiencies

PSC organisation	Authority	Port of inspection	Date of report	Human element deficiencies
Paris MoU	Belgium	Antwerp	17/03/2000	1
US Coast Guard	United States of America	Newport News, Virginia	02/07/1999	1

THE HIGH COURT OF KERALA
सत्यमेव जयते

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Ship history

• Current and former name(s)

Name of ship	Date of effect	Source
MSC SABRINA III	since 01/10/2022	IHS Maritime

• Current and former flag(s)

Flag	Date of effect	Source
Panama	since 01/05/1998	IHS Maritime

• Current and former classification status

Classification society	Date of survey	Sources
Registro Italiano Navale (IACS)	30/10/2022	Registro Italiano Navale
Registro Italiano Navale (IACS)	19/06/2017	Registro Italiano Navale
Registro Italiano Navale (IACS)	18/05/2013	Registro Italiano Navale
Registro Italiano Navale (IACS)	15/05/2008	Registro Italiano Navale
Registro Italiano Navale (IACS)	29/01/2003	Registro Italiano Navale

• Company

Company	Role	Date of effect	Sources
MSC SHIPMANAGEMENT LTD	ISM Manager	since 06/04/2012	
FRESHEN CORP	Registered owner	since 03/08/2009	

THE HIGH COURT OF KERALA सत्यमेव जयते

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• Company

Company	Role	Date of effect	Sources
MSC SHIP MANAGEMENT HK LTD	ISM Manager	since 10/10/2006	
MEDITERRANEAN SHIPPING CO SRL	ISM Manager	since 09/04/2002	
MSC MEDITERRANEAN SHIPPING CO	Ship manager/ Commercial manager	during 04/1998	

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Equasis - Ship folder
MSC NAIROBI X

imo: 9605243

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Ship informations

• Ship particulars

Information		Since
IMO number :	9605243	
Name of ship :	MSC NAIROBI X	(since 01/09/2023)
Call sign :	5LNQ5	
MMSI :	636023421	
Gross tonnage :	94402	(since 01/08/2017)
DWT :	132389	
Type of ship :	Container Ship	(since 01/11/2013)
Year of build :	2013	
Flag :	Liberia	(since 01/09/2023)
Status of ship :	In Service/Commission	(since 28/11/2013)
Last update :	14/05/2025	

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• Management detail

IMO	Role	Name of company	Address	Date of effect
1535947	ISM Manager	MSC SHIPMANAGEMENT LTD	MSC House, 8, Spyrou Kyprianou Avenue, 3070, Limassol, Cyprus.	since 19/10/2023
0152944	Ship manager/ Commercial manager	MSC MEDITERRANEAN SHIPPING CO	chemin Rieu, 12-14, 1208, Geneva, Switzerland.	since 30/09/2023
6437973	Registered owner	AELIANA OCEANWAY LTD	C/O: MSC Mediterranean Shipping Co SA chemin Rieu, 12-14, 1208, Geneva, Switzerland.	since 30/09/2023

• Classification status

Classification society	Date change status	Status	Reason
DNV (IACS)	since 28/11/2013	Delivered	by society for other reasons

• Classification surveys

Classification society	Date survey	Date next survey
DNV (IACS)	04/05/2024	27/11/2028

• Safety management certificate

Classification society	Date survey	Date expiry	Date of status	Status	Reason	Type
DNV (IACS)	04/05/2024	04/05/2029	30/09/2023	Delivered		Convention

• P&I information

Name of P&I insurer	Recorded on
Britannia Steamship insurance Association Ld	01/07/2025
Steamship Mutual Underwriting Association (Bermuda)	20/06/2025
Standard P&I Club per Charles Taylor & Co	23/12/2024
UK P&I Club	20/02/2024

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Ship certification

• Association membership

• Intermanager

THE HIGH COURT OF KERALA
सत्यमेव जयते

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Ship inspections

• List of port state control

Authority	Port of inspection	Date of report	Detention	PSC organisation	Type of inspection	Duration (days)	Number of deficiencies
United Kingdom	Felixstowe	02/04/2025	N	Paris MoU	Initial inspection	0	5
Togo	Port of Lome	09/12/2024	N	Abuja MoU	Initial inspection	0	
United States of America	Portland, Oregon	08/06/2024	N	US Coast Guard	Standard Examination	0	
Italy	Cagliari	02/09/2023	N	Paris MoU	Initial inspection	0	
Greece	Piraeus	14/12/2021	N	Paris MoU	Initial inspection	0	
Egypt	Port Said	27/09/2021	N	Mediterranean MoU	More detailed inspection	0	1
China Peoples's Republic	Ningbo	17/08/2021	N	Tokyo MoU	Initial inspection		
Panama	Balboa	01/10/2020	N	Tokyo MoU	Initial inspection		
				Vina Del Mar MoU	Initial inspection	0	
Spain	Valencia	26/02/2020	N	Paris MoU	Initial inspection	0	
Panama	Rodman	05/12/2019	N	Vina Del Mar MoU	Initial inspection	0	
United States of America	Long Beach, California	18/06/2019	N	US Coast Guard	Standard Examination	0	
Greece	Piraeus	04/02/2019	N	Paris MoU	Initial inspection	0	1
Singapore	Singapore	02/07/2018	N	Tokyo MoU	Initial inspection		1
United Kingdom	Southampton	02/01/2018	N	Paris MoU	More detailed inspection	0	8
France	Le havre	26/07/2017	N	Paris MoU	More detailed inspection	0	
Chile	Valparaiso	02/01/2017	N	Vina Del Mar MoU	Follow-up inspection	0	

THE HIGH COURT OF KERALA सत्यमेव जयते

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• List of port state control

Authority	Port of inspection	Date of report	Detention	PSC organisation	Type of inspection	Duration (days)	Number of deficiencies
Chile	San Antonio	27/12/2016	N	Tokyo MoU	Follow-up inspection		
				Vina Del Mar MoU	Follow-up inspection	0	
				Tokyo MoU	Initial inspection		2
				Vina Del Mar MoU	Initial inspection	0	2
Belgium	Antwerp	08/09/2016	N	Paris MoU	More detailed inspection	0	2
United States of America	Philadelphia, Pennsylvania	26/08/2016	N	US Coast Guard	Standard Examination	0	
China Peoples's Republic	Shanghai	29/03/2016	N	Tokyo MoU	Initial inspection		4
Japan	Yokohama	05/10/2015	N	Tokyo MoU	Follow-up inspection		
				Tokyo MoU	Initial inspection		1
Brazil	Itajai Sc	03/08/2015	N	Vina Del Mar MoU	Initial inspection	0	
China Peoples's Republic	Shanghai	17/12/2014	N	Tokyo MoU	Initial inspection		4
South Africa	Port Of Ngqura	13/05/2014	N	Indian Ocean MoU	Initial inspection	0	
Brazil	Itajai Sc	17/01/2014	N	Vina Del Mar MoU	Initial inspection	0	

• Human element deficiencies

PSC organisation	Authority	Port of inspection	Date of report	Human element deficiencies
Vina Del Mar MoU	Chile	San Antonio	27/12/2016	1

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Ship history

• Current and former name(s)

Name of ship	Date of effect	Source
MSC NAIROBI X	since 01/09/2023	IHS Maritime
Joseph Schulte	since 01/12/2020	IHS Maritime
MSC Algeciras	since 01/11/2013	IHS Maritime
Joseph Schulte	since 01/09/2013	IHS Maritime

• Current and former flag(s)

Flag	Date of effect	Source
Liberia	since 01/09/2023	IHS Maritime
Hong Kong, China	since 01/11/2013	IHS Maritime

• Current and former classification status

Classification society	Date of survey	Sources
DNV (IACS)	04/05/2024	Det Norske Veritas
DNV (IACS)	21/11/2018	Det Norske Veritas

• Company

Company	Role	Date of effect	Sources
MSC SHIPMANAGEMENT LTD	ISM Manager	since 19/10/2023	
MSC MEDITERRANEAN SHIPPING CO	Ship manager/ Commercial manager	since 30/09/2023	
AELIANA OCEANWAY LTD	Registered owner	since 30/09/2023	

HIGH COURT OF KERALA
सत्यमेव जयते

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• Company

Company	Role	Date of effect	Sources
HANSEATIC UNITY CHARTERING HU	Ship manager/ Commercial manager	since 01/05/2016	
BERNHARD SCHULTE-HKG LP	ISM Manager	since 28/11/2013	
BERNHARD SCHULTE GMBH & CO KG	Ship manager/ Commercial manager	since 16/11/2013	
DOVER PARK SHIPPING CO PTE LTD	Registered owner	since 16/11/2013	

THE HIGH COURT OF KERALA
सत्यमेव जयते

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MEDITERRANEAN SHIPPING COMPANY S.A.
12-14, chemin Rieu - CH -1208 GENEVA, Switzerland
website: www.msc.com

BILL OF LADING No. MEDUTM376603
RIDER PAGE
Page 1 of 1

CONTINUATION PARTICULARS FURNISHED BY THE SHIPPER - NOT CHECKED BY CARRIER - CARRIER NOT RESPONSIBLE (see Clause 14)

Container Numbers, Seal Numbers and Marks	Description of Packages and Goods (Continued on attached Bill of Lading Rider pages(s), if applicable)	Gross Cargo Weight	Measurement
FFAU1922312 40' HIGH CUBE Seal Number: EU26803710 Tare Weight: 3,700 kgs.	350 BAG(S) of DRIED RAW CASHEW NUT	28,360.000 kgs.	
MSDU5813641 40' HIGH CUBE Seal Number: EU26808915 Tare Weight: 3,700 kgs.	315 BAG(S) of DRIED RAW CASHEW NUT 4X 40 FT CNTR (S) S.T.C SHIPPER'S LOAD STOW COUNT 1330 BAGS OF DRIED RAW CASHEW NUTS IN SHELL OF BURKINA FASO ORIGIN NEW CROP 2025 HS CODE: 08013100 TOTAL GROSS WEIGHT: 107.780 MTS TOTAL NET WEIGHT: 106.450 MTS FREIGHT PREPAID 2 NOTIFY PARTY; ABS NUTS TRADING LLC (DUBAI)	25,520.000 kgs.	
MSMU8660814 40' HIGH CUBE Seal Number: EU26833287 Tare Weight: 3,840 kgs.	350 BAG(S) of DRIED RAW CASHEW NUT	28,300.000 kgs.	
MSMU4269150 40' HIGH CUBE Seal Number: EU26806623 Tare Weight: 3,700 kgs.	315 BAG(S) of DRIED RAW CASHEW NUT	25,600.000 kgs.	
	Total :	107,780.000 kgs.	

THE HIGH COURT OF KERALA
सत्यमेव जयते

PLACE AND DATE OF ISSUE	SHIPPED ON BOARD DATE	SIGNED on behalf of the Carrier MSC Mediterranean Shipping Company S.A. by MSC Ghana Ltd As Agent
MSC TEMA 27-Feb-2025	22-Feb-2025	

Standard Edition - 01/2017

A 431020681

MEDITERRANEAN SHIPPING COMPANY S.A.

Terms and conditions of MSC Mediterranean Shipping Company S.A

CONTRACT OF CARRIAGE

Contract of Carriage continued from the front page.

1. DEFINITIONS
The following definitions shall apply in this Bill of Lading:
Carrier: means MSC Mediterranean Shipping Company S.A.
COGSA: means the U.S. Carriage of Goods by Sea Act 1936.
Combined Transport: arises if the Carrier has indicated a Place of Receipt and/or a Place of Delivery on the front hereof in the relevant spaces. Combined Transport consists of a Port-to-Port carriage and Inland Transport.
Container: includes any container, trailer, transportable tank, flat or pallet, or any similar article used to consolidate Goods and any connected or accessory equipment.
Freight: includes the freight and all charges, costs and expenses whatsoever payable to the Carrier in accordance with the applicable Tariff and this Bill of Lading, including storage, per diem and demurrage.
Goods: includes the whole or any part of the cargo carried under this Bill of Lading, including any packing or packaging materials and Merchant owned or leased Containers.
Hague Rules: means the provisions of the International Convention for the Unification of Certain Rules relating to Bills of Lading signed at Brussels on 25 August 1924 with the express exclusion of Article 9.
Hague-Visby Rules: means the provisions of The Hague Rules 1924 as Amended by the Protocol adopted at Brussels on 23 February 1968, and 21st December 1979 (SDR Protocol) where applicable. Notwithstanding anything to the contrary herein it is expressly agreed that nothing herein shall contractually apply the Hague-Visby Rules to this Bill of Lading and they shall apply only when compulsorily applicable by the law governing this Bill of Lading.
Inland Transport: means carriage during Combined Transport other than between the Port of Loading and the Port of Discharge.
Merchant: includes the Shipper, Consignee, holder of this Bill of Lading, the receiver of the Goods and any Person owning, entitled to or claiming the possession of the Goods or of this Bill of Lading or anyone acting on behalf of this Person.
Person: includes an individual, corporation, company or any other legal entity.
Place of Delivery: means the place at which the Carrier has contracted to deliver the Goods, when such place is other than the Port of Discharge.
Place of Receipt: means the place at which the Carrier has contracted to receive the Goods, when such place is other than the Port of Loading.
Pomerene Act: means the United States Federal Bill of Lading Act, 1916 49 U.S.C. 801 or any amendments thereto.
Port-to-Port carriage: means carriage between the Port of Loading and the Port of Discharge.
Subcontractor: includes but is not limited to the owners, charterers and operators of the Vessel(s) other than the Carrier, as well as stevedores, terminals and groupage operators, road and rail transport operators, warehousemen and any independent contractors employed by the Carrier performing the carriage and any direct or indirect Subcontractors, servants and agents thereof, whether in direct contractual privity or not.
Vessel: includes the vessel named herein or any substituted vessel, feeder vessel, lighter or other watercraft utilized by the Carrier for carriage by sea.

2. CONTRACTING PARTIES AND WARRANTY
The contract evidenced by this *Bill of Lading* is between the Carrier and the Merchant. Every Person defined as "Merchant" is jointly and severally liable towards the Carrier for all the various undertakings, responsibilities and liabilities of the Merchant under or in connection with this Bill of Lading and to pay the Freight due under it without deduction or set-off. The Merchant warrants that in agreeing to the terms and conditions in this Bill of Lading, he is the owner of the Goods or he does so with the authority of the owner of the Goods or of the Person entitled to the possession of the Goods or of this Bill of Lading.

3. CARRIER'S TARIFF
The terms and conditions of the Carrier's applicable Tariff are incorporated into this Bill of Lading. Particular attention is drawn to terms and conditions concerning additional charges including demurrage, per diem, storage expenses and legal fees, etc. A copy of the applicable Tariff can be obtained from the Carrier or its agent upon request and the Merchant is deemed to know and accept such Tariff. In the case of any conflict or inconsistency between this Bill of Lading and the applicable Tariff, it is agreed that this Bill of Lading shall prevail.

4. SUBCONTRACTING AND INDEMNITY
4.1 The Carrier shall be entitled to sub-contract on any terms whatsoever the whole or any part of the carriage, including liberty to further sub-contract.
4.2 The Merchant undertakes that no claim or allegation whether arising in contract, bailment, tort or otherwise shall be made against any servant, agent, or Subcontractor of the Carrier which imposes or attempts to impose upon any of them or any Vessel owned or chartered by any of them any liability whatsoever in connection with the Goods or the carriage of the Goods whether or not arising out of negligence on the part of such Person. If any such claim or allegation should nevertheless be made, the Merchant agrees to indemnify the Carrier against all consequences thereof. Without prejudice to the foregoing, every such servant, agent and Subcontractor shall have the benefit of all terms and conditions of whatsoever nature contained herein or otherwise benefiting the Carrier under this Bill of Lading, as if such terms and conditions were expressly for their benefit. In entering into this contract, the Carrier, to the extent of such terms and conditions, does so on its own behalf and also as agent and trustee for such servants, agents and Subcontractors.
4.3 The provisions of clause 4.2, including but not limited to the undertaking of the Merchant contained therein, shall extend to all claims or allegations of whatsoever nature against other Persons chartering space on the Vessel.
4.4 The Merchant further undertakes that no claim or allegation in respect of the Goods shall be made against the Carrier by any Person which imposes or attempts to impose upon the Carrier any liability whatsoever in connection with the Goods or the carriage of the Goods other than in accordance with the terms and conditions of this Bill of Lading, whether or not arising out of negligence or misdelivery on the part of the Carrier, and if any such claim or allegation should nevertheless be made, to indemnify the Carrier against all consequences thereof.

5. CARRIER'S RESPONSIBILITY
5.1 Port-to-Port carriage – If carriage under this Bill of Lading is Port-to-Port:
(a) The period of responsibility of the Carrier for any loss of or damage to the Goods shall commence only at the moment that the Goods are loaded on board the Vessel and shall end when the Goods have been discharged from the Vessel.
(b) This Bill of Lading shall be subject to the Hague Rules unless the governing law makes the Hague or the Hague-Visby Rules compulsorily applicable in which case the said Hague or Hague-Visby Rules will apply to this Bill of Lading only to the extent that they are compulsorily applicable.
(c) Notwithstanding the above, in case and to the extent that the governing law, or a contractual arrangement, or custom and practice, or any court or tribunal decision extends the Carrier's period of responsibility whether in contract, tort, bailment or otherwise to all or any part of the period before loading, or the period after discharge, including for misdelivery then Carrier shall have the benefit of every right, defence, immunity, limitation and liberty provided for in the Hague Rules during such additional period of responsibility, notwithstanding that the loss, damage or misdelivery did not occur during the carriage by sea.
5.2 Combined Transport – The Carrier's liability for Combined Transport shall be as follows:
5.2.1 Where the loss or damage occurred during the Port-to-Port section of the carriage, the liability of the Carrier is in accordance with clause 5.1 above.
5.2.2 Where the loss or damage occurred during Inland Transport, the liability of the Carrier shall be determined:
(a) by the provisions contained in any international convention, national law or regulation applicable to the means of transport utilized, if such convention, national law or regulation would have been compulsorily applicable in the case where a separate contract had been made in respect to the particular stage of transport concerned, or
(b) where no international convention, national law or regulation would have been compulsorily applicable, by the contract of carriage issued by the Subcontractor carrier for that stage of transport, including any limitations and exceptions contained therein, which contract the Merchant and the Carrier adopt and incorporate by reference, it being agreed that the Carrier's rights and liabilities shall be the same as those of the Subcontractor carrier, but in no event whatsoever shall the Carrier's liability exceed GBP 100 sterling legal tender per package, or
(c) if any court shall determine that no international convention, national law or regulation would have been compulsorily applicable and that the Carrier may not determine its liability, if any, by reference to the applicable Subcontractor's contract of carriage or where said Subcontractor carrier does not have a contract of carriage, then it is contractually agreed as between the Merchant and the Carrier that the Carrier's liability shall be determined as if the loss and/or damage complained of occurred during the Port-to-Port section of carriage as provided at 5.1 above, but in no event whatsoever shall the Carrier's liability exceed GBP 100 sterling legal tender per package.
(d) If the place of loss or damage cannot be established by the Merchant, then the loss or damage shall be presumed to have occurred during the Port-to-Port section of carriage and the Carrier's liability shall be determined as provided at 5.1 above.
5.2.3 Any transport that the Carrier arranges for the Merchant which is not part of the carriage under this Bill of Lading is done under the Merchant's own responsibility, time, risk and expense and the Carrier acts as agent only for the Merchant.
5.3 Delivery to Customs or Port Authorities – Where any law or regulation applicable at the Port of Discharge or Place of Delivery provides that delivery of the Goods to the Merchant shall or may be effected by the customs or port authorities at the Port of Discharge or Place of Delivery, notwithstanding anything to the contrary herein, delivery of the Goods by the Carrier to such customs or port authorities shall be deemed to be lawful delivery of the Goods by the Carrier to the Merchant and the Carrier shall not be liable for any loss of or damage to the Goods which occurs for any reason whatsoever after delivery of the Goods by the Carrier to the customs or port authorities.

6. U.S. TRADE CLAUSE
6.1 Notwithstanding the provisions of clause 5, for carriage to or from any port of the United States, its territories or possessions, or if suit is brought in the United States, this Bill of Lading shall have effect subject to the provisions of the COGSA and to the provisions of the Pomerene Act regardless of whether said Act would apply of its own force. The provisions of the COGSA are incorporated herein and save as otherwise provided herein shall apply throughout the entire time the Goods are in the Carrier's custody, including before loading and after discharge as long as the Goods remain in the custody of the Carrier or its Subcontractors, including cargo carried on deck. Nothing contained herein is to be deemed a surrender by the Carrier of its rights, immunities, exemptions or limitations or an increase of any of its responsibilities or liabilities under the COGSA. Except for clause 8, every other term, condition, limitation, defence and liberty whatsoever contained in this Bill of Lading shall apply to carriage in the US Trades.
6.2 For limitation purposes under the COGSA, it is agreed that the meaning of the word "package" shall be any palletized and/or unitized assemblage of cartons which has been palletized and/or unitized for the convenience of the Merchant, regardless of whether said pallet or unit is disclosed on the front hereof.

7. COMPENSATION AND LIABILITY PROVISIONS
7.1 Subject always to the Carrier's right to limit liability as provided for herein, if the Carrier is liable for compensation in respect of loss of or damage to the Goods, such compensation shall be calculated by reference to the invoice value of the Goods, plus Freight and insurance if paid. If there is no invoice value of the Goods or if any such invoice is not bona fide, such compensation shall be calculated by reference to the market value of such Goods at the place and time they are delivered or should have been delivered to the Merchant. The market value of the Goods shall be fixed according to the current market price, by reference to the normal value of goods of the same kind and/or quality.
7.2 Save as is provided in clause 7.3:
7.2.1 (a) If and to the extent the Hague Rules or Hague-Visby Rules are compulsorily applicable to this Bill of Lading by virtue of clauses 5.1, 5.2.1 or 5.2.2 (c) or (d) or otherwise, the Carrier's liability for breaches or wrongs occurring during such period of compulsory application shall in no event whatsoever exceed the amounts provided in the Hague Rules or Hague-Visby Rules, whichever are compulsorily applicable.
(b) If and to the extent the Hague Rules apply only contractually pursuant to clause 5, the Carrier's maximum liability shall in no event whatsoever exceed GBP 100 sterling lawful currency per package or unit.
7.2.2 Where COGSA applies by virtue of clause 6, neither the Carrier nor the Vessel shall in any event be or become liable in an amount exceeding US$500 per package or per customary freight unit.
7.3 The Merchant agrees and acknowledges that the Carrier has no knowledge of the value of the Goods. Higher compensation than that provided for in this Bill of Lading may be claimed only when, with the written confirmation of the Carrier, the value of the Goods declared by the Shipper upon delivery to the Carrier has been stated by the Carrier in the box marked "Declared Value" on the front of this Bill of Lading and ad valorem charges paid. In that case, the amount of the Declared Value shall be substituted for the limits provided in this Bill of Lading. Any partial loss or damage shall be adjusted pro rata on the basis of such Declared Value.
7.4 Nothing in this Bill of Lading shall operate to limit or deprive the Carrier of any statutory protection, defence, exemption or limitation of liability authorised by any applicable laws, statutes or regulations of any country or which would have been applicable in the absence of any of the terms set out in this Bill of Lading. The Carrier shall have the benefit of the said laws, statutes or regulations as if it were the owner of the Vessel.
7.5 When any claim is paid by the Carrier to the Merchant, the Carrier shall be automatically subrogated to all rights of the Merchant against any third party. The Merchant shall sign a subrogation receipt, release and indemnity immediately when requested by the Carrier.

8. SCOPE OF VOYAGE, DELAY, CONSEQUENTIAL DAMAGES
The scope of voyage herein contracted for may or may not include usual or customary or advertised ports of call whether named in this Bill of Lading contract or not and may include transport of the Goods to or from any facilities used by the Carrier as part of the carriage, including but not limited to off-dock storage. The Carrier does not promise or undertake to load, carry or discharge the Goods on or by any particular Vessel, date or time. Advertised sailings and arrivals are only estimated times, and such schedules may be advanced, delayed or cancelled without notice. In no event shall the Carrier be liable for consequential damages or for any delay in scheduled departures or arrivals of any Vessel or other conveyances used to transport the Goods by sea or otherwise. If the Carrier should nevertheless be held legally liable for any such direct or indirect or consequential loss or damage caused by such alleged delay, such liability shall in no event exceed the Freight paid for the carriage.

9. METHODS AND ROUTES OF CARRIAGE
9.1 The Carrier may at any time and without notice to the Merchant:
(a) use any means of transport or storage whatsoever;
(b) transfer the Goods from one conveyance to another including transhipping or carrying the Goods on a Vessel other than the Vessel named on the front hereof or by any other means of transport whatsoever, even though transhipment or forwarding of the Goods by such means may not have been contemplated or provided for herein;
(c) sail without pilots, proceed via any route (whether or not the nearest or most direct or customary or advertised route) at any speed and proceed to, return to and stay at any port or place whatsoever (including the Port of Loading herein provided) once or more often, and in any order in or out of the route or in a contrary direction to or beyond the Port of Discharge once or more often;
(d) load and unload the Goods at any place or port (whether or not any such port is named on the front hereof as the Port of Loading or Port of Discharge) and store the Goods at any such port or place, including but not limited to the use of off-dock storage at any port;
(e) comply with any orders or recommendations given by any government or authority or any Person or body purporting to act as or on behalf of such government or authority or having under the terms of the insurance on any conveyance employed by the Carrier the right to give orders or directions.
9.2 The liberties set out in clause 9.1 may be invoked by the Carrier for any purpose whatsoever whether or not connected with the carriage of the Goods, including but not limited to loading or unloading other goods, bunkering or embarking or disembarking any Person(s), undergoing repairs and/or drydocking, towing or being towed, assisting other vessels, making trial trips and adjusting instruments. Anything done or not done in accordance with clause 9.1 or any delay arising therefrom shall be deemed to be within the contractual carriage and shall not be a deviation.

10. NOTICE OF CLAIMS, TIME BAR AND JURISDICTION
10.1 Notice - of loss or damage to Goods shall be given in writing to the Carrier or its agent at the Port of Discharge before or at the time of delivery. If the loss or damage is not apparent before or at the time of delivery, notice must be given within three (3) days of delivery to the Merchant or its agent. Claims shall be submitted in writing addressed by the Merchant to the Carrier's agent at the Port of Discharge.
10.2 Time bar - In any event, the Carrier shall be discharged from all liability if suit is not commenced within one (1) year after delivery of the Goods or the date that the Goods should have been delivered for claims related to loss or damage during the Port-to-Port carriage, and for claims related to loss or damage during Inland Transport the shorter of nine (9) months or any time limit provided for by any applicable international convention, national law, regulation or contract by virtue of clauses 5.2.2 (a) or (b).
10.3 Jurisdiction - It is hereby specifically agreed that any suit by the Merchant, and save as additionally provided below any suit by the Carrier, shall be filed exclusively in the High Court of London and English Law shall exclusively apply, unless the carriage contracted for hereunder was to or from the United States of America, in which case suit shall be filed exclusively in the United States District Court for the Southern District of New York and U.S. law shall exclusively apply. The Merchant agrees that it shall not institute suit in any other court and agrees to be responsible for the reasonable legal expenses and costs of the Carrier in removing a suit filed in another forum. The Merchant waives any objection to the personal jurisdiction over the Merchant of the above agreed forum.
In the case of any dispute relating to Freight or other sums due from the Merchant to the Carrier, the Carrier may, at its sole option, bring suit against the Merchant in the fora agreed above or in the countries of the Port of Loading, Port of Discharge, Place of Delivery or in any jurisdiction where the Merchant has a place of business.

11. MERCHANT-PACKED CONTAINERS
If a Container has not been packed by or on behalf of the Carrier:
11.1 The Merchant shall inspect the Container for suitability for carriage of the Goods before packing it. The Merchant's use of the Container shall be prima facie evidence of its being sound and suitable for use.
11.2 The Carrier shall not be liable for loss of or damage to the Goods caused by:
(a) the manner in which the Goods have been packed, stowed, stuffed or secured in the Container, or
(b) the unsuitability of the Goods for carriage in the Container supplied or for carriage by Container between the Ports or Places specified herein, or
(c) the unsuitability or defective condition of the Container or the incorrect setting of any refrigeration controls thereof, provided that, if the Container has been supplied by or on behalf of the Carrier, this unsuitability or defective condition would have been apparent upon inspection by the Merchant at or prior to the time when the Container was packed, or
(d) packing refrigerated Goods that are not properly pre-cooled to the correct temperature for carriage or before the refrigerated Container has been properly pre-cooled to the correct carrying temperature.
11.3 The Merchant is responsible for the packing and sealing of all Merchant-packed Containers and, if a Merchant-packed Container is delivered by the Carrier with an original seal as affixed by the Merchant or customs or security control intact, or the Carrier can establish bona fide circumstances in which the original seal was replaced, the Carrier shall not be liable for any shortage of Goods ascertained upon delivery.
11.4 The Merchant shall indemnify the Carrier against any loss, damage, liability or expense whatsoever and howsoever arising caused by one or more of the matters referred to in clause 11.2, including but not limited to damage to Container, other cargo and the Vessel.

12. REFRIGERATION, HEATING, INSULATION
12.1 Special Containers with refrigeration, heating or insulation shall not be furnished unless contracted for on the front of this Bill of Lading and extra Freight paid. If a carrying temperature is noted on the front of this Bill of Lading, the Merchant shall deliver the Goods to the Carrier at plus or minus 2 degrees Celsius from the noted temperature, and the Carrier shall exercise due diligence to maintain such supply air temperature, plus or minus 2 degrees Celsius while the Goods are in its possession. IT IS THE MERCHANT'S OBLIGATION TO SET AND/OR CHECK THAT THE TEMPERATURE CONTROLS ON THE CONTAINER ARE AT THE REQUIRED CARRYING TEMPERATURE AND TO PROPERLY SET THE VENTS. The Carrier does not undertake to deliver empty refrigerated Containers to the Merchant at any specific temperature. The Carrier has the right but not the obligation to refuse to accept any Container loaded by the Merchant for shipment where the Goods are not or were not loaded into the Container within plus or minus 2 degrees Celsius of the contracted carrying temperature.
12.2 The Merchant must take note that refrigerated Containers are not designed:
(a) to cool or freeze Goods which have been loaded into a Container at a temperature higher than their designated carrying temperature. The Carrier shall not be responsible for the consequences of the Goods being loaded at a higher temperature than that required for the carriage; nor
(b) to monitor and control humidity levels, even if a setting facility exists, and because humidity is influenced by many external factors the Carrier does not guarantee and is not responsible for the maintenance of any intended level of humidity inside any Container.
12.3 The Carrier shall not be liable for any loss or damage to the Goods arising from latent defects, breakdown, defrosting, stoppage of the refrigerating or any other specialised machinery, plant, insulation [illegible] of the Container and any other facilities, provided that the Carrier exercised due diligence before releasing the empty Container to the shipper.
12.4 The Carrier [illegible] but shall exercise care in its operation and [illegible]. The Carrier will not accept responsibility for the recording of temperatures in any form other than [illegible] log book maintained [illegible] with any governmental program or protocol unless [illegible].

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13. INSPECTION OF GOODS AND SPECIAL CIRCUMSTANCES
Inspection - The Carrier [illegible] obligation, to open and/or scan any package or [illegible] and to inspect, weigh [illegible] the contents without notice to the Merchant.
Special circumstances - If it appears [illegible] the Goods cannot safely or properly be carried or carried further, either at all or without incurring any additional expense or taking any measures in relation to the Container or the Goods, the Carrier may [illegible] (but as his agent only) take any measures and/or incur any reasonable additional expense to carry or to continue the carriage of the Goods, and/or to sell or dispose of them and/or to abandon the carriage and/or to store them ashore or afloat, under cover or in the open, at any place, whichever the Carrier in its absolute discretion considers most appropriate, and any sale, disposal, abandonment or storage shall be deemed to constitute due delivery under this Bill of Lading. The Merchant shall indemnify the Carrier against any additional expense so incurred. The Carrier in exercising the liberties contained in this clause shall not be under any obligation to take any particular measures and shall not be liable for any loss, delay or damage howsoever arising from any action or lack of action under this clause.

14. DESCRIPTION OF GOODS AND MERCHANT'S RESPONSIBILITY
14.1 This Bill of Lading shall be prima facie evidence of the receipt by the Carrier in apparent good order and condition, except as otherwise noted, of the total number of Containers or other packages or units indicated in the box entitled "Carriers Receipt" on the front hereof.
14.2 No representation is made by the Carrier as to the weight, contents, measure, quantity, quality, description, condition, temperature, marks, numbers or value of the Goods and the Carrier shall be under no responsibility whatsoever in respect of such description or particulars.
14.3 The Merchant warrants to the Carrier that the particulars relating to the Goods as set out on the front hereof have been checked by or on behalf of the Merchant on receipt of this Bill of Lading and that such particulars, and any other particulars furnished by or on behalf of the Merchant, are adequate and correct. The Merchant warrants that the Goods are safely and securely packed in the Container.
14.4 The Merchant also warrants that the Goods and/or Merchant-packed Containers are lawful Goods, contain no contraband, drugs, other illegal substances or stowaways, and that any hazardous or potentially dangerous characteristics of the Goods have been fully disclosed by or on behalf of the Merchant and that they will not cause loss, damage or expense to the Carrier, or to any other cargo, Containers, Vessel or Person during the carriage.
14.5 If any particulars of any letter of credit and/or import license and/or sales contract and/or invoice or order number and/or details of any contract to which the Carrier is not a party are shown on the front hereof, such particulars are shown at the sole risk of the Merchant and for his convenience. The Merchant agrees that such particulars shall not be regarded as a declaration of value and shall in no circumstances whatsoever increase the Carrier's liability under this Bill of Lading, and the Merchant agrees to indemnify the Carrier for any increased liability so caused, including reasonable legal expenses and costs.
14.6 The Merchant shall comply with all regulations or requirements of customs, port and other authorities, and shall bear and pay all duties, taxes, fines, imposts, expenses or losses (including, without prejudice to the generality of the foregoing Freight for any additional carriage undertaken), incurred or suffered by reason thereof, or by reason of any illegal, incorrect or insufficient declaration, marking, numbering or addressing of the Goods, and shall indemnify the Carrier in respect thereof, including reasonable legal expenses and costs.
14.7 If by order of the authorities at any place, Goods are detained and/or seized and/or a Container has to be opened for the Goods to be inspected for any reason whatsoever, including but not limited to for a breach or infringement of a trademark, patent or other intellectual property right, the Carrier will not be liable for any loss or damage whatsoever incurred as a result of any opening, unpacking, inspection, re-packing, detention, destruction or delay. The Carrier shall be entitled to recover from the Merchant all charges, fines, costs, losses and expenses, including reasonable legal expenses and costs resulting from such action, including but not limited to any detention, demurrage and storage charges for the Goods and/or the Container.
14.8 The Carrier allows a period of free time for the use of the Containers and other equipment in accordance with the Tariff and as advised by the local MSC agent at the Ports of Loading and Discharge. Free time commences from the day the Container and other equipment is collected by the Merchant or is discharged from the Vessel or is delivered to the Place of Delivery as the case may be. The Merchant is required and has the responsibility to return to a place nominated by the Carrier the Container and other equipment before or at the end of the free time allowed at the Port of Discharge or the Place of Delivery. Demurrage, per diem and detention charges will be levied and payable by the Merchant thereafter in accordance with the Tariff.
14.9 The Merchant shall redeliver, to a place nominated by the Carrier, the Containers and other equipment in like good order and condition, undamaged, empty, odour free, cleaned and with all fittings installed by the Merchant removed and without any rubbish, dunnage or other debris inside. The Merchant shall be liable to indemnify the Carrier for any and all costs incurred reinstating or replacing Containers and other equipment not returned in the condition as specified above, including the reasonable legal expenses and costs of recovering the costs incurred and interest thereon.

15. DANGEROUS OR HAZARDOUS GOODS
15.1 The Carrier will not accept any Goods of a dangerous or hazardous nature without prior written notice of their full and true particulars and the Carrier's written approval to carry them.
When the Merchant delivers Goods of a dangerous or hazardous nature to the Carrier, the Merchant shall fully inform the Carrier in writing of the precise and accurate details of the Goods, and special precautions or handling required for the Goods. Such Goods shall be distinctly marked on the outside of the Container as well as on the outside of the packaging inside the Container as as to indicate the nature thereof and the marking must comply with the requirements of any applicable regulations, including regulations contained in any relevant international treaty or convention.
15.2 The Merchant shall be fully liable for and shall indemnify, hold harmless and defend the Carrier, its servants, agents and subcontractors and any third party for all loss, damage, delay, personal injury, death or expenses including fines and penalties, and all reasonable legal expenses and costs caused to the Carrier, the Vessel, any cargo, and other property, whether on board or ashore, arising from such Goods and/or from the breach of clause 15.1, whether or not the Merchant was aware of the nature of such Goods.
15.3 Nothing contained in this clause shall deprive the Carrier of any of its rights provided for elsewhere.

16. FREIGHT AND CHARGES
16.1 Freight has been calculated on the basis of the Shipper's particulars and if such particulars are found to be erroneous and additional Freight is payable, the Merchant shall be liable therefor and also for any expense thereby incurred.
16.2 All Freight is earned and due upon receipt of the Goods by the Carrier, whether the Freight is prepaid or collect and the Carrier shall be entitled to all Freight due under all circumstances, ship and/or cargo lost or not lost or the voyage abandoned. All Freight shall be paid when due without any set-off, counter claim, or deduction.
16.3 Every Person defined as "Merchant" in clause 1 shall be jointly and severally liable to the Carrier for the payment of all Freight and charges and for the performance of the obligations of each of them hereunder. Any Person engaged by the Merchant to perform forwarding services with respect to the Goods shall be considered to be exclusively the Merchant's agent for all purposes, and any payment of Freight to such Person shall not be considered payment to the Carrier in any event whatsoever. Failure of such third parties to pay any part of the Freight to the Carrier shall be considered a default by the Merchant in the payment of Freight.

17. CARRIER'S LIEN
THE CARRIER, ITS SERVANTS OR AGENTS SHALL HAVE A LIEN ON THE GOODS AND ANY DOCUMENT RELATING THERETO FOR FREIGHT AND FOR GENERAL AVERAGE CONTRIBUTIONS TO WHOMSOEVER DUE. THE CARRIER, ITS SERVANTS OR AGENTS SHALL ALSO HAVE A LIEN AGAINST THE MERCHANT ON THE GOODS AND ANY DOCUMENT RELATING THERETO FOR ALL SUMS DUE FROM THE MERCHANT TO THE CARRIER UNDER ANY OTHER CONTRACT. The Carrier may exercise its lien at any time and any place in its sole discretion, through the action of any servant, agent or Subcontractor, whether the contractual carriage is completed or not. The Carrier's lien shall also extend to cover the cost and legal expense of recovering any sums due. The Carrier shall have the right to sell any Goods liened by public auction or private treaty, without notice to the Merchant. Nothing herein shall prevent the Carrier from recovering from the Merchant the difference between the amount due to the Carrier and the net amount realised by such sale.

18. OPTIONAL STOWAGE, DECK CARGO AND LIVESTOCK
18.1 Goods, whether packed in Containers or not, may be carried on deck or under deck without notice to the Merchant unless it is specifically stipulated on the front hereof that the Containers or Goods will be carried under deck. If carried on deck, the Carrier shall not be required to note, mark or stamp on the Bill of Lading any statement of such on-deck carriage. Save as provided in clause 18.2 such Goods (except livestock) carried on or under deck and whether or not stated to be carried on deck shall participate in general average and shall be deemed to be within the definition of Goods for the purpose of the Hague Rules or the COGSA or any compulsorily applicable legislation and shall be carried subject to such Rules or Act, whichever is applicable.
18.2 Goods which are out of gauge and/or are stowed on or in open top containers, flatracks or platforms, and which are stated on the front hereof to be carried on deck, and all livestock whether carried on deck or under deck, are carried without any responsibility whatsoever on the part of the Carrier for loss or damage of whatsoever nature or delay arising during the carriage whether caused by unseaworthiness or negligence or any other cause whatsoever and the Hague Rules or the COGSA shall not apply.

19. MATTERS ADVERSELY AFFECTING CARRIER'S PERFORMANCE
19.1 If at any time the carriage is or is likely to be affected by any hindrance, risk, danger, delay, difficulty or disadvantage of whatsoever kind and howsoever arising which cannot be avoided by the Carrier by the exercise of reasonable endeavours, (even though the circumstances giving rise to such hindrance, risk, danger, delay, difficulty or disadvantage existed at the time this contract was entered into or the Goods were received for the carriage) the Carrier may at its sole discretion and without notice to the Merchant and whether or not the carriage is commenced either:
(a) carry the Goods to the contracted Port of Discharge or Place of Delivery, whichever is applicable, by an alternative route to that indicated in this Bill of Lading or that which is usual for Goods consigned to that Port of Discharge or Place of Delivery; or
(b) suspend the carriage of the Goods and store them ashore or afloat upon the terms and conditions of this Bill of Lading and endeavour to forward them as soon as possible, but the Carrier makes no representations as to the maximum period of suspension; or
(c) abandon the carriage of the Goods and place them at the Merchant's disposal at any place or port which the Carrier may deem safe and convenient, or from which the Carrier is unable by the exercise of reasonable endeavours to continue the carriage, whereupon the responsibility of the Carrier in respect of such Goods shall cease. The Carrier shall nevertheless be entitled to full Freight on the Goods received for the carriage, and the Merchant shall pay any additional costs incurred by reason of the abandonment of the Goods. If the Carrier elects to use an alternative route under clause 19.1 (a) or to suspend the carriage under clause 19.1 (b) this shall not prejudice its right subsequently to abandon the carriage.
19.2 If the Carrier elects to invoke the terms of this clause 19, then notwithstanding the provisions of clause 9, the Carrier shall be entitled to such additional Freight and costs as the Carrier may determine.

20. NOTIFICATION AND DELIVERY
20.1 Any mention in this Bill of Lading of parties to be notified of the arrival of the Goods is solely for information of the Carrier. Failure to give such notification shall not subject the Carrier to any liability nor relieve the Merchant of any obligation hereunder.
20.2 The Merchant shall take delivery of the Goods within the time provided for in the Carrier's applicable Tariff or as otherwise agreed. If the Merchant fails to do so, the Carrier may without notice unpack the Goods if packed in Containers and/or store the Goods ashore, afloat, in the open or under cover at the sole risk of the Merchant. Such storage shall constitute due delivery hereunder, and thereupon all liability whatsoever of the Carrier in respect of the Goods, including for misdelivery or non-delivery, shall cease and the costs of such storage shall forthwith upon demand be paid by the Merchant to the Carrier.
20.3 If the Goods are unclaimed within a reasonable time or whenever in the Carrier's opinion the Goods are likely to deteriorate, decay or become worthless, or incur charges whether for storage or otherwise in excess of their value, the Carrier may at its discretion and without prejudice to any other rights which it may have against the Merchant, without notice and without any responsibility attaching to it, sell, abandon or otherwise dispose of the Goods at the sole risk and expense of the Merchant and apply any proceeds of sale in reduction of the sums due to the Carrier from the Merchant under or in connection with this Bill of Lading.
20.4 Refusal by the Merchant to take delivery of the Goods in accordance with the terms of this clause and/or to mitigate any loss or damage thereto shall constitute an absolute waiver and abandonment by the Merchant to the Carrier of any claim whatsoever relating to the Goods or the carriage thereof. The Carrier shall be entitled to an indemnity from the Merchant for all costs whatsoever incurred, including legal costs, for the cleaning and disposal of Goods refused and/or abandoned by the Merchant.

21. BOTH TO BLAME COLLISION CLAUSE
If the Vessel comes into collision with another ship as a result of the negligence of the other ship and any act, neglect or default of the master, mariner, pilot or the servants of the Carrier in the navigation or in the management of the Vessel, the owners of the Goods carried hereunder will indemnify the Carrier against all loss or liability to the other or non-carrying ship or her owners in so far as such loss or liability represents loss of, or damage to, or any claim whatsoever of the owners of said Goods, paid or payable by the other or non-carrying ship or her owners to the owners of said Goods and set-off, recouped or recovered by the other or non-carrying ship or her owners as part of their claim against the Vessel or Carrier. The foregoing provisions shall also apply where the owners, operators or those in charge of any ship or ships or objects other than, or in addition to, the colliding ships or objects are at fault in respect of a collision or contact.

22. GENERAL AVERAGE AND SALVAGE
General Average shall be adjusted, stated and settled at any port or place at the Carrier's option according to York - Antwerp Rules 1994 except Rule XXII and, as to matters not therein provided for, according to the laws and usages at any port or place at the Carrier's option, save that General Average on a Vessel not operated or chartered by the Carrier shall be adjusted according to the requirements of the owner or operator of that Vessel. Average agreement or bond and such cash deposit (payable at Carrier's option in United States currency) as the Carrier may require as additional security for the contribution of the Goods and salvage and special charges thereon, shall be furnished before delivery or forwarding.
In the event of accident, danger, damage or disaster, before or after commencement of the voyage resulting from any cause whatsoever, whether due to negligence or not, for which, or for the consequence of which, the Carrier is not responsible by statute, contract, or otherwise, the Goods and the Merchant shall, jointly and severally, contribute with the Carrier in General Average to the payment of any sacrifices, losses, or expenses of a General Average nature that may be made or incurred, and shall pay salvage and special charges incurred in respect of the Goods, as determined by an independent General Average adjuster duly appointed by the Carrier, and his determination as to liability for General Average contribution and his computation for the same shall be final and binding on all parties to the venture. If a salving ship is owned or operated by the Carrier, salvage shall be paid for as fully and in the same manner as if such salvaging ship or ships belonged to strangers. Such deposit as the Carrier or its agents may deem sufficient to cover the estimated contribution of the goods and any salvage and special charges thereon shall, if required, be made by the Goods, Shippers, Consignees or owners of the Goods to the Carrier before delivery.

23. SEPARABILITY AND VARIATION OF TERMS, FINAL CONTRACT
The terms of this Bill of Lading shall be separable and, if any term or provision hereof or any part of any term or provision shall be invalid to any extent, it shall be invalid to that extent, but no further and such circumstance shall not affect the validity or enforceability of any other term or provision hereof. This Bill of Lading is the final contract between the parties which supersedes any prior agreement or understanding, whether in writing or verbal, save where this Bill of Lading has been issued pursuant to another contract between the Merchant and the Carrier, when such other contract and this Bill of Lading shall be construed together. This Bill of Lading and its terms and conditions may not be changed orally.

Standard Edition - 01/2017

P4

See website for large version of the reverse | Ver página Web para términos y condiciones | Смотрите веб-сайт для ознакомления с условиями и положениями | 提单的条款和条件详请见网站 | www.msc.com

MEDITERRANEAN SHIPPING COMPANY S.A.
12-14, chemin Rieu - CH -1208 GENEVA, Switzerland
website: www.msc.com

BILL OF LADING No. MEDUTM376603
ORIGINAL
"Port-To-Port" or "Combined Transport"(see Clause 1)

NO.& SEQUENCE OF ORIGINAL B/L's	NO. OF RIDER PAGES
1 Of Three	1 One

SHIPPER:
TALDO SARL
01BP 1536 OUAGA 01,00226781
21612 BURKINA FASO ON BEHALF
OF SREE CHAKRA TRADING LTD
P.O.BOX 45, KANESHIE ACCRA GHANA

CARRIER'S AGENTS ENDORSEMENTS: (Include Agent(s) at POD)
SHIPPER'S LOAD, STOW AND COUNT;FCLFCL;SAID TO CONTAIN
This carriage is subject to the MSC Sea Waybill or Bill of Lading Terms and Conditions found at the back of this document, as well as to the MSC Agency Terms and Conditions available at www.msc.com/en/carrier-terms which are incorporated by reference.

CONSIGNEE: This B/L is not negotiable unless marked "To Order" or "To Order of . . " here.
To order of BBS FOOD STUFF TRADING COMPANY LLC
(DUBAI)

Lloyds/IMO Number: 9404675
TERMINAL HANDLING CHARGES AND CONTAINER DEMURRAGE CHARGES PAYABLE BY CONSIGNEE AS PER LINE'S TARIFF

NOTIFY PARTIES : (No responsibility shall attach to Carrier or to his Agent for failure to notify - see Clause 20)
MANGALATH CASHEWS
Kannanalloor P.O kollam Pin 691576,
Kerala FSSAI NO: 10021041000086 ,
GST NO: 32AQOPS6838A1ZP

PORT OF DISCHARGE AGENT:
MSC AGENCY (INDIA) PVT. LTD.146,
Palayamkottai Road
1st Floor, Manickam Tower
Tuticorin, 628003

Email : IN363-comm.tuticorin@msc.com

VESSEL AND VOYAGE NO (see Clause 8 & 9)	PORT OF LOADING	PLACE OF RECEIPT: (Combined Transport ONLY - see Clause 1 & 5.2)
MSC MELATILDE - XA508R	**TEMA**	**XXXXXXXXXXXXXXX**
BOOKING REF. (or) **SHIPPER'S REF.**	**PORT OF DISCHARGE**	**PLACE OF DELIVERY : (Combined Transport ONLY - see Clause 1 & 5.2)**
EBKG11750374 **XXXXXXXXXXXXXXX**	**TUTICORIN**	**XXXXXXXXXXXXXXX**

PARTICULARS FURNISHED BY THE SHIPPER - NOT CHECKED BY CARRIER - CARRIER NOT RESPONSIBLE (see Clause 14)

Container Numbers, Seal Numbers and Marks	Description of Packages and Goods (Continued on attached Bill of Lading Rider pages(s), if applicable)	Gross Cargo Weight	Measurement
	Please see attached RIDER for Container / Cargo Description(s). 4 x 40' HIGH CUBE Total Items : 1330 Total Gross Weight : 107780.000 Kgs.		

THE HIGH COURT OF KERALA
सत्यमेव जयते

FREIGHT & CHARGES: Cargo shall not be delivered unless Freight & Charges are paid(see Clause 16)

AS PER AGREEMENT

RECEIVED by the Carrier in apparent good order and condition (unless otherwise stated herein) the total number or quantity of Containers or other packages or units indicated in the box entitled Carrier's Receipt for carriage subject to all the terms and conditions hereof from the Place of Receipt or Port of Loading to the Port of Discharge or Place of Delivery, whichever is applicable. IN ACCEPTING THIS BILL OF LADING THE MERCHANT EXPRESSLY ACCEPTS AND AGREES TO ALL THE TERMS AND CONDITIONS, WHETHER PRINTED, STAMPED OR OTHERWISE INCORPORATED ON THIS SIDE AND ON THE REVERSE SIDE OF THIS BILL OF LADING AND THE TERMS AND CONDITIONS OF THE CARRIER'S APPLICABLE TARIFF AS IF THEY WERE ALL SIGNED BY THE MERCHANT.

If this is a negotiable (To Order / of) Bill of Lading, one original Bill of Lading, duly endorsed must be surrendered by the Merchant to the Carrier (together with outstanding Freight and charges) in exchange for the Goods or a Delivery Order. If this is a non-negotiable (straight) Bill of Lading, the Carrier shall deliver the Goods or issue a Delivery Order (after payment of outstanding Freight and charges) against the surrender of one original Bill of Lading or in accordance with the national law at the Port of Discharge or Place of Delivery whichever is applicable.

IN WITNESS WHEREOF the Carrier or their Agent has signed the number of Bills of Lading stated at the top, all of this tenor and date, and wherever one original Bill of Lading has been surrendered all other Bills of Lading shall be void.

DECLARED VALUE (Only applicable if Ad Valorem charges paid - see Clause 7.3)	CARRIER'S RECEIPT (No. of Cntrs or Pkgs rcvd by Carrier - see Clause 14.1)	SIGNED on behalf of the Carrier MSC Mediterranean Shipping Company S.A. by MSC Ghana Ltd As Agent
XXXXXXXXXXXXXXX	**4 cntrs**	
PLACE AND DATE OF ISSUE	**SHIPPED ON BOARD DATE**	
MSC TEMA 27-Feb-2025	**22-Feb-2025**	

Standard Edition - 01/2017

TERMS CONTINUED ON REVERSE

526

A 431020682

MEDITERRANEAN SHIPPING COMPANY S.A.

CONTRACT OF CARRIAGE

Terms and conditions of MSC Mediterranean Shipping Company S.A. Contract of Carriage continued from the front page.

1 . DEFINITIONS
The following definitions shall apply in this Bill of Lading:
Carrier: means MSC Mediterranean Shipping Company S.A.
COGSA: means the U.S. Carriage of Goods by Sea Act 1936.
Combined Transport: arises if the Carrier has indicated a Place of Receipt and/or a Place of Delivery on the front hereof in the relevant spaces. Combined Transport consists of a Port-to-Port carriage and Inland Transport.
Container: includes any container, trailer, transportable tank, flat or pallet, or any similar article used to consolidate Goods and any connected or accessory equipment.
Freight: includes the freight and all charges, costs and expenses whatsoever payable to the Carrier in accordance with the applicable Tariff and this Bill of Lading, including storage, per diem and demurrage.
Goods: includes the whole or any part of the cargo carried under this Bill of Lading, including any packing or packaging materials and Merchant owned or leased Containers.
Hague Rules: means the provisions of the International Convention for the Unification of Certain Rules relating to Bills of Lading signed at Brussels on 25 August 1924 with the express exclusion of Article 9.
Hague-Visby Rules: means the provisions of The Hague Rules 1924 as Amended by the Protocol adopted at Brussels on 23 February 1968, and 21st December 1979 (SDR Protocol) where applicable. Notwithstanding anything to the contrary herein it is expressly agreed that nothing herein shall contractually apply the Hague-Visby Rules to this Bill of Lading and they shall apply only when compulsorily applicable by the law governing this Bill of Lading.
Inland Transport: means carriage during Combined Transport other than between the Port of Loading and the Port of Discharge.
Merchant: includes the Shipper, Consignee, holder of this Bill of Lading, the receiver of the Goods and any Person owning, entitled to or claiming the possession of the Goods or of this Bill of Lading or anyone acting on behalf of this Person.
Person: includes an individual, corporation, company or any other legal entity.
Place of Delivery: means the place at which the Carrier has contracted to deliver the Goods, when such place is other than the Port of Discharge.
Place of Receipt: means the place at which the Carrier has contracted to receive the Goods, when such place is other than the Port of Loading.
Pomerene Act: means the United States Federal Bill of Lading Act, 1916, 49 U.S.C. 801 or any amendments thereto.
Port-to-Port carriage: means carriage between the Port of Loading and the Port of Discharge.
Subcontractor: includes but is not limited to the owners, charterers and operators of the Vessel(s) other than the Carrier, as well as stevedores, terminals and groupage operators, road and rail transport operators, warehousemen and any independent contractors employed by the Carrier performing the carriage and any direct or indirect Subcontractors, servants and agents thereof, whether in direct contractual privity or not.
Vessel: includes the vessel named herein or any substituted vessel, feeder vessel, lighter or other watercraft utilized by the Carrier for carriage by sea.

2 . CONTRACTING PARTIES AND WARRANTY
The contract evidenced by this Bill of Lading is between the Carrier and the Merchant. Every Person defined as "Merchant" is jointly and severally liable towards the Carrier for all the various undertakings, responsibilities and liabilities of the Merchant under or in connection with this Bill of Lading and to pay the Freight due under it without deduction or set-off. The Merchant warrants that in agreeing to the terms and conditions in this Bill of Lading, he is the owner of the Goods or he does so with the authority of the owner of the Goods or of the Person entitled to the possession of the Goods or of this Bill of Lading.

3 . CARRIER'S TARIFF
The terms and conditions of the Carrier's applicable Tariff are incorporated into this Bill of Lading. Particular attention is drawn to terms and conditions concerning additional charges including demurrage, per diem, storage expenses and legal fees, etc. A copy of the applicable Tariff can be obtained from the Carrier or its agent upon request and the Merchant is deemed to know and accept such Tariff. In the case of any conflict or inconsistency between this Bill of Lading and the applicable Tariff, it is agreed that this Bill of Lading shall prevail.

4 . SUBCONTRACTING AND INDEMNITY
4.1 The Carrier shall be entitled to sub-contract on any terms whatsoever the whole or any part of the carriage, including liberty to further sub-contract.
4.2 The Merchant undertakes that no claim or allegation whether arising in contract, bailment, tort or otherwise shall be made against any servant, agent, or Subcontractor of the Carrier which imposes or attempts to impose upon any of them or any Vessel owned or chartered by any of them any liability whatsoever in connection with the Goods or the carriage of the Goods whether or not arising out of negligence on the part of such Person. If any such claim or allegation should nevertheless be made, the Merchant agrees to indemnify the Carrier against all consequences thereof. Without prejudice to the foregoing, every such servant, agent and Subcontractor shall have the benefit of all terms and conditions of whatsoever nature contained herein or otherwise benefiting the Carrier under this Bill of Lading, as if such terms and conditions were expressly for their benefit. In entering into this contract, the Carrier, to the extent of such terms and conditions, does so on its own behalf and also as agent and trustee for such servants, agents and Subcontractors.
4.3 The provisions of clause 4.2, including but not limited to the undertaking of the Merchant contained therein, shall extend to all claims or allegations of whatsoever nature against other Persons chartering space on the Vessel.
4.4 The Merchant further undertakes that no claim or allegation in respect of the Goods shall be made against the Carrier by any Person which imposes or attempts to impose upon the Carrier any liability whatsoever in connection with the Goods or the carriage of the Goods other than in accordance with the terms and conditions of this Bill of Lading, whether or not arising out of negligence or misdelivery on the part of the Carrier, and if any such claim or allegation should nevertheless be made, to indemnify the Carrier against all consequences thereof.

5 . CARRIER'S RESPONSIBILITY
5.1 Port-to-Port carriage – If carriage under this Bill of Lading is Port-to-Port:
(a) The period of responsibility of the Carrier for any loss of or damage to the Goods shall commence only at the moment that the Goods are loaded on board the Vessel and shall end when the Goods have been discharged from the Vessel.
(b) This Bill of Lading shall be subject to the Hague Rules unless the governing law makes the Hague or the Hague-Visby Rules compulsorily applicable in which case the said Hague or Hague-Visby Rules will apply to this Bill of Lading only to the extent that they are compulsorily applicable.
(c) Notwithstanding the above, in case and to the extent that the governing law, or a contractual arrangement, or custom and practice, or any court or tribunal decision extends the Carrier's period of responsibility, whether in contract, tort, bailment or otherwise to all or any part of the period before loading, or the period after discharge, including for misdelivery, then Carrier shall have the benefit of every right, defence, immunity, limitation and liberty provided for in the Hague Rules during such additional period of responsibility, notwithstanding that the loss, damage or misdelivery did not occur during the carriage by sea.
5.2 Combined Transport – The Carrier's liability for Combined Transport shall be as follows:
5.2.1 Where the loss or damage occurred during the Port-to-Port section of the carriage, the liability of the Carrier is in accordance with clause 5.1 above.
5.2.2 Where the loss or damage occurred during Inland Transport, the liability of the Carrier shall be determined:
(a) by the provisions contained in any international convention, national law or regulation applicable to the means of transport utilized, if such convention, national law or regulation would have been compulsorily applicable in the case where a separate contract had been made in respect to the particular stage of transport concerned, or
(b) where no international convention, national law or regulation would have been compulsorily applicable, by the contract of carriage issued by the Subcontractor carrier for that stage of transport, including any limitations and exceptions contained therein, which contract the Merchant and the Carrier adopt and incorporate by reference, it being agreed that the Carrier's rights and liabilities shall be the same as those of the Subcontractor carrier, but in no event whatsoever shall the Carrier's liability exceed GBP 100 sterling legal tender per package, or
(c) if any court shall determine that no international convention, national law or regulation would have been compulsorily applicable and that the Carrier may not determine its liability, if any, by reference to the applicable Subcontractor's contract of carriage or where said Subcontractor carrier does not have a contract of carriage, then it is contractually agreed as between the Merchant and the Carrier that the Carrier's liability shall be determined as if the loss and/or damage complained of occurred during the Port-to-Port section of carriage as provided at 5.1 above, but in no event whatsoever shall the Carrier's liability exceed GBP 100 sterling legal tender per package.
(d) If the place of loss or damage cannot be established by the Merchant, then the loss or damage shall be presumed to have occurred during the Port-to-Port section of carriage and the Carrier's liability shall be determined as provided at 5.1 above.
5.2.3 Any transport that the Carrier arranges for the Merchant which is not part of the carriage under this Bill of Lading is done under the Merchant's own responsibility, time, risk and expense and the Carrier acts as agent only for the Merchant.
5.3 Delivery to Customs or Port Authorities – Where any law or regulation applicable at the Port of Discharge or Place of Delivery provides that delivery of the Goods to the Merchant shall or may be effected by the customs or port authorities at the Port of Discharge or Place of Delivery, notwithstanding anything to the contrary herein, delivery of the Goods by the Carrier to such customs or port authorities shall be deemed to be lawful delivery of the Goods by the Carrier to the Merchant and the Carrier shall not be liable for any loss of or damage to the Goods which occurs for any reason whatsoever after delivery of the Goods by the Carrier to the customs or port authorities.

6 . U.S. TRADE CLAUSE
6.1 Notwithstanding the provisions of clause 5, for carriage to or from any port of the United States, its territories or possessions, or if suit is brought in the United States, this Bill of Lading shall have effect subject to the provisions of the COGSA and to the provisions of the Pomerene Act regardless of whether said Act would apply of its own force. The provisions of the COGSA are incorporated herein and save as otherwise provided herein shall apply throughout the entire time the Goods are in the Carrier's custody, including before loading and after discharge as long as the Goods remain in the custody of the Carrier or its Subcontractors, including cargo carried on deck. Nothing contained herein is to be deemed a surrender by the Carrier of its rights, immunities, exemptions or limitations or an increase of any of its responsibilities or liabilities under the COGSA. Except for clause 5, every other term, condition, limitation, defence and liberty whatsoever contained in this Bill of Lading shall apply to carriage in the US Trades.
6.2 For limitation purposes under the COGSA, it is agreed that the meaning of the word "package" shall be any palletised and/or unitised assemblage of cartons which has been palletised and/or unitised for the convenience of the Merchant, regardless of whether said pallet or unit is disclosed on the front hereof.

7 . COMPENSATION AND LIABILITY PROVISIONS
7.1 Subject always to the Carrier's right to limit liability as provided for herein, if the Carrier is liable for compensation in respect of loss of or damage to the Goods, such compensation shall be calculated by reference to the invoice value of the Goods, plus Freight and insurance if paid. If there is no invoice value of the Goods or if any such invoice is not bona fide, such compensation shall be calculated by reference to the market value of such Goods at the place and time they are delivered or should have been delivered to the Merchant. The market value of the Goods shall be fixed according to the current market price, by reference to the normal value of goods of the same kind and/or quality.
7.2 Save as is provided in clause 7.3:
7.2.1 (a) If and to the extent the Hague Rules or Hague-Visby Rules are compulsorily applicable to this Bill of Lading by virtue of clauses 5.1, 5.2.1 or 5.2.2 (c) or (d) or otherwise, the Carrier's liability for breaches or wrongs occurring during such period of compulsory application shall in no event whatsoever exceed the amounts provided in the Hague Rules or Hague-Visby Rules, whichever are compulsorily applicable.
(b) If and to the extent the Hague Rules apply only contractually pursuant to clause 5, the Carrier's maximum liability shall in no event whatsoever exceed GBP 100 sterling lawful currency per package or unit.
7.2.2 Where COGSA applies by virtue of clause 6, neither the Carrier nor the Vessel shall in any event be or become liable in an amount exceeding US$500 per package or per customary freight unit.
7.3 The Merchant agrees and acknowledges that the Carrier has no knowledge of the value of the Goods. Higher compensation than that provided for in this Bill of Lading may be claimed only when, with the written confirmation of the Carrier, the value of the Goods declared by the Shipper upon delivery to the Carrier has been stated by the Carrier in the box marked "Declared Value" on the front of this Bill of Lading and ad valorem charges paid. In that case, the amount of the Declared Value shall be substituted for the limits provided in this Bill of Lading. Any partial loss or damage shall be adjusted pro rata on the basis of such Declared Value.
7.4 Nothing in this Bill of Lading shall operate to limit or deprive the Carrier of any statutory protection, defence, exemption or limitation of liability authorised by any applicable laws, statutes or regulations of any country or which would have been applicable in the absence of any of the terms set out in this Bill of Lading. The Carrier shall have the benefit of the said laws, statutes or regulations as if it were the owner of the Vessel.
7.5 When any claim is paid by the Carrier to the Merchant, the Carrier shall be automatically subrogated to all rights of the Merchant against any third party. The Merchant shall sign a subrogation receipt, release and indemnity immediately when requested by the Carrier.

8 . SCOPE OF VOYAGE, DELAY, CONSEQUENTIAL DAMAGES
The scope of voyage herein contracted for may or may not include usual or customary or advertised ports of call whether named in this Bill of Lading contract or not and may include transport of the Goods to or from any facilities used by the Carrier as part of the carriage, including but not limited to off-dock storage. The Carrier does not promise or undertake to load, carry or discharge the Goods on or by any particular Vessel, date or time. Advertised sailings and arrivals are only estimated times, and such schedules may be advanced, delayed or cancelled without notice. In no event shall the Carrier be liable for consequential damages or for any delay in scheduled departures or arrivals of any Vessel or other conveyances used to transport the Goods by sea or otherwise. If the Carrier should nevertheless be held legally liable for any such direct or indirect or consequential loss or damage caused by such alleged delay, such liability shall in no event exceed the Freight paid for the carriage.

9 . METHODS AND ROUTES OF CARRIAGE
9.1 The Carrier may at any time and without notice to the Merchant:
(a) use any means of transport or storage whatsoever;
(b) transfer the Goods from one conveyance to another including transhipping or carrying the Goods on a Vessel other than the Vessel named on the front hereof or by any other means of transport whatsoever, even though transhipment or forwarding of the Goods by such means may not have been contemplated or provided for herein;
(c) sail without pilots, proceed via any route (whether or not the nearest or most direct or customary or advertised route) at any speed and proceed to, return to and stay at any port or place whatsoever (including the Port of Loading herein provided) once or more often, and in any order in or out of the route or in a contrary direction to or beyond the Port of Discharge once or more often;
(d) load and unload the Goods at any place or port (whether or not any such port is named on the front hereof as the Port of Loading or Port of Discharge) and store the Goods at any such port or place, including but not limited to the use of off-dock storage at any port;
(e) comply with any orders or recommendations given by any government or authority or any Person or body purporting to act as or on behalf of such government or authority or having under the terms of the insurance on any conveyance employed by the Carrier the right to give orders or directions.
9.2 The liberties set out in clause 9.1 may be invoked by the Carrier for any purpose whatsoever whether or not connected with the carriage of the Goods, including but not limited to loading or unloading other goods, bunkering or embarking or disembarking any Person(s), undergoing repairs and/or drydocking, towing or being towed, assisting other vessels, making trial trips and adjusting instruments. Anything done or not done in accordance with clause 9.1 or any delay arising therefrom shall be deemed to be within the contractual carriage and shall not be a deviation.

10 . NOTICE OF CLAIMS, TIME BAR AND JURISDICTION
10.1 Notice - of loss or damage to Goods shall be given in writing to the Carrier or its agent at the Port of Discharge before or at the time of delivery. If the loss or damage is not apparent before or at the time of delivery, notice must be given within three (3) days of delivery to the Merchant or its agent. Claims shall be submitted in writing addressed by the Merchant to the Carrier's agent at the Port of Discharge.
10.2 Time bar - In any event, the Carrier shall be discharged from all liability if suit is not commenced within one (1) year after delivery of the Goods or the date that the Goods should have been delivered for claims related to loss or damage during the Port-to-Port carriage, and for claims related to loss or damage during Inland Transport the shorter of nine (9) months or any time limit provided for by any applicable international convention, national law, regulation or contract by virtue of clauses 5.2.2 (a) or (b).
10.3 Jurisdiction - It is hereby specifically agreed that any suit by the Merchant, and save as additionally provided below any suit by the Carrier, shall be filed exclusively in the High Court of London and English Law shall exclusively apply, unless the carriage contracted for hereunder was to or from the United States of America, in which case suit shall be filed exclusively in the United States District Court for the Southern District of New York and U.S. law shall exclusively apply. The Merchant agrees that it shall not institute suit in any other court and agrees to be responsible for the reasonable legal expenses and costs of the Carrier in removing a suit filed in another forum. The Merchant waives any objection to the personal jurisdiction over the Merchant of the above agreed fora.
In the case of any dispute relating to Freight or other sums due from the Merchant to the Carrier, the Carrier may, at its sole option, bring suit against the Merchant in the fora agreed above, or in the countries of the Port of Loading, Port of Discharge, Place of Delivery or in any jurisdiction where the Merchant has a place of business.

11 . MERCHANT-PACKED CONTAINERS
If a Container has not been packed by or on behalf of the Carrier:
11.1 The Merchant shall inspect the Container for suitability for carriage of the Goods before packing it. The Merchant's use of the Container shall be prima facie evidence of its being sound and suitable for use.
11.2 The Carrier shall not be liable for loss of or damage to the Goods caused by:
(a) the manner in which the Goods have been packed, stowed, stuffed or secured in the Container, or
(b) the unsuitability of the Goods for carriage in the Container supplied or for carriage by Container between the Ports or Places specified herein, or
(c) the unsuitability or defective condition of the Container or the incorrect setting of any refrigeration controls thereof, provided that, if the Container has been supplied by or on behalf of the Carrier, this unsuitability or defective condition would have been apparent upon inspection by the Merchant at or prior to the time when the Container was packed, or
(d) packing refrigerated Goods that are not properly pre-cooled to the correct temperature for carriage or before the refrigerated Container has been properly pre-cooled to the correct carrying temperature.
11.3 The Merchant is responsible for the packing and sealing of all Merchant-packed Containers and, if a Merchant-packed Container is delivered by the Carrier with an original seal as affixed by the Merchant or customs or security control intact, or the Carrier can establish bona fide circumstances in which the original seal was replaced, the Carrier shall not be liable for any shortage of Goods ascertained upon delivery.
11.4 The Merchant shall indemnify the Carrier against any loss, damage, liability or expense whatsoever and howsoever arising caused by one or more of the matters referred to in clause 11.2, including but not limited to damage to Container, other cargo and the Vessel.

12 . REFRIGERATION, HEATING, INSULATION
12.1 Special Containers with refrigeration, heating or insulation shall not be furnished unless contracted for on the front of this Bill of Lading and extra Freight paid. If a carrying temperature is noted on the front of this Bill of Lading, the Merchant shall deliver the Goods to the Carrier at plus or minus 2 degrees Celsius from the noted temperature, and the Carrier shall exercise due diligence to maintain such supply air temperature, plus or minus 2 degrees Celsius while the Goods are in its possession. IT IS THE MERCHANT'S OBLIGATION TO SET AND/OR CHECK THAT THE TEMPERATURE CONTROLS ON THE CONTAINER ARE AT THE REQUIRED CARRYING TEMPERATURE AND TO PROPERLY SET THE VENTS. The Carrier does not undertake to deliver empty refrigerated Containers to the Merchant at any specific temperature. The Carrier has the right but not the obligation to refuse to accept any Container loaded by the Merchant for shipment where the Goods are not or were not loaded into the Container within plus or minus 2 degrees Celsius of the contracted carrying temperature.
12.2 The Merchant must take note that refrigerated Containers are not designed:
(a) to [illegible] Goods which have not been presented for stuffing into a Container at a temperature other than their designated carrying temperature. The Carrier shall not be responsible for the consequences of the Goods being loaded at a higher temperature than that required for the carriage, nor
(b) to monitor and control humidity levels, even if a setting facility exists, and because humidity is influenced by many external factors the Carrier does not guarantee and is not responsible for the maintenance of any particular humidity levels inside any Container.
12.3 The Carrier shall not be liable for any loss of or damage to the Goods arising from latent defects, breakdown, deficiency, stoppage of the refrigeration plant, or other special machinery, plant, insulation and/or apparatus of the Container, Vessel, conveyance, provided that the Carrier exercised due diligence before releasing the Container to the Shipper.
12.4 The Carrier does not warrant refrigerating or heating machinery but shall exercise care in its operation and maintenance while in the actual custody of the Carrier. The Carrier will not accept responsibility for the recording of [illegible] other than any reefer log book maintained on board the Vessel. The Carrier does not accept or comply with any given reefer program or protocol unless noted on the front hereof and additional Freight is paid.

TALDO SARL
01 BP 1556 Ouaga 01 - Burkina Faso
Tel: 50 47 62 52
Le Gerant

13 . INSPECTION OF GOODS AND SPECIAL CIRCUMSTANCES
Inspection - The Carrier shall be entitled, but shall be under no obligation, to open and/or scan any package or Container at any time and to inspect, verify and weigh the contents without notice to the Merchant.
Special circumstances - If it appears at any time that the Goods cannot safely or properly be carried or carried further, either at all or without incurring any additional expense or taking any measures in relation to the Container or the Goods, the Carrier may without notice to the Merchant (but as his agent only) take any measures and/or incur any reasonable additional expense to carry or to continue the carriage of the Goods, and/or to sell or dispose of them and/or to abandon the carriage and/or to store them ashore or afloat, under cover or in the open, at any place, whichever the Carrier in its absolute discretion considers most appropriate, and any sale, disposal, abandonment or storage shall be deemed to constitute due delivery under this Bill of Lading. The Merchant shall indemnify the Carrier against any additional expense so incurred. The Carrier in exercising the liberties contained in this clause shall not be under any obligation to take any particular measures and shall not be liable for any loss, delay or damage howsoever arising from any action or lack of action under this clause.

14 . DESCRIPTION OF GOODS AND MERCHANT'S RESPONSIBILITY
14.1 This Bill of Lading shall be prima facie evidence of the receipt by the Carrier in apparent good order and condition, except as otherwise noted, of the total number of Containers or other packages or units indicated in the box entitled "Carriers Receipt" on the front hereof.
14.2 No representation is made by the Carrier as to the weight, contents, measure, quantity, quality, description, condition, temperature, marks, numbers or value of the Goods and the Carrier shall be under no responsibility whatsoever in respect of such description or particulars.
14.3 The Merchant warrants to the Carrier that the particulars relating to the Goods as set out on the front hereof have been checked by or on behalf of the Merchant on receipt of this Bill of Lading and that such particulars, and any other particulars furnished by or on behalf of the Merchant, are adequate and correct. The Merchant warrants that the Goods are safely and securely packed in the Container.
14.4 The Merchant also warrants that the Goods and/or Merchant-packed Containers are lawful Goods, contain no contraband, drugs, other illegal substances or stowaways, and that any hazardous or potentially dangerous characteristics of the Goods have been fully disclosed by or on behalf of the Merchant and that they will not cause loss, damage or expense to the Carrier, or to any other cargo, Containers, Vessel or Person during the carriage.
14.5 If any particulars of any letter of credit and/or import license and/or sales contract and/or invoice or order number and/or details of any contract to which the Carrier is not a party are shown on the front hereof, such particulars are shown at the sole risk of the Merchant and for his convenience. The Merchant agrees that such particulars shall not be regarded as a declaration of value and shall in no circumstances whatsoever increase the Carrier's liability under this Bill of Lading, and the Merchant agrees to indemnify the Carrier for any increased liability so caused, including reasonable legal expenses and costs.
14.6 The Merchant shall comply with all regulations or requirements of customs, port and other authorities, and shall bear and pay all duties, taxes, fines, imposts, expenses or losses (including without prejudice to the generality of the foregoing Freight for any additional carriage undertaken) incurred or suffered by reason thereof, or by reason of any illegal, incorrect or insufficient declaration, marking, numbering or addressing of the Goods, and shall indemnify the Carrier in respect thereof.
14.7 If by order of the authorities at any place, Goods are detained and/or seized and/or a Container has to be opened for the Goods to be inspected for any reason whatsoever including but not limited to for a breach or infringement of a trademark, patent or other intellectual property right, the Carrier will not be liable for any loss or damage whatsoever incurred as a result of any opening, unpacking, inspection, re-packing, detention, destruction or delay. The Carrier shall be entitled to recover from the Merchant all charges, fines, costs, losses and expenses, including reasonable legal expenses and costs resulting from such action, including but not limited to any detention, demurrage and storage charges for the Goods and/or the Container.
14.8 The Carrier allows a period of free time for the use of the Containers and other equipment in accordance with the Tariff and as advised by the local MSC agent at the Ports of Loading and Discharge. Free time commences from the day the Container and other equipment is collected by the Merchant or is discharged from the Vessel or is delivered to the Place of Delivery as the case may be. The Merchant is required and has the responsibility to return to a place nominated by the Carrier the Container and other equipment before or at the end of the free time allowed at the Port of Discharge or the Place of Delivery. Demurrage, per diem and detention charges will be levied and payable by the Merchant thereafter in accordance with the Tariff.
14.9 The Merchant shall redeliver to a place nominated by the Carrier, the Containers and other equipment in like good order and condition, undamaged, empty, odour free, cleaned and with all fittings installed by the Merchant removed and without any rubbish, dunnage or other debris inside. The Merchant shall be liable to indemnify the Carrier for any and all costs incurred reinstating or replacing Containers and other equipment not returned in the condition as specified above, including the reasonable legal expenses and costs of recovering the costs incurred and interest thereon.

15 . DANGEROUS OR HAZARDOUS GOODS
15.1 The Carrier will not accept any Goods of a dangerous or hazardous nature without prior written notice of their full and true particulars and the Carrier's written approval to carry them.
When the Merchant delivers Goods of a dangerous or hazardous nature to the Carrier, the Merchant shall fully inform the Carrier in writing of the precise and accurate details of the Goods, and special precautions or handling required for the Goods. Such Goods shall be distinctly marked on the outside of the Container as well as on the outside of the packaging inside the Container so as to indicate the nature thereof and the marking must comply with the requirements of any applicable regulations, including regulations contained in any relevant international treaty or convention.
15.2 The Merchant shall be fully liable for and shall indemnify, hold harmless and defend the Carrier, its servants, agents and subcontractors and any third party for all loss, damage, delay, personal injury, death or expenses including fines and penalties, and all reasonable legal expenses and costs caused to the Carrier, the Vessel, any cargo, and other property, whether on board or ashore, arising from such Goods and/or from the breach of clause 15.1, whether or not the Merchant was aware of the nature of such Goods.
15.3 Nothing contained in this clause shall deprive the Carrier of any of its rights provided for elsewhere.

16 . FREIGHT AND CHARGES
16.1 Freight has been calculated on the basis of the Shipper's particulars and if such particulars are found to be erroneous and additional Freight is payable, the Merchant shall be liable therefor and also for any expense thereby incurred.
16.2 All Freight is earned and due upon receipt of the Goods by the Carrier, whether the Freight is prepaid or collect and the Carrier shall be entitled to all Freight due under all circumstances, ship and/or cargo lost or not lost or the voyage abandoned. All Freight shall be paid when due without any set-off, counter claim, or deduction.
16.3 Every Person defined as "Merchant" in clause 1 shall be jointly and severally liable to the Carrier for the payment of all Freight and charges and for the performance of the obligations of each of them hereunder. Any Person engaged by the Merchant to perform forwarding services with respect to the Goods shall be considered to be exclusively the Merchant's agent for all purposes, and any payment of Freight to such Person shall not be considered payment to the Carrier in any event whatsoever. Failure of such third parties to pay any part of the Freight to the Carrier shall be considered a default by the Merchant in the payment of Freight.

17 . CARRIER'S LIEN
THE CARRIER, ITS SERVANTS OR AGENTS SHALL HAVE A LIEN ON THE GOODS AND ANY DOCUMENT RELATING THERETO FOR FREIGHT AND FOR GENERAL AVERAGE CONTRIBUTIONS TO WHOMSOEVER DUE. THE CARRIER, ITS SERVANTS OR AGENTS SHALL ALSO HAVE A LIEN AGAINST THE MERCHANT ON THE GOODS AND ANY DOCUMENT RELATING THERETO FOR ALL SUMS DUE FROM THE MERCHANT TO THE CARRIER UNDER ANY OTHER CONTRACT. The Carrier may exercise its lien at any time and any place in its sole discretion, through the action of any servant, agent or Subcontractor, whether the contractual carriage is completed or not. The Carrier's lien shall also extend to cover the cost and legal expense of recovering any sums due. The Carrier shall have the right to sell any Goods liened by public auction or private treaty, without notice to the Merchant. Nothing herein shall prevent the Carrier from recovering from the Merchant the difference between the amount due to the Carrier and the net amount realised by such sale.

18 . OPTIONAL STOWAGE, DECK CARGO AND LIVESTOCK
18.1 Goods, whether packed in Containers or not, may be carried on deck or under deck without notice to the Merchant unless it is specifically stipulated on the front hereof that the Containers or Goods will be carried under deck. If carried on deck, the Carrier shall not be required to note, mark or stamp on the Bill of Lading any statement of such on-deck carriage. Save as provided in clause 18.2 such Goods (except livestock) carried on or under deck and whether or not stated to be carried on deck shall participate in general average and shall be deemed to be within the definition of Goods for the purpose of the Hague Rules or the COGSA or any compulsorily applicable legislation and shall be carried subject to such Rules or Act, whichever is applicable.
18.2 Goods which are out of gauge and/or are stowed on or in open top containers, flatracks or platforms, and which are stated on the front hereof to be carried on deck, and all livestock whether carried on deck or under deck, are carried without any responsibility whatsoever on the part of the Carrier for loss or damage of whatsoever nature or delay arising during the carriage whether caused by unseaworthiness or negligence or any other cause whatsoever and the Hague Rules or the COGSA shall not apply.

19 . MATTERS ADVERSELY AFFECTING CARRIER'S PERFORMANCE
19.1 If at any time the carriage is or is likely to be affected by any hindrance, risk, danger, delay, difficulty or disadvantage of whatsoever kind and howsoever arising which cannot be avoided by the Carrier by the exercise of reasonable endeavours, (even though the circumstances giving rise to such hindrance, risk, danger, delay, difficulty or disadvantage existed at the time this contract was entered into or the Goods were received for the carriage) the Carrier may at its sole discretion and without notice to the Merchant and whether or not the carriage is commenced either:
(a) carry the Goods to the contracted Port of Discharge or Place of Delivery, whichever is applicable, by an alternative route to that indicated in this Bill of Lading or that which is usual for Goods consigned to that Port of Discharge or Place of Delivery; or
(b) suspend the carriage of the Goods and store them ashore or afloat upon the terms and conditions of this Bill of Lading and endeavour to forward them as soon as possible, but the Carrier makes no representations as to the maximum period of suspension; or
(c) abandon the carriage of the Goods and place them at the Merchant's disposal at any place or port which the Carrier may deem safe and convenient, or from which the Carrier is unable by the exercise of reasonable endeavours to continue the carriage, whereupon the responsibility of the Carrier in respect of such Goods shall cease. The Carrier shall nevertheless be entitled to full Freight on the Goods received for the carriage, and the Merchant shall pay any additional costs incurred by reason of the abandonment of the Goods. If the Carrier elects to use an alternative route under clause 19.1 (a) or to suspend the carriage under clause 19.1 (b) this shall not prejudice its right subsequently to abandon the carriage.
19.2 If the Carrier elects to invoke the terms of this clause 19, then notwithstanding the provisions of clause 8, the Carrier shall be entitled to such additional Freight and costs as the Carrier may determine.

20 . NOTIFICATION AND DELIVERY
20.1 Any mention in this Bill of Lading of parties to be notified of the arrival of the Goods is solely for information of the Carrier. Failure to give such notification shall not subject the Carrier to any liability nor relieve the Merchant of any obligation hereunder.
20.2 The Merchant shall take delivery of the Goods within the time provided for in the Carrier's applicable Tariff or as otherwise agreed. If the Merchant fails to do so, the Carrier may without notice unpack the Goods if packed in Containers and/or store the Goods ashore, afloat, in the open or under cover at the sole risk of the Merchant. Such storage shall constitute due delivery hereunder, and thereupon all liability whatsoever of the Carrier in respect of the Goods, including for misdelivery or non-delivery, shall cease and the costs of such storage shall forthwith upon demand be paid by the Merchant to the Carrier.
20.3 If the Goods are unclaimed within a reasonable time or whenever in the Carrier's opinion the Goods are likely to deteriorate, decay or become worthless, or incur charges whether for storage or otherwise in excess of their value, the Carrier may at its discretion and without prejudice to any other rights which it may have against the Merchant, without notice and without any responsibility attaching to it, sell, abandon or otherwise dispose of the Goods at the sole risk and expense of the Merchant and apply any proceeds of sale in reduction of the sums due to the Carrier from the Merchant under or in connection with this Bill of Lading.
20.4 Refusal by the Merchant to take delivery of the Goods in accordance with the terms of this clause and/or to mitigate any loss or damage thereto shall constitute an absolute waiver and abandonment by the Merchant to the Carrier of any claim whatsoever relating to the Goods or the carriage thereof. The Carrier shall be entitled to an indemnity from the Merchant for all costs whatsoever incurred, including legal costs, for the cleaning and disposal of Goods refused and/or abandoned by the Merchant.

21 . BOTH TO BLAME COLLISION CLAUSE
If the Vessel comes into collision with another ship as a result of the negligence of the other ship and any act, neglect or default of the master, mariner, pilot or the servants of the Carrier in the navigation or in the management of the Vessel, the owners of the Goods carried hereunder will indemnify the Carrier against all loss or liability to the other or non-carrying ship or her owners in so far as such loss or liability represents loss of, or damage to, or any claim whatsoever of the owners of said Goods, paid or payable by the other or non-carrying ship or her owners to the owners of said Goods and set-off, recouped or recovered by the other or non-carrying ship or her owners as part of their claim against the Vessel or Carrier. The foregoing provisions shall also apply where the owners, operators or those in charge of any ship or ships or objects other than, or in addition to, the colliding ships or objects are at fault in respect of a collision or contact.

22 . GENERAL AVERAGE AND SALVAGE
General Average shall be adjusted, stated and settled at any port or place at the Carrier's option according to York - Antwerp Rules 1994 except Rule XXII and, as to matters not therein provided for, according to the laws and usages at any port or place at the Carrier's option, save that General Average on a Vessel not bareboat chartered by the Carrier shall be adjusted according to the requirements of the owner or operator of that Vessel. Average agreement or bond and such cash deposit (payable at Carrier's option in United States currency) as the Carrier may require as additional security for the contribution of the Goods and salvage and special charges thereon, shall be furnished before delivery or forwarding.
In the event of accident, danger, damage or disaster, before or after commencement of the voyage resulting from any cause whatsoever, whether due to negligence or not, for which, or for the consequence of which, the Carrier is not responsible by statute, contract, or otherwise, the Goods and the Merchant shall, jointly and severally, contribute with the Carrier in General Average to the payment of any sacrifices, losses, or expenses of a General Average nature that may be made or incurred, and shall pay salvage and special charges incurred in respect of the Goods, as determined by an independent General Average adjuster duly appointed by the Carrier, and his determination as to liability for General Average contribution and his computation for the same shall be final and binding on all parties to the venture. If a salving ship is owned or operated by the Carrier, salvage shall be paid for as fully and in the same manner as if such salving ship or ships belonged to strangers. Such deposit as the Carrier or its agents may deem sufficient to cover the estimated contribution of the goods and any salvage and special charges thereon shall, if required, be made by the Goods, Shippers, Consignees or owners of the Goods to the Carrier before delivery.

23 . SEPARABILITY AND VARIATION OF TERMS, FINAL CONTRACT
The terms of this Bill of Lading shall be separable and, if any term or provision hereof or any part of any term or provision shall be invalid to any extent, it shall be invalid to that extent, but no further and such circumstance shall not affect the validity or enforceability of any other term or provision hereof. This Bill of Lading is the final contract between the parties which supersedes any prior agreement or understanding, whether in writing or verbal, save where this Bill of Lading has been issued pursuant to another contract between the Merchant and the Carrier, when such other contract and this Bill of Lading shall be construed together. The Bill of Lading and its terms and conditions may not be changed orally.

Standard Edition - 01/2017

P5

From: mangalath cashews <mcknlr@gmail.com>
Sent: 09 June 2025 16:30
To: joy@calliduscmc.com
Subject: Fwd: MEDUTM377858 , MEDUTM377155 , MEDUTM376603 , MEDUTM377163 , MEDUTM376199 - CONSIGNMENT STATUS REQUEST

---------- Forwarded message ---------
From: <vasantharaja.n@msc.com>
Date: Wed, May 28, 2025 at 12:09 PM
Subject: RE: MEDUTM377858 , MEDUTM377155 , MEDUTM376603 , MEDUTM377163 , MEDUTM376199 - CONSIGNMENT STATUS REQUEST
To: <dhanabalan@divyaimpexindia.com>, <anand@divyaimpexindia.com>, <divyaaimpex@gmail.com>, <ramkii@pratipacashews.com>, <mcknlr@gmail.com>, <baburajvijayan493@gmail.com>, <santhacashewfactory@gmail.com>, <sunfoodcorporations@gmail.com>, <swamy.veera68@gmail.com>, <kkparesh@gmail.com>
Cc: <IN363-impdoctut@msc.com>, <IN363-impsalestut@msc.com>

Dear Sir,
Good day,

MSC regrets to advise Customers of the capsize and sinking of MSC Elsa 3 off the Indian Coast whilst en route from Vizhinjam port to Cochin.

At about 0100 on the morning of 24th May the vessel started to develop a list to starboard. Despite all efforts of the vessel's crew with support from the Indian Coastguard and authorities ashore and from attending vessels, the list gradually increased leading to the vessel capsizing at about 07.00 on the morning of 25th May 2025.

All of her crew were safely rescued with the assistance of the Indian authorities and other vessels, but regrettably the vessel and her cargo are lost.

Best Regards
VASANTHARAJA. N
Manager – Import Sales & Marketing

MSC AGENCY (INDIA) PRIVATE LIMITED
1st Floor, Manickam Towers, 146 Palayamkottai Road, Tuticorin-628 003, India
T: +91 461 4066 614 M: +91 90038 22002 F: +91 461 4066 677
W:www.msc.com
As agent for MSC Mediterranean Shipping Company S.A., Geneva

THE HIGH COURT OF KERALA
सत्यमेव जयते

2025/417151

Certificate of Entry

NorthStandard

The undermentioned ship is entered in NorthStandard Limited on the terms and conditions set out below, and in accordance with the articles and the rules from time to time in force, and the terms of any circulars which have been or may be issued pursuant to the rules, for the period of insurance stated below unless lost, sold or withdrawn in accordance with the rules. Attention is drawn to Rule 1.5.2 concerning excluded provisions of the Insurance Act 2015.

Ship	IMO Number	GT	Flag
MSC ELSA 3	9123221	16,799	Liberia

MEMBER:	**MULTI CONTAINER MANAGEMENT S.A.** **as Bareboat Charterer**
INTEREST:	**P&I**
POLICY YEAR:	**2025**
PERIOD OF INSURANCE:	**noon GMT 20 February 2025 to noon GMT 20 February 2026**
PORT OF REGISTRY:	**MONROVIA**
NAME AND FULL ADDRESS OF THE PRINCIPAL PLACE OF BUSINESS OF THE REGISTERED OWNER:	**Elsa 3 Maritime Inc.** **80 Broad Street** **Monrovia** **Liberia**

THE HIGH COURT OF KERALA सत्यमेव जयते

EVIDENCE OF INSURANCE This certificate of entry is evidence only of the contract of indemnity insurance between the above-named member and
the club and shall not be construed as evidence of any undertaking on the part of the club to any other party.

In the event that the member tenders this certificate as evidence of insurance under any applicable law relating to financial responsibility, or otherwise shows or offers it to any other party as evidence of insurance, this is not to be taken as any indication that the club thereby consents to act as guarantor or to be sued directly in any jurisdiction whatsoever. The club does not so consent.

NorthStandard Limited | 100 The Quayside | Newcastle upon Tyne | NE1 3DU | UK
Telephone: +44 (0) 191 232 5221 | Fax: +44 (0) 191 261 0540 | Email: enquiries@north-standard.com
Registered in England No. 505456. Registered office above. VAT No. GB 828 5711 10.
Authorised by the Prudential Regulation Authority and regulated by the Financial Conduct Authority and the Prudential Regulation Authority.
For office locations and contact details, please visit:**www.north-standard.com**

2025/417151

NorthStandard

CLASS	PROTECTION & INDEMNITY
INSURED PARTIES	**JOINT ENTRANTS** In accordance with rule 13 the following are registered as joint entrants: Elsa 3 Maritime Inc. (Registered Owner) MSC Shipmanagement Limited (Technical and Crew managers) MSC Crewing Services LLC (Crew Managers) MSC Crewing Services Pvt. Limited (Crew Managers) MSC Mediterranean Shipping Company S.A. (Time Charterers / Commercial Managers) **GROUP PRINCIPAL** This ship is entered under a group agreement and, for the purposes of rules 13.14 to 13.16, MSC Mediterranean Shipping Company S.A. is designated as group principal.
STANDARD RISKS COVERED	P&I risks in accordance with the rules. Wreck liabilities in accordance with rule 3.11. Through transport liabilities to cargo in accordance with rule 3.13.3.
SPECIAL RISKS & ADDITIONAL TERMS	In accordance with rule 1.3, cover includes: **MARITIME LABOUR CONVENTION** Liabilities in accordance with the terms of the club's **Maritime Labour Convention extension clause 2025.** **CONSORTIA** Including liabilities, costs and expenses in accordance with "MSC Consortium/Slot & Space" liabilities cover. **P&I WAR RISKS** P&I war risks in accordance with the terms of the club's **P&I war risks clause 2025,** subject to the limits set out therein. Notwithstanding clause 6, but subject always to clause 1.2, of the club's **P&I war risks clause 2025**, cover also includes liability for bio-chemical risks in accordance with the terms, and subject to the limit, of the club's **bio-chemical risks inclusion clause 2025**. **WAR RISKS FOR ADDITIONAL COVERS** War risks in accordance with the terms of the club's **war risks clause for additional covers 2025**.

THE HIGH COURT OF KERALA

2025/417151

NorthStandard

DEDUCTIBLES

The member is to bear the following deductibles:

US$ 500,000 each single voyage, in respect of cargo claims arising under rules 3.13 and 3.14.

Where cargo, which has been or is to be carried on an ocean ship owned or time chartered by the member is carried on a feeder ship or other means of transportation under MSC through transport bill(s) of lading which suffers one casualty giving rise to a number of cargo claims, one deductible only of US$ 500,000 each single voyage, for cargo claims arising under rules 3.13 and 3.14 shall be borne by the member in respect of all cargo claims on all ocean ships which were to receive cargo from, or had delivered cargo to, the feeder ship or other means of transport even if one or more of the ocean ships is entered in another club. If there is more than one club involved, NorthStandard Limited shall apply a proportion of the deductible, pro rata to the number of loaded containers going to or from MSC ocean ships entered in NorthStandard Limited compared to those in other clubs or, if the loaded containers had not been allocated to specific vessels, pro rata to the owned and time chartered MSC tonnage entered in NorthStandard Limited compared to that in other clubs at the time of the incident.

US$ 500,000, any one event, in respect of claims recoverable under the consortia clause.

US$ 100,000, any one event, in respect of crew claims arising under rule 3.1;

US$ 100,000, each and every claim, in respect of fines for oil pollution arising under rule 3.16.3;

US$ 100,000, any one event, in respect of all other claims.

Claims in respect of saving life at sea arising under rule 3.4 are payable without deductible.

If an event gives rise to claims under more than one rule, only the higher deductible will apply.

The member is to bear an annual aggregate deductible (AAD) of US$ 500,000, from the inception of the 2025/26 policy year, applicable after the deduction of the relevant fleet deductibles. After exhaustion of the AAD the relevant fleet deductibles shall apply.

These deductibles shall also apply to legal, survey and correspondents' fees.

THE HIGH COURT OF KERALA

2025/417151

NorthStandard

LIMITS OF COVER

The club's liability is limited in accordance with the rules unless limited to a lesser amount in this certificate of entry. Such limit(s) shall apply in the aggregate in respect of the member and any other person entitled to claim under the rules, any one event, including legal and survey fees and expenses. In relation to recovery by a charterer, whether under a charterer's entry or where a charterer is an insured party, where any limit stated in this certificate exceeds the charterers' limit set out in rule 6.9, the latter limit shall always apply.

Consortia liabilities and **Charterers' liability for damage to hull clause 2025:** US$ 750m combined single limit, subject to the following:

In no case shall any **consortia liabilities** be recoverable from the club in excess of the sum of US$ 500m to the extent that:

(1) they are directly or indirectly caused by or contributed to by or arise from the use or operation, as a means for inflicting harm, of any computer, computer system, computer software programme, malicious code, computer virus, computer process or any other electronic system; and/or

(2) they would be excluded under the JL2021-014 clause dated 8 March 2021 (endorsement Excluding a Communicable Disease Following a Public Health Emergency of International Concern) published by the Joint Liability Committee of the Lloyd's Market Association.

Oil pollution claims arising under rule 3.8: US$ 1bn

War risks clause for additional covers 2025: the limit of the relevant special risks set out in this certificate of entry or US$ 100m, whichever is the lesser.
Notwithstanding the incorporation of the JL2021-014 clause into any special risks, such liabilities as would be covered under such special risks but for the JL2021-014 clause shall be recoverable from the club to the limit of the relevant special risk or US$ 5m, whichever is the lesser.

Such limit shall always be part of the limit of the relevant special risk set out in this certificate of entry and not additional to it.

2025/417151

NorthStandard

INFORMATION

This entry is for 32% of any liabilities, costs and expenses covered by the club in accordance with the rules and this Certificate of Entry.

This member is also insured for the following Quota Share percentages:- The Britannia Steam Ship Insurance Association Europe for 18%, The United Kingdom Mutual Steam Ship Assurance Association Limited for 25%, The Steamship Mutual Underwriting Association (Europe) Limited for 25% of the risk in respect of the P&I liabilities relating to the entered ship.

The limits shown in this certificate are for a 100% entry. This entry is on the basis of a 32% quota share: save for the **contractual extension clause 2025** limit and the **cargo deviation clause 2025** limit, any limit applicable at law and the limits shown in this certificate shall be scaled down by the same proportion.

The deductibles shown in this certificate are for 100% entry.

In respect of claims relating to this ship, NorthStandard Limited will take the lead in accordance with the Quota Share Agreement.

The quota shares of other insurers referenced above shall not apply in respect of the club's **contractual extension clause 2025** or the **cargo deviation clause 2025.**

NorthStandard Limited

Jeremy Grose

Paul Jennings

THE HIGH COURT OF KERALA
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2025/417151

S2U02M5M/41A7R1Y5 1OF COVER

NorthStandard

CERTIFICATE OF ENTRY - OWNER'S ENTRY

Ship:	**MSC ELSA 3**
Club:	NorthStandard Limited
Member:	**MULTI CONTAINER MANAGEMENT S.A.** **as Bareboat Charterer**

This document confirms that the following risks are included in the cover provided by the contract of insurance evidenced by the Certificate of Entry numbered above and that they are covered in accordance with the terms set out in that contract.

Risks covered:

Oil Pollution
Wreck Removal

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This document is intended purely as a summary of some of the principal risks covered and does not constitute a contract of insurance and shall not be construed as evidence of any undertaking, financial or otherwise, on the part of the club to any other party.

In the event that a member tenders this summary as evidence of insurance under any applicable law relating to financial responsibility, or otherwise shows or offers it to any other party as evidence of insurance, such use of this summary by the member is not to be taken as any indication that the club thereby consents to act as guarantor or to be sued directly in any jurisdiction whatsoever. The club does not so consent.

07/02/2025

GOVERNMENT OF KERALA

DFTVM/1759/2025-G2

Office of the Director of Fisheries,
Thiruvananthapuram.
Dated:**04-07-2025**
Phone: 0471-2305042
e-mail: fisheriesdirector@gmail.com

From
Director of Fisheries

To
The Special Secretary to Government,
Fisheries & Ports Department
Government Secretariat
Thiruvananthapuram.

Sir,

Sub:- Fisheries - Discussion on MSC Elsa-3 ship wreck incident releasing dangerous cargo containers in the sea offshore of Kerala- loss of mandays-reg

Ref:- Lr. No.B3/181/2025-FandP dated 30-06-2025 and meeting held o n 02/07/2025 under the Chairpersonship of Hon'ble Chief Secretary, Kerala

Kind attention of the Government is invited to the subject and reference.The details on revised loss related to livelihood of fishermen is submitted as follows:

Livelihood Loss for fisher community: The oil spill and associated ban on fishing will severely affect the livelihood of fishermen and allied workers in the sector. As per the database of FIMS (Fisheries Information and Management System data as on 29/06/2025) following is the estimated number of people affected - no. of active marine fishermen in Thiruvananthapuram district 48437 nos., & no. of allied fish workers are 7123 nos., Kollam district- 18191 active marine fishermen & 17295 allied fish workers, Alappuzha district- 24287 active marine fishermen & 22879 allied fish workers and in Ernakulam district 11028 active marine fishermen & 11180 allied fish workers.

FSO VERIFIED -18

There are a total 1,05,518 families which include 78498 marine fisherfolk families in the above 4 districts (33980 nos in Thiruvananthapuram district, 15235 families in Kollam, 19957 families in Alappuzha and 9326 families in Ernakulam) and also 27,020 registered Allied fishermen families (2525 nos in Thiruvananthapuram, 6923 nos. in Kollam, 11375 in Alappuzha, 6197 in Ernakulam).

The Per Capita income of fishermen during 2023-24 was Rs.1,56,397/-.**On projecting the GSDP of Fisheries sector for the year 2024-25 using the previous four years GSDP data, the Per Capita income for 2024-25 comes to Rs.207830/-. The marine fishermen population as on 03/07/2025 comes to 850873 nos.**

Year	2020-21	2021-22	2022-23(P)	2023-24(Q)	2024-25 (Projected)
Rs. in lakh					
GSDP	1067233	1423932	1611264	1548199	1768377
Hence projected income = 176837700000/850873 = 207830					

Assuming that the mandays available per year is 250 days (after deducting 52 days trawl ban period + 52 sundays and remaining 11 days for weather warnings/festivals) the average income per day calculated for 250 mandays Rs.207830/250 is Rs.830/-.

Accordingly, ***the income loss from livelihood to the fishermen of the said four districts for the period 25th May to 1st June 2025, calculated based on the per capita income comes to Rs. 106.51 crore. The details are as follows:***

Loss of Livelihood to Fishermen from 25th may 2025 to 1st June 2025 based on per capita income Rs 207830/-				
District	**Marine Fisher folk (No.)**	**Allied Fisher folk (No.)**	**Total Fisher folk (No.)**	**Income loss (in crore) of fishermen for 8 days @ Rs.830/-day**

Thiruvananthapuram	48437	7123	55560	**36.89**
Kollam	18191	17295	35486	**23.56**
Alappuzha	24286	22879	47165	**31.32**
Ernakulam	11027	11179	22206	**14.74**
Total	**101941**	**58476**	**160417**	**106.51**

The above details are submitted for perusal and further necessary action.

Yours faithfully,

SMITHA R NAIR
ADDITIONAL DIRECTOR OF FISHERIES
For Director of Fisheries.

Signed by
Smitha. R. Nair
Date: 04-07-2025 17:44:45

BEFORE THE HON'BLE HIGH COURT OF KERALA AT ERNAKULAM
(Admiralty Jurisdiction)

I.A No. of 2025
In
Adml.S. No..... of Year 2025

State of Kerala
Represented by its Special Secretary : Applicant/Plaintiff

Vs

Owners and parties interested in : Respondents/Defendants
M V MSC AKITETA II(IMO No. 9220847)
& Ors

THE HIGH COURT OF KERALA सत्यमेव जयते

AFFIDAVIT

I, Seeram Sambasiva Rao, aged 39 years, S/o Venkata Raman residing at 2C Season, Summer Breeze, Kuravankonam, Thiruvanthapuram - 695003 do hereby solemnly affirm and state as follows:-

1. I am the Special Secretary, Environment Department, who has been authorized by the State of Kerala, vide order dated 30.06.2025, to verify and sign the present admiralty Plaint. I know the facts of the case and am competent and duly authorized to swear this affidavit.

2. It is submitted that the above admiralty Plaint is filed for Maritime Claims under Section 4 of the Admiralty (Jurisdiction and Settlement of Maritime Claims) Act, 2017 (22 of 2017), towards the loss/damages incurred by State of Kerala, pursuant to sinking of the vessel, MSC Elsa 3 ("Subject

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Vessel") and resultant pollution thereof. In the said Plaint, the plaintiff seeks for a decree or judgment directing the 1st, 2nd and 3rd Defendants to pay to the plaintiff a sum of Rs.9531 Crores towards its maritime claims @ 6% per annum from the date of the plaint till date of judgment and decree and thereafter at 12% from the date of decree till realization. I crave leave of this Hon'ble Court to treat the plaint averments and documents filed there with as part and parcel of this affidavit. The parties are referred to by their status in the plaint.

3. It is submitted that the above I.A is filed by this Plaintiff, seeking arrest of the 1st Defendant Vessel in lieu of the Vessel, MSC Elsa-3 against which the following maritime claims arises.

a) Maritime claim arising out of damage caused by the Subject vessel to the Environment, Coastline or related interests and compensation for such damage to the State of Kerala (Section 4(u))

b) Maritime claim arising out of measures taken to prevent, minimize or remove the damage caused by Subject Vessel to the Environment, coastline or related interests, in the State of Kerala (Section 4(u))

c) Maritime Claim arising out of the economic loss caused to the fisherman of the State of Kerala, pursuant to the damage caused by the Subject Vessel. (Section 4(u))

4. It is submitted that the present Plaint and the petition is filed in extreme urgency and therefore this plaintiff craves leave to add, amend, and alter the Plaint if need to and to place on record additional facts and /or documents which may be necessary and /or available. The Plaintiff submits that should any other relevant facts or documents remained to be placed on record

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such failure may be pleased to be excused as the Plaintiff is putting its earnest efforts to gather those document.

5. It is submitted that the 1st Defendant Vessel, MSC AKITETA II, bearing IMO No.9220847 is the Liberian Flagged Vessel and is presently lying with its hull, tackle, engines, gears, boilers, machinery and other appurtenant at Port and Harbour of Vizhinjam Seaport International Limited, within the territorial waters of the State and subject to the jurisdiction of this Hon'ble Court.

6. It is submitted that the subject vessel, MSC ELSA 3 (IMO No. 9123221), was a Liberian-flagged container ship built in the year 1997 (28 years) and registered at the Port of Monrovia, Liberia. The vessel was owned and commercially operated by 3rd Defendant. The technical and International Safety Management ('ISM') of the Subject vessel is entrusted to MSC Shipmanagement Ltd., based in Limassol, Cyprus. The Subject Vessel was a container ship with an overall length ('LOA') of 183.91 meters (approximately 600 feet), a beam of 25.3 meters (approximately 82 feet), a reported draught of 9.9 meters, and gross and deadweight tonnes of 16,799 GT and 22,994 DWT, respectively. The vessel had a carrying capacity of 1,730 twenty-foot equivalent units ('TEUs'). The vessel was covered by a Protection and Indemnity Club (hereinafter referred to as 'P&I Club'), being the North Standard P&I Club, which is a member of the International Group of P&I Clubs ("IG P&I").

7. It is submitted that on 23.05.2025, the subject Vessel, departed from Vizhinjam Seaport, India at approximately 2003 Indian Standard Time, bound for Kochi Port. At the time, the vessel was laden with a total of six

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hundred and forty-three (643) containers, with two hundred and ninety-six (296) containers onboard and three hundred and forty-seven (347) containers in the cargo hold. The vessel was also carrying thirteen (13) containers bearing hazardous materials, classified under Class 4.3 and Class 9 of the International Maritime Dangerous Goods ("IMDG Code"), out of which twelve (12) containers contained a cargo of calcium carbide. Further, out of the six hundred and forty-three (643) containers about Sixty Eight (68) containers, i.e. about 1400 MT, were carrying plastic products known as 'nurdles" were being carried by the vessel

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8. It is submitted that additionally, the Subject vessel carried approximately more than four hundred and fifty (450) metric tonnes of marine fuel oil, including approximately three hundred and sixty-seven (367) tonnes of Very Low Sulfur Fuel Oil ('VLSFO) and sixty-four (64) tonnes of Diesel Oil at the time of the incident.

HIGH COURT OF KERALA
सत्यमेव जयते

9. It is submitted that on 24.05.2025, at around 1300 hours IST, while transiting approximately thirty-eight (38) nautical miles southwest of Kochi and approximately twenty-one point five (21.5) nautical miles off the nearest coast of Kerala, the vessel developed a starboard list which kept increasing. Within the next two hours, at approximately 1515 hours IST, the list had increased to 30 degrees and the vessel was steadily maintaining this list angle.

10. It is submitted that on 25.05.2025, about 0750 Hours IST, the Subject Vessel sunk at 13 Nautical Miles from Thottappally spillway, coast of State of Kerala, at the approximate positing of Latitude 09 Deg 18.50.022 N and

seal 9.

Longitude 76 Deg 07`58.967``E. That within hours of the vessel's submergence, the Indian Coast Guard surveillance aircraft detected an oil slick at the site.

11. It is submitted that consequent to the sinking of the Subject Vessel, some of the containers stowed on the deck were afloat and dispersed into the surroundings, while the Containers stowed below deck submerged along with the Vessel. As on 30.06.2025, about 61 Containers, washed ashore, have been retrieved by this Plaintiff.

12. It is submitted that the Cargo Manifest indicated that approximately 68 containers onboard the Vessel contained Plastic materials, including plastic products, packaging materials and plastic pellets (Nurdles). Plastic pellets (also known as Nurdles) are small plastic granules that are widely used as a raw material in the creation of plastic products. When plastic pellets are released into the marine environment, they can cause environmental damage, including impacts on fishing, aquaculture and tourism.

13. It is submitted that an estimate of number of Nurdles fallen overboard the Subject Vessel, is beyond Plaintiff's computation. More than 60MT of these, Nurdles were found along the shoreline near Thiruvananthapuram, Kollam, Alappuzha, Ernakulam and immediate manual clean-up operations were initiated by this Plaintiff, to mitigate environmental impact caused by these Nurdles. The State of Kerala has deployed 600 personnel for the clean-up activities. Plastic Nurdles have spread over 20 km, a caution has been provided by International Tanker Owners Pollution Federation (ITOPF), an expert agency appointed by the P&I Insurers, that Nurdle contamination could spread along a 100-km coastline and they emphasized the

need for elevated storage and mechanical assistance (front-end loaders or excavators) for cleanup.

14. It is submitted that the Kerala State Disaster Management Authority (KSDMA), in collaboration with local government bodies, has mobilized substantial additional manpower including Civil Defence personnel and locals to support ongoing shoreline cleanup operations. Further, the local fishing community which has extended crucial support by providing trawlers and/or boats for reconnaissance and recovery of containers adrift and beached on locations with difficult terrain, enabling better access to impacted coastal stretches and enhancing the overall operational reach of the response teams.

15. It is submitted that on 25.05.2025, the Kerala State Disaster Management Authority issued specific advisories to fishermen, instructing them not to venture within a 20 nautical mile radius of the sunken Subject vessel. The Disaster Management (A) Department of the State of Kerala, declared this Incident as State Disaster vide G.O.(Ms)No.11/2025/DMD dated 29.05.2025.

16. It is submitted that the release of Oil and other pollutants in the Sea have caused a fear amongst the Consumers, on the quality of the fish. The fish market has faced a serious downfall since 25.05.2025. Hence, the Disaster Management (A) Department of the State of Kerala, has ordered an interim financial assistance of ₹1000/- (Rupees One Thousand only) per head and free ration of 6 kg rice per person to be disbursed to 78,498 fishermen families and 27,020 allied families in the districts of Thiruvananthapuram, Kollam, Alappuzha, and Ernakulam. The same is disbursed to the Fishermen by the Plaintiff.

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17. It is submitted that since on 25.05.2025, six marine mammal carcasses five dolphins and one whale, have washed ashore on the Alappuzha coast. On 26.06.2025, carcass of two dolphins was ashore at Azheekode Munakkal Beach, Thrissur District. The post-mortem report of the one of the dead dolphin is awaited. The other one, was already decomposed when discovered, precluding the collection of scientifically viable samples. The Plaintiff submits that the mortality of these cetaceans is due to their exposure with the hazardous substances and micro plastics discharged from the Subject Vessel.

18. It is submitted that as on 30.06.2025, about 61 of containers have washed ashore the coasts of the State, particularly in Thiruvanthapuram, Kollam, Alapuzha and Ernakulam District. Onshore response efforts continue to progress under the supervision of the Marine Emergency Response Centre. The transportation of cleaned plastic pellets (nurdles) from Veli Beach to Kollam Port remains ongoing, with two additional truckloads dispatched on 28.06.2025. It is submitted that a total of 790 bags weighing 14.032 metric tons were moved on 27 June 2025, bringing the cumulative transported quantity to approximately 59.6 metric tons since the commencement of operations on 24 June 2025.

19. It is submitted that Shoreline cleanup efforts have mobilized approximately 300 volunteers across the State. Recovery operations also targets floating pellet bags reported near shore, with 8 to 9 bags retrieved from the coastline within the last 24 hours, as on 27.06.2025.

20. It is submitted that vide GO (Rt) No.363/2025/DMD dated 30.05.2025, the Department of Disaster Management has authorized me as

Principal Impact Assessment Officer. I have been authorized to make all necessary arrangements for study of potential damage caused by Oil Spill from the vessel MSC Elsa and also from the Containers/parts thereof beached ashore and from the Cargoes floating and beached on the shore of the Coast of Kerala, including steps for restoration and remediation by engaging various Scientific and Research Institutions/Experts.

21. It is submitted that pursuant to the above, I have made an assessment of the loss incurred and the likely future loss to be incurred by the State Government, on account of the above incident, based on the report submitted by the Department of Fisheries and information collected from various other departments, including Disaster Management Department, Kerala State Disaster Management Authority, Local Self Government Department, Kerala State Pollution Control Board and Central Agencies empowered under the Merchant Shipping Act, 1958. Pursuant to the assessement made, the claim amount computed by the Plaintiff on the aforesaid heads of maritime claims mentioned hereinbelow.

22. That, the Plaintiff seeks for an amount of Rs.8626.12 Crores with respect to Maritime claim arising out of pollution damage (Oil and Cargo) caused by the subject Vessel to the environment, coastline, or related interest in the State of Kerala and compensation for such damage.

23. That the Plaintiff seeks for an amount of Rs.378.48 Crores with respect to maritime claim arising out of measures taken to prevent, minimize or remove the damage caused by the subject Vessel to the environment, coastline,

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or related interest in the State of Kerala and cost of reasonable measures for restoration of environment.

24. That Plaintiff seeks for an amount of Rs.526.51 Crores with respect to maritime claim arising out of the economic loss caused to the fishermen of the State of Kerala pursuant to the damage caused by the subject Vessel.

25. That the Plaintiff seeks for consolidated sum of Rs.9531 Crores towards the maritime claims set out above.

26. That the first Defendant Vessel and the subject Vessel are the sister Vessel. The 2nd Defendant is the registered owner of the subject Vessel since the commercial control, financial control and technical and operational control of the subject Vessel is with the 2nd Defendant.

THE HIGH COURT OF KERALA
सत्यमेव जयते

27. It is submitted that the modus of operation undertaken by 2nd Defendant, is illegal, with an intention to defraud the Central and State machineries and mechanism, and regulations under various central Acts. This is more so evident from the fact that the vessel named MSC MANASA F, bearing IMO No.9220847, though is registered under the name of ALION maritime LTD-LIB, its registered address is that of the 2nd defendant. Similar is in the case of the vessel MV MSC Melissa- bearing IMO No.9926918, MV MSC FLORA-bearing IMO No.9978937, MV MSC AKITETA II-bearing IMO No.9220847, MV MSC AGRIGENTO-bearing IMO No.9618276, MV MSC MICHELA-bearing IMO No.9720512, MV MSC KATIE -bearing IMO No.9467457, MV MSC SABRINA III-bearing IMO No.8714205, MV MSC NAIROBI X-bearing IMO No.9605243.

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28. It is submitted that the 2nd Defendant Company sets up shell companies/paper companies and then registers the vessels which are actually owned by them in the name of these shell companies/paper companies only within intention to defraud the potential claims against them. For all practical purposes, 2nd Defendant Company is the defacto owner and ultimate beneficiary of the revenue earned by these vessels. Even if the plaintiff were to initiate an action on its maritime claims as against the purported registered owner of the subject vessels, it will not be able to realize its claims because the purported registered owner has no assets or properties worth the claim of the Plaintiff, as known to the Plaintiff.

29. Without prejudice to the submissions of the Plaintiff that the 2nd Defendant is the owner of the subject Vessel and the 1st Defendant Vessel, in the alternative, it is submitted that the 2nd Defendant Vessel is the Demise Charterer of the 2nd Defendant Vessel and the Subject Vessel. Therefore, this admiralty Plaint is maintainable as against arrest of the 1st defendant vessel even if subject vessel was on demise charter by the second dependent. A plaintiff reading of Section 5(2) of the Admiralty Act 2017 r/s Section 5 (1)(b)of the said Act provides for arrest of the first defendant vessel for the purpose of providing security in respect of the above maritime claims set out by the plaintiff, for which the second defendant as demise charterer of the subject vessel is liable.

30. In view of the above, it is submitted that the the plaintiff is entitled to invoke the admiralty jurisdiction of this Hon'ble High Court under Section 5(1)/(a) read with Section 5(2) of the Admiralty Act 2017, to enforce its maritime claim and recover the outstanding sums, by an action *in rem* against

the first defendant Vessel in lieu of the subject vessel, against which the maritime claims, as mentioned above, arises.

31. It is submitted that the first defendant Vessel is presently lying at the Port and Harbour of Vizhinjam International Seaport, within the territorial waters of India and within the jurisdiction of this Hon'ble Court. Hence, this Hon'ble Court has the necessary jurisdiction to entertain, try and dispose of the present Plaint.

32. It is submitted that the Plaintiff further seeks that pending the hearing and final disposal of the Plaint, the Defendant Vessel together with her hull, tackle, machinery, engines, paraphernalia and all appurtenant be arrested, condemned and sold for payment to the Plaintiff by and pursuant to the orders and directions of this Hon'ble Court and the net sale proceeds therein be deposited with the Registry of this Hon'ble Court and applied towards satisfaction of the Plaintiff's claim together with interest and costs.

33. Therefore, the Plaintiff submits it is just, necessary and convenient that pending the hearing and final disposal of the Plaint, this Hon'ble Court be pleased to issue a Warrant of Arrest against the Defendant Vessel together with her hull, tackle, engines, machinery, paraphernalia and all other appurtenant.

34. It is submitted that the Plaintiff seeks that it is just, necessary, and convenient that this Hon'ble Court be pleased to pass emergent orders against the Defendant Vessel in order to protect and preserve the Plaintiff's claim against the Sister Vessel. If the ad-interim reliefs as prayed for are not granted, grave harm, prejudice, and injury would be caused to the Plaintiff. The balance

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of convenience is also clearly in favour of the Plaintiff. The Plaintiff has more than a *prima facie* case/reasonably arguable best case/an arguable best case to warrant the arrest of the Defendant Vessel.

35. It is submitted that the Plaintiff has filed the present Plaint in extreme urgency. There is every possibility that the Defendant Vessel may leave the jurisdiction of this Hon'ble Court, in which case the Plaintiff herein shall face extreme economic hardship in recovering the sums due and payable to them by the Owner or by the 2nd Defendant.

36. It is submitted that the 1st Defendant Vessel along with her hull, tackle, machinery, engines, gears, articles, things, bunkers, apparel, plant, furniture and other appurtenances at present lying at the Port and Harbour of 5th Defendant, within territorial waters of India and within the jurisdiction of this Hon'ble Court be arrested by a warrant of arrest of this Hon'ble Court and the same may be condemned in respect of the claims narrated herein above and be ordered to be sold along with her hull, tackle, machinery, engines, gears, articles, things, bunkers, apparel, plant, furniture and other appurtenances and net sale proceeds be applied to this satisfaction of the Plaintiff's claim in the Plaint.

Dated this the 7th day of July, 2025

DEPONENT

SEERAM SAMBASIVA RAO IA
Special Secretary
Environment Department
Govt. of Kerala, Secretariat
Thiruvananthapuram

Solemnly affirmed and signed before me by
the deponent who is personally known to me
on this 7th day of July 2025 at my office in Ernakulam

Kparvathy

PARVATHY KOTTOL
GOVERNMENT PLEADER

BEFORE THE HON'BLE HIGH COURT OF KERALA AT ERNAKULAM

I.A NO . OF 2025

IN

Adm S (Admiralty Suit) No. of Year 2025

Applicants/ Plaintiff

State of Kerala
Represented by its Special Secretary,
Environment Department,
Government Secretariat,
Thiruvananthapuram, Pin-695001, Kerala

Respondents/ Defendant (s)

1. M V MSC AKITETA II(IMO No. 9220847)
(and her owners and all other persons concerned
and all other persons concerned and/or interested in her)
A vessel registered in Liberia, together with her hull, tackle, engines, gears, plant, machinery, articles, things, apparel, equipment, paraphernalia, and all other appurtenances, presently at the Port and harbour of Adani Port, within the territorial waters of India and within the Admiralty Jurisdiction of this Hon'ble Court.

2. Mediterranean Shipping Co. S.A (MSC)
Represented as Owner/Demise Charterer/Manager and Operator of the Vessel, MSC Elsa 3, Having its office address at
SA Chemin Rieu, 12-14, 1208, Geneva, Switzerland

3. Mediterranean Shipping Company,
Through its Authorized Nodal Officer, Mr. Jacob George,
MSC House, Andheri – Kurla Road, Andheri East,
Mumbai, Maharashtra – 400059, India

4. MSC Agency India Pvt Ltd.
146, Palayamkottai Road,
1st Floor, Manickam Tower,
Tuticorin – 628003, India

5. Adani Vizhinjam Port PVT LTD
Port Operation Building, Mulloor,
Thiruvananthapuram, Kerala-695521
India

PETITION FILED UNDER SECTION 151 OF THE C.P.C R/W RULE 4 OF THE KERALA HIGH COURT ADMIRALTY (JURISDICTION & SETTLEMENT OF MARITIME CLAIMS) RULES, 2019 FOR ISSUANCE OF WARRANT OF ARREST OF THE FIRST RESPONDENT VESSEL

For the reasons stated in the accompanying affidavit, it is most humbly prayed that this Hon'ble Court may be pleased to issue a warrant of arrest of the 1st defendant Vessel M V MSC AKITETA II(IMO No. 9220847) flying Flag of Liberia, along with her hull, tackle, engine, machinery spares, gear, apparel, paraphernalia, furniture, etc, presently/ scheduled to be within the Territorial Waters of India at the Port/ Anchorage of Vizhinjam and direct the 5th defendant (Adani Vizhinjam Port PVT LTD, Port Operation Building, Mulloor, Thiruvananthapuram, Kerala-695521) to keep the vessel under safe arrest until further orders of this Hon'ble Court and also prayed that this Hon'ble Court may be pleased to communicate the order of arrest to the 5th Respondent/Defendant by e-mail/fax/phone and direct the 5th Respondent/Defendant to act upon the e-mail/fax/ copy of the order, in the interest of justice.

Dated this the 7th day of July, 2025.

Kparvathy

PARVATHY KOTTOL
GOVERNMENT PLEADER

BEFORE THE HONOURABLE HIGH COURT OF KERALA AT ERNAKULAM

(Admiralty Jurisdiction)

Adml.S. No. Of Year 2025

Plaintiff	:	State of Kerala Represented by its Special Secretary
		Vs.
Defendants	:	Owners and parties interested in M V MSC AKITETA II(IMO No. 9220847) & Others

MEMO OF APPEARANCE FILED BY THE GOVERNMENT PLEADER IN THE ABOVE CASE

It is submitted that one of the Government Pleaders is appearing in the above case on behalf of the Plaintiff.

Dated this the 07th day of July, 2025.

Government Pleader

ANNEXURE R-X

IN THE HIGH COURT OF KERALA AT ERNAKULAM

PRESENT

THE HONOURABLE MR. JUSTICE M.A.ABDUL HAKHIM

Monday, the 7th day of July 2025 / 16th Ashadha, 1947

IA.NO.1/2025 IN ADML.S. NO. 12 OF 2025 J

APPLICANT/PLAINTIFF:

STATE OF KERALA REPRESENTED BY ITS SPECIAL SECRETARY ENVIRONMENT DEPARTMENT, GOVERNMENT SECRETARIAT, THIRUVANANTHAPURAM, PIN - 695001.,KERALA.

RESPONDENTS/DEFENDANTS:

1. **M V MSC AKITETA II (IMO NO. 9220847) (AND HER OWNERS AND ALL OTHER PERSONS CONCERNED AND ALL OTHER PERSONS CONCERNED AND/OR INTERESTED IN HER) A VESSEL REGISTERED IN LIBERIA, TOGETHER WITH HER HULL, TACKLE, ENGINES, GEARS, PLANT, MACHINERY, ARTICLES, THINGS, APPAREL, EQUIPMENT, PARAPHERNALIA, AND ALL OTHER APPURTENANCES, PRESENTLY AT THE PORT AND HARBOUR OF ADANI PORT, WITHIN THE TERRITORIAL WATERS OF INDIA AND WITHIN THE ADMIRALTY JURISDICTION OF THIS HON'BLE COURT.**
2. **MEDITERRANEAN SHIPPING CO. S.A (MSC) REPRESENTED AS OWNER/DEMISE CHARTERER/MANAGER AND OPERATOR OF THE VESSEL, MSC ELSA 3, HAVING ITS OFFICE ADDRESS AT SA CHEMIN RIEU, 12-14, 1208, GENEVA, SWITZERLAND.**
3. **MEDITERRANEAN SHIPPING COMPANY THROUGH ITS AUTHORIZED NODAL OFFICER, MR. JACOB GEORGE, MSC HOUSE, ANDHERI – KURLA ROAD, ANDHERI EAST, MUMBAI, MAHARASHTRA, INDIA, PIN - 400059.**
4. **MSC AGENCY INDIA PVT LTD 146, PALAYAMKOTTAI ROAD, 1ST FLOOR, MANICKAM TOWER, TUTICORIN, INDIA, PIN - 628003.**
5. **ADANI VIZHINJAM PORT PVT LTD PORT OPERATION BUILDING, MULLOOR, THIRUVANANTHAPURAM, KERALA, INDIA, PIN - 695521.**

Application praying that in the circumstances stated in the affidavit filed therewith the High Court be pleased to issue a warrant of arrest of the 1st defendant Vessel M V MSC AKITETE II(IMO No.9220847) flying flag of Liberia, along with her hull, tackle,engine,machinery spares,gear,apparel,paraphernalia,furniture,etc, presently/scheduled to be within the Territorial Waters of India at the Port/Anchorage of Vizhinjam and direct the 5th defendant (Adani Vizhinjam Port PVT LTD, Port Operation Building,Mulloor,Thiruvananthapuram,Kerala-695521) to keep the vessel under safe arrest until further orders of this Hon'ble Court and also prayed that this Hon'ble Court may be pleased to communicate the order of arrest to the 5th Respondent/Defendant by e-mail/fax/phone and direct the 5th Respondent/Defendant to act upon the e-mail/fax/copy of order, in the interest of justice.

This Application coming on for orders upon perusing the application and the affidavit filed in support thereof, and upon hearing the arguments of GOVERNMENT PLEADER, for the petitioner and of PRANOY K.KOTTARAM Advocate for the respondent No.1, Roshen D. Alexander, Advocate for the respondent No.5, the court passed the following:

M.A. ABDUL HAKHIM, J.

Adml.S. No. 12 of 2025

Dated this the 7th day of July 2025

ORDER

1. Admit. Advocate Sri. Pranoy.K.Kottaram takes notice for the 1st defendant as he has appeared pursuant to the Caveat filed by him. Advocate Sri. Roshen D. Alexander takes notice for the 5th defendant/Port. Advocate Sri. Pranoy.K.Kottaram submitted that he has instructions for appearing only for the 1st defendant vessel and he prayed for posting on 10.07.2025 in order to enable him to report whether he will be able to take notice for the defendants 2 to 5. The 2nd defendant is shown as the owner of the 1st defendant vessel and the 3rd and 4th defendants are stated to be the agents of the 2nd defendant in India. In view of the submission of Advocate Sri. Pranoy.K.Kottaram, the issuance of notice to the defendants Nos. 2 to 4 is deferred for the time being.

2. Post the suit for further consideration on 10.07.2025..

I.A. No.1 of 2025

1. This Application is filed by the plaintiff in the captioned Admiralty Suit to issue Warrant of Arrest against the Marine Vessel “MSC” AKITETA II (IMO 9220847) with all her accessories, which is presently anchored at Vizhinjam Port, which is within the territorial waters of India and within the admiralty jurisdiction of this Court.
2. I heard the learned Advocate General Sri.K.Gopalakrishna Kurup instructed by learned Government Pleader Smt.Parvathy Kottol for the Applicant/State of Kerala, learned counsel for the 1st respondent Sri. Pranoy.K.Kottaram and the learned Counsel for the 5th respondent Sri. Roshen D. Alexander.
3. The State of Kerala as the plaintiff through its Special Secretary, Environment Department has filed the above captioned suit seeking to pass a decree directing the 1st and 2nd defendants to pay a sum of Rs.9,531 Cores to it towards maritime claims, with interest @ 6% per annum till the date

of decree and thereafter 12% from the date of decree till realisation.

4. The maritime claims are made with respect to the vessel “MSC ELSA -3 (IMO No. 9123221)” belonging to the 2nd respondent which was capsized and sunk in the coastal waters of Kerala, on the allegation that the same has been causing damage by way of pollution to marine environment, coastline and related interest of the State and also economic loss to the fishermen in the State.

5. Rs. 8,626.12 Croes is claimed as compensation towards damage caused by MSC ELSA- 3 to the environment, coastline and related interest of the State of Kerala. It is averred in the plaint that the damage occurred on account of oil pollution caused by the said vessel and pollution caused by the cargo in 643 containers carried in the said vessel. It is averred that the compensation is computed in accordance with the Central Pollution Control Board Guidelines. The computation of the said claim is provided in paragraph Nos.V.I, V.I.A and V.I.B of the plaint.

6. Rs.378.48 Crores is claimed for taking measures to prevent, minimise or remove the damage caused by the said vessel to the environment, coastline, and related interest in the State of Kerala and cost of reasonable measures for restoration of environment. The computation of the said claim is provided in paragraph V.II of the plaint.

7. Rs,526.51 Crores is claimed towards economic loss caused to the fishermen of the State of Kerala as a result of damage caused by the aforesaid vessel. The details of computation of the claim is provided in Paragraph No. V.III, V.III.1 and V.III.2 and V.III.3.

8. The Applicant has produced 42 documents along with the plaint to prove the plaint claim.

9. Document No.1 would show that Nairne Ocean Way Limited is the registered owner and the 2nd respondent is the Ship Manager/Commercial Manager of MSC AKITETA II. The address of the 2nd respondent is shown as the care of address of the registered owner of MSC AKITETA II. It reveals that the 2nd respondent is having substantial interest

in the registered owner of 1st respondent vessel. Document No.2 would reveal that ELSA 3 Maritime INC is the registered owner and the 2nd respondent is the Ship Manager / Commercial Manager of MSC ELSA III. The address of ELSA 3 Maritime INC is shown as the care of address of the 2nd respondent. It reveals that the 2nd respondent is having substantial interest in the registered owner of MSC ELSA III also. I, prima facie, find that these documents would prove that MSC ELSA III and MSC AKITETA II are registered in the name of two sister/subsidiary companies of the 2nd respondent and both the vessels are managed, operated, controlled and owned by the 2nd respondent. Accordingly, both these vessels are, prima facie, sister vessels.

10. Since the 1st respondent vessel is anchored at Vizhinjam Port within the territorial jurisdiction of this Court, this Court has admiralty jurisdiction over the same as per the provisions of the Admiralty (Jurisdiction and settlement of Maritime Claims) 2017. I prima facie find that averments in the plaint and in the Affidavit in support of this Application and

the documents produced by the Applicant would make out a maritime claim against the respondents 1 and 2 under S.4(1) of the Admiralty (Jurisdiction and settlement of Maritime Claims) 2017 to invoke the admiralty jurisdiction of this Court conferred under S.5 for the arrest and detention of the 1st respondent vessel in order to obtain security for the plaint claim. I am satisfied that an arguable maritime claim is made out by the Applicant warranting a conditional order of arrest of the 1st respondent vessel till the 1st respondent furnishes security for the plaint claim.

11. Accordingly, the following conditional order is passed.

1. The 1st respondent vessel by name "**MSC" AKITETA II (IMO 9220847)** along with her hull, tackle, engine, machinery spares, gear, apparel, paraphernalia, furniture etc. presently anchored in the Vizhinjam Port is ordered to be arrested until **Rs.9,531 Crores** is deposited by the 1st respondent in this Court or until

security for the said amount is furnished by the 1st respondent to the satisfaction of this Court.

2. It is ordered that the 5th respondent shall execute the Warrant and effect the arrest, seizure and detention of the said vessel **"MSC" AKITETA II (IMO 9220847)"** along with her hull, tackle, engines, machinery, boards, bunkers, equipment, peripherals and other appurtenances as ordered above.

3. It is made clear that this Order will not in any way prevent the loading and unloading of cargo of the Vessel.

List the I.A for further consideration on **10.07.2025.**

Sd/-

M.A.ABDUL HAKHIM
JUDGE

jma

IN THE HIGH COURT OF KERALA AT ERNAKULAM

PRESENT

THE HONOURABLE MR. JUSTICE M.A.ABDUL HAKHIM

Thursday, the 25th day of September 2025 / 3rd Aswina, 1947

IA.NO.1/2025 IN ADML.S. NO. 12 OF 2025 J

APPLICANTS/PLAINTIFF:-

STATE OF KERALA, REPRESENTED BY ITS SPECIAL SECRETARY, ENVIRONMENT DEPARTMENT, GOVERNMENT SECRETARIAT, THIRUVANANTHAPURAM, KERALA, PIN - 695001, KERALA.

RESPONDENTS/DEFENDANTS:-

1. **M V MSC AKITETA II (IMO NO. 9220847) (AND HER OWNERS AND ALL OTHER PERSONS CONCERNED AND ALL OTHER PERSONS CONCERNED AND/OR INTERESTED IN HER) A VESSEL REGISTERED IN LIBERIA, TOGETHER WITH HER HULL, TACKLE, ENGINES, GEARS, PLANT, MACHINERY, ARTICLES, THINGS, APPAREL, EQUIPMENT, PARAPHERNALIA, AND ALL OTHER APPURTENANCES, PRESENTLY AT THE PORT AND HARBOUR OF ADANI PORT, WITHIN THE TERRITORIAL WATERS OF INDIA AND WITHIN THE ADMIRALTY JURISDICTION OF THIS HON'BLE COURT.**
2. **MEDITERRANEAN SHIPPING CO. S.A (MSC), REPRESENTED AS OWNER/DEMISE CHARTERER/MANAGER AND OPERATOR OF THE VESSEL, MSC ELSA 3, HAVING ITS OFFICE ADDRESS AT SA CHEMIN RIEU, 12-14, 1208, GENEVA, SWITZERLAND.**
3. **MEDITERRANEAN SHIPPING COMPANY, THROUGH ITS AUTHORIZED NODAL OFFICER, MR. JACOB GEORGE, MSC HOUSE, ANDHERI – KURLA ROAD, ANDHERI EAST, MUMBAI, MAHARASHTRA, PIN - 400059, INDIA.**
4. **MSC AGENCY INDIA PRIVATE LIMITED, 146, PALAYAMKOTTAI ROAD, 1ST FLOOR, MANICKAM TOWER, TUTICORIN, PIN - 628003, INDIA.**
5. **ADANI VIZHINJAM PORT PRIVATE LIMITED, PORT OPERATION BUILDING, MULLOOR, THIRUVANANTHAPURAM, KERALA, PIN - 695521, INDIA.**

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Application praying that in the circumstances stated in the affidavit filed therewith the High Court be pleased to issue a warrant of arrest of the 1st defendant Vessel M V MSC AKITETA II(IMO No.9220847) flying flag of Liberia, along with her hull, tackle, engine, machinery spares, gear, apparel, paraphernalia, furniture, etc, presently/scheduled to be within the Territorial Waters of India at the Port/Anchorage of Vizhinjam and direct the 5th defendant (Adani Vizhinjam Port PVT LTD, Port Operation Building, Mulloor, Thiruvananthapuram, Kerala-695521) to keep the vessel under safe arrest until further orders of this Hon'ble Court and also prayed that this Hon'ble Court may be pleased to communicate the order of arrest to the 5th Respondent/Defendant by e-mail/fax/phone and direct the 5th Respondent/Defendant to act upon the e-mail/fax/copy of order, in the interest of justice.

This Application again coming on for orders upon perusing the application and the affidavit filed in support thereof, and this Court's order dated 07.07.2025,16.09.2025 and upon hearing the arguments of SRI.K.GOPALAKRISHNA KURUP, ADVOCATE GENERAL AND SMT. PARVATHY KOTTOL, GOVERNMENT PLEADER for the petitioners and of SRI.PRASANTH S. PRATHAP (SENIOR ADVOCATE) AND M/S PRANOY K.KOTTARAM,SIVARAMAN P.L, ATHUL BABU, AMITAVA MAJUMDAR, ASHUTOSH TIWARI, GOENKA RUCHIR BIKAS CHANDRA, FOR R1 TO R4, SRI.ROSHEN D.ALEXANDER, TINA ALEX THOMAS, HARIMOHAN, KOCHURANI JAMES, FOR R5, the court passed the following:

HIGH COURT OF KERALA
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CR

M.A. ABDUL HAKHIM, J

- -

I.A.No.1 of 2025 in Adml.S.No.12/2025

- -

Dated this the 25th September, 2025

ORDER

1. The State of Kerala has filed the above Admiralty Suit claiming an amount of Rs.9,531 Crores from the Defendant Nos.1 & 2 with interest @ 6% per annum from the date of the suit till date of judgment and thereafter at 12% from the date of decree till realisation. The suit was filed for recovering the loss and damages pursuant to the sinking of the vessel MSC ELSA 3 and resultant pollution thereof.

2. The Plaintiff has based its claim under Section 4(1)(u) of the Admiralty (Jurisdiction and Settlement of Maritime Claims) Act, 2017 *(hereinafter referred to as 'the Admiralty*

Act'). Section 4(1)(u) is extracted hereunder for easy reference.

> *"**4. Maritime Claim-** (1) The High Court may exercise jurisdiction to hear and determine any question on a maritime claim, against any vessel, arising out of any--*
>
> *xx xx xx*
>
> *(u) damage or threat of damage caused by the vessel to the environment, coastline or related interests; measures taken to prevent, minimise, or remove such damage; compensation for such damage; costs of reasonable measures for the restoration of the environment actually undertaken or to be undertaken; loss incurred or likely to be incurred by third parties in connection with such damage; or any other damage, costs, or loss of a similar nature to those identified in this clause;"*

3. The Plaint Claim of Rs.9,531 Crores consists of claims under three heads - (1) Rs.8,626.12 Crores is claimed towards the compensation for the damage caused by the sunken vessel to the environment, coastline or related

interests of the State; (2) Rs.378.48 Crores is claimed towards cost of the measures taken to prevent, minimise or remove the damage to the environment, coastline or related interests in the State and cost of the measures for restoration of environment; and (3) Rs.526.51 Crores is claimed towards the economic loss caused to the fishermen of the State of Kerala, pursuant to the damage by the sunken vessel.

4. Out of the claim under the first head, Rs.8,554.39 Crores (USD 1 Billion) is claimed as compensation for the oil pollution damage caused by the sunken vessel. Rs.71.73 Crores is claimed towards compensation for the pollution caused by the cargo in the sunken ship, alleging that the cargo contains hazardous chemicals, plastic waste and other pollutants. The environmental compensation caused by the said items of cargo is computed in accordance with the Central Pollution Control Board guidelines. Out of the said Rs.71.73 Crore, Rs.30.09 Crores is claimed towards

compensation for the pollution caused by plastic waste, Rs.30.42 Crores is claimed towards compensation for the pollution caused by hazardous chemicals and Rs.11.22 Crores is claimed towards compensation for the pollution caused by other pollutants.

5. Out of the claim under the second head, Rs.1.38 Crores is claimed towards the cost incurred by the Kerala State Pollution Control Board for preparing emergency shore line clean-up, formation of a Rapid Response Team, Water Quality Monitoring, etc., pursuant to the shipping casualty, Rs.18 Crores is claimed towards estimated cost for future preventive measures by the Kerala State Pollution Control Board, Rs.45 lakhs is claimed towards the cost incurred by the Department of Fisheries for studies by the Centre for Aquatic Resource Management and Conservation, Kerala University of Fisheries and Ocean Studies for a period of three months, Rs.152.1 Crores is claimed towards the remediation cost for hazardous chemical pollution,

Rs.150.45 Crores is claimed towards remediation cost for plastic pollution and Rs.56.1 Crores is claimed towards remediation cost for other pollutants. It is alleged that the Kerala Disaster Management Authority has played an important role in minimising or removing the damage and the expenditure incurred is under process and the Plaintiff reserves the right to amend to include the said expenditure. It indicates that the plaint claim does not include the expenditure of the Kerala Disaster Management Authority. It is alleged that the plaintiff computed the remediation cost as per the Central Pollution Control Board guidelines.

6. Out of the claim under the third head, Rs.349 Crores is claimed towards economic loss to the fishermen due to market scare on fish quality, Rs.71 Crores is claimed towards the landing loss due to fishing ban in 20 Nautical Miles (NM) at Alappuzha, Rs.106.51 Crores is claimed

towards economic loss to the fishermen due to fishing ban in 20 Nautical miles for 8 days.

7. The different claims of the Plaintiff under the aforesaid three main Heads are shown in the following Table below for easy understanding.

Sl. No.	Nature of Claim		Amount (in Crores)
1.	Compensation for oil pollution	:	Rs.8,554.39
2.	Compensation for cargo pollution	:	Rs.71.73
3.	Cost incurred by the Kerala State Pollution Control Board	:	Rs.1.38
4.	Estimate for future cost for preventive measures by the Kerala State Pollution Control Board	:	Rs.18.00
5.	Cost incurred by Department of Fisheries for studies	:	Rs.0.45
6.	Remediation cost for hazardous chemical pollution	:	Rs.152.10
7.	Remediation cost for plastic pollution	:	Rs.150.45
8.	Remediation cost for other pollutants.	:	Rs.56.10
9.	Economic loss to the fishermen due to	:	Rs.349.00

	market scare on fish quality,		
10.	Landing loss due to the fishing ban in 20 NM	:	Rs.71.00
11.	Economic loss to the fishermen due to the fishing ban	:	Rs.106.51
TOTAL		**:**	**Rs.9,531.11**

8. This Court considered I.A.No.1/2025 seeking conditional order of arrest of the Respondent No.1/Defendant No.1 MSC AKITETA II (IMO 9220847) on the claim of the Applicant/Plaintiff that the Respondent No.1 is a sister vessel of the sunken vessel MSC ELSA 3 and passed an order of conditional arrest on 07.07.2025 against the Respondent No.1 anchored at Vizhinjam Port until the Respondent No.1 deposits the plaint amount of Rs.9,531 Crores in this Court or until security for the said amount is furnished by the Respondent No.1 to the satisfaction of this Court.

THE HIGH COURT OF KERALA
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9. Since the Respondent No.1 neither deposited Rs.9,531 Crores nor furnished security for the same, the Respondent No.1 is still continuing under arrest in Vizhinjam Port.

10. The Respondent No.2/Defendant No.2, who is arrayed as the owner of the sunken vessel and the Respondent No.1 vessel, filed Counter Affidavit dated 29.07.2025, Additional Counter Affidavit dated 31.07.2025 and Second Additional Counter Affidavit dated 19.08.2025 in I.A.No.1/2025. The Applicant filed a Rejoinder dated 07.08.2025 in I.A.No.1/2025.

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11. This Court passed an ad-interim order of arrest after giving notice to the counsel for the Respondent No.1, who had filed a caveat. The said order was passed without notice to the Respondent No.2 and without considering the contentions of the respondents, as the Applicant pressed for an emergent order in the same. After completing the pleadings in I.A.No.1/2025, the Respondent No.2 pressed

for a hearing on I.A.No.1/2025 to consider whether the order of conditional arrest is to be continued during the pendency of the suit or whether it requires any modification. Accordingly, I.A.No.1/2025 was heard by this Court. On the closing date of the arguments, the Applicant filed I.A.No.7/2025 to receive two documents. Even though the acceptance of the said documents was objected to by the Respondent No.2, the said documents were accepted into the files as per Order dated 19.09.2025.

12. From the side of the Applicant/plaintiff, Document Nos.1 to 50 are produced and from the side of the Respondent No.2/Defendant No.2, 19 documents were produced as Annexures A to S. The documents Nos.1 to 50 produced by the Applicant are marked as Exts.A1 to A50 in the same order and 19 documents produced by the Respondent No.2 as Annexures A to S are marked as

Exts.B1 to B19 for the purpose of considering I.A.No.1/2025.

13. I heard the learned Advocate General, Sri. Gopalakrishna Kurup, instructed by learned Government Pleader, Smt. Parvathy Kottol for the Applicant and the learned Senior Counsel, Sri. Prasanth S. Pratap, instructed by Adv. Pranoy K. Kottaram for the Respondent No.2 and the learned Counsel for the Respondent No.5, Sri. Roshen D. Alexander.

14. In the light of the arguments addressed before me the following questions arise for consideration:

1. Whether the State of Kerala is competent to file the present Admiralty Suit?
2. Whether Defendant No.1 is the sister vessel of the sunken vessel MSC ELSA 3?
3. Whether the Applicant has made out a prima facie case or reasonably arguable best case with respect to the claims under various heads in the suit?

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4. Whether the Letter of Undertaking from the Protection and Insurance (P & I) Club Insurance can be accepted as the security for releasing the arrested vessel?

Question No.1

15. The contention of the learned Senior Counsel for the Respondent No.2 is that the sinking of the vessel MSC ELSA 3 occurred at 14.6 NM from the Kerala coast. The location is beyond the territorial waters of India and it is in the Exclusive Economic Zone (EEZ) over which the State is not having any power. The learned Senior Counsel invited my attention to Section 7(4)(d) of the Territorial Waters, Continental Shelf, Exclusive Economic Zone and Other Maritime Zones Act, 1976, to substantiate the point that the Central Government alone is having exclusive jurisdiction over EEZ. It is contended that Maritime Shipping and Navigation comes under Entry No.25 and Fishing and Fisheries beyond territorial waters comes

under Entry No.57 in List 1 – Union List in the Seventh Schedule of the Constitution of Indian, and only the Central Government has jurisdiction to make legislation with respect to the said subjects. The Central Government passed the Merchant Shipping Act, 1958. The Director-General of Shipping is appointed under Section 7 of the Merchant Shipping Act, 1958, for the purpose of exercising or discharging the powers of the Central Government. Part XIA of the Merchant Shipping Act covers the prevention and containment of pollution of the sea by oil and empowers the Central Government under Section 356 J and 356K to take necessary action, including remedial measures. The Director General of Shipping has been closely monitoring the activities on the sinking of the subject vessel and has been giving necessary directions for containment of the minor pollution caused by the discharge of oil from the vessel.

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16. The Division Bench of this Court in ***Prathapan T. N. v. Union of India [2025 KHC 1792]*** while considering a Public Interest Litigation with respect to the same incident, referring to the provisions under the Territorial Waters, Continental Shelf, Exclusive Economic Zone and Other Maritime Zones Act, 1976, specifically held that in the Continental shelf, the Union has the exclusive jurisdiction to preserve and protect the marine environment and to prevent and control marine pollution and that in the Exclusive Economic Zone, the Union has sovereign rights for exploration, exploitation, conservation and management of the natural resources, both living and non–living and also the exclusive jurisdiction to preserve and protect the marine environment and to prevent and control marine pollution.

17. Inviting my attention to Section 4(1)(u) of the Admiralty Act, the learned Advocate General contended that, as per subclause (u), a maritime claim may arise from damage or threat caused by the vessel to the environment. Oil from

the sunken vessel is noticed inside the territorial waters. The sunken vessel has not been removed even now. Admittedly, it is having fuel in the bunker, engine oil and hazardous substances as cargo. It is located near the territorial waters. It has been causing an imminent threat to the territorial waters. Even if the sinking of the vessel occurred outside the territorial waters, if the sinking of the vessel has its effect inside the territorial waters or threat to the territorial waters, the State is well competent to institute suit with respect to the maritime claim arising therefrom. I find force in the submission of the learned Advocate General.

18. Learned Senior Counsel for the Respondent No.2 invited my attention to the Question put by Mexico and the answer given by the United States in the proceedings of the Main Committee for the Travaux Preparatoires of the International Convention on Arrest of Ships, 1999, as to how the threat of damage can give rise to a maritime

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claim. The United States answered that a whole series of measures may have to be taken in order to prevent damage to the environment, that is, when a threat has arisen, but a pollution or incident has not yet occurred and that is intended to capture claims that would arise in response to the threat of damage even though the damage itself did not occur. Of course, a mere threat caused by the vessel to the environment alone will not constitute a cause of action for an Admiralty Suit. A maritime claim should arise from such a threat. I am of the view that it is not the preventive measures alone that would constitute a maritime claim. A maritime claim would arise from such a threat if, on account of the threat, loss or injury is suffered on account of the inability to do the regular activities in the area where the threat prevails. I find that if there is pollution within the territorial waters on account of the sinking of a vessel outside the territorial waters or if the sunken vessel outside the territorial waters has been causing threat to the territorial waters, the State

HIGH COURT OF KERALA
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can very well institute Admiralty Suit with respect to the maritime claim arising from such pollution or threat under Section 4(1)(u) of the Admiralty Act.

19. Next contention of the learned Senior Counsel for the Respondent No.2 is with reference to the definition of 'Pollution damage' under Clause 9 of Article 1 of the International Convention on Civil Liability for Bunker Oil Pollution Damage, 2001 (hereinafter referred to as 'the Bunker Convention'), which reads as follows:

"9."Pollution damage" means:

a) loss or damage caused outside the ship by contamination resulting from the escape or discharge of bunker oil from the ship, wherever such escape or discharge may occur, provided that compensation for impairment of the environment other than loss of profit from such impairment shall be limited to costs of reasonable measures of reinstatement actually undertaken or to be undertaken; and

HIGH COURT OF KERALA
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b) the costs of preventive measures and further loss or damage caused by preventive measures."

20. Clause 5 of Article 3 of the Bunker Convention provides that no claim for compensation for pollution damage shall be made against the shipowner otherwise than in accordance with the said Convention. The learned Senior Counsel invited my attention to Paragraph No.8 of Ext.B4 which is the Counter Affidavit given on behalf of the Central Government and Director General of Shipping in WP(PIL) No.50/2025 instituted in this Court alleging inaction of the State and Central Governments with respect to the measures to be taken under law on the sinking of the Vessel MSC ELSA 3. In Paragraph No.8 of Ext.B4, it is stated that since India is a party to the United Nations Convention on Law of the Sea (UNCLOS), the provisions in the Bunker Convention carry binding legal force and reinforce India's obligations under the International Environmental Law, notwithstanding the fact

that India has not ratified the Bunker Convention itself. The stand taken by the Central Government in Ext. B4 Counter Affidavit would reveal that the provisions of the Bunker Convention are applicable to India. In view of the definition of 'pollution damage' in Clause 9 of Article 1 of the Bunker Convention, the compensation for impairment of the environment on account of oil pollution from Bunker is limited to the cost of reasonable measures of reinstatement actually undertaken or to be undertaken and the cost of preventive measures and further loss or damage caused by preventive measures. The limitation is not available against loss of profit from impairment of the environment. The plaintiffs have made claims under various heads arising out of the maritime claim under Section 4(1)(u) of the Admiralty Act, other than pollution caused by bunker oil. Even now, it is not clear whether the pollution is caused by bunker oil alone. The sunken vessel had diesel oil and lubricating oil apart from bunker oil. The State wants to prevent environmental damage caused by

HIGH COURT OF KERALA
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the sinking of the vessel and to see that the environment is restored back, removing all the pollution caused by the sinking of the vessel. The loss of profit on account of pollution caused by the sinking of the vessel is also included under the third head. When pollution is caused on account of the discharge of bunker oil and other pollutants, the State necessarily will have to expend costs for preventive measures and restoration, and when the environment is affected naturally, there will be loss of profit to the State and the persons who depend on such environment. How much amount is required for the restoration of the environment and for the preventive measures, and how much amount is the loss of profit, are matters of evidence in the trial of the suit. The cost incurred by the State for preventive measures and restoration measures is also a matter of evidence in the trial in the Suit. The application of the provisions of the Convention and whether the plaintiff is making any claim for compensation on account of discharge of bunker oil

HIGH COURT OF KERALA
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beyond the said Convention or not are matters to be considered only when the claims are adjudicated in the suit. Those questions need not be considered during the consideration of a prima facie case or reasonably best arguable case for ordering conditional arrest by way of interim order.

Question No.2

21. The allegation of the Plaintiff in the suit is that the Defendant No.1 vessel belongs to the Defendant No.2. The registered ownership of MSC ELSA 3 is with ELSA 3 MARITIME INC, as revealed from Ext.A2 Ship Folder of MSC ELSA 3 maintained by Equasis, which is a well-known international organisation maintaining the database of vessels. The registered ownership of the Defendant No.1 is with Nairne Oceanway Limited, as revealed from Ext.A1 Ship Folder of Defendant No.1 maintained by Equasis. The contention of the learned Advocate General is that the said registered ownership is merely nominal

THE HIGH COURT OF KERALA
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and not indicative of true operational and financial control and that the Defendant No.2 sets up shell companies/paper companies and then registers the vessels which are actually owned by the Defendant No.2 in the name of these shell companies/paper companies with the intention to defraud the potential claim against it. The contention of the learned Senior Counsel for the Defendant No.2 is that as per Exts.A1 and A2, the Defendant No.2 is not the registered owner of the Defendant No.1 and the sunken vessel. Exts.A1 and A2 would prove that Defendant No.1 and the sunken vessel are owned by different entities. Since the Defendant No.1 and the sunken vessel are owned by different entities, they could not be treated as sister vessels. Hence, for the liability of MSC ELSA 3, Defendant No.1 could not be proceeded against. Defendant No.2, as the Charterer, is aggrieved by the arrest of Defendant No.1.

HIGH COURT OF KERALA
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22. Exts.A1 and A2 would prove that the address of the registered owners therein are the address of the Defendant No.2. Ext.A27, which is the Equasis Company Folder of ELSA Maritime Inc, would prove that the address of the registered owner of the sunken vessel is the address of Defendant No.2. The Plaintiff has produced Exts.A28 to A39 documents relating to several other vessels which would show that all those vessels are owned by different companies; that the ship manager of those vessels is the Defendant No.2 and the addresses of the registered owners therein are the address of the Defendant No.2. It would prima facie show that the contention of the Plaintiff that the Defendant No.2 sets up shell companies/paper companies and then registers the vessels, which are actually owned by it, in the name of these shell companies/paper companies only with the intention to defraud the potential claim against it. The learned Advocate General cited the decision of the Bombay High Court in ***MSC Mediterranean Shipping Company***

HIGH COURT OF KERALA
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v. MV MSC Clementina [2015 SCC OnLine Bom 4224], in which it is held that the question whether the Ship which caused oil pollution and Defendant No.1 therein are sister ships is to be considered in the trial. Whether the sunken vessel and Defendant No.1 are sister companies or not is a matter to be finally decided in the trial on the basis of the evidence adduced by the parties in the suit. Hence, I find prima facie that the Defendant No.1 vessel is the sister vessel of the sunken vessel MSC ELSA 3.

Question No.3

23. In an Admiralty Suit, the Plaintiff is entitled to obtain an order of conditional arrest only if the plaintiff satisfies reasonably arguable best case to the Court. The learned Senior Counsel for the Respondent No.2 cited the judgment of the Division Bench of the Bombay High Court in ***M/s. Kimberly-Clark Lever Private Limited v. M.V. Eagle Excellence [Judgment dated 13.08.2008 in Appeal No.240/2007 in Notice of Motion No.2346/2006 in Adml. Suit No.12/2006*** in this

HIGH COURT OF KERALA
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regard. After referring to the decision of the Hon'ble Supreme Court in ***Videsh Sanchar Nigam Limited v. M.V. Kapitan Kud and Others [(1996) 7 SCC 127],*** the Bombay High Court held that the distinction between two tests, namely, 'the reasonably arguable best case' and 'the prima facie case', has almost been disappeared and both the expressions substantially convey the same meaning, though grammatically the expressions may not be synonymous to each other. The learned Senior Counsel pointed out the observation of the Court that, as per Rule 954(IV) of the Bombay High Court Rules, which is similar to Rule 25 of the Kerala High Court Admiralty (Jurisdiction and Settlement of Maritime Claims) Rules, 2019, the Court can release the vessel even without insisting on security or release of security after release of the vessel obtaining security.

24. The learned Senior Counsel for the Respondent No.2 cited the Division Bench of this Court in ***Sangita Das and***

Others v. M.V. Amber L (Bulk Carrier) and Others [2018 (1) KLJ 836], in which confirming the judgment of the learned Single Bench of this Court reducing the security from the Plaint claim of Rs.18 Crores to Rs.1 Crore, it is held that the discretionary power of the Admiralty Courts to reduce the quantum of security to a lesser amount than the plaint amount stands well - founded on the strong pillars of discretionary jurisdiction and power under Section 443 of the Merchant Shipping Act, 1958, Section 151 of the Code of Civil Procedure, rules relating to arrest and release of ships evolved in International Conventions, 1952 and 1999 and the decision laid down by the Supreme Court in M.V. Elisabeth and Others v. Harwan Investment and Trading Pvt. Ltd., Hanoekar House, Swatontapeth Vasco - De - Gama, Goa, [1993 KHC 700]. It is further held that the Plaintiffs and Defendants in an Admiralty Suit are not in an equal bargaining position and it is for the Court to maintain a balance by preventing abuse of process of Court, by the Plaintiffs, who stand in a superior position; that the desire

HIGH COURT OF KERALA
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to obtain an excessive security having no proximity with a reasonably arguable best case, including entitlement of a reasonable amount as damage, is oppressive and arbitrary; that the owner of the ship cannot be asked to furnish excessive security for an unrealistic and inflated fancy amount, having no proximity with the actual loss and in such situation, the sufficiency of security would fall within the realm of 'satisfaction' of the High Court, contemplated under Section 443 of the Merchant Shipping Act; and that the Defendants cannot be burdened with a hypothetical and fancy security amount, having no reality at all.

25. The learned Advocate General cited the decision of the Bombay High Court in ***MSC Mediterranean Shipping Company (supra)*** arising from an Admiralty Suit filed by the State of Maharashtra against the Defendant No.2 itself claiming compensation for oil pollution. In the said case, a collision took place between two vessels in Mumbai Port and there

was spillage of bunker fuel from one of the vessels involved, namely MSC Chitra. The Defendant No.1 vessel therein was arrested for an amount of Rs.8,13,00,000/-. When the Defendant No.2 prayed for vacating / setting aside the order of arrest and returning the security of Rs.8,13,00,000/- or for reducing the amount of security, the Bombay High Court dismissed the prayers, holding that the plaintiff has made out a prima facie case that the Defendant No.2 is liable for the pollution that emanated from MSC Chitra.

26. Even though the consideration of the Interlocutory Applications for Interim Order for conditional arrest in Admiralty Suits and the consideration of Applications for injunction/attachment in normal civil suits are somewhat similar, in Admiralty Suits, the Plaintiffs are always in a better bargaining position than the Defendants, unlike in ordinary civil suits. In a normal Civil suit, a strong prima facie case and a balance of convenience and irreparable

injury of the parties are to be considered while considering an Application for Interlocutory Order. In Admiralty Suits, the balance of convenience and irreparable injury of the parties are always found in favour of the Plaintiff, as if an emergent conditional arrest is not made, the foreign vessel would leave from the jurisdiction of the Court, making the decree that may be passed in the suit virtually unenforceable against the foreign national/entity. Thus, in Admiralty Suits, the Plaintiffs are always in a better bargaining position than the Defendants. There is every chance of the Plaintiffs in Admiralty Suits misusing their upper hand in order to compel the Defendants to accede to their unreasonable demands. Sometimes, the Defendants have to settle even the baseless claims of the Plaintiffs in order to avoid arrest in view of the huge loss that may be occasioned if the arrest of the vessel is made. In almost all the Admiralty Suits, huge amounts are claimed based on maritime claim. If the Defendant/Vessel is ordered to be arrested requiring a huge amount as

HIGH COURT OF KERALA
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security on the mere averments in the Plaint, it may end in unnecessary serious civil consequences, sometimes which would be irreparable, to the Defendant. This makes the Courts' job more responsible and onerous while considering an application for conditional arrest in Admiralty Suits. While considering an Application for conditional arrest, Courts shall be very much careful to ensure a strong prima facie case with reference to the materials produced by the Plaintiff. When unliquidated damages are claimed, the degree of satisfaction of a prima facie case by the plaintiff is on the higher side. What would be the degree of a strong prima facie case depends on the facts and circumstances of each case. The Court has to satisfy that the maritime claim made by the plaintiff is prima facie supported by the materials before it. If the prima facie case is made out by the Plaintiff, the Court has to pass an order of conditional arrest, and the rest is a matter of evidence to be proved in the trial of the suit. But when the Court is satisfied only with respect to part of the

HIGH COURT OF KERALA
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claim in an Admiralty Suit, the security shall only be for the said part of the claim.

27. In the decision of the Bombay High Court in ***Shree LTC Agro Sales Ltd. v. Mediterranean Shipping Company, S.A. and Others (2013 SCC OnLine Bom 852)*** cited by the learned Senior Counsel for the Respondent No.2, it is held that the arrest of the ship is regarded as a mere procedure to obtain security to satisfy the judgment; that the Plaintiff is entitled to security to the extent of the reasonably best arguable case or prima facie case; and that even assuming the Plaintiff is entitled to insist for any security, it cannot be excessive in nature; that excessive demand for security should not be tolerated and that the material placed on record should reveal strong prima facie case in favour of the Plaintiff and only to that extent the security can be asked for. The Bombay High Court further held that standard and well recognised text books on Admiralty law have stated the law to be that excessive security will not

be countenanced by a Court, referring to the English decision in ***George Gordon [(1884) P.D. 46]*** that party should not arrest a ship for an exorbitant amount and that such a course the court will never sanction. The Bombay High Court made specific reference to two English decisions on the point in ***Moschanthy [(1971) 1 LLR 37]*** and ***The Clarabelle [(2002) 2 LLR 479]*** in which it is held that the security in support of a claim in rem is a very strong power and it must not be used oppressively. In ***The Clarabelle (Supra)***, the Court observed that it should not be assumed that security at a Rolls Royce level is the inalienable right of a plaintiff simply because the Admiralty jurisdiction has been invoked.

28. The learned Senior counsel for the Respondent No.2 cited the Division Bench decisions of the Madras High Court ***[Judgment dated 13.03.2018 in W.A. No.537/2018 and Order dated 10.10.2017 in W.P. No.25813/2017]*** in which the compensation for oil spill due to collision of two vessels in Kamarajar Port

HIGH COURT OF KERALA
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Limited in Ennore was considered. The learned Senior Counsel pointed out that the total compensation claimed by the Government of Tamil Nadu was only Rs.240 Crores, even in a case where the oil spill was inside the Port and the case was settled for the said amount.

29. The decision of the Bombay High Court in ***MSC Mediterranean Shipping Company (supra)*** is relied on by the learned Senior Counsel for the Respondent No.2, contending that in the said case, the leakage of bunker oil is around 800 tonnes, and even then, the Court ordered security of only Rs.8.13 Crores.

30. The learned Advocate General cited the decision of the Supreme Court of Sri Lanka in ***MV X-Press Pearl Marine Environmental Pollution case [SC/FR 168/2021]*** in which the Court ordered to pay USD 1 Billion as an initial payment on a claim similar to that of the present suit, in which the Vessel caught fire and sank, causing damage to the marine environment.

HIGH COURT OF KERALA
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31. The law is thus well settled that security in lieu of arrest of the vessel shall not be excessive and oppressive. When the Court is of the view that the claim is exorbitant, the Court has to make due enquiry to find out the proper amount of security to be demanded from the Defendant in lieu of arrest of the vessel.

32. The present Admiralty Suit was filed when the Division Bench of this Court in ***Prathapan T.N. (supra)*** observed that Governments are expected to exercise available statutory powers to proceed against offending vessels and recover damages rather than spending from public exchequer, as delay or failure to act may set a dangerous precedent for future offenders. When an Admiralty Suit is filed by the State on an emergent basis for protecting the public interest claiming compensation for environmental pollution seeking conditional arrest of a sister vessel, it is to be presumed that officers of the State are making responsible averments in the suit with reference to relevant records

and such averments are to taken on its face value in the absence of any material to doubt the same. But when the Defendants appear and raise their defence, the State is also bound to satisfy a strong prima facie case to continue the order of arrest.

33. Now let me examine whether the Applicant has made out a reasonably arguable best case or strong prima facie case to obtain arrest of the Respondent No.1 for the plaint claim, or whether the Applicant has made exaggerated claims to demand excessive security in lieu of the arrest of the vessel. Let me examine the claims of the plaintiff one by one.

1. <u>Compensation of Rs.8,554.39 Crores for Oil Pollution Damage.</u>

34. First of all, let me consider the pleading of the Plaintiff under this claim. The pleading is to the effect that it is indubitable that oil pollution damage has been caused by the subject vessel to the marine environment of the State of Kerala, its coastline and other related interests and that

having established the fact that there was an oil spill from the subject vessel, the Defendant No.2 is liable. The pleadings refer to three documents, namely, Ext.A13 Notice under Section 356J of the Merchant Shipping Act dated 24.05.2025 issued by the Mercantile Marine Department, Kochi, Ext.A14 dated 26.05.2025 issued by the Director General of the Indian Coast Guard to the Chief Secretary of the State and Ext.A15 Notice under Section 356J of the Merchant Shipping Act dated 30.05.2025 issued by the Director General of Shipping. The averment is that Ext.A13 evidences the fact that there was an oil leak from the subject vessel into sea; that as per Ext.A14 the Director General of the Indian Coast Guard intimated the Disaster Management Department about the oil spill and drifting of debris, including cargo, along Kerala's coastline; and that as per Ext.A15, the Director General of Shipping informed the State of Kerala about the oil spill from the subject vessel. On considering these averments, I am of the view that these averments

HIGH COURT OF KERALA
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are quite insufficient to claim a compensation of Rs.8,554.39 Crores. The extent of oil discharge from the subject vessel or the magnitude of environmental damage due to oil pollution is lacking in the averments. The Plaintiff has claimed Rs.8,554.39 Crores, equivalent to USD 1 Billion, as compensation for oil pollution damage for the simple reason that the Defendant No.2 has obtained insurance coverage for USD 1 Billion for oil pollution from the P & I Club. Such a reason to support the claim is plainly unsustainable. The amount of insurance coverage for oil pollution has no relevance for claiming compensation for oil pollution damage from the owner of the vessel. Even if there is no insurance, the Plaintiff can claim compensation for oil pollution damage if the same is supported by the materials. The compensation for oil pollution damage can be claimed exceeding the insurance coverage if there are materials for the same. The Plaintiff has to substantiate its claim of Rs.8,554.39 Crores by independent materials irrespective of the value of

HIGH COURT OF KERALA
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insurance. No averment is there in the Plaint to support the huge claim of Rs.8,554.39 Crores.

35. The documents produced along with the Plaint form part of the pleadings. No document produced along with the Plaint discloses any basis for the claim of Rs.8,554.39 Crores towards the compensation for oil pollution damage. The learned Advocate General could not explain any other reason for such a huge claim, other than what is stated in the Plaint. Hence, I find that the claim of Rs.8,554.39 Crores towards the compensation for oil pollution damage by the Plaintiff is an exorbitant one.

36. Let me examine whether Exts.A13, A14 and A15 reveals any oil discharge from the vessel. Ext.A13 is issued before the sinking of the vessel directing to take action preventing escape of oil from the vessel, and monitoring the area; action for removal of oil from the vessel; action for removal oil slicks on the surface of the sea, if it were to occur; action to disperse the oil slicks on the surface of the sea, if

it were to occur and to tow the vessel away from the coast to mitigate the risk of pollution. Ext.A13 does not say oil slicks occurred on the surface of the sea. Ext.A14 reports silver sheen in small patches of oil slick. It states an immediate threat of pollution at sea. It confirms oil discharge from the subject vessel. It does not state the area where the oil sheen is found. In Ext.A15, it is specifically stated that the sunken vessel is discharging oil into the marine environment, thereby posing a potential and serious threat to the Indian EEZ and its coastline. In view of Exts.A14 and A15 documents, the plaintiff has succeeded in proving the discharge of oil from the sunken vessel. Discharge of oil from the vessel into the sea will definitely create serious environmental pollution. Even if it occurs in the EEZ, it will definitely affect the territorial waters and the coastline of the State. Hence, the claim of the State for compensation for oil pollution damage is fully justified. Without getting proof as to the quantity of the oil discharge and its effect on the environment, the

HIGH COURT OF KERALA
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compensation could not be fixed for oil pollution damage. It is a tedious task to be undertaken in the trial. I perfectly understand the difficulty of the Plaintiff-State to assess the environmental damage at this stage even on a prima facie basis. It is relevant to note the contention of the learned Advocate General that studies are still undergoing in this regard, referring to Ext.A49 Study Report of CSIR - National Institute of Oceanography, Regional Centre, Kochi. It would definitely take much time to conclude the study to find out the actual damage to the environment due to pollution on account of oil discharged from the sunken vessel. It is not justifiable to keep the Respondent No.1 Vessel under arrest, demanding an exorbitant amount as security without any basis. At the same time, the present Admiralty Suit filed by the State Government in public interest, demanding compensation for damage to the environment, etc., could not be treated at par with normal Admiralty Suits. Damage to the environment due to oil pollution is prima facie proved. The State Government

HIGH COURT OF KERALA
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necessarily has to expend money from its exchequer to prevent further pollution, restore the environment, and for other allied losses that occurred on account of the sinking of the vessel and consequent oil pollution. Ext.A24 Minutes of the Meeting dated 28.05.2025, presided by the State Fisheries Minister, would show various courses of action to be taken by the State on account of the sinking of the vessel. It will definitely cause a huge burden for the State exchequer. It is for this Court to fix a reasonable amount of security for the compensation for oil pollution damage with the materials available in this case.

37. Then arises the next question as to what is the reasonable amount of security which could be demanded from the Respondent No.1 for securing the compensation due to oil pollution damage on the basis of the materials available before this Court. In order to fix the same, the magnitude of oil pollution is to be ascertained from the available materials.

HIGH COURT OF KERALA
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38. The documents would reveal that the vessel was capsized on 25.05.2025 in the Arabian Sea, 14.6 NM off from the Kerala coastline. Oil discharge from the sunken vessel is admitted by the Respondent No.2 to a limited extent. The contention of the Respondent No.2 is that there occurred only an oil sheen on the sea surface on account of the discharge of oil from the vents of one of the fuel tanks of the vessel; that the vents of the fuel tanks were subsequently capped by the salvors by deep sea diving operations; and that thereafter there is no risk of any oil escaping from the fuel tanks of the vessel. The Respondent No.2 admits that there is fuel still in the bunker of the vessel. In Ext.A46 SITREP dated 28.05.2025 issued by the Director General of Shipping, it is reported that the vessel was carrying approximately 367 tonnes of Heavy Fuel Oil and 64 tonnes of Diesel Oil at the time of the incident. Ext.A4 dated 26.05.2025 issued by the Press Information Bureau (Defence Wing) stated that ICG Surveillance Aircraft detected an oil slick at the

HIGH COURT OF KERALA
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site and that the oil slick was spotted drifting east-southeast from the site. The learned Advocate General referred to Ext.A10 issued by the DFO, Chalakudy, in which it is stated that it is suspected that the death of two dolphins near Azhikode in Thrissur may be linked to the spill from the sunken ship, which contained hazardous materials.

39. Learned Senior Counsel for the Respondent No.2 invited my attention to Ext.B4 Counter Affidavit of the Central Government and Director General of Shipping in W.P.(PIL) No.50/2025, in which it is stated that the Indian Coast Guard, as a part of aerial surveillance, identified and reported the presence of an oil sheen extending approximately 1 NM around the vicinity of the sunken vessel; that the oil sheen was considerably light and identified as possibly diesel or mechanical oil; that the oil sheen appear to have gradually dissipated following the completion of capping operations undertaken by the

salvors on 15.06.2005, which is confirmed by the Indian Coast Guard aerial survey.

40. Ext.B5 Counter Affidavit dated 30.06.2025 filed by the Kerala State Pollution Control Board in W.P.(PIL) No.50/2025, stated that the analysis reports obtained so far reveal that there is no noticeable variation in seawater quality in respect of ship wreck issue; that sampling and analysis are going on and final and conclusive inference on the extent of pollution that may be caused by the shipwreck can be made only after the entire analysis is over; and that Air Quality Monitoring results show that the air quality is not varied with respect to shipwreck incident. The said statement itself reveals that the analysis is not final and conclusive. Ext.B19, which is the Counter Affidavit filed by the Indian Coast Guard in W.P.(PIL) No.50/2025 dated 03.07.2025, stated that to date, minor oil sheens observed close to the sunken vessel have been effectively addressed by using oil spill dispersant. In the

Rejoinder, the Plaintiff has contended that the Indian Coast Guard on 04.08.2025 has reported a fresh oil sheen extending to 2 NM from the wreckage site. It would cause further pollution in the sea. Its effect on the sea organisms is to be assessed. It indicates the chances of the development of further oil sheens in future. Learned Advocate General invited my attention to Ext.A45 Literature, which points out toxicity to fish from the oil pollution.

41. The learned Advocate General and learned Senior Counsel tried to distinguish between the meaning of the words ‘sheen’ and ‘slick’. It is true that both words are used simultaneously in various Reports. All the reports indicate only a thin layer of oil on the surface of the sea. Hence, the use of the words ‘sheen’ and ‘slick’ is immaterial.

42. Ext.B16 SITREP dated 05.08.2025 issued by the Directorate General of Shipping states that while no major

spill has been confirmed, the possibility of a leak due to engine room disturbance has necessitated heightened vigilance and that while the sheen remains limited in scope, this development highlights the need for the salvage team to transition swiftly into operational mode. Ext.B18 Newspaper Report contains the opinions of certain Government officials. It is reported that the Range Forest Officer said that they are awaiting forensic examination reports to identify the exact cause of death of four dolphins and two whales and that nothing suspicious has been found in the postmortem examinations. It is reported that the Senior Scientist of CMFRI said the possibility of a direct link between the death of dolphins & whales and the shipwreck is very low; and that though their primary assumption is that the deaths are not related to the shipwreck, they are not completely ruling it out and that they are conducting studies to determine if there is any connection. Ext.A49 Study Report dated Nil of the C.S.I.R. - National Institute of Oceanography, Regional

HIGH COURT OF KERALA
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Centre, after undertaking 28 days cruise through the sea from 25.07.2025 to 21.08.2025, stated that diesel and furnace oil remain contained; that large oil film on the surface was characterised at the shipwreck location; that high oxygen depletion was prominent in the coastal stations of Munambam and Arthungal. It shows oil slicks aligned with wave trans observed at Alappuzha-Thottappilly during 14th to 15th of August 2025, large oil slicks in the capsized location and a dead turtle observed in the capsized location.

43. There is no material before this Court to find that there is extensive oil pollution within the territorial waters. There is no report before this Court showing a significant impact of oil pollution on the marine environment and marine organisms. Going by the Counter Affidavits filed by the Central Agencies in W.P.(PIL) No.50/2025, oil sheens found near the shipwreck location on two occasions were minor, and the same were dissipated using oil spill

dispersant. Section 4 of the Admiralty Act provides that the High Court may exercise jurisdiction to hear and determine any question on a maritime claim, against any vessel, arising out of any damage or threat to damage caused by the vessel to the environment. As stated earlier, a mere threat to damage a maritime claim will not arise if the threat has not caused anything. On account of the threat, if some activities could not be taken place or if some preventive measures are to be taken by the State, then only the State can claim compensation for the threat. In the case at hand, on account of the threat caused by the existence of fuel and hazardous chemicals in the sunken vessel, the activities in that area are restricted, and the State has to take preventive measures. The fishing activity in the area is also affected on account of the oil spill from the sunken vessel. Considering the materials showing the extent of discharge of oil from the sunken vessel and its impact on the marine environment and marine organisms, I am of the prima facie view that a

HIGH COURT OF KERALA
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security of Rs.500 Crores is sufficient to protect the interest of the State as of now. On a prima facie consideration, I am of the view that security for Rs.500 Crores can be demanded from the Respondent No.1 to secure the compensation for oil pollution damage.

2. Compensation of Rs.71.73 Crores for the pollution caused by the cargo.

44. The plaintiff has computed the environmental compensation for the pollution caused by cargo as per Ext.A20 Guidelines of the Central Pollution Control Board. It is prepared for the violation of Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016. The contention of learned Senior Counsel for the Respondent No.2 is that the said Rules deal with hazardous and other wastes and Rule 2(b) of the said Rules specifically excludes its application to wastes arising out of the operation of ships beyond five kilometres of the relevant baseline as covered under the provisions of the Merchant Shipping Act, 1958 and the rules made

thereunder and as amended from time to time. Hence, the computation of the environmental compensation as per Ext.A20 Guidelines of the Central Pollution Control Board is unjustified. I am unable to accept the said contention. Any other relevant Rules applicable for assessing cargo pollution are not pointed out by the Learned Senior Counsel. The plaintiff is not seeking enforcement of the said Rules against the pollution caused by cargo. The plaintiff has relied on the guidelines made under the said Rules only for the purpose of calculating its claim for compensation for environmental compensation, in the absence of any relevant Rules or guidelines. The legality of the computation as per Ext.A20 is a matter of adjudication in the suit and not at this interlocutory stage.

45. Out of Rs.71.73 Crores for the pollution caused by the cargo, Rs.30.09 Crores is claimed as environmental compensation for pollution caused by plastic waste, Rs.30.42 Crores is claimed as environmental

compensation for pollution caused by hazardous chemicals and Rs.11.22 Crores is claimed as environmental compensation for pollution caused by other pollutants. Ext.A3 Cargo Manifest reveals the nature of the cargo in the 643 containers carried in the sunken vessel. The documents reveal that the items of cargo in the containers in the sunken vessel contain various items, including cotton, polymers, wood, food items, waste and scrap, calcium carbide, hydrazine, hydroxylamine and quick lime.

HIGH COURT OF KERALA

46. Learned Advocate General invited my attention to Exts.A17 and A19 Publications, which describe the adverse effects of plastic waste and plastic nurdles in the marine environment. It reports that some marine organisms, such as fish, sea birds or sea lions, accumulate ingested plastic in their bodies and these organisms may also become entangled in the plastic which can be harmful or fatal. Even though the learned Senior Counsel for the Respondent No.2 contended

that the plastic pellets from the sunken vessel could not be ingested by small fishes on account of its size and there is no report showing presence of plastic pellets in fishes, I am of the view that the large quantities of plastic pellets from the sunken vessel would definitely affect the marine organisms in one way or another. How far it would affect the marine organisms is a matter to be decided in the trial of the suit. It is stated in Ext.B4 that the Kerala State Disaster Management Authority, in conjunction with local administration, deployed personnel, including members of the Civil Defence and local volunteers, to undertake shoreline remedial efforts, particularly in areas impacted by container and cargo wash-up, that approximately more than 100 personnel were deployed by the salvors and an approximate additional 600 personnel were mobilised by the local government authorities on a daily basis. Ext.A4 dated 26.05.2025 issued by the Press Information Bureau (Defence Wing) stated that over 100 cargo containers are floating. Ext.A6 Photographs show plastic pellets and cotton

HIGH COURT OF KERALA
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bales washed ashore along the beaches of the State. This would show the extent of pollution caused by cargo. The total quantity of plastic pellets in the sunken ship was nearly 1400 Metric Tons. Ext.B17 SITREP dated 06.08.2025 issued by the Director General of Shipping stated that as on that date, a cumulative total of 629 Metric Tons of plastic nurdles have been transported and stored in Kollam warehouse. What happened to the remaining quantity of plastic pellets is not known. Prima facie, the plastic pellets have caused much pollution in the sea and the shore and the Plaintiff is entitled to claim security for Rs.30.09 Crores claimed as compensation for pollution caused by plastic pellets in the cargo.

47. It is true that the sunken ship had 12 containers containing calcium carbide and one container containing rubber chemical (antioxidant). As rightly contended by the learned Senior Counsel for the Respondent No.2, there is no evidence that the sunken vessel has caused any

hazardous chemical pollution. There is no evidence that the containers containing calcium carbide and rubber chemical got released from the vessel. It is admitted in the Rejoinder of the Plaintiff that the containers containing IMDG cargo presently remain with the sunken vessel. The presence of pollution caused by calcium carbide and rubber chemical in the seawater is not reported by any authority. In Ext.B4 Counter Affidavit filed by the Central Government and the Director General of Shipping in W.P. (PIL) No.50/2025, it is stated that a total of 60 containers were salvaged and delivered to the port and that none of the containers that washed ashore were identified as containing IMDG cargo. Since there is no evidence that the containers containing hazardous chemicals have been released from the vessel into the sea, the Plaintiff is not entitled to claim security for Rs.30.42 Crores in this regard.

HIGH COURT OF KERALA
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48. Since there is evidence that containers containing cotton, etc., are released from the vessel into the sea, the Plaintiff is entitled to claim security for Rs.11.22 Crores claimed as compensation for pollution caused by other pollutants in the cargo.

49. On a prima facie consideration, I am of the view that security for the claim of Rs.41.31 Crores (Rs.30.09 Crores + Rs.11.22 Crores) can be demanded from the Respondent No.1 as security for the compensation for pollution caused by plastic pellets and other pollutants in the cargo.

HIGH COURT OF KERALA
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3. <u>Cost of Rs.1.38 Crores incurred by the Kerala State Pollution Control Board.</u>

50. Ext.A23 dated 26.06.2025 issued by the Kerala State Pollution Control Board to the Special Secretary, Environment Department of the State reveals that the Board expended an amount of Rs.1,37,63,045/- as on 18.06.2025 towards water and soil analysis charges and expenses incurred by the District Offices of the Board for

purchase of lab equipments, transportation, loading and unloading, stationery, etc., in connection with sinking of the vessel. Though the learned counsel for the Respondent No.2 contended that there is no supporting document for this claim, I am of the view that since Ext.A23 is issued by a responsible Authority of the State, there is nothing to disbelieve it. On a prima facie consideration, I am of the view that security for the claim of Rs.1.38 Crores incurred by the Kerala State Pollution Control Board can be demanded from the Respondent No.1.

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4. Estimated cost of Rs.18 Crores for future, preventive measures by the Kerala State Pollution Control Board.

51. Ext.A23 issued by the Kerala State Pollution Control Board to the Special Secretary, Environment Department of the State states that Rs.3 Crores is claimed as anticipated expenditure for continuing the sampling for two more months. Considering the amounts already expended by the Board, I am of the view that the estimated cost of

Rs.3 Crores is reasonable. Rs.15 Crores is claimed as the amount to be incurred for getting the study conducted through NIO. The figure is stated as yet to be finalised. There is no material to support such a claim. It is unreasonable to demand security from the Respondent No.1 at present for the said estimated amount to be incurred. On a prima facie consideration, I am of the view that out of the estimated cost of Rs.18 Crores for future preventive measures by the Kerala State Pollution Control Board, security for the amount of Rs.3 Crores can be demanded from the Respondent No.1 at this stage.

HIGH COURT OF KERALA
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5. <u>Cost of Rs.45 lakhs incurred by the Department of Fisheries for studies.</u>

52. In Ext.A26 dated 25.06.2025 sent by the Director of Fisheries to the Special Secretary of the Fisheries Department, it is stated that an amount of Rs.45 lakhs is required towards the studies by the Kerala University of Fisheries & Ocean Studies for sampling studies of water and fish tissue for three months. Though the learned

counsel for the Respondent No.2 contended that there is no supporting document for this claim, I am of the view that since a responsible Authority of the State has calculated the cost of such studies at Rs.45 Lakhs, there is nothing to disbelieve the said figure. On a prima facie consideration, the figure appears to be reasonable. Hence, security for the claim of Rs.45 Lakhs can be demanded from the Respondent No.1.

6. Compensation of Rs.152.1 Crores towards the remediation cost for hazardous chemical pollution.

53. Learned Advocate General invited my attention to Ext.A21 dated 01.07.2025 prepared by the Directorate of Environment & Climate Change of the State, which shows the calculation of environmental compensation and remedial cost for hazardous chemical pollution, plastic pollution and other pollutants. Claims for environmental compensation and remedial cost for hazardous chemical pollution, plastic pollution and other pollutants at Rs.152.1 Crores, Rs.150.45 Crores and Rs.56.10 Crores,

respectively, are made on the basis of Ext.A21. As there is no evidence of hazardous chemical pollution from the sunken ship, the security for Rs.152.1 Crores claimed in the Plaint as environmental compensation and remedial cost for hazardous chemical pollution cannot be demanded from the Respondent No.1 at this stage.

7. Compensation of Rs.150.45 Crores towards remediation cost for plastic pollution.

54. Ext.A21 shows the calculation of environmental compensation and remedial cost for plastic pollution. Claim of Rs.150.45 Crores for environmental compensation and remedial cost for plastic pollution is made on the basis of Ext.A21. The evidence on record prima facie shows plastic pollution. In such a case, the calculation in Ext.A21 made by a responsible authority with respect to plastic pollution is to be accepted on a prima facie basis. Hence, security for the environmental compensation and remedial cost for plastic pollution,

calculated at Rs.150.45 Crores, can be demanded from the Respondent No.1.

8. Compensation of Rs.56.1 Crores towards remediation cost for other pollutants.

55. Ext.A21 shows the calculation of environmental compensation and remedial cost for pollution caused by other pollutants. Claim of Rs.56.1 Crores for environmental compensation and remedial cost for plastic pollution is made on the basis of Ext.A21. The evidence on record prima facie shows pollution caused by other pollutants, namely, cotton, etc. In such a case, the calculation in Ext.A21 made by a responsible authority with respect to pollution caused by other pollutants is to be accepted on a prima facie basis. Hence, security for the environmental compensation and remedial cost for pollution caused by other pollutants, calculated at Rs.56.10 Crores, can be demanded from the Respondent No.1.

9. Compensation of Rs.349 Crores towards economic loss to the fishermen due to market scare on fish quality

56. Ext.A26 dated 25.06.2025, prepared by the Director of Fisheries, is the basis for the claim of Rs.349 Crores towards the compensation for economic loss due to market scare. Learned Senior Counsel for the Respondent No.2 contended that there is no evidence of any polluted fish catch and that there is no evidence of any drop in the market price of fish. Learned Senior Counsel invited my attention to Ext.B5 Counter Affidavit dated 30.06.2025 filed by the Kerala State Pollution Control Board in W.P.(PIL) No.50/2025 stating that the analysis reports obtained so far reveal that there is no noticeable variation in seawater quality in respect of the shipwreck issue and that the Air Quality Monitoring results show that the air quality is not varied with respect to shipwreck incident. In the said Counter Affidavit itself, it is stated that sampling and analysis are going on and a final and conclusive inference on the extent of pollution that may be caused by the

shipwreck can be made only after the entire analysis is over. Learned Senior Counsel invited my attention to Ext.B13 Answer given by the Central Minister for Fisheries, Animal Husbandry and Dairying on 22.07.2025 in the Lok Sabha that the test reports revealed that the fish samples were all in good condition and no objectionable smell or favour was observed and the pH, salinity and conductivity of the water samples were within the normal range and that preliminary analysis of water and fish samples revealed that there were no trace or the presence of oil content, no direct evidence to prove presence of hazardous chemicals and that the fish samples are safe for consumption. The Minister's answer is based on preliminary analysis. The study is still ongoing. The presence of oil and plastic pollution is proved by the Plaintiff. The claim is based on the scare of the general public, preventing them from buying fish on the grounds of pollution. When oil and plastic pollution are proven, it is reasonable that it would create a scare among the general

HIGH COURT OF KERALA
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public, preventing them from buying fish. Though learned Senior Counsel contended that there is no evidence with respect to the market scare, I am of the view that under normal circumstances, there would be a market scare about the quality of the fish when a vessel with a huge amount of oil and hazardous cargo has sunken in the sea. Whether there was an actual market scare, whether there was a price drop, and the extent of economic loss on account of such a market scare are matters of evidence to be proved in the suit. Hence, security for the claim of Rs.349 Crores towards the compensation for economic loss due to market scare can be demanded from the Respondent No.1.

10. Compensation of Rs.71 Crores towards landing loss due to fishing ban in 20 Nautical Miles (NM) at Alappuzha.

57. Ext.A26 dated 25.06.2025 prepared by the Director of Fisheries is the basis for the claim of Rs.71 Crores towards the compensation for the landing loss of fish due to the fishing ban in 20 NM for six months. Here also, the

responsible Authority of the State has calculated the landing loss of fish due to the fishing ban in 20 NM for six months at Rs.71 Crores with the data available with it. On a prima facie consideration, the Plaint claim of Rs.71 Crores towards the compensation for the landing loss of fish due to the fishing ban in 20 NM for six months is well founded. Though the Senior Counsel for the Respondent No.2 contended that there was a duplication of this claim with the claim for Rs.106.51 towards compensation for economic loss to the fishermen on account of the fishing ban, I am of the view that the said question is a matter for trial. The claim for Rs.106.51 towards compensation for economic loss to 160417 numbers of fisher folk and allied fisher folk on account of the fishing ban is calculated for 8 days on the basis of their average income, whereas the compensation for the landing loss of fish due to the fishing ban in 20 NM for six months is calculated on the basis of land loss. Prima facie, it appears that both claims are different. Hence, security for the claim of Rs.71 Crores

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towards the compensation for the landing loss of fish due to the fishing ban in 20 NM for six months can be demanded from the Respondent No.1.

11. Compensation of Rs.106.51 Crores towards economic loss to the fishermen due to the fishing ban in 20 Nautical miles for 8 days.

58. Ext.A26 dated 25.06.2025, prepared by the Director of Fisheries, is the basis for the claim of Rs.106.51 Crores towards the compensation for economic loss to the fishermen due to the fishing ban in 20 NM for 8 days. The contention of the learned counsel for the Respondent No.2 is that the fact of the fishing ban is not proved by the State by producing any official document for the same. The Plaintiff relies on a news item on social media to prove the fishing ban. Since the suit is filed by the State Government, I am of the view that the State Government will not make a false claim of a fishing ban in the Plaint. Ext.A26 is an official document in which the fishing ban in 20 NM around the shipwreck introduced on 25.05.2025 is specifically stated. Ext.A9 would reveal that the Plaintiff

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granted Rs.10,55,18,000/- out of the State Disaster Management Fund to pay interim relief of Rs.1,000/- to 78,498 fishermen families and 27,020 families of fishing allied workers in four Districts – Thiruvananthapuram, Kollam, Alappuzha and Ernakulam. It also states that it is decided to give 6 kg of rice as a free ration to each of the families. In Ext.A26, the compensation was calculated at Rs.54.93 Crores on an average income of Rs.428/- per day. In the Plaint, the compensation calculated was Rs.106.51 Crores on an average income of Rs.830/- per day. The Plaintiff has taken Rs.830/- as the average income per day, projecting the GSDP of the fisheries sector for the year 2024-25 using the previous four years' GSDP data. I find force in the submission of the learned Senior Counsel for the Respondent No.2 that the average income of Rs.428/- per day of the year 2023-24 is unreasonably increased almost double for the next year to Rs.830/- per day. Economic loss to fishermen could not be assessed on a projected figure. It has to be calculated

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on the actual figure with a reasonable increase. The extent of increase is a matter of evidence. I am of the view that, for the purpose of security towards the compensation for economic loss to the fishermen due to the fishing ban in 20 NM for 8 days, Rs.54.93 Crores calculated in Ext.A26 on actual average income of the previous year is to be accepted instead of Rs.106.51 Crores claimed in the Plaint on projected average income. Hence, security for Rs.54.93 Crores towards the compensation for economic loss to the fishermen due to the fishing ban can be demanded from the Respondent No.1.

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Amount of Security to be demanded

59. The following Table will show the total amount of security to be demanded for the release of the Respondent No.1.

Sl.No.	Nature of Claim		Amount Claimed (in Crores)	Security to be demanded (in Crores)
1.	Compensation for oil pollution	:	Rs.8,554.39	Rs.500.00

2.	Compensation for cargo pollution	:	Rs.71.73	Rs.41.31
3.	Cost incurred by the Kerala State Pollution Control Board	:	Rs.1.38	Rs.1.38
4.	Estimate for future cost for preventive measures by the Kerala State Pollution Control Board	:	Rs.18.00	Rs.3.00
5.	Cost incurred by the Department of Fisheries for studies	:	Rs.0.45	Rs.0.45
6.	Remediation cost for hazardous chemical pollution	:	Rs.152.10	Nil
7.	Remediation cost for plastic pollution	:	Rs.150.45	Rs.150.45
8.	Remediation cost for other pollutants.	:	Rs.56.10	Rs.56.10
9.	Economic loss to the fishermen due to market scare on fish quality	:	Rs.349.00	Rs.349.00
10.	Landing loss due to the fishing	:	Rs.71.00	Rs.71.00

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	ban in 20 NM			
11.	Economic loss to the fishermen due to the fishing ban	:	Rs.106.51	Rs.54.93
TOTAL			Rs.9,531.11	Rs.1,227.62

60. The fixation of Rs.1,227.62 as security for the release of the Respondent No.1 at present would not prevent the State Government from seeking an increase in the security on obtaining further materials to support such increase during the pendency of the suit. The Plaintiff has every right to seek the arrest of any other sister vessel of the sunken vessel in this suit itself to demand additional security on furnishing supporting materials for the increase. I reserve the right of the plaintiff to seek an increase in the security on obtaining further materials to support the same and to seek arrest of any other sister vessel of the sunken vessel in this suit itself to demand additional security.

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Question No.4

61. Learned Senior Counsel for the Respondent No.2 invited my attention to the Merchant Shipping (Regulation of Entry of Ships into Ports, Anchorages and Offshore Facilities) Rules, 2012, which recognises P & I Insurance and Rule 5 mandates foreign vessels shall have a valid P & I Insurance policy against maritime claims to enter into the Indian coastal waters. Learned Senior Counsel cited the Order of the Hon'ble Supreme Court in ***Eco Maritime Ventures Ltd. v. ING Bank NV [Dated 10.01.2017 in Civil Appeal No.239/2017]*** and contented that the Hon'ble Supreme Court accepted the Letter of Undertaking from the first class P & I Club for the security amount in lieu of arrest of the vessel. On going through the said Order, it is seen that the Letter of Undertaking from the first class P & I Club was accepted for the security amount since the plaintiff endorsed no objection.

62. As per Section 5 of the Admiralty Act, the purpose of arrest is for providing security against the maritime claim in the Admiralty Suit. Section 2(1)(c) defines 'arrest' as the detention or restriction for removal of a vessel by order of a High Court to secure a maritime claim. A foreign vessel is arrested to secure the decree amount that may be passed against the Defendant. The reason for the arrest is that if the vessel leaves the territorial waters of the country without furnishing security, the plaintiff will not be able to execute the decree against the foreign national/entity. If a security in the form of a Letter of Undertaking is accepted from a foreign entity in lieu of arrest, the decree could not be executed against such entity if such entity refuses to honour the Letter of Undertaking. In such a case, the very purpose of the arrest will be defeated. That apart, the Court may not be able to assess the financial and other credibility of the foreign entity which issues the Letter of Undertaking. It is difficult to confirm even the genuineness of the Letter of Undertaking. In some Admiralty Suits, Bank

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Guarantees of Indian Banks are accepted as security in lieu of arrest. No Court will accept a Letter of Undertaking, even from an Indian Bank, as security in lieu of arrest. The insistence of valid P & I Insurance under the Merchant Shipping (Regulation of Entry of Ships into Ports, Anchorages and Offshore Facilities) Rules, 2012 for entry into the Indian Coastal Waters could not be taken as a reason to accept a Letter of Undertaking from a P & I Insurance Club in lieu of arrest in an Admiralty Suit. The Admiralty Act does not recognise a Letter of Undertaking from a P & I Insurance Club in lieu of arrest in an Admiralty Suit. My view is supported by the Division Bench decision of the Calcutta High Court in ***S.B.International Ltd. v. The Owners and Parties in Vessel M.T. Zaima Wavard [(1998) ILR 2 Cal 222]*** cited by the learned Advocate General in which the Calcutta High Court refused to accept Letters and Guarantees furnished by P & I Club to release vessel from arrest, holding that the Court is more concerned with the possibility as to what will happen if the P & Club does not

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pay up and in that event the plaintiff has to go abroad and that the very purpose of obtaining admiralty security, that the Plaintiff does not have to chase the ship, or the owners and parties interested in the ship, all over the world, would be defeated, because the plaintiff, even after winning the Admiralty Suit, would have to go to England to enforce the letter of security. I hold that the Letter of Undertaking from P & I Club cannot be accepted as the security for releasing the arrested vessel.

Conclusion

63. In view of the above discussions and findings, the Order dated 07.07.2025 in I.A. No.1/2025 in the above Admiralty Suit arresting the Respondent No.1 is modified by substituting the security amount of **Rs.9,531 Crores** with **Rs.1,227.62 Crores.** The order of arrest against the Respondent No.1 Vessel shall be until **Rs.1,227.62 Crores** is deposited by the Respondent No.1 in this Court

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or until security for the said amount is furnished by the Respondent No.1 to the satisfaction of the Court.

Sd/-

M A ABDUL HAKHIM, JUDGE

jma/Shg

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APPENDIX

Ext.A1	Relevant page of the Ship profile of MV MSC AKITETA II-bearing IMO No.9220847 obtained from www.equasis.org
Ext.A2	Relevant pages of the Ship Profile of MV MSC ELSA 3 (IMO No. 9123221) taken from the website https://www.equasis.org/ .
Ext.A3	True copy of the cargo manifest of MSC Elsa 3 as received from Mercantile Marine Department, Kochi.
Ext.A4	A true copy of the Press Release by Ministry of Defence, posted on 26.05.2025 on "Oil Slick Detected after Liberian Container Vessel Sinks off Kerala Coast, ICG Leads Pollution response".
Ext.A5	A true copy of the list of Containers retrieved by the Plaintiff.
Ext.A6	Photographs of the Plastic Pellets and cotton balls, beached at Thiruvananthapuram, Kollam, Alappuzha, and Ernakulam.
Ext.A7	A copy of the specific advisories to fishermen by the Kerala State Disaster Management.
Ext.A8	A true copy of the G.O.(Ms)No.11/2025/DMD dated 29.05.2025 declaring the sinking of the Vessel MSC Elsa 3 as State Disaster.
Ext.A9	A true copy of GO (Rt) No. 371/2025/DMD dated 3-6-2025 ordering Interim cash relief assistance of Rs.1000/- to each fishermen family of Ernakulam, Alappuzha, Kollam and Thiruvananthapuram and 6 kg rice to each fishermen family.
Ext.A10	A true copy of the letter dated 01.07.2025 from the Divisional Forest Officer, Chalakkudy to the Director of Department of Environment and Climate Change regarding the report on Dolphin strandings at Munnakkal Beach, Azheekode Thrissur along with photographs of the carcass of Dolphins.
Ext.A11	A true copy of the SITREP dated 27.06.2025 available from the official website of the Kerala State Disaster Management authority.

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Ext.A12	A true copy of the GO (Rt) No.363/2025/DMD dated 30.05.2025 of the Disaster Management (A) Department.
Ext.A13	A true copy of the Notice dated 24.05.2025 from the Mercantile Marine Department; Kochi to the 2nd Defendant
Ext.A14	A true copy of the letter dated 26.05.2025 from Director General, India Coast Guard.
Ext.A15	A true copy of the notice under Section 356(J) of Merchant Shipping Act 1958 and Article 9 of the Nairobi International Convention on the Removal of Wrecks 2007, dated 30.05.2025 from Directorate General of Shipping.
Ext.A16	A true copy of the RBI Reference rate as on 30.06.2025.
Ext.A17	A true copy of the paper titled “Plastic Waste in Marine Environment; a review of sources, occurrence and effects”, published in Journal of Science of the Total Environment.
Ext.A18	A true copy of the paper titled “EFFECT OF CALCIUM CARBIDE ON BIO-CHEMICAL PROPERTIES OF ROSY BARB, PETHIA CONCHONIUS (HAMILTON, 1822)” published in connect journals.
Ext.A19	A true copy of the paper titled “Maritime Pollution in the Indian Ocean after the MV X-Press Pearl accident”, published in Journal of Marine Pollution Bulletin.
Ext.A20	A true copy of the CPCB’s 2019 guideline titled “Determination of Environmental Compensation to be recovered for violation of Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016”.
Ext.A21	A true copy of the report on the assessment of environmental compensation and remediation cost by the Director, Directorate of Environment and Climate Change, Government of Kerala.
Ext.A22	A true copy of the action taken by the Kerala State Pollution Control Board in view of the ship wreck incident.
Ext.A23	A true copy of the letter dated 26.06.2025 from the Chairman, Kerala State Pollution Control Board to the Special Secretary, Environmental Department with regard to their claim pursuant to

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	sinking of MSC Elsa 3.
Ext.A24	A true copy of the Minutes of Meeting dated 28/05/2025 by the Hon'ble Minister of Fisheries, Saji Cherian along with other dignitaries pursuant to sinking of MSC Elsa 3.
Ext.A25	A true copy of the study conducted by Centre for Aquatic Resource Management and Conservation, KUFOS on the subject MSC Elsa-3 Container mishap: Impact assessment studies - Fish eggs and larvae.
Ext.A26	A true copy letter dated 25.06.2025 from the Director of Fisheries to the Special Secretary to Environment with regard to their claim pursuant to sinking of MSC Elsa 3.
Ext.A27	Relevant page of the Company Profile of Elsa 3 Maritime INC taken from the website https://www.equasis.org/ .
Ext.A28	Relevant page of the Company Profile of Chloe Navigation Ltd - LIB taken from the website https://www.equasis.org/ .
Ext.A29	Relevant pages of the Ship Profile of MV MSC CAGLIARI IV (IMO No 9318187) taken from the website https://www.equasis.org
Ext.A30	Relevant page of the Company profile of ALION MARITIME LTD-LIB, bearing IMO No.6233177 obtained from www.equasis.org
Ext.A31	Relevant page of the Ship profile of MV MSC Melissa, bearing IMO No.9926918 obtained from www.equasis.org
Ext.A32	Relevant page of the Company profile of AVANTAGE Enterprises INC, bearing IMO No.1977801 obtained from www.equasis.org
Ext.A33	Relevant page of the Ship profile of MV MSC FLORA-bearing IMO No.9978937 obtained from www.equasis.org
Ext.A34	Relevant page of the Ship profile of MV MSC MANASA F, bearing IMO No.9238882 obtained from www.equasis.org
Ext.A35	Relevant page of the Ship profile of MV MSC AGRIGENTO-bearing IMO No.9618276 obtained from www.equasis.org
Ext.A36	Relevant page of the Ship profile of MV MSC MICHELA-bearing IMO No.9720512 obtained from www.equasis.org
Ext.A37	Relevant page of the Ship profile MV MSC KATIE-bearing IMO

	No.946745718 obtained from www.equasis.org
Ext.A38	Relevant page of the Ship profile of MV MSC SABRINA III-bearing IMO No.8714205 obtained from www.equasis.org
Ext.A39	Relevant page of the Ship profile of MV MSC NAIROBI X-bearing IMO No.9605243 obtained from www.equasis.org
Ext.A40	A copy of the Bills of Lading issued by 2nd Defendant to Consignees of various Containers on Board the Subject Vessel and the Arrival Notices issued by the 3rd Defendant, on behalf of the 2nd Defendant
Ext.A41	A copy of the Certificate of Entry issued by North Standard P&I, dated 07.02.2025, for the Subject Vessel
Ext.A42	Copy of Letter No. DFTVM/1759/2025-G2 dated 04.07.2025 of the Director of Fisheries addressed to the Special Secretary, Fisheries and Ports Department
Ext.A43	Copy of the Map demonstrating the location of the sunken Vessel, prepared by the GIS Lab, Directorate of Environment and Climate Change (DoECC) of the State
Ext.A44	Copy of the Map demonstrating the location of the retrieved containers prepared by the GIS Lab, Directorate of Environment and Climate Change (DoECC) of the State
Ext.A45	Copy of the Article on Environmental Implications of Oil Spills from Shipping Accidents by Justyna Rogowska and Jacek Namiesnik, Department of Analytical Chemistry, Chemical Faculty, Dansk University of Technology, Narutowicza, Poland, published in Reviews of of environmental contamination and toxicology volume 206, 2010: p. 95-114
Ext.A46	Copy of the Situation Report, SITREP-6 dated 28.05.2025
Ext.A47	Copy of the Situation Report, SITREP-42 dated 21.07.2025
Ext.A48	Copy of the details of sampling locations provided by KSPCB
Ext.A49	SIGNED COPY OF THE PRELIMINARY STUDY REPORT OF NIO TITLED CRUISEREPORT FORV SAGAR SAMPADA CRUISE NO. #SS419

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Ext.A50	AFFIDAVIT OF THE PROJECT LEADER OF NIO DATED 18.09.2025 PURSUANTTO PRELIMINARY STUDY REPORT OF NIO TITLED CRUISE REPORT - FORVSAGAR SAMPADA CRUISE NO. #SS419

Ext.B1	A list of the containers on board the Vessel MSC Elsa 3
Ext.B2	- The dangerous cargo manifest dated 24.052025 for the Vessel MSC Elsa 3
Ext.B3	A copy of the bMC report dated 22nd June 2025
Ext.B4	A copy of the affidavit (without annexures) dated 18th June 2025 produced by the Union of India and the Directorate General of Shipping
Ext.B5	A copy of the affidavit (without Annexures) filed by KSPCB dated 30th June 2025
Ext.B6	A copy of the Certificate of Registry of the Defendant Vessel dated 16.05.2025
Ext.B7	A copy of the current Bareboat Charter for the Defendant Vessel dated 19.02.2025
Ext.B8	A copy of the Certificate of Registry of the Vessel Elsa 3 dated 28.02.2022
Ext.B9	A copy of the Bareboat Charter for Vessel Elsa 3 dated 01.01.2024
Ext.B10	A copy of the Certificate from the Flag State Authority- The Republic of Liberia dated 28th January 2025
Ext.B11	A copy of the Oil Recovery Plan dated 25.06.2025
Ext.B12	A copy of the press release published online by the Press Information Bureau (“PIB”) titled “Financial Assistance to Fishing Communities in Kerala” and dated 22.07.2025
Ext.B13	A copy of the written reply to the Unstarred Question No. 357, pertaining to the Fisheries Crisis in Kerala, submitted by Shri George Kurian, Minister of State for Fisheries, Animal Husbandry and Dairying, in the Lok Sabha on 22.07.2025

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I.A.No.1 of 2025 in

Admn.S.No.12/2025

Ext.B14	A copy of the SITREP – 41 as published by the Directorate General of Shipping pertaining to the Sinking of MSC Elsa 3, dated 18.07.2025
Ext.B15	A copy of the State Plan, containing the budget outlay for Outside State Plan Schemes for Fisheries in the State of Kerala
Ext. B16	A true copy of the Sitrep 44 dated 5th August 2025
Ext.B17	A true copy of the Sitrep 45 dated 6th August 2025
Ext.B18	A copy of two-newspaper article dated 18 July and 25 June 2025
Ext.B19	A true copy of the Affidavit filed by the District Commander, Indian Coast Guard, in PIL 50 of 2025 filed on 05.07.2025

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Digitally Signed by:
LISHA K
HIGH COURT OF KERALA
HIGHCOURT
Date: 2025-10-03T10:12:08.3960892+05:30

2773 **2062**

HIGH COURT OF KERALA
AT ERNAKULAM

Number and Year of the Case	**: Adml.S. 12/2025**
Name Of Applicant	**: Pranoy K. Kottaram**
Number and Date of Application	**: E 5179/2025 , 01-10-2025**
Date when the copy was delivered	**: 03-10-2025**

Examiner

ONLINE COPY APPLICATION

Digitally Signed by:
LISHA K
HIGH COURT OF KERALA
HIGHCOURT
Date: 2025-10-03T10:12:13.3955254+05:30

ANNEXURE R9-XII

2063

No CLB0/HDS/20231119090846

DOCUMENT OF COMPLIANCE

Special Requirements for Ships carrying Dangerous Goods

Issued in pursuance of the requirement of Regulation II-2/19.4 of the International Convention for the Safety of Life at Sea, 1974, as amended under the authority of the Government of

REPUBLIC OF LIBERIA

By BUREAU VERITAS MARINE & OFFSHORE

Name of Ship BV No : **29820Q**	Distinctive Number or Letters	Port of Registry	Ship Type	IMO Number
MSC ELSA 3	A8NR5	MONROVIA	Container ship	9123221

THIS IS TO CERTIFY:

1. That the construction and equipment of the above mentioned ship was found to comply with the provisions of Regulation II-2/19.3 as applicable according to II-2/1.2.4 of the International Convention for the Safety of Life at Sea, 1974, as amended; and

2. That the ship is suitable for carriage of those classes of dangerous goods as specified in the appendix hereto, subject to any provisions in the International Maritime Dangerous Goods (IMDG) Code and the International Maritime Solid Bulk Cargoes (IMSBC) Code for individual substances also being complied with.

This document is valid until **13 November 2028**

Completion date of the survey on which this certificate is based : 13 November 2023

Issued at Colombo, Sri Lanka, on the 13 November 2023

BUREAU VERITAS
MARINE & OFFSHORE
Achala DE SILVA

This document is electronically signed and does not require a manual signature as defined in IMO guideline FAL.5-Circ.39.
Click here for the verification website

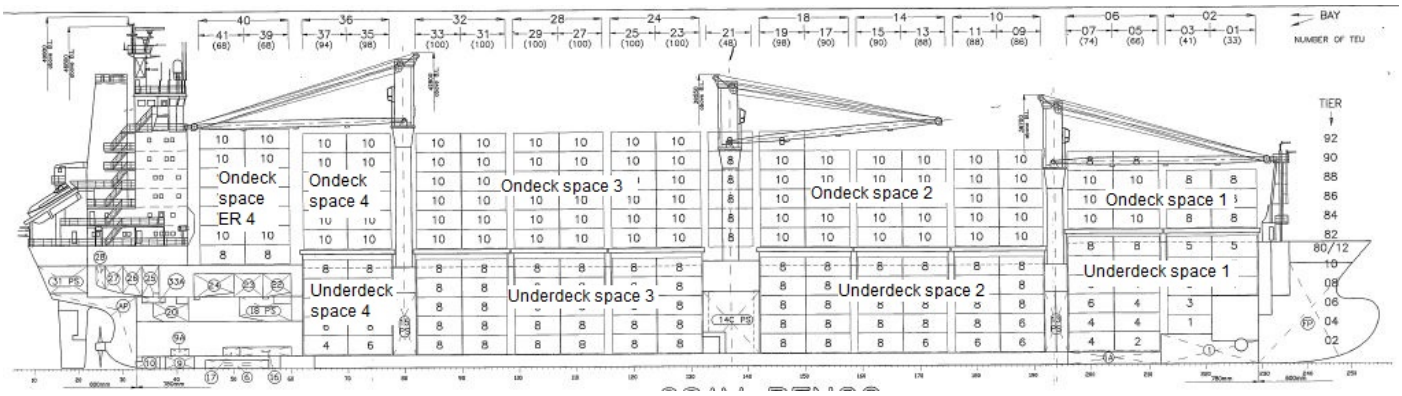
By Order of the Secretary

Note : There are no special requirements in above mentioned Regulation II-2/19 for the carriage of dangerous goods of Classes 6.2 and 7 and for the carriage of dangerous goods in limited quantities, as required in Chapter 3.4 of the IMDG Code, and excepted quantities, as required in chapter 3.5 of the IMDG Code.

APPENDIX TO DOCUMENT OF COMPLIANCE
No: CLB0/HDS/20231119090846

SPACES TO BE INDICATED IN PLAN WITH NUMBERS CORRESPONDING WITH TABLE

Name of Ship BV No : **29820Q**	Distinctive Number or Letters	Port of Registry	Ship Type	IMO Number
MSC ELSA 3	A8NR5	MONROVIA	Container ship	9123221



DOCUMENT OF COMPLIANCE No : CLB0/HDS/20231119090846
NAME OF SHIP : MSC ELSA 3
BV REGISTER : 29820Q

SPACE

Class \ Hold	Underdeck space 1	Underdeck space 2,3	Underdeck space 4	Ondeck space ER 4	Ondeck space 1 to 4
1.1 - 1.6	P 1)	X	X	X	P
1.4.S	P	P	P	P	P
2.1	P 1)	X	X	X	P
2.2	P	P	P	X	P
2.3 flammable	X	X	X	X	P
2.3 non-flammable	X	X	X	X	P
3 FP < 23°C	P 1)	P 1)	X	X	P
3 FP >=23°C - =<60°C	P	P	P	X	P
4.1	P	P	P	X	P
4.2	P	P	P	X	P
4.3 liquids	P 2)	P 2)	P 2)	X	P
4.3 solids	P	P	P	X	P
5.1	P	P	P	P 5)	P
5.2	X	X	X	X	P
6.1 liquids FP < 23°C	P 1)	P 1)	X	X	P
6.1 liquids FP >=23°C - =<60°C	P	P	X	X	P
6.1 liquids	P	P	X	P	P
6.1 solids	P	P	P	P	P
8 liquids FP < 23°C	P 1)	P 1)	X	X	P
8 liquids FP >=23°C - =<60°C	P	P	P 3)	X	P
8 liquids	P	P	P 3)	P	P
8 solids	P	P	P	P	P
9	P 1)	P 1)	P 1)	P	P

P indicates PACKAGED GOODS PERMITTED

A indicates PACKAGED and BULK GOODS ALLOWED

X NOT ALLOWED

Remarks related to information in the table as applicable: ☒ see annex
NOTE : Cargoes in bulk may be listed individually by name and class

DOCUMENT OF COMPLIANCE No : CLB0/HDS/20231119090846
NAME OF SHIP : MSC ELSA 3
BV REGISTER : 29820Q

1) The following electrical equipment in the cargo space(s) is to be isolated from the electrical supply and to be secured against unintentional reconnection(refer to the list of equipment: floodlight(s))
2) Except good having a flashpoint less than 23 listed in the IMDG Code
3) Except good having a subsidiary risk class 6.1
4) Stowage applicable between frame N°42 and 62
5) Except goods for which stowage away from sources of heat is stipulated by the IMDG Code.

INTERNATIONAL BALLAST WATER MANAGEMENT CERTIFICATE

~~2778~~ 2067

No SGP0/AJQ/20221209114805-E2

Issued under the provisions of the
International Convention for the Control and Management of
Ships Ballast Water and Sediments (hereinafter referred to as "the Convention")
under the authority of the Government of

REPUBLIC OF LIBERIA

By BUREAU VERITAS MARINE & OFFSHORE

Name of Ship BV No : **29820Q**	Distinctive Number or Letters	Port of Registry	Gross Tonnage	IMO Number[1]
MSC ELSA 3	A8NR5	MONROVIA	16799	9123221

Date of construction: 18 February 1997
Ballast Water Capacity: 7864.1 m3

Details of Ballast Water Management Method(s) used

Method of Ballast Water Management used:
Ballast Water Treatment System
Date installed (if applicable) (dd/mm/yyyy): **17 August 2022**
Name of manufacturer (if applicable): ERMA FIRST ESK ENGINEERING SOLUTIONS S.A.

The principal Ballast Water Management method(s) employed on this ship is/are:
[-] In accordance with regulation D-1
[X] In accordance with regulation D-2

Description:

Type : FIT 300, Capacity: 300 m3/h, Technology: FILTER + electrolysis disinfection for Ballasting. Neutralization disinfection for De- ballasting.

[-] the ship is subject to regulation D-4
[-] other approach in accordance with regulation

THIS IS TO CERTIFY

1. That the ship has been surveyed in accordance with Regulation E-1 of the Annex to the Convention; and
2. That the survey shows that Ballast Water Management on the ship complies with the Annex to the Convention.

This Certificate is valid until **18 August 2027**
subject to surveys in accordance with Regulation E-1 of the Annex to the Convention.

Completion date of the survey on which this Certificate is based: 17 August 2022

Issued at Singapore, on the 09 December 2022

BUREAU VERITAS
MARINE & OFFSHORE
Marcus LEE

This document is electronically signed and does not require a manual signature as defined in IMO guideline FAL.5-Circ.39.
Click here for the verification website

By Order of the Secretary

1. IMO Ship Identification Number Scheme adopted by the Organization by resolution A.1117(30), as may be amended.

ENDORSEMENT FOR ANNUAL AND INTERMEDIATE SURVEYS

THIS IS TO CERTIFY that at a survey required by Regulation E-1 of the Annex to the Convention the ship was found to comply with the relevant provisions of the Convention:

Annual survey

Signed : Achala DE SILVA
(Surveyor to BUREAU VERITAS MARINE & OFFSHORE)

Place : Colombo, Sri Lanka

Date : 13 November 2023

☐ Annual survey
☒ Intermediate survey

Signed : Yury Gushcha
(Surveyor to BUREAU VERITAS MARINE & OFFSHORE)

Place : Salalah, Oman

Date : 05 November 2024

☐ Annual survey
☐ Intermediate survey

Signed :
(Surveyor to BUREAU VERITAS MARINE & OFFSHORE)

Place :

Date :

Annual survey

Signed :
(Surveyor to BUREAU VERITAS MARINE & OFFSHORE)

Place :

Date :

Annual / intermediate survey in accordance with regulation E-5.8.3

THIS IS TO CERTIFY that, at an ☐ annual ☐ intermediate survey in accordance with regulation E-5.8.3 of the Annex to the Convention, the ship was found to comply with the relevant provisions of the Convention.

Signed :
(Surveyor to BUREAU VERITAS MARINE & OFFSHORE)

Place :

Date :

Endorsement to extend the Certificate if valid for less than 5 years where regulation E-5.3 applies

The ship complies with the relevant provisions of the Convention, and this Certificate shall, in accordance with regulation E-5.3 of the Annex to the Convention, be accepted as valid until

Signed :
(Surveyor to BUREAU VERITAS MARINE & OFFSHORE)

Place :

Date :

Endorsement where the renewal survey has been completed and regulation E-5.4 applies

The ship complies with the relevant provisions of the Convention, and this Certificate shall, in accordance with regulation E-5.4 of the Annex to the Convention, be accepted as valid until

Signed :
(Surveyor to BUREAU VERITAS MARINE & OFFSHORE)

Place :

Date :

Endorsement to extend the validity of the Certificate until reaching the port of survey or for a period of grace where regulation E-5.5 or E-5.6 applies

This Certificate shall, in accordance with regulation of the Annex to the Convention, be accepted as valid until

Signed :
(Surveyor to BUREAU VERITAS MARINE & OFFSHORE)

Place :

Date :

Endorsement for advancement of anniversary date where regulation E-5.8 applies

In accordance with regulation E-5.8 of the Annex to the Convention, the new anniversary date is

Signed :
(Surveyor to BUREAU VERITAS MARINE & OFFSHORE)

Place :

Date :

In accordance with regulation E-5.8 of the Annex to the Convention, the new anniversary date is

Signed :
(Surveyor to BUREAU VERITAS MARINE & OFFSHORE)

Place :

Date :

CARGO SHIP SAFETY EQUIPMENT CERTIFICATE

No CLB0/HDS/20231119075643-E1

This Certificate shall be supplemented by a Record of Equipment (Form E)

Issued under the provisions of the
INTERNATIONAL CONVENTION FOR THE SAFETY OF LIFE AT SEA, 1974,
AS MODIFIED BY THE PROTOCOL OF 1988 RELATING THERETO
under the authority of the Government of

REPUBLIC OF LIBERIA

By BUREAU VERITAS MARINE & OFFSHORE

Name of Ship BV No : **29820Q**	Distinctive Number or Letters	Port of Registry	Gross Tonnage	IMO Number
MSC ELSA 3	A8NR5	MONROVIA	16799	9123221

Deadweight of ship (metric tons) (*For oil tankers, chemical tankers and gas carriers only)***:

Length of ship (regulation III/3.12): 172.36 m

TYPE OF SHIP:

☐ Bulk Carrier
☐ Oil Tanker
☐ Chemical Tanker
☐ Gas Carrier
☒ Cargo ship other than any of the above

Date on which keel was laid or ship was at a similar stage of construction or, where applicable, date on which work for a conversion or an alteration or modification of a major character was commenced **18 Feb 1997**

THIS IS TO CERTIFY:

1 That the ship has been surveyed in accordance with the requirements of regulation I/8 of the Convention.
2 That the survey showed that :
2.1 the ship complied with the requirements of the Convention as regards fire safety systems and appliances and fire control plans;
2.2 the life-saving appliances and the equipment of the lifeboats, liferafts and rescue boats were provided in accordance with the requirements of the Convention;
2.3 the ship was provided with a line-throwing appliance and radio installations used in life-saving appliances in accordance with the requirements of the Convention;
2.4 the ship complied with the requirements of the Convention as regards shipborne navigational equipment, means of embarkation for pilots and nautical publications;
2.5 the ship was provided with lights, shapes, means of making sound signals and distress signals in accordance with the requirements of the Convention and the International Regulations for Preventing Collisions at Sea in force;
2.6 in all other respects the ship complied with the relevant requirements of the Convention.

BUREAU VERITAS

CARGO SHIP SAFETY EQUIPMENT CERTIFICATE No : CLB0/HDS/20231119075643-E1
NAME OF SHIP : MSC ELSA 3
BV REGISTER : 29820Q

2.7 the ship was not subjected to an alternative design and arrangements in pursuance of regulation(s) II-2/17, III/38 of the Convention;
2.8 a Document of approval of alternative design and arrangements for fire protection, life-saving appliances and arrangements is not appended to this Certificate.
3 That the ship operates in accordance with regulation III/26.1.1.1** within the limits of the trade area -
4 That an Exemption Certificate has not been issued.

This certificate is valid until* **13 November 2028**,
subject to the annual and periodical surveys in accordance with regulation I/8 of the Convention.

Completion date of the survey on which this certificate is based: **13 Nov 2023**

Issued at Colombo, Sri Lanka, on the 13 November 2023

BUREAU VERITAS
MARINE & OFFSHORE
Achala DE SILVA

This document is electronically signed and does not require a manual signature as defined in IMO guideline FAL.5-Circ.39.
Click here for the verification website

By Order of the Secretary

** Insert the date of expiry as specified by the Administration in accordance with regulation I/14(a) of the Convention. The day and the month of this date correspond to the anniversary date as defined in regulation I/2(n) of the Convention, unless amended in accordance with regulation I/14(h).*

*** Refer to the 1983 amendments to SOLAS (MSC.6(48)), applicable to ships constructed on or after 1 July 1986, but before 1 July 1998 in the case of self-righting partially enclosed lifeboat(s) on board.*

This certificate is complemented by Record No. CLB0/HDS/20231119075643-E1/E

CARGO SHIP SAFETY EQUIPMENT CERTIFICATE No : CLB0/HDS/20231119075643-E1
NAME OF SHIP : MSC ELSA 3
BV REGISTER : 29820Q

ENDORSEMENT FOR ANNUAL AND PERIODICAL SURVEYS

THIS IS TO CERTIFY that at a survey required by Regulation I/8 of the Convention the ship was found to comply with the relevant provisions of the Convention:

Annual survey

Signed : Yury Gushcha
(Surveyor to BUREAU VERITAS MARINE & OFFSHORE)

Place : Salalah, Oman

Date : 05 November 2024

☐ Annual survey
☐ Periodical survey

Signed :
(Surveyor to BUREAU VERITAS MARINE & OFFSHORE)

Place :

Date :

☐ Annual survey
☐ Periodical survey

Signed :
(Surveyor to BUREAU VERITAS MARINE & OFFSHORE)

Place :

Date :

Annual survey

Signed :
(Surveyor to BUREAU VERITAS MARINE & OFFSHORE)

Place :

Date :

CARGO SHIP SAFETY EQUIPMENT CERTIFICATE No : CLB0/HDS/20231119075643-E1
NAME OF SHIP : MSC ELSA 3
BV REGISTER : 29820Q

Annual / periodical survey in accordance with regulation I/14(h)(iii)

THIS IS TO CERTIFY that, at an ☐ annual ☐ periodical survey in accordance with regulation I/14(h)(iii) of the Convention, the ship was found to comply with the relevant provisions of the Convention.

Signed :
(Surveyor to BUREAU VERITAS MARINE & OFFSHORE)

Place :

Date :

Endorsement to extend the Certificate if valid for less than 5 years where regulation I/14(c) applies

The ship complies with the relevant provisions of the Convention, and this Certificate shall, in accordance with regulation I/14(c) of the Convention, be accepted as valid until

Signed :
(Surveyor to BUREAU VERITAS MARINE & OFFSHORE)

Place :

Date :

Endorsement where the renewal survey has been completed and regulation I/14(d) applies

The ship complies with the relevant provisions of the Convention, and this Certificate shall, in accordance with regulation I/14(d) of the Convention, be accepted as valid until

Signed :
(Surveyor to BUREAU VERITAS MARINE & OFFSHORE)

Place :

Date :

CARGO SHIP SAFETY EQUIPMENT CERTIFICATE No : CLB0/HDS/20231119075643-E1
NAME OF SHIP : MSC ELSA 3
BV REGISTER : 29820Q

Endorsement to extend the validity of the Certificate until reaching the port of survey or for a period of grace where regulation I/14(e) or I/14(f) applies

This Certificate shall, in accordance with regulation of the Convention, be accepted as valid until

Signed :
(Surveyor to BUREAU VERITAS MARINE & OFFSHORE)

Place :

Date :

Endorsement for advancement of anniversary date where regulation I/14(h) applies

In accordance with regulation I/14 (h) of the Convention, the new anniversary date is

Signed :
(Surveyor to BUREAU VERITAS MARINE & OFFSHORE)

Place :

Date :

In accordance with regulation I/14 (h) of the Convention, the new anniversary date is

Signed :
(Surveyor to BUREAU VERITAS MARINE & OFFSHORE)

Place :

Date :

RECORD OF EQUIPMENT FOR COMPLIANCE WITH THE INTERNATIONAL CONVENTION FOR THE SAFETY OF LIFE AT SEA , 1974, AS AMENDED (FORM E)

No CLB0/HDS/20231119075643-E1/E

1. Particulars of ship

Name of Ship : MSC ELSA 3
BV Register : 29820Q
Distinctive number or letters: A8NR5

2. Details of life-saving appliances

1	Total number of persons for which life-saving appliances are provided	28	
		Port side	Starboard side
2	Total number of davit launched lifeboats	-	-
2.1	Total number of persons accommodated by them	-	-
2.2	Number of self-righting partially enclosed lifeboats (regulation III/43)[1]	-	-
2.3	Number of totally enclosed lifeboats (regulation III/31 and LSA Code section 4.6)	-	-
2.4	Number of lifeboats with a self contained air support system (regulation III/31 and LSA Code section 4.8)	-	-
2.5	Number of fire-protected lifeboats (regulation III/31 and LSA Code section 4.9)	-	-
2.6	Other lifeboats	-	-
2.6.1	Number	-	-
2.6.2	Type	-	-
3	Total number of freefall lifeboats	1	
3.1	Total number of persons accommodated by them	28	
3.2	Number of totally enclosed lifeboats (regulation III/31 and LSA Code, section 4.7)	1	
3.3	Number of lifeboats with a self-contained air support system (regulation III/31 and LSA Code, section 4.8)	-	
3.4	Number of fire-protected lifeboats (regulation III/31 and LSA Code, section 4.9)	-	
4	Number of motor lifeboats (included in the total lifeboats shown in 2 and 3 above)	1 (28)	
4.1	Number of lifeboats fitted with searchlights	1	
5	Number of rescue boats	1	
5.1	Number of boats which are included in the total lifeboats shown in 2 and 3 above	-	
6	Liferafts		
6.1	Those for which approved launching appliances are required		
6.1.1	Number of liferafts	2	
6.1.2	Number of persons accommodated by them	32	
6.2	Those for which approved launching appliances are not required		
6.2.1	Number of liferafts	2	
6.2.2	Number of persons accommodated by them	32	
6.3	Number of liferafts required by regulation III/31.1.4	1	

[1] *Refer to the 1983 amendments to SOLAS (MSC.6(48)), applicable to ships constructed on or after 1 July 1986, but before 1 July 1998.*

RECORD FORM E No : CLB0/HDS/20231119075643-E1/E
NAME OF SHIP : MSC ELSA 3
BV REGISTER : 29820Q

2. Details of life-saving appliances (continued)

7	Number of lifebuoys	12
8	Number of lifejackets	35
9	Immersion suits	
9.1	Total number	30
9.2	Number of suits complying with the requirements for lifejackets	-
10	Number of anti-exposure suits	-
11	Radio installations used in life-saving appliances	
11.1	Number of search and rescue locating devices	
11.1.1	Radar search and rescue transponders (SART)	2
11.1.2	AIS search and rescue transmitters (AIS-SART)	-
11.2	Number of two-way VHF radiotelephone apparatus	3

3. Details of navigational systems and equipment

	Item	Actual provision
1.1	Standard magnetic compass*	PROVIDED
1.2	Spare magnetic compass*	-
1.3	Gyro compass*	PROVIDED
1.4	Gyro compass heading repeater*	PROVIDED
1.5	Gyro compass bearing repeater*	PROVIDED
1.6	Heading or track control system*	PROVIDED
1.7	Pelorus or compass bearing device*	PROVIDED
1.8	Means of correcting heading and bearings	PROVIDED
1.9	Transmitting heading device (THD)*	-
2.1	Electronic charts display and information system (ECDIS)	PROVIDED
2.2	Back up arrangements for ECDIS	PROVIDED
2.3	Nautical publications	PROVIDED
2.4	Back up arrangements for electronic nautical publications	PROVIDED
3.1	Receiver for a global navigation satellite system*	PROVIDED
3.2	9 Ghz radar*	PROVIDED
3.3	Second radar (3 GHz)*	PROVIDED
3.4	Automatic radar plotting aid (ARPA)*	PROVIDED
3.5	Automatic tracking aid*	-
3.6	Second automatic tracking aid*	-
3.7	Electronic plotting aid*	-
4.1	Automatic identification system (AIS)	PROVIDED
4.2	Long-range identification and tracking system	PROVIDED
5.1	~~Voyage data recorder (VDR)**~~	N/A
5.2	Simplified voyage data recorder (S-VDR)**	PROVIDED

RECORD FORM E No : CLB0/HDS/20231119075643-E1/E
NAME OF SHIP : MSC ELSA 3
BV REGISTER : 29820Q

3. Details of navigational systems and equipment (continued)

6.1	Speed and distance measuring device (through the water)*	PROVIDED
6.2	Speed and distance measuring device (over the ground in the forward and athwartship direction)*	-
7	Echo sounding device*	PROVIDED
8.1	Rudder, propeller, thrust, pitch and operational mode indicator*	PROVIDED
8.2	Rate of turn indicator*	-
9	Sound reception system*	-
10	Telephone to emergency steering position*	PROVIDED
11	Daylight signalling lamp*	PROVIDED
12	Radar reflector*	-
13	International Code of Signals	PROVIDED
14	IAMSAR Manual, Volume III	PROVIDED
15	Bridge navigational watch alarm system (BNWAS)	PROVIDED

** Alternative means of meeting this requirement are permitted under regulation V/19. In case of other means they shall be specified*

THIS IS TO CERTIFY that this Record is correct in all respects.

Issued at Colombo, Sri Lanka, on the 13 November 2023

BUREAU VERITAS
MARINE & OFFSHORE
Achala DE SILVA

This document is electronically signed and does not require a manual signature as defined in IMO guideline FAL.5-Circ.39.
Click here for the verification website

By Order of the Secretary

2790 **2079**

INTERNATIONAL CLASSIFICATION SOCIETY

CERTIFICATE OF CLASSIFICATION

Nr CLB0/PGK/20250225101741

MSC ELSA 3
Ship's Name

29820Q
Register Nr

Liberia
Flag

MONROVIA
Port of Registry

ELSA 3 MARITIME INC.
Owners

This is to certify that the above named ship has been entered in the Bureau Veritas Register Book with the following classification symbols and notations

I ✠ HULL ✠ MACH
Container ship
Unrestricted navigation

✠ INWATERSURVEY

This certificate is issued within the scope of Bureau Veritas Marine & Offshore General Conditions.

At Colombo, Sri Lanka
Limit date of validity

on 25 February 2025
13 November 2028

The hull of the ship is surveyed under normal survey system
The machinery of the ship is surveyed under normal survey system

BUREAU VERITAS
MARINE & OFFSHORE
Achala DE SILVA

This document is electronically signed and does not require a manual signature as defined in IMO guideline FAL.5-Circ.39.
Click here for the verification website

By Order of the Secretary

Conditions and endorsements overleaf.

Any person not a party to the contract pursuant to which this certificate is delivered may not assert a claim against Bureau Veritas Marine & Offshore SAS for any liability arising out of errors or omissions which may be contained in said certificate, or for errors of judgment, fault or negligence committed by personnel of the Society or of its Agents in the establishment or issuance of this certificate, and in connection with any activities which it may provide for.

MSC ELSA 3
Name of Ship

29820Q
Register Nr

ENDORSEMENT FOR ANNUAL AND INTERMEDIATE SURVEYS

The endorsements refer to the completion of periodical surveys only.

Annual survey 1 **(from** 13 Aug 2024 **to** 13 Feb 2025**)**	Signed : Prasanna GUNAT5HILAKE *(Surveyor to BUREAU VERITAS MARINE & OFFSHORE)* Place : HAMBANTOTA ,Sri lanka Date : 23 February 2025
Annual survey 2 **(from** 13 Aug 2025 **to** 13 Feb 2026**)**	Signed : *(Surveyor to BUREAU VERITAS MARINE & OFFSHORE)* Place : Date :
Intermediate survey **(from** 13 Aug 2025 **to** 13 Feb 2027**)**	Signed : *(Surveyor to BUREAU VERITAS MARINE & OFFSHORE)* Place : Date :
Annual survey 3 **(from** 13 Aug 2026 **to** 13 Feb 2027**)**	Signed : *(Surveyor to BUREAU VERITAS MARINE & OFFSHORE)* Place : Date :
Annual survey 4 **(from** 13 Aug 2027 **to** 13 Feb 2028**)**	Signed : *(Surveyor to BUREAU VERITAS MARINE & OFFSHORE)* Place : Date :

Conditions of validity:

1. This certificate remains the property of Bureau Veritas Marine & Offshore SAS ("the Society").
2. This certificate cannot be used in connection with the sale of ship without permission of the Society.
3. The validity of the assigned class is conditioned upon due compliance with the requirements of chapter 2 of the Rules regarding notably adequate maintenance and operation of the ship and declaration of defects to the Society.
4. The latest published Rules of Bureau Veritas Marine & Offshore and the General Conditions are applicable.

2792 2081

SAFETY MANAGEMENT CERTIFICATE

No PHC0/DAK/20201110184446

Issued under the provisions of the
INTERNATIONAL CONVENTION FOR THE SAFETY OF LIFE AT SEA, 1974,
as amended, under the authority of the Government of

REPUBLIC OF LIBERIA

By BUREAU VERITAS

Name of Ship BV No: 29820Q	Distinctive number or letters	Port of Registry	Gross Tonnage	IMO Number
MSC ELSA 3	**A8NR5**	**MONROVIA**	**16799**	**9123221**

Name of Company (Identification Number : **1535947**)	Ship Type
MSC SHIPMANAGEMENT LIMITED 8, Spyrou Kyprianou Avenue LIMASSOL CY-3070 CYPRUS	**Other cargo ship**

THIS IS TO CERTIFY THAT :

The safety management system of the ship has been audited and that it complies with the requirements of the International Management Code for the Safe Operation of Ships and for Pollution Prevention (ISM Code), following verification that the Document of Compliance for the Company is applicable to this type of ship.

This Safety Management Certificate is valid until **9 November 2025**, subject to periodical verification and the Document of Compliance remaining valid.

Completion date of the audit on which this certificate is based : 10 November 2020

Issued at **Port Harcourt**, on the **10 November 2020**

BUREAU VERITAS

Denis AKE
By Order of the Secretary

BUREAU VERITAS

2793

2082

Certificate No. PHC0/DAK/20201110184446

ENDORSEMENT FOR INTERMEDIATE VERIFICATION AND ADDITIONAL VERIFICATION (IF REQUIRED)

THIS IS TO CERTIFY THAT, at the periodical verification in accordance with regulation IX/6.1 of the Convention and paragraph 13.8 of the ISM Code, the safety management system was found to comply with the requirements of the ISM Code.

RANGE : From **9 November 2022** to **9 November 2023**

INTERMEDIATE VERIFICATION
(to be completed between the **second** and **third** anniversary date)

Signed : .....

Place : .....

Date : .....

ADDITIONAL VERIFICATION

Signed : .....

Place : .....

Date : .....

ADDITIONAL VERIFICATION

Signed : .....

Place : .....

Date : .....

ADDITIONAL VERIFICATION

Signed : .....

Place : .....

Date : .....

Certificate No. PHC0/DAK/20201110184446

ENDORSEMENT WHERE THE RENEWAL VERIFICATION HAS BEEN COMPLETED AND PART B 13.13 OF THE ISM CODE APPLIES

The ship complies with the relevant provisions of part B of the ISM Code, and the Certificate should, in accordance with part B 13.13 of the ISM Code, be accepted as valid until

Signed : .....

Place : .....

Date : .....

ENDORSEMENT TO EXTEND THE VALIDITY OF THE CERTIFICATE UNTIL REACHING THE PORT OF VERIFICATION WHERE PART B 13.12 OF THE ISM CODE APPLIES OR FOR A PERIOD OF GRACE WHERE PART B 13.14 OF THE ISM CODE APPLIES

This Certificate should, in accordance with part B 13.12 or part B 13.14 of the ISM Code, be accepted as valid until

Signed : .....

Place : .....

Date : .....

2797

2086

Printed by agent : DANGEROUS CARGO ANTWERP

International Dangerous Cargo Manifest

export

MSC-MEDITERRANEAN SHIPPING CY

Vessel : MSC ELSA 3 SR520A **Port/Loading :** VIZHINJAM INTERNATIONAL **Nationality :** LIBERIAN Lloyds Reg. Nbr. : 9123221

Port/Discharge : COCHIN via VIZHINJAM INTERNATIONAL SEA PORT

Bkg ref/sub: 177CSGDGS308099/1 MEDU5372298 - DV / 20

UN1402, CALCIUM CARBIDE (-), CLASS 4.3 (-) , PG : II

EmS-Fire / Spill : F-G, S-N

225 Steel drums, removable head-1A2(1A2) -> 22500.0000 Kg.

Actual Holding Time:

MSC-code : 40

Emerg.contact: WULANCHABU CITY ROYALTY CHEMICAL INDUSTRY CO.,LT

Emerg.Phone: 86-18647495666

Bkg ref/sub: 177CSGDGS308099/2 MSMU1837390 - DV / 20

UN1402, CALCIUM CARBIDE (-), CLASS 4.3 (-) , PG : II

EmS-Fire / Spill : F-G, S-N

225 Steel drums, removable head-1A2(1A2) -> 22500.0000 Kg.

Actual Holding Time:

MSC-code : 40

Emerg.contact: WULANCHABU CITY ROYALTY CHEMICAL INDUSTRY CO.,LT

Emerg.Phone: 86-18647495666

I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name(s), and are classified, packaged, marked and labelled/placarded, and are in all respects in proper condition for transport according to applicable international, national governmental regulations and to the IMDG code.

Preparer's name + Signature

X

Master's name + Signature

X

MSC Mediterranean Shipping Company S.A. – Chemin Rieu 12/14 – 1208 Geneva - Switzerland
Senior Director Chemical Cargo Transports : Cdt., Dirk Vande Velde
IDE for MSC Mediterranean Shipping Company S.A. : CHE 111.954.803

Printed by agent : DANGEROUS CARGO ANTWERP

International Dangerous Cargo Manifest

export

MSC-MEDITERRANEAN SHIPPING CY

Vessel : MSC ELSA 3 SR520A **Port/Loading :** VIZHINJAM INTERNATIONAL **Nationality :** LIBERIAN Lloyds Reg. Nbr. : 9123221

Port/Discharge : TUTICORIN via SHANGHAI/ VIZHINJAM INTERNATIONAL SEA PORT

Bkg ref/sub: 177MPPPPXTDG1450/5 AXIU2227284 - DV / 20

UN1402, CALCIUM CARBIDE (-), CLASS 4.3 (-) , PG : II

EmS-Fire / Spill : F-G, S-N

210 Steel drums, removable head-1A2(1A2) -> 25200.0000 Kg.

Actual Holding Time:

MSC-code : 40

Emerg.contact: NEW OCEAN GROUP CO.,LIMITED, JENNIFER

Emerg.Phone: 86-22-28261301

I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name(s), and are classified, packaged, marked and labelled/placarded, and are in all respects in proper condition for transport according to applicable international, national governmental regulations and to the IMDG code.

Preparer's name + Signature

X

Master's name + Signature

X

Printed by agent : DANGEROUS CARGO ANTWERP

International Dangerous Cargo Manifest

export

MSC-MEDITERRANEAN SHIPPING CY

Vessel : MSC ELSA 3 SR520A **Port/Loading :** VIZHINJAM INTERNATIONAL **Nationality :** LIBERIAN Lloyds Reg. Nbr. : 9123221

Port/Discharge : TUTICORIN via VIZHINJAM INTERNATIONAL SEA PORT

Bkg ref/sub: 177CSEDGS910045/5 DFSU2681951 - DV / 20

UN1402, CALCIUM CARBIDE (na calcium carbide), CLASS 4.3 (-) , PG : II

EmS-Fire / Spill : F-G, S-N

210 Steel drums, removable head-1A2(1A2) -> 25200.0000 Kg.

Actual Holding Time:

MSC-code : 40

Emerg.contact: NEW OCEAN GROUP CO.,LIMITED, JENNIFER

Emerg.Phone: 86-22-28261301

Bkg ref/sub: 177CSEDGS910045/2 DFSU2765179 - DV / 20

UN1402, CALCIUM CARBIDE (na calcium carbide), CLASS 4.3 (-) , PG : II

EmS-Fire / Spill : F-G, S-N

210 Steel drums, removable head-1A2(1A2) -> 25200.0000 Kg.

Actual Holding Time:

MSC-code : 40

Emerg.contact: NEW OCEAN GROUP CO.,LIMITED, JENNIFER

Emerg.Phone: 86-22-28261301

I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name(s), and are classified, packaged, marked and labelled/placarded, and are in all respects in proper condition for transport according to applicable international, national governmental regulations and to the IMDG code.

Preparer's name + Signature

X

Master's name + Signature

X

MSC Mediterranean Shipping Company S.A. – Chemin Rieu 12/14 – 1208 Geneva - Switzerland
Senior Director Chemical Cargo Transports : Cdt., Dirk Vande Velde
IDE for MSC Mediterranean Shipping Company S.A. : CHE 111.954.803

Printed by agent : DANGEROUS CARGO ANTWERP

International Dangerous Cargo Manifest

export

MSC-MEDITERRANEAN SHIPPING CY

Vessel : MSC ELSA 3 SR520A **Port/Loading :** VIZHINJAM INTERNATIONAL **Nationality :** LIBERIAN Lloyds Reg. Nbr. : 9123221

Port/Discharge : TUTICORIN via VIZHINJAM INTERNATIONAL SEA PORT

Bkg ref/sub: 177CSEDGS910045/3 FCIU4619879 - DV / 20

UN1402, CALCIUM CARBIDE (na calcium carbide), CLASS 4.3 (-) , PG : II

EmS-Fire / Spill : F-G, S-N

210 Steel drums, removable head-1A2(1A2) -> 25200.0000 Kg.

Actual Holding Time:

MSC-code : 40

Emerg.contact: NEW OCEAN GROUP CO.,LIMITED, JENNIFER

Emerg.Phone: 86-22-28261301

I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name(s), and are classified, packaged, marked and labelled/placarded, and are in all respects in proper condition for transport according to applicable international, national governmental regulations and to the IMDG code.

Preparer's name + Signature

X

Master's name + Signature

X

MSC Mediterranean Shipping Company S.A. – Chemin Rieu 12/14 – 1208 Geneva - Switzerland
Senior Director Chemical Cargo Transports : Cdt., Dirk Vande Velde
IDE for MSC Mediterranean Shipping Company S.A. : CHE 111.954.803

Printed by agent : DANGEROUS CARGO ANTWERP

International Dangerous Cargo Manifest

export

MSC-MEDITERRANEAN SHIPPING CY

Vessel : MSC ELSA 3 SR520A **Port/Loading :** VIZHINJAM INTERNATIONAL **Nationality :** LIBERIAN Lloyds Reg. Nbr. : 9123221

Port/Discharge : TUTICORIN via SHANGHAI/ VIZHINJAM INTERNATIONAL SEA PORT

Bkg ref/sub: 177MPPPPXTDG1450/2 GLDU3752928 - DV / 20

UN1402, CALCIUM CARBIDE (-), CLASS 4.3 (-) , PG : II

EmS-Fire / Spill : F-G, S-N

210 Steel drums, removable head-1A2(1A2) -> 25200.0000 Kg.

Actual Holding Time:

MSC-code : 40

Emerg.contact: NEW OCEAN GROUP CO.,LIMITED, JENNIFER

Emerg.Phone: 86-22-28261301

Bkg ref/sub: 177MPPPPXTDG1450/1 MEDU6618806 - DV / 20

UN1402, CALCIUM CARBIDE (-), CLASS 4.3 (-) , PG : II

EmS-Fire / Spill : F-G, S-N

210 Steel drums, removable head-1A2(1A2) -> 25200.0000 Kg.

Actual Holding Time:

MSC-code : 40

Emerg.contact: NEW OCEAN GROUP CO.,LIMITED, JENNIFER

Emerg.Phone: 86-22-28261301

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Preparer's name + Signature

X

Master's name + Signature

X

MSC Mediterranean Shipping Company S.A. – Chemin Rieu 12/14 – 1208 Geneva - Switzerland
Senior Director Chemical Cargo Transports : Cdt., Dirk Vande Velde
IDE for MSC Mediterranean Shipping Company S.A. : CHE 111.954.803

Printed by agent : DANGEROUS CARGO ANTWERP

International Dangerous Cargo Manifest

export

MSC-MEDITERRANEAN SHIPPING CY

Vessel : MSC ELSA 3 SR520A **Port/Loading :** VIZHINJAM INTERNATIONAL **Nationality :** LIBERIAN Lloyds Reg. Nbr. : 9123221

Port/Discharge : TUTICORIN via VIZHINJAM INTERNATIONAL SEA PORT

Bkg ref/sub: 177CSEDGS910045/4 MSDU1913339 - DV / 20

UN1402, CALCIUM CARBIDE (na calcium carbide), CLASS 4.3 (-) , PG : II

EmS-Fire / Spill : F-G, S-N

210 Steel drums, removable head-1A2(1A2) -> 25200.0000 Kg.

Actual Holding Time:

MSC-code : 40

Emerg.contact: NEW OCEAN GROUP CO.,LIMITED, JENNIFER

Emerg.Phone: 86-22-28261301

Bkg ref/sub: 177KGDGDQDG2404/1 MSMU4243427 - HC / 40

UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.* (anti-oxidant 6ppd (sirantox 6ppd p-phenylenediamine)), CLASS 9 (-) , PG : III

MARINE POLLUTANT, EmS-Fire / Spill : F-A, S-F

840 Paper bags, multiwall, water-resistant-5M2(5M2) -> 21000.0000 Kg.

Actual Holding Time:

MSC-code : 5

Emerg.contact: SENNICS CO., LTD, NI LI WEN

Emerg.Phone: 1391 808 2211

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X

Master's name + Signature

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Senior Director Chemical Cargo Transports : Cdt., Dirk Vande Velde
IDE for MSC Mediterranean Shipping Company S.A. : CHE 111.954.803

Printed by agent : DANGEROUS CARGO ANTWERP

International Dangerous Cargo Manifest

export

MSC-MEDITERRANEAN SHIPPING CY

Vessel : MSC ELSA 3 SR520A **Port/Loading :** VIZHINJAM INTERNATIONAL **Nationality :** LIBERIAN Lloyds Reg. Nbr. : 9123221

Port/Discharge : TUTICORIN via SHANGHAI/ VIZHINJAM INTERNATIONAL SEA PORT

Bkg ref/sub: 177MPPPPXTDG1450/4 SEGU1488630 - DV / 20

UN1402, CALCIUM CARBIDE (-), CLASS 4.3 (-) , PG : II

EmS-Fire / Spill : F-G, S-N

210 Steel drums, removable head-1A2(1A2) -> 25200.0000 Kg.

Actual Holding Time:

MSC-code : 40

Emerg.contact: NEW OCEAN GROUP CO.,LIMITED, JENNIFER

Emerg.Phone: 86-22-28261301

Bkg ref/sub: 177MPPPPXTDG1450/3 TCLU2550703 - DV / 20

UN1402, CALCIUM CARBIDE (-), CLASS 4.3 (-) , PG : II

EmS-Fire / Spill : F-G, S-N

210 Steel drums, removable head-1A2(1A2) -> 25200.0000 Kg.

Actual Holding Time:

MSC-code : 40

Emerg.contact: NEW OCEAN GROUP CO.,LIMITED, JENNIFER

Emerg.Phone: 86-22-28261301

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MSC-MEDITERRANEAN SHIPPING CY

Vessel : MSC ELSA 3 SR520A **Port/Loading :** VIZHINJAM INTERNATIONAL **Nationality :** LIBERIAN Lloyds Reg. Nbr. : 9123221

Port/Discharge : TUTICORIN via VIZHINJAM INTERNATIONAL SEA PORT

Bkg ref/sub: 177CSEDGS910045/1 TCLU2570422 - DV / 20

UN1402, CALCIUM CARBIDE (na calcium carbide), CLASS 4.3 (-) , PG : II

EmS-Fire / Spill : F-G, S-N

210 Steel drums, removable head-1A2(1A2) -> 25200.0000 Kg.

Actual Holding Time:

MSC-code : 40

Emerg.contact: NEW OCEAN GROUP CO.,LIMITED, JENNIFER

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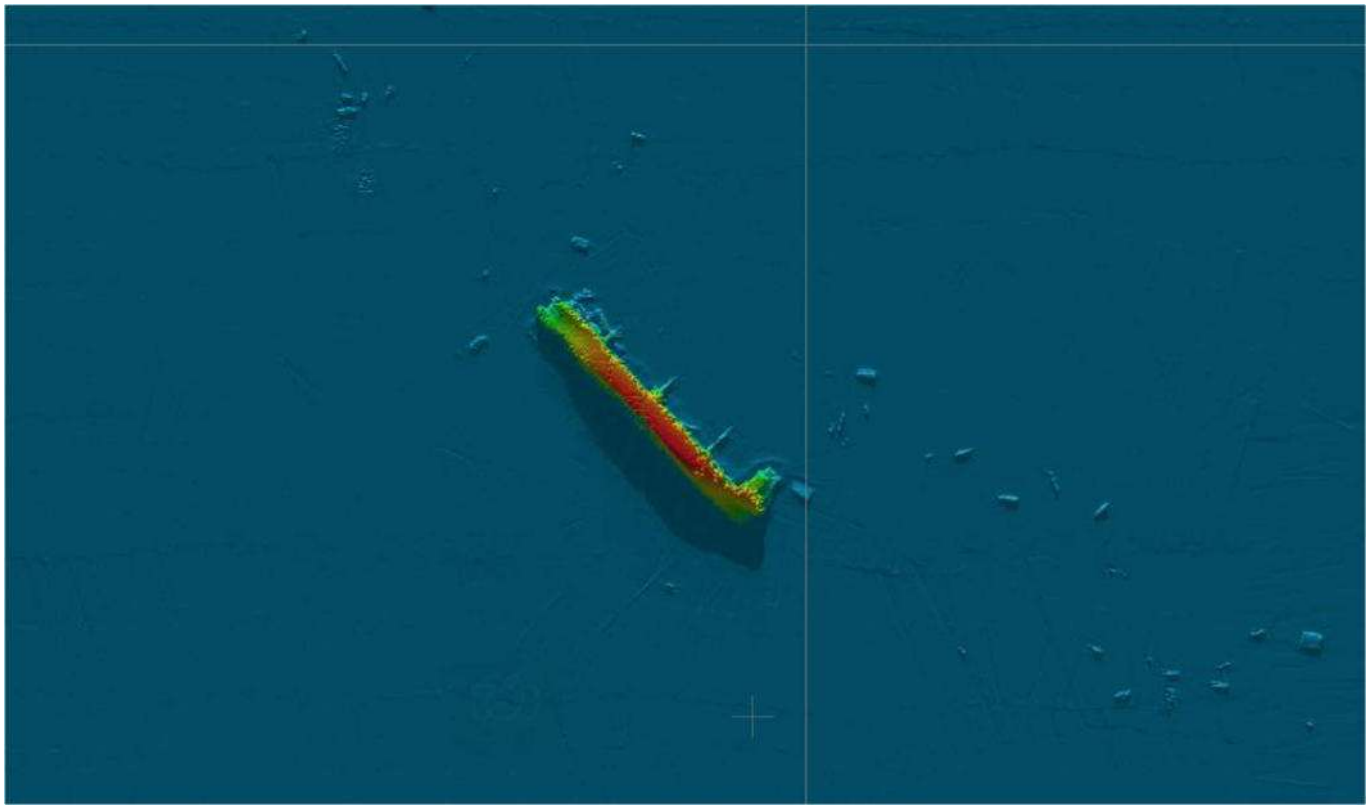
ANNEXURE R9 - XIV

PN4 - 0052025

MSC ELSA 3

OIL RECOVERY OPERATIONS REPORT



Project Name:	MSC ELSA 3
bMC Project No.:	PN4 - 0052025
Date of Occurrence:	24 May 2025
Report No.:	01
Report Version No.:	1.0
Consultant	Vivian Dsouza
Consultant:	James Swinburn
Approved by:	Capt. Ajay Prasad
Date of Report:	10 October 2025

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Company registration no. : 201614437C

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TABLE OF CONTENTS

1 EXECUTIVE SUMMARY 4

2 INTRODUCTION 4

2.1 BACKGROUND & INCIDENT NARRATIVE 4

2.2 SHIP PARTICULARS 4

2.3 VESSEL MSC ELSA 3 DESCRIPTION 5

2.4 PURPOSE AND SCOPE OF THIS REPORT 6

3 SUMMARY OF OPERATIONS 7

3.1 MULTIBEAM SURVEY 7

3.2 CONTAINMENT MEASURES - CAPPING OF VENTS 7

3.3 INITIAL ROV SURVEY 7

3.4 INITIAL OPERATIONS 8

3.5 OIL RECOVERY METHOD 9

3.6 OIL RECOVERY OPERATIONS 11

3.7 RECOVERED OIL QUANTITIES 15

3.8 HYDOCARBONS (OILY MIXTURE) DISPOSAL 16

4 APPENDIX 18

4.1 SURVEYOR REPORT'S DURING RECOVERED FUEL DISPOSAL AT KOCHI 18

4.2 GENERAL ARRANGEMENT PLAN WITH TANK LOCATIONS 19

4.3 MSC ELSA 3 – CHIEF OFFICER DEPARTURE STABILITY REPORT – DATED 23 MAY 2025 20

4.4 MSC ELSA 3 – CHIEF ENGINEERS BUNKER SOUNDING LOG – DATED 11 MAY 2025 21

1 EXECUTIVE SUMMARY

The MSC ELSA 3 sank off Kerala on 25 May 2025. Initial risk of large-scale hydrocarbon release was addressed by containment and monitoring measures, which included the sealing of accessible vents and sounding pipes, carried out by T&T Salvage in the month of June 2025. This was followed subsequently by a planned and controlled hydrocarbon removal operation carried out by SMIT salvage.

2 INTRODUCTION

2.1 BACKGROUND & INCIDENT NARRATIVE

The Liberian-flagged container vessel MSC ELSA 3 developed a list and sank off the coast of Kerala, India, on Sunday, 25 May 2025, whilst enroute from Vizhinjam to Kochi, India. MSC ELSA 3 had reported on board approximately 396 m3 of fuel oil, 96 m3 of marine diesel and 60 m3 of lubricating oil. Following the sinking, intermittent oil release from light oils (presumed diesel oil) was observed on the water surface in the vicinity of the wreck. The released hydrocarbon was reportedly observed on the sea surface mostly as rainbow sheens and was reported to be dissipating naturally within a distance extending up to approximately three hundred meters from the wreck site.

Picture 1. MSC ELSA sinking

2.2 SHIP PARTICULARS

- NAME: MSC ELSA 3

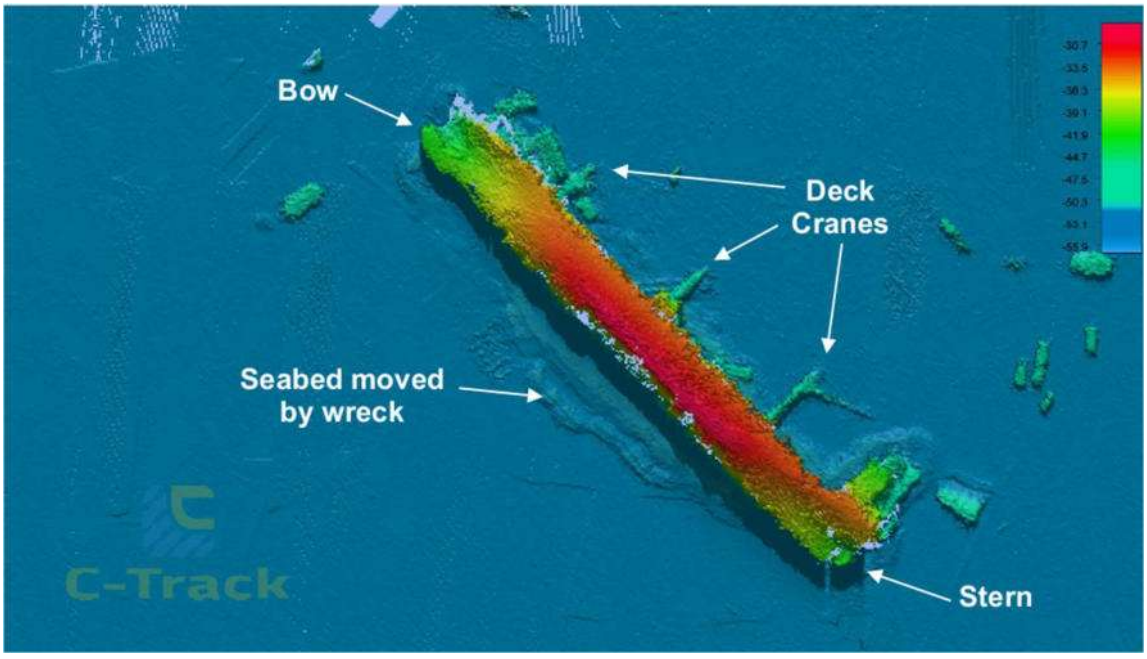
- IMO: 9123221
- Call Sign: A8NR5
- Port of Registry/Flag: MONROVIA/Liberia
- Gross Tonnage: 16799
- Deadweight: 22994
- Length × Breadth: 183.91m x 25.3
- Depth: 9.91m
- Year Built: 1997
- Class: Bureau Veritas

2.3 VESSEL MSC ELSA 3 DESCRIPTION

The MSC ELSA 3 was located on the seabed with coordinates 6°24'411 East, 10°29'790 North. The MSC ELSA 3 was found resting on its starboard side, oriented with the bow pointing northwest and the stern pointing southeast.

MSC ELSA 3 is lying at an approximate depth of 51 meters, with the highest point of the vessel located at 33 meters below MSL (6°24'19.291E, 10°29'771.164N). Scattered debris, potentially including containers and vessel appendages, was observed around MSC ELSA 3 during the multibeam survey.

The MSC ELSA 3 is lying on its starboard side at an angle of about 106 degrees. The seabed in the survey area is relatively flat, with no significant natural obstructions observed.



Picture 2. Wreck site bathymetry

2.4 PURPOSE AND SCOPE OF THIS REPORT

The purpose of this report is to document the operations involving the hydrocarbon removal, presenting survey findings along with a comprehensive record of the actions undertaken for hydrocarbon recovery from the MSC ELSA 3.

The primary objective of the removal operation itself was to remove hydrocarbons remaining on board MSC ELSA 3 as far as was reasonably possible, accessible and within safe conditions thereby minimize potential impacts on the environment.

3 SUMMARY OF OPERATIONS

3.1 MULTIBEAM SURVEY

Following the sinking of MSC ELSA 3, a light oil sheen, assumed to be diesel oil, was observed on the sea surface near the wreck site. Initial mitigating actions comprised of operations to locate and verify the wreck's position, orientation, and depth. A survey team from C-Track Surveys Pvt Ltd was mobilised in June 2025 from Mumbai to Kochi along with the survey spread and equipment. The survey established the wreck's location, general condition, and provided baseline data required for planning subsequent containment measures, including container identification and assessment.

3.2 CONTAINMENT MEASURES - CAPPING OF VENTS

T&T Salvage mobilised Diving support vessel SEAMEC III for offshore operations and were successful in utilising air divers to seal all accessible openings of the fuel tanks. Operations were conducted at about 50 m water depth, where the bottom working time for divers was limited. The divers also needed to undergo staged decompression in a surface decompression chamber after each dive. The operation was carried out in the month of June, with strong monsoon condition and weather experienced at site. Despite the limitations, a total of 41 dives were completed. During this time, all identified vents and sounding pipes were capped. This intervention reduced the risk of hydrocarbon release in the short term, until a more permanent solution could be executed. In view of the peak monsoon conditions in the months of June and July and the associated operational and environmental risks, which limited the available working window, it was decided to defer the next phase of hydrocarbon recovery operations to a more favourable weather window. In the interim, the tug CANARA MEGH was deployed on site for oil spill response (OSR) and guard duties. Plans were considered, agreed upon then put in motion to mobilise a suitable contractor for oil recovery operations.

3.3 INITIAL ROV SURVEY

The next stage of work required planning for hydrocarbon removal from tanks at depths of up to 51 m, including spaces that would necessitate penetration diving. SMIT salvage was contracted to undertake hydrocarbon removal using saturation divers and assisted by a work-class ROV team.

Between 16 July and 4 August 2025, the DP DSV SOUTHERN NOVA was mobilized and outfitted in Singapore with a Quasar 3000 m rated work-class ROV, DECO cutting tools, Tank heating and recirculation spread and other salvage equipment. In parallel, the PSV OFFSHORE MONARCH was mobilised from Mumbai with supporting equipment spreads. Personnel were assembled in Trivandrum in preparation for transfer to Southern Nova at Kollam, initiating the saturation diving phase.

Figure 3: 150HP SMD Mark II Quasar 3000m rated Work Class ROV

3.4 INITIAL OPERATIONS

SMIT's fuel removal operation commenced with mobilisation of the DP DSVSOUTHERN NOVA. The operational plan was structured to ensure that hydrocarbon recovery could be conducted under controlled conditions and to international standards, once weather conditions permitted.

Figure 4: DP DSV SOUTHERN NOVA

Operations at the wreck site commenced on 09 August 2025 with a ROV survey of the wreck site to confirm the work area was clear of hazards and obstructions prior to SOUTHERN NOVA's approach and to ensure that the containers around the wreck would not present a hazard to surface navigation of SOUTHERN NOVA or other project vessels.

A team of nine saturation divers, split into three teams of three, was compressed to storage depth over a 48-hour period within the saturation system. Diving operations began on 18 August 2025, with the first bell run focused on removing previously identified obstructions from the stern of the wreck, identified during the ROV survey.

The PSV OFFSHORE MONARCH, with a Life Support Package (LSP) installed on deck, remained in the vicinity of SOUTHERN NOVA throughout the saturation diving operations, serving as the designated hyperbaric evacuation vessel. During the operations, the SOUTHERN NOVA maintained its position above the wreck by using its Dynamic Position system (DP).

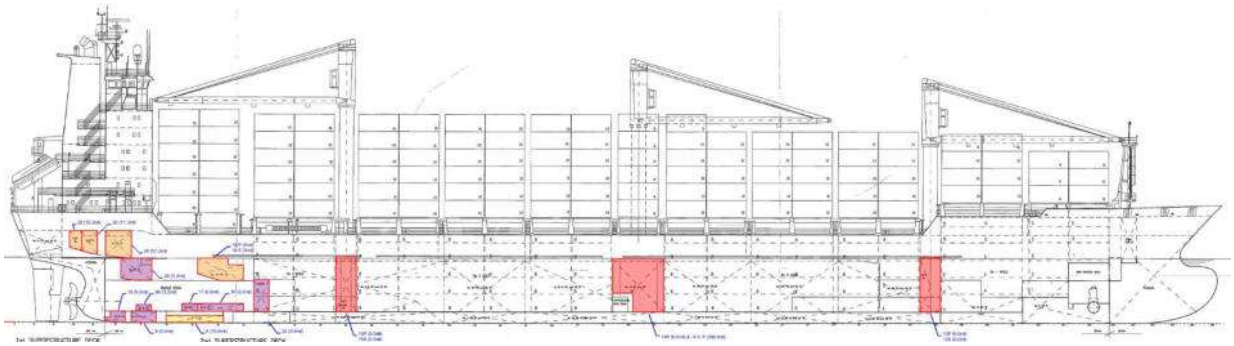


Figure 5: Location of Tanks

3.5 OIL RECOVERY METHOD

The heavy fuel oil (HFO) storage tanks were accessed via the double bottom and wing ballast tanks, depending on their position within the hull. The engine room lube oil tanks, situated on the port side of the hull with direct access from the side shell plating, and the HFO service and settling tanks, located on the port side within the engine room, were accessed through the side shell, separated from the tanks by a cofferdam. The diesel oil tanks, located on the starboard side of the vessel with all openings buried in the seabed, were inaccessible for fuel recovery.

The saturation divers identified, measured, and marked the cutting locations on the hull, and then cut access openings using an abrasive cutting device (DECO Tool), to finally access and hot tap the fuel tanks.

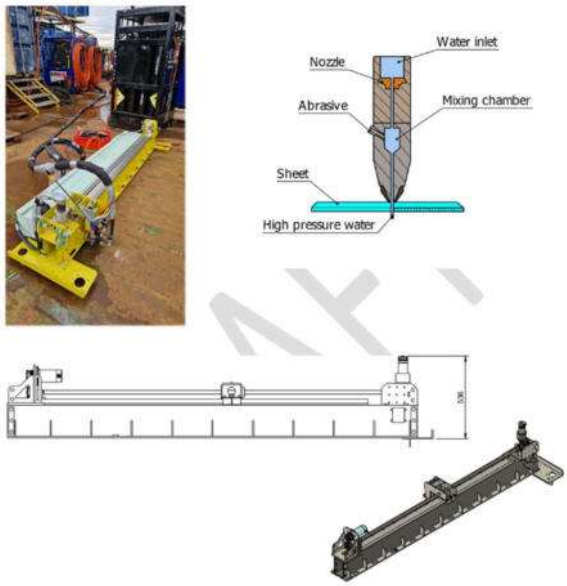


Figure 6: Abrasive cutting tool

The divers entered the access point to reach the tank structure and identified two locations for drilling: one at the highest point of the fuel tank and another at the lowest point. This prevented any vacuum build up during pumping and allowed water to displace the oil toward the upper extraction point. Drilling was carried out using a hot-tap drill to create openings on the tanks, enabling the installation of valves with flanges to facilitate connection of the Desmi hydraulic pump and discharge hose for oil extraction.

Figure 7: Hot-tap drill system

Additional ports were drilled for heating and flushing the HFO bunker tanks to maximize oil recovery. Hot water from a dedicated steam plant (boiler and heat exchanger) installed on the main deck of SOUTHERN NOVA was circulated through the tanks to heat up their contents.

The recovered hydrocarbons from the tanks were temporarily stored in six ISO tanktainers onboard the DSV SOUTHERN NOVA. Transfer operations were conducted on-site with both vessels on DP to transfer the recovered oil into the tanks of the PSV OFFSHORE MONARCH using the Desmi pump. Finally, all recovered hydrocarbon was delivered ashore at Kochi Port for further disposal.

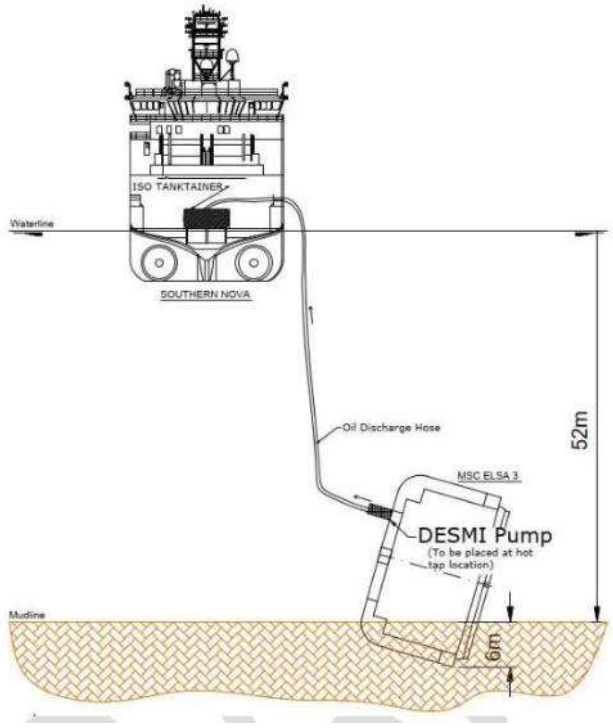


Figure 8: Illustration (not to scale) of oil recovery process

3.6 OIL RECOVERY OPERATIONS

Oil recovery operations commenced as planned, starting with hot tapping of the HFO storage tank 14 Centre Port (14C P), which was reported to contain a high percentage of fuel oil remaining on board.

On 21 August 2025, divers began work on tank 14C P by marking drilling locations on the shell plating to create an access opening through the double bottom ballast tank 3A DB P. This allowed access to the target tank for oil recovery.

By 25 August 2025, approximately 13 m^3 of fuel oil and an unverified quantity of oily water mixture was recovered, after heating and recirculation operations. This against the reported quantity of 268.9 m^3. The shortfall was attributed to possible migration of oil into adjacent tanks. Consequently, it was decided to proceed with hot tapping of the engine room day tanks and the FO overflow tank to locate and recover any migrated oil.

Tank	Content volume [m³]	Tank volume [m³]	Weight [tons]
FO TANK No.7	11.30	33.00	10.40
FO TANK No.13 P	0.00	137.70	0.00
FO TANK No.13 S	0.00	137.70	0.00
FO TANK No.14 P	0.00	291.20	0.00
FO TANK No.14 S	0.00	291.20	0.00
FO TANK No.14 C P	268.90	282.20	248.30
FO TANK No.14 C S	22.20	339.00	20.50
FO TANK No.15 P	0.00	221.50	0.00
FO TANK No.15 S	0.00	211.40	0.00
FO TANK No.22	30.60	67.50	28.30
FO TANK No.23	43.90	70.10	40.50
FO TANK No.24	20.70	65.80	19.10

Table 1: HFO tanks volume and reported content at time of sinking

It should be noted that the volume of hydrocarbons last reported by the crew was basis the temperature the fuels were maintained at on the vessel. Therefore, the actual volumes at sub-surface temperatures will differ.

Operations then moved to the engine room HFO day tanks (22–24). During drilling for eye bolt holes in a void space between the side shell and FO tank 22, oil was observed, prompting an immediate halt to drilling.

The approach for tanks 22 to 24 was subsequently revised. The area also being the high spot in the engine room space, it was decided to carry out hot-tap drilling on the side shell, followed by pumping and flushing through these taps to remove any residual oil accumulation from the engine room space. After pumping, a small inspection window would be cut, with a salvage patch kept on standby in case further oil was encountered. Once confirmed clear, a larger access window would be cut to facilitate hot tapping of these tanks.

Upon completion of oil extraction, a salvage patch with rubber sealing would be installed on the engine room side shell to securely seal the access window, ensuring the engine room space remained secured.

Two hot taps were drilled on the engine room port side shell at frames 48 and 54, with valves and a Desmi pump subsequently installed. Pumping from this space yielded an unverified quantity of oily water mixture.

Hot-tap operations on FO tanks 22–24 were deferred to a later date pending the arrival of materials required for the salvage patch.

Operations subsequently moved to the engine room Lube oil storage tanks (25–28), located at the same level and depth within MSC ELSA 3, along the engine room ship side. Divers drilled and hot-tapped the inlet and outlet ports on each of these four tanks in sequence. By 27 August 2025, approximately 25 m^3 of lube oil and an unverified quantity of oily water mixture had been successfully recovered from LO tanks 25–28.

To access the remaining double bottom tanks, the saturation diving depth was increased to 42 meters. Hot-tap operations progressed with extraction of hydrocarbons from the engine room double bottom tanks — specifically, the Fuel oil overflow tank (No. 7) and the Main engine lube oil sump tank (No. 6). Hot-taps were drilled directly onto the hull/keel for these tanks, and oil recovery was completed by 05 September 2025. The Fuel oil overflow tank (No.7) was heated and recirculated to ensure that all residues were recovered. Approximately 15.5 m³ of hydrocarbons and an unverified amount of oil water mixture was recovered from tanks No. 6 and 7.

Tank	Content volume [m³]	Tank volume [m³]	Weight [tons]
LO TANK No.6	11.80	22.50	10.60
LO TANK No.25	17.10	26.60	15.40
LO TANK No.26	21.00	23.70	18.90
LO TANK No.27	6.10	16.10	5.50
LO TANK No.28	4.90	6.10	4.40

Table 2: Lube oil tanks volume and reported content

Maintaining the saturation diving depth of 42 m, divers commenced work on the HFO storage tank 14 Centre Starboard (14C S) by marking drilling locations on the shell plating to create an access opening through the double bottom ballast tank 3A DB S, allowing access to FOT 14C S.

By 07 September 2025, hot-tap activities were completed, with divers confirming no oil presence from the hot-tap ports. A further heating and recirculation cycle yielded no oil.

Saturation dive teams entered decompression to adjust for the shallower working depth of 30 m, in preparation for operations on the port side tanks of MSC ELSA 3. The divers then commenced work on the HFO storage tank 14 Port (14P), marking drilling locations on the shell plating to create an access opening through the double bottom ballast tank 3A WP for access to FOT 14P.

By 10 September 2025, hot-tap operations were completed, and pumping recovered approximately 126 m³ of fuel oil and an unverified amount of oily water mixture from FOT 14P, despite it being reported as empty. Since FOT 14P is adjacent to FOT 14CP—where the major oil quantity had originally been reported—the recovered volume suggests migration from 14CP.

This confirms the likelihood of oil migration between tanks through the overflow line, which runs common between the port side FO bunker tanks of the vessel. On this basis, it was decided to additionally carry out hot-tapping of portside HFO storage tanks (13P and 15P), which had been reported as empty.

Maintaining the saturation working depth of 30m, divers continued operations on 11 September 2025, on the engine room HFO day tanks (22–24). The pump was installed and the engine room space was flushed/pumped through the previously drilled hot-tap ports at frames 48 and 54 on the engine room side shell to remove any accumulated oil. No oil was observed during flushing, and the space was cleared for access opening into the tanks.

An initial opening measuring 0.5 m × 0.5 m was cut at frames 48–49 on the side shell to access HFO day tanks 23 and 24, with a salvage patch of adequate size kept on standby as a precaution. Subsequently, a larger opening measuring 1.5 m × 1.5 m was made, allowing divers direct access to tanks 23 and 24. By 14 September 2025, hot-taps were drilled on both tanks, and oil was successfully recovered. Upon completion, an "As Left" survey confirmed that the hot-tap ports on tanks 23 and 24 were secured with blind flanges, followed by installation of a steel salvage patch over the access opening on the engine room side shell securing the space.

On 19 September 2025, an opening was made on the engine room side shell to access HFO day tank 22. Hot-tap and pumping operations were carried out, after which the hot-tap ports were sealed with blind flanges. The steel salvage patch installation over the access opening was completed by 20 September 2025.

Pumping of HFO day tanks 22, 23 and 24 recovered approximately 67 m^3 of fuel oil and an unverified amount of oily water mixture.

Operations now focused on tapping portside HFO storage tanks 13P and 15P, which were reported as empty but could possibly contain oil which may have migrated during sinking of MSC ELSA 3.

The first stage involved creating an access opening through ballast tank 5WP to reach FOT 15P. By 22 September 2025, hot-tap drilling was completed, with divers confirming no oil presence from the hot-tap port. A subsequent revisit to FOT 15P included verification of measurements and hot-tap locations, all of which were confirmed accurate and correctly positioned.

The second stage involved creating an access opening through ballast tank 2WP to reach FOT 13P. On 24 September 2025, hot-tap drilling was completed, and divers confirmed the presence of oil within the tank. Pumping and a subsequent cycle of heating and circulation recovered approximately 40.5 m^3 of fuel oil and an unverified amount of oily water mixture.

On 25 September 2025, FOT 14P was revisited for a cycle of heating and recirculation after settling and this resulted in the recovery of approximately 6.0 m^3 of fuel oil and an unverified amount of oily water mixture.

Engine room IOPP tanks:

On 26 September 2025, the accessible IOPP tanks which may contain hydrocarbons were pumped. Operations began with the identification of the two accessible vent heads for Separator Water Tank No. 8 and FO/LO Separator Sludge Tank No. 16/17 (which share a common vent).

The vent heads from tanks 8 and 16/17 were removed and the contents were recovered by pumping using a Desmi pump, resulting in the recovery of approximately 2.3 m^3 of hydrocarbons and an unverified amount of oily water mixture.

Tank	Content volume [m^3]	Tank volume [m^3]	Weight [tons]
TANKNo.8 (seperator water)	4.80	12.00	0.00
TANKNo.16 (FO seperator sludge)	3.20	24.00	0.80
TANKNo.17 (LO seperator sludge)	0.60	4.30	3.20

Table 3: Engine room IOPP tanks volume and reported content

This completed the hydrocarbon recovery operation from all accessible tanks, carried out in the most practical and safe manner possible.

AS-LEFT SURVEY:

All tanks from which hydrocarbons were recovered had their hot-tap ports secured with blind flanges. An As-Left survey, supported by video and photographic evidence, confirmed the proper closure of the hot-tap ports, with the same verification done to the steel salvage patches installed on the engine room side shell access opening for engine room HFO day tanks (22–24).

3.7 RECOVERED OIL QUANTITIES

The quantities reported in the Chief Officer's Departure Stability Report (from Vizhinjam on 23 May 2025) indicated below quantities:

FO - 367.1 Metric tonnes

LO - 54.8 Metric tonnes

IOPP tanks (8,16 & 17) – 8.6 Metric tonnes

Total hydrocarbons = 430.5 Metric tonnes

Note 1 - A review of the chief engineer's bunker sounding log for the previous 3 months has revealed a typo error of 19.4 metric tonnes of fuel oil in the Chief Officer's Departure Stability Report. The quantity of 19.4 metric tonnes of fuel oil has been deducted from the above reported 430.5 metric tonnes to arrive at the estimated remaining on board (R.O.B) quantity.

Note 2 - Based on the Bunker sounding log, it is established that bunker storage 14C S tank was being used for daily fuel consumption and it is presumed that the tank was stripped prior to the MSC ELSA

3's anticipated arrival at the next port of call, leaving it empty in preparation for bunkering. As per the vessel's plan, the main engine's daily fuel consumption at Maximum Continuous Rating (MCR) is 54.6 m^3, while at service speed the consumption is estimated at approximately 35–40 m^3 per day. The consumption of the vessel after departure from Vizhinjam up to the time of listing and sinking is estimated at 40 metric tonnes. This quantity of 40 metric tonnes has been deducted from the above reported 430.5 metric tonnes to arrive at the estimated remaining on board (R.O.B) quantity.

Allowing for items in 1 and 2 above, the total hydrocarbon quantity remaining on board the MSC ELSA 3 at the time of sinking is estimated at **371.1 Metric tonnes**.

Recovered Oily water quantity (as per shore survey figures)

1) Survey report Issued LARDNER NORTH & CO on 09 Oct 2025 states:

Quote:

Final quantity (oily/water mixture) of 437.12 MT.

Observed that the recovered cargo (oily/water mixture) comprises of approximately 12–15% water content, with the balance consisting predominantly of oil.

Unquote:

Thus, total Oil Recovered = **estimated at 371.552 MT to 384.66 Metric tonnes**

2) Marpol Declaration Survey as per CEE JEE Lubricants on 06 Oct 2025

Quote:

Oily Water – 435.03 MT (out of which seawater is estimated at 15%)

Sludge – 2.09 Metric tonnes

Unquote:

Thus, total Oil Recovered = **estimated 371.86 Metric tonnes**

Based on the quantities established by the surveyors it is concluded that the entire quantity of 371.1 Metric tonnes of hydrocarbons (Fuel & Lube Oils) estimated to be remaining on board the MSC ELSA 3, at the time of sinking, has been successfully recovered during the fuel removal operations concluded on 26 September 2025.

3.8 HYDOCARBONS (OILY MIXTURE) DISPOSAL

The hydrocarbon recovered from the MSC ELSA 3 wreck and stored onboard PSV OFFSHORE MONARCH in tanks (Port 3, Port 4, Stbd 3 and Stbd 4) was discharged at the Kochi Port for further disposal.

The PSV OFFSHORE MONARCH arrived at Kochi on 01 October 2025, where two independent cargo surveyors conducted a preliminary assessment and estimation of the tank quantities before discharge

commenced. The oily mixture was then transferred from the OFFSHORE MONARCH tanks to shore tankers using portable gear pumps.

OFFSHORE MONARCH tanks were thoroughly stripped, and discharge/suction hoses were blown through and drained. Vessel tanks and six ISO tanks placed on the OFFSHORE MONARCH deck was washed and cleaned, with sludge from tank bottoms removed and stored in barrels. Operations concluded on 06 October 2025. Shore trucks were weighed in batches to quantify the recovered oily mixture in metric tonnes.

The report for the final survey establishing the recovered oil quantities is attached as Appendix 1 below.

4 APPENDIX

4.1 SURVEYOR REPORT'S DURING RECOVERED FUEL DISPOSAL AT KOCHI

2823

2112

Phone : Factory : 0484 - 2558486, 9895976901
E-mail : ceejeelubricants@gmail.com
info@ceejeelubricants.com

GSTIN : 32ADBPA6891M1ZH

CEE JEE LUBRICANTS

VI / 592, INDUSTRIAL DEVELOPMENT AREA, EDAYAR,
BINANIPURAM - P.O., ALUVA - 683 502, KERALA.

Appendix 3 **Date:**06/10/2025

STANDARD FORMAT FOR THE WASTE DELIVERY RECEIPT FOLLOWING A SHIPS USE OF PORT RECEPTION FACILITIES (MEPC.1/Circ.645)

The designated representative of the reception facility provider should provide the following form to the master of a ship that has just delivered waste. This form should be retained on board vessel along with the appropriate oil RB or Garbage RB.

1. RECEPTION FACILITY AND PORT PARTICULARS ANF: 250929104241

1.1 Location/Terminal Name: **Cochin Port,**
1.2 Reception facility provider(s): **Cee Jee Lubricants, Industrial Development Area, Binanipuram P.O, Cochin – 683502 , India**
1.3 Treatment facility provider(s) – if different from above:
1.4 Waste discharge Date & Time from:

2. SHIP PARTICULARS

2.1 Name of Ship: OSV OFFSHORE MONARCH	2.5 Owner or operator:
2.2 IMO number: IMO- 9249453	2.6 Distinctive number or letters:
2.3 Gross tonnage:	2.7 Flag state:
2.4 Type of Ship Oil Tanker Chemical Tanker Bulk Carrier Container Other Cargo Ship Passenger Ship Ro-ro **Other (specify)**	

3. TYPE AND AMOUNT OF WASTE RECEIVED

MARPOL Annex 1- OIL	**Quantity(~~m3~~) MT**
Oily ~~Bilge~~ Water	435.030
Oily Residues(Sludge)	2.090
Oily Tank Washings	435.03 MT OF OILY WATER (AS PER WEIGHBRIDGE SCALE) OUT OF WHICH SEA WATER IS ESTIMATED AT 15%.
Dirty Ballast Water	
Scale and Sludge from tank cleaning	
EMPTY STEEL DRUMS	
MARPOL Annex II- NLS	**Quantity(m3)/name**
Category X substances	
Category Y substances	
Category Z substances	
OS/ other substances	
MARPOL Annex IV-SEWAGE	**Quantity(m3)**

KSPCB AUTHORIZATION No.KSPCB/ESC/ICO/10087575/VAR/2024 valid upto 30/06/2028
COCHIN PORT TRUST LICENSE No.DC/MMPC/Auth-03/2025 valid upto 04/07/2026

NOTE: OILY MIXTURE EXTRACTED FROM THE SUNKEN VESSEL MSC ELSA3 AND STORED ON BOARD THIS VESSEL OFFSHORE MONARCH.

On behalf of the port facility I confirm that the above wastes were delivered.

Signature Full name and company stamp

Shajan K.C
Manager
Cee Jee Lubricants
IDA, Edayar, Aluva

CEE JEE LUBRICANTS EDAYAR ALUVA-683502 INDUSTRIAL DEVELOPMENT AREA

MASTER
M.V. OFFSHORE MONARCH

LARDNER NORTH & CO.

MARINE CARGO SURVEYORS CONSULTANTS, LOSS ASSESSORS
TECHNICAL CONSULTANTS FOR ISO 9000

GSTIN : 32AADFL7357G1ZD Pan Card No. AADFL7357G

Phone : 91 - 484 – 2316865
Fax : 91 - 484 – 2323889
E-mail : lardnernorthcok@gmail.com

55/1717, KCRWA-159
Varekkat Building, Club Road. Girinagar
Kadavanthra P. 0,, Kochi - 682 020

Ref: 08/MSC **09/10/2025**

OIL EMIXTURE EXTRACTED SURVEY REPORT

SURVEY / ULLAGE & DISCHARGE REPORT

Vessel : M.V. OFFSHORE MONARCH
Port : BTP Terminal, Cochin Port
Initial Attendance Date : 01 October 2025
Completion Date : 06 October 2025

---

1. PURPOSE OF ATTENDANCE

We, the undersigned surveyors, attended on board the vessel M.V. OFFSHORE MONARCH at BTP, Cochin Port, for the purpose of ascertaining the quantity of cargo described as “Oily Mixture / Slop (Adulterated Oil)” carried on board the vessel. The cargo originated from the sunken vessel MSC ELSA 3 and was transferred to M.V. OFFSHORE MONARCH by the salvage operator MERK for delivery ashore.

---

2. CARGO DESCRIPTION

- **Cargo Type** : Oily Mixture / Slop (Adulterated Oil)
- **Source** : Extracted from sunken vessel MSC ELSA 3
- **Method of Transfer to Shore** : Pumped to tanker trucks and weighed at **weighbridge**

---

3. TANK INSPECTION AND ULLAGE OPERATION (01.10.2025)

The vessel reported cargo in the following tanks:

- 3P, 3S, 4P, 4S (vessel tanks)

Additional cargo was observed in the following on-board tank containers:

- SLZU2907686
- QNTU2502998
- QNTU2604114
- QNTU2603993
- QNTU2604808

Important Observation:

The vessel is not equipped with calibration tables or tank capacity plans, and no calibration charts were provided for the tank containers. Therefore, Accurate quantification of cargo by ullage or dip measurements on onboard prior to discharge could not be performed.

4. DISCHARGE OPERATIONS (01.10.2025 – 06.10.2025)

Cargo was discharged from the vessel to 20 tanker trucks over multiple days. Each truck was weighed using a certified weighbridge to determine the net cargo weight.

Date	Truck number	gross weight	tare weight	net weight
01.10.2025	KL17K6828	33230	12270	20960
	KL64M6370	43460	14270	29190
	KL05AT6811	41880	14030	27850
	KL33D5677	33500	12540	20960
	KL39Q3999	34100	12510	21590
	KL5AD9050	27170	10400	16770
	KL07BK3419	35730	11520	24210
	KL5AC1144	27970	10430	17540
	KL63D658	27270	9590	17680
	KL45Q682	45480	13270	32210
02.10.2025	KL39N1638	35510	11510	24000
01.10.2025	KL63A6116	18930	6890	12040
	KL63C8240	36970	11730	25240
04.10.2025	KL41C7079	29920	9100	20820
01.10.2025	KL41G7733	28350	9500	18850
06.10.2025	KL40D1135	30080	8960	21120
06.10.2025	KL63D546	31300	9520	21780
01.10.2025	KL63C5864	36420	11440	24980
01.10.2025	KL63J5131	51040	13800	37240
06.10.2025	KL09AU27	9650	7560	2090
TOTAL		**657960**	**220840**	**437120**

Total Cargo Discharged: 437,120 kg = 437.12 Metric Tons

5. ULLAGE REPORT AFTER DISCHARGE (06.10.2025)

All vessel tanks and containers were inspected after discharge.

Tank / Container	Status
3P	EMPTY
3S	EMPTY
4P	EMPTY

LARDNER NORTH & Co. Kochi-682020

Tank / Container	Status
4S	EMPTY
QNTU2604114	EMPTY
QNTU2502998	EMPTY
QNTU2603993	EMPTY
QNTU2604808	EMPTY
SLZU2907686	EMPTY

We confirm that all listed tanks and containers were found EMPTY after discharge.

6. BASIS OF FINAL QUANTITY DETERMINATION

Due to the absence of calibration tables, ullage measurements could not be used for volumetric calculation.
Therefore, the only accurate and accepted method of determination was by Weighment of delivery tanker trucks at weighbridge.

This method was used to calculate the final quantity (oily/water mixture) of 437.12 MT.

Based on our observations, it is observed that the recovered cargo (oily/water mixture) comprises of approximately 12–15% water content, with the balance consisting predominantly of oil.

7. VESSEL PARTICULARS

- Flag: India
- Port of Registry: Mumbai
- IMO No: 9249453
- MMSI: 419001523
- Call Sign: VTYY
- Year Built: 2003

Main Characteristics

- LOA: 67 m
- Beam: 16 m
- GRT: 1992 MT
- NRT: 925 MT
- Max Draft (midships): 5.9 m
- DWT at Max Draft: 3115 MT
- TPC: 7.8 T/cm

8. REMARKS / CONCLUSION

1. Cargo consisted of oily mixture recovered from MSC ELSA 3.
2. Cargo was stored in vessel tanks and portable containers.
3. No tank or container calibration tables were available.
4. Ullage-based quantity assessment was not possible**.**
5. Discharge was carried out to 20 tanker trucks between 01–06 October 2025.
6. Each truck was weighed at weighbridge to determine cargo quantity.
7. Final total cargo received ashore: 437.12 MT
8. Post-discharge inspection confirmed all tanks and containers empty.

---

9. CERTIFICATION

Based on our attendance, inspection, and verification of weighbridge records, we confirm that 437.12 MT of oily mixture was discharged from M.V. OFFSHORE MONARCH at Cochin BTP.

All observations are reported to the best of our knowledge and belief.

This report is prepared and submitted **without prejudice** to the rights and interests of all parties involved. The contents are based on information furnished to us and our independent observations at the time of inspection. No admission of liability is implied or intended.

For LARDNER NORTH & CO.

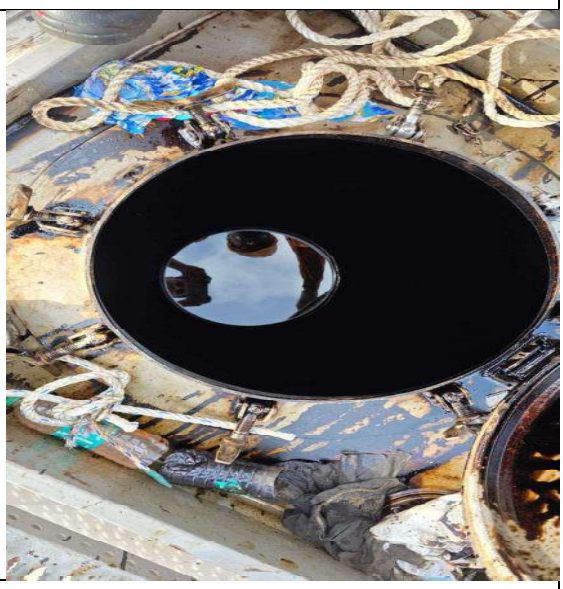
CAPT. ALEX ANTONY

PHOTOGRAPHS

LARDNER NORTH & Co. Kochi-682020

Galaxy S25 Ultra

Galaxy S25 Ultra



THOTOS OF TANKER DURING LOADING

SHIP TANKS AFTER DISCHARGE

4.2 GENERAL ARRANGEMENT PLAN WITH TANK LOCATIONS

2832
2121
7TH SUPERSTRUCTURE DECK
6th SUPERSTRUCTURE DECK
5th SUPERSTRUCTURE DECK
4th SUPERSTRUCTURE DECK
3rd SUPERSTRUCTURE DECK
2nd SUPERSTRUCTURE DECK
1st SUPERSTRUCTURE DECK

4.3 MSC ELSA 3 – CHIEF OFFICER DEPARTURE STABILITY REPORT – DATED 23 MAY 2025

Voyage No.: SR520A
Current POL: INTRV
Next POD: INCOK
ETD: 23/05/2025 14:00:42
ETA: 23/05/2025 21:00:42

Condition Summary

Vessel name: MSC ELSA 3 — Voyage No:SR520A
Current POL: INTRV
Next POD: INCOK
ETD 23/05/2025 14:00 — ATD
ETA 23/05/2025 21:00 — ATA
Description:

Density of Seawater:	1.0250 t/m3		
waterballast	5576 t		
h. fuel oil	367 t	Draught Fore	9.90 m
diesel oil	84 t	Draught Mid	9.87 m
lub. oil	55 t	Draught Aft	9.84 m
fresh water	96 t	Trim	-0.05 m
drain tanks	39 t	GM' (corrected)	0.66 m
		GM Limit	0.54 m
		GM Reserve	0.12 m
		Max. rel. BM (Sea)	70 %
		Max. rel. SF (Sea)	63 %
Stores / Misc.	813 t	Max. rel. TM (Sea)	32 %
		Lever Balance	OK
Container	15822 t	Deadweight	22852 t
	1052 TEU	Light Ship	7852 t
No. of Containers	643	Displacement	30704 t

Lash : GM=0.66 m

Master: _____ Ch.Officer: _____

Tanks

Name	Volume m3	Vol (%)	Weight tons	Lcg m.fr.AP.	Vcg m.a.BL.	Tcg m.fr.CL.	Fs m*t	Density t/m3
FOREPEAK	6.9	1	7.1	164.79	0.64	0.00	2	1.0250
BW TANK No.1	341.6	100	350.1	152.00	3.36	-0.01	0	1.0250
BW TANK No.1A	394.4	100	404.3	140.48	2.81	0.00	0	1.0250
BW TANK No.2 P	160.6	100	164.6	126.78	0.94	-4.30	0	1.0250
BW TANK No.2 S	160.6	100	164.6	126.78	0.94	4.30	0	1.0250

Tanks

Name	Volume m3	Vol (%)	Weight tons	Lcg m.fr.AP.	Vcg m.a.BL.	Tcg m.fr.CL.	Fs m*t	Density t/m3
BW TANK No.2A P	137.0	100	140.4	113.11	0.85	-4.10	0	1.0250
BW TANK No.2A S	137.0	100	140.4	113.11	0.85	4.10	0	1.0250
BW TANK No.2A W P	216.9	70	222.3	113.20	3.07	-10.14	12	1.0250
BW TANK No.2A W S	199.2	64	204.1	113.23	2.80	10.03	12	1.0250
BW TANK No.3 P	137.0	100	140.4	99.85	0.85	-4.10	0	1.0250
BW TANK No.3 S	137.0	100	140.4	99.85	0.85	4.10	0	1.0250
BW TANK No.3 W P	173.8	54	178.2	99.77	2.08	-10.34	14	1.0250
BW TANK No.3 W S	242.1	75	248.2	99.79	3.13	10.66	14	1.0250
BW TANK No.3A P	217.5	100	222.9	82.69	0.85	-4.10	0	1.0250
BW TANK No.3A S	217.5	100	222.9	82.69	0.85	4.10	0	1.0250
BW TANK No.3A W P	320.8	62	328.8	82.69	2.43	-10.50	22	1.0250
BW TANK No.3A W S	278.6	54	285.6	82.69	2.04	10.36	22	1.0250
BW TANK No.4 P	128.9	100	132.1	65.92	0.85	-4.10	0	1.0250
BW TANK No.4 S	128.9	100	132.1	65.92	0.85	4.10	0	1.0250
BW TANK No.4 W P	182.5	60	187.1	65.95	2.34	-10.47	13	1.0250
BW TANK No.4 W S	172.2	57	176.5	65.95	2.18	10.40	13	1.0250
BW TANK No.5 P	293.6	100	300.9	45.60	0.89	-4.14	0	1.0250
BW TANK No.5 S	295.0	100	302.4	45.56	0.89	4.15	0	1.0250
BW TANK No.5 W P	204.3	42	209.4	49.63	2.24	-9.74	20	1.0250
BW TANK No.5 W S	281.3	49	288.3	46.47	2.57	9.32	85	1.0250
AFTERPEAK	31.1	25	31.9	6.89	3.78	0.00	5	1.0250
Total: waterballast	5440.1	69	5576.1	92.53	1.98	0.05	320	1.0250
FO TANK No.7	11.3	34	10.4	27.89	0.50	-2.81	21	0.9234
FO TANK No.13 P	0.0	0	0.0	133.44	1.70	-2.55	0	0.9910
FO TANK No.13 S	0.0	0	0.0	134.01	1.70	2.55	0	0.9910
FO TANK No.14 P	0.0	0	0.0	89.44	1.70	-8.03	0	0.9910
FO TANK No.14 S	0.0	0	0.0	89.20	1.70	8.03	0	0.9910
FO TANK No.14 C P	268.9	95	248.3	89.51	6.22	-2.74	99	0.9234
FO TANK No.14 C S	22.2	7	20.5	89.59	1.98	2.79	104	0.9234
FO TANK No.15 P	0.0	0	0.0	44.69	1.70	-3.94	0	0.9910
FO TANK No.15 S	0.0	0	0.0	44.96	1.70	3.78	0	0.9910
FO TANK No.22	30.6	45	28.3	27.09	10.57	-8.13	63	0.9234
FO TANK No.23	43.9	63	40.5	23.42	10.77	-8.11	62	0.9234
FO TANK No.24	20.7	31	19.1	18.64	10.43	-7.26	38	0.9234
Total: h. fuel oil	397.5	19	367.1	71.98	6.88	-3.68	385	0.9234
FO TANK No.18 P	0.0	0	0.0	27.29	6.40	-8.72	0	0.8640
FO TANK No.18 S	5.8	16	5.0	26.85	6.79	8.77	3	0.8640
DO TANK No.29	11.5	46	10.3	3.74	11.59	6.84	12	0.9000
DO TANK No.30	13.2	38	11.9	5.88	10.96	6.80	14	0.9000
DO TANK No.33	0.0	0	0.0	13.33	6.40	3.54	0	0.8640
DO TANK No.35	66.2	91	57.2	10.21	11.74	7.82	4	0.8640
Total: diesel oil	96.7	39	84.4	9.79	11.32	7.61	33	0.8735
LO TANK No.6	11.8	52	10.6	21.88	0.30	0.00	9	0.9000
LO TANK No.25	17.1	64	15.4	10.17	11.88	-9.12	10	0.9000
LO TANK No.26	21.0	89	18.9	7.76	12.45	-9.08	11	0.9000

Tanks

Name	Volume m3	Vol (%)	Weight tons	Lcg m.fr.AP.	Vcg m.a.BL.	Tcg m.fr.CL.	Fs m*t	Density t/m3
LO TANK No.28	4.9	80	4.4	3.42	12.82	-8.70	2	0.9000
LO TANK No.33 A	0.0	0	0.0	10.54	9.00	-0.23	0	0.9000
Total: lub. oil	60.9	62	54.8	10.58	9.92	-7.25	36	0.9000
FW TANK No.9	0.0	0	0.0	14.21	0.00	0.13	0	1.0000
FW TANK No.31 P	48.0	54	48.0	-0.87	11.94	-4.92	86	1.0000
FW TANK No.31 S	48.0	54	48.0	-0.87	11.94	4.92	86	1.0000
Total: fresh water	96.0	48	96.0	-0.87	11.94	0.00	172	1.0000
TANK No.8	4.8	40	4.8	21.41	0.75	-2.54	3	1.0000
TANK No.9 A	3.2	72	3.2	14.11	2.16	1.99	1	1.0000
TANK No.10	9.3	89	9.3	10.04	0.89	0.34	7	1.0000
TANK No.11	11.7	55	11.7	23.40	0.82	2.88	10	1.0000
TANK No.12	0.8	3	0.8	29.23	0.08	1.93	3	1.0000
TANK No.16	3.2	13	3.2	26.21	1.79	-4.32	13	1.0000
TANK No.17	0.6	14	0.6	21.16	1.80	-3.64	1	1.0000
TANK No.20	5.3	14	5.3	13.66	7.11	-4.03	3	1.0000
TANK No.32	0.0	0	0.0	32.11	1.70	-6.70	0	1.0000
Total: drain tanks	38.7	24	38.7	18.18	1.87	-0.12	40	1.0000
Total: All Tanks	**6129.9**	**57**	**6217.1**	**87.57**	**2.62**	**-0.14**	**987**	**1.0153**

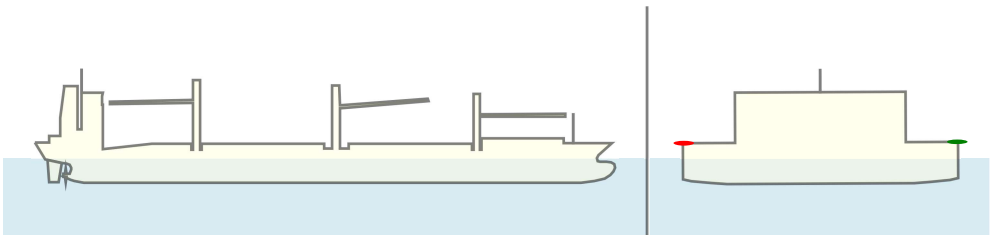
Constants

Item	Weight tons	Lcg m.fr.AP.	Vcg m.a.BL.	Tcg m.fr.CL.	Wda m.fr.AP.	Wdf m.fr.AP.
CREW	2.50	8.00	21.00	0.00	4.00	12.00
PROVISION	10.00	0.97	14.60	0.00	-4.00	4.20
LASHINGS	50.00	81.52	12.93	0.00	50.00	120.00
Constant	750.00	55.00	11.25	-2.90	44.00	120.00
Total	**812.50**	**55.82**	**11.42**	**-2.68**		

Cargo Overview

Loading Condition total						
	Weight tons	LCG m.fr.AP.	VCG m.a.BL.	TCG m.fr.CL.	Fs m*t	Cont TEU
Constants	812.5	55.82	11.42	-2.68		
Tanks	6217.1	87.57	2.62	-0.14	987	
Container	15822.5	90.32	12.94	0.13		1052
Deadweight	22852.1	88.34	10.08	-0.04	987	
Light Ship	7852.0	71.16	10.41	0.07		
Displacement	30704.1	83.95	10.16	-0.01		
Deadw. Reserve	130.9	SUMMER Freeboard				

Trim / Draft

Draughts, Trim and List / Freeboard Mode: SUMMER		
	(Perpendiculars)	m.a.bok.
	Draught Mean	9.87
	Draught Max	9.905
	Draught Aft	9.84
	Draught Mid	9.87
	Draught Fore	9.90
Trim by bow 0.0 degree (-0.05 m)		
List due to transverse moment (deg): -1.2 (portside)		
Density of Seawater: 1.025 t/m3		
Visibility line: 160.95 m - IACS95/2011 + IMO :OK		

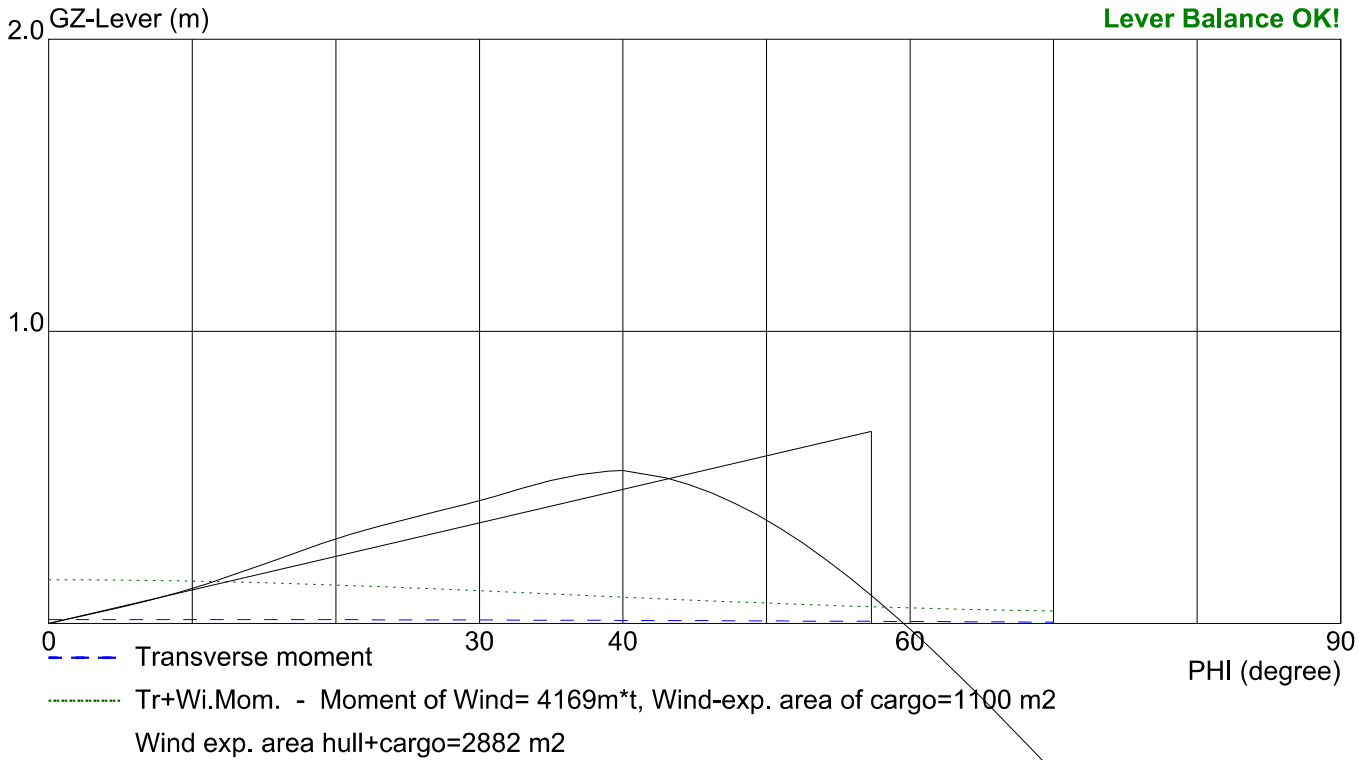
Stability Results

Stability Results / 3 tiers cont.SBG			
Lever Balance OK!	actual	Limit	
GM' (corrected)	0.657	0.540	m
Angle due to transverse Moment	1.2	3.0	° (ps)
Angle due to Wind + transverse Moment	11.5	14.5	° (ps)
GZ Lever at 30 Degrees	0.406	0.362	
Statical Stability Range	58.1	50.0	degr.
Area up to 30 degrees	0.101	0.055	m*rad
Area up to 40 degrees	0.183	0.090	m*rad
Area between 30 and 40 degrees	0.082	0.030	m*rad

Hydrostatic Particulars

Hydrostatic Particulars					
Displacement	30704.1	tons	Draught at aft perpendicular	9.84	m
Corresponding mean draught	9.87	m	Transverse metacentre ab. baseline KM	10.85	m
Longitudinal centre of flotation	79.68	m.fr.AP.	Vertical centre of gravity KG (solid)	10.16	m
Longitudinal centre of buoyancy	83.88	m.fr.AP.	Transverse metacentric height GM	0.69	m
Longitudinal centre of gravity	83.95	m.fr.AP.	Free surface correction GG'	0.03	m
Trimming lever	-0.07	m	Vertical centre of gravity corr.	10.19	m
Trim coefficient	0.7860		Corr. transverse metacentric height GM'	0.66	m
Total trim over perpendiculars	-0.05	m	Transverse moment	-426.6	m*t
Trim at fore perpendicular	0.03	m	List due transverse moment	-1.2	degr.
Trim at aft perpendicular	-0.02	m	Moment to change Trim MCT	390.64	(t*m)/cm
Draught at fore perpendicular	9.90	m	Weight to change Draft TPC	37.05	t/cm
Draught at midship	9.87	m			

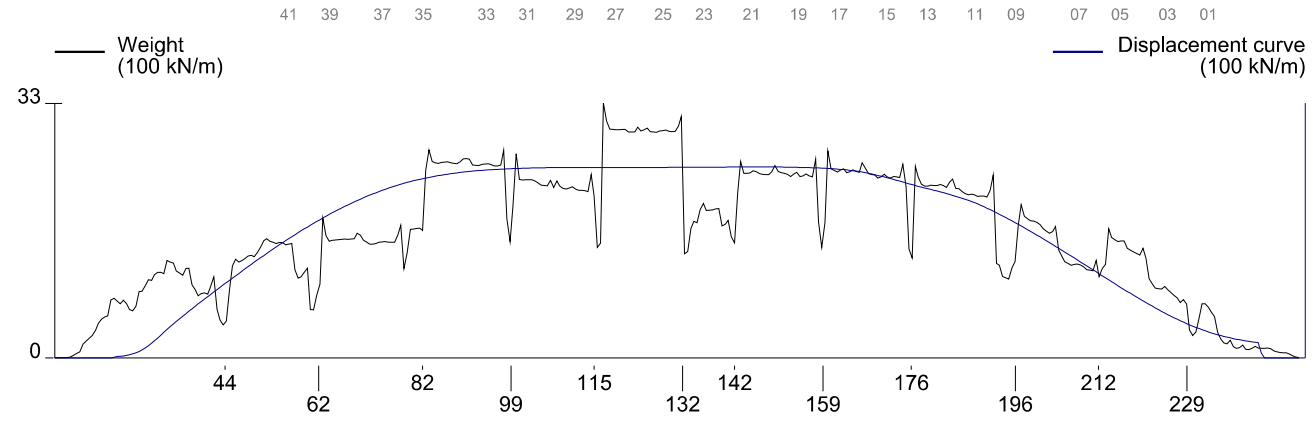
GZ Curve

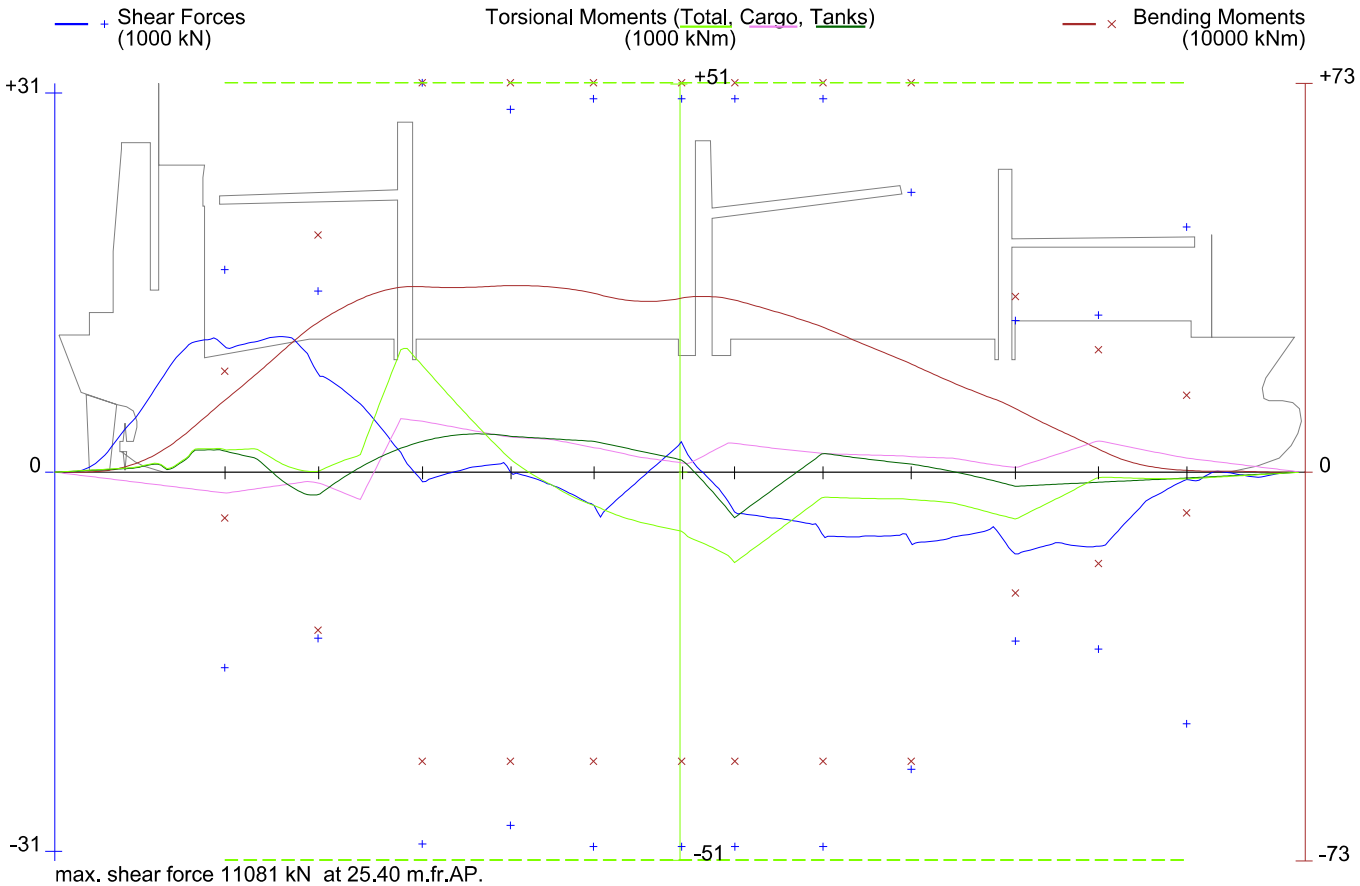


Lever Values

Heel.: PHI (deg)	5.0	10.0	20.0	30.0	40.0	50.0	60.0	70.0
KN-Ordinate (m)	0.943	1.890	3.777	5.515	7.076	8.163	8.808	9.070
KG*Sin(PHI) (m)	0.886	1.764	3.475	5.081	6.531	7.784	8.800	9.548
Free-Surf. Corr. (m)	0.003	0.006	0.011	0.016	0.021	0.025	0.028	0.030
Liq.Cargo Corr. (m)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GZ-Lever. Corr. (m)	0.055	0.120	0.291	0.418	0.524	0.354	-0.020	-0.509
Trans.Mom.Ord. (m)	0.014	0.014	0.013	0.012	0.011	0.009	0.007	0.005
Tr+Windmom.Ord. (m)	0.149	0.147	0.141	0.130	0.115	0.096	0.075	0.051

Long. Strength Curves





max. shear force 11081 kN at 25.40 m.fr.AP.
max. bending moment 350443 kNm at 59.68 m.fr.AP.
max. torsional moment 16256 kNm at 44.11 m.fr.AP.

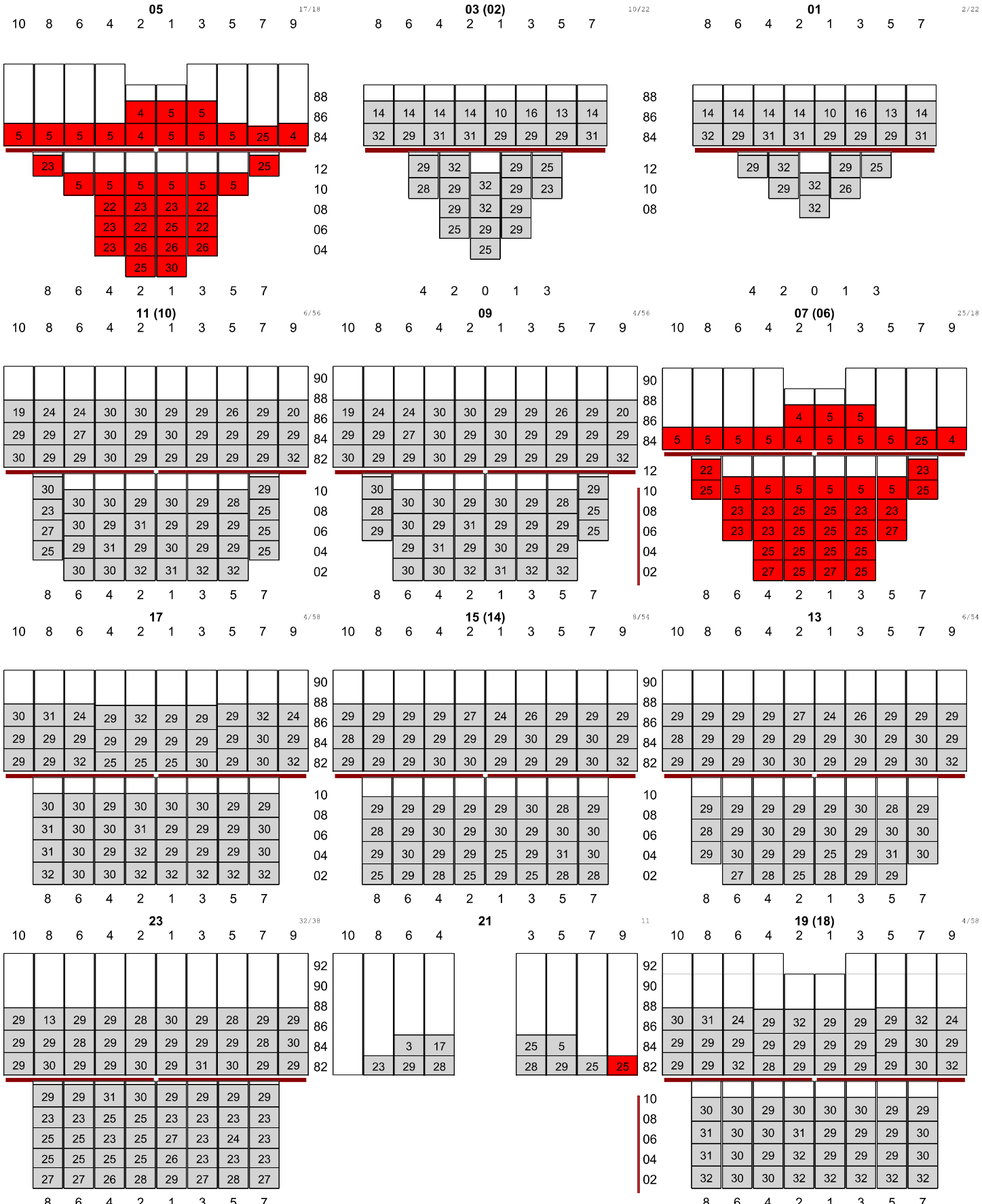
Long. Strength Values

Sea Condition										
Frame		Shear Forces			Bending Moments			Torsion		
No.	Distance (m.fr.AP.)	existing (kN)	Limit (kN)	rel. (%)	existing (kNm)	Limit (kNm)	rel. (%)			rel. (%)
44	16.78	10397	16600	*63	132927	189200	*70	max.M	Limit	
62	30.82	8186	14700	56	279828	444400	63	(kNm)	(kNm)	
82	46.42	-621	-30400	2	348387	730000	48	16256	51100	32
99	59.68	96	29700	0	350443	730000	48	Area of T.	Limit	
115	72.16	-2642	-30600	9	336458	730000	46	(kN*m2)	(kN*m2)	
132	85.42	2576	30600	8	326500	730000	45	732482	4343900	17
142	93.22	-3032	-30600	10	323871	730000	44			
159	106.48	-4969	-30600	16	273589	730000	37			
176	119.74	-5559	-24200	23	204417	730000	28			
196	135.34	-6577	-13900	47	121012	330800	37			
212	147.82	-6052	-14400	42	44875	232000	19			
229	161.08	-637	-20600	3	3575	142000	3			

* marks max. percentage

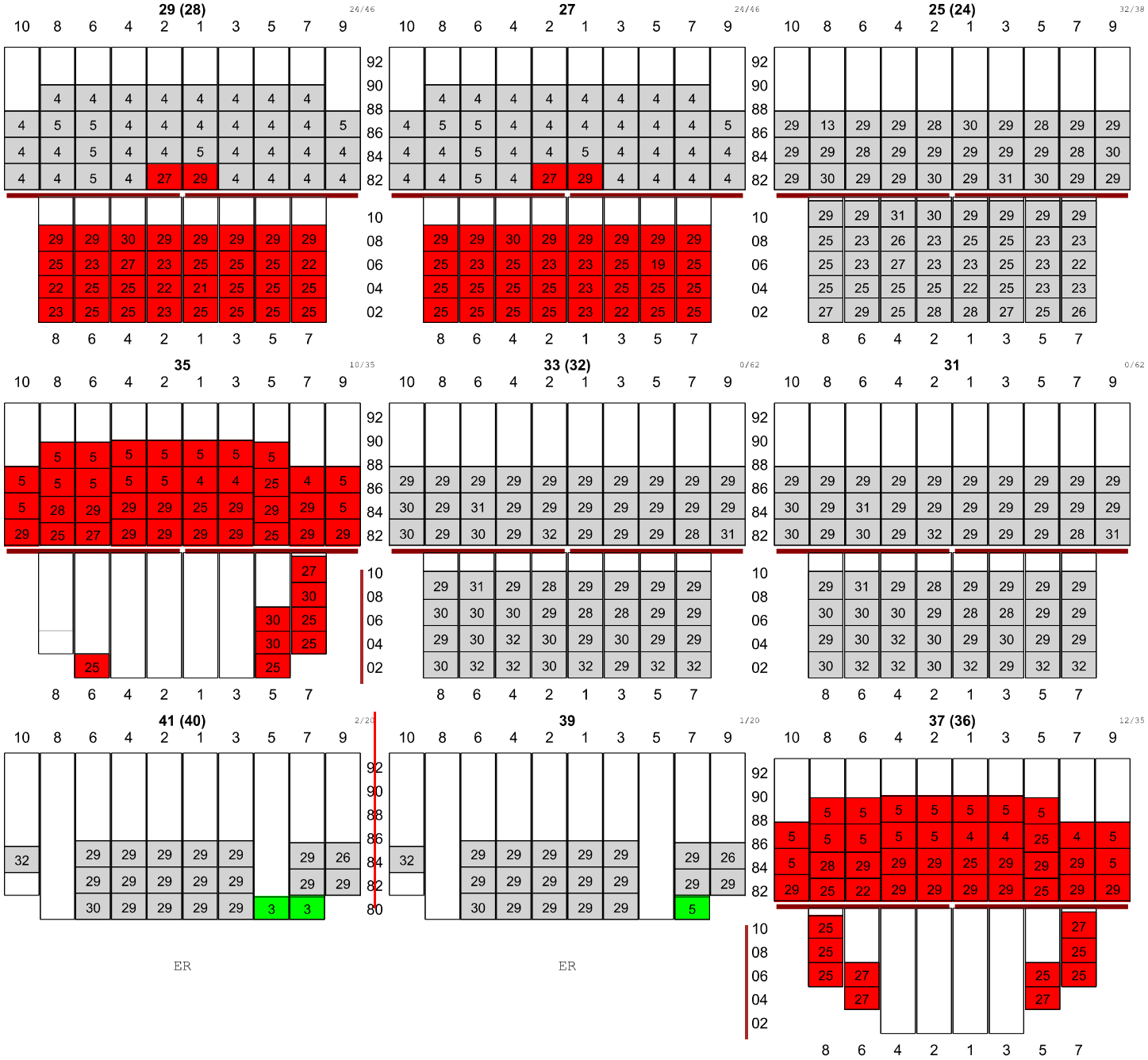
Bayplan

POD XXOPT INCOK INTUT



Bayplan

POD XXOPT INCOK INTUT



4.4 MSC ELSA 3 – CHIEF ENGINEERS BUNKER SOUNDING LOG – DATED 11 MAY 2025

msc

PORT: At Sea/ Port | DATE: MAY 11, 2025 AT port tuticorin

TANK No	Content (HFO/VLSFO)	100% Capacity (M3)	TRIM	SOUNDING (cm)	Trim Corr. (cm)	VOLUME (M³)	MT (temp and trim corrected)	SG 15ºC	T ºC	LOG Book ROB	Difference (Sdg-Log) MT	Vessel Log No.	BDN No. / Supplier Name	Bunker Rcvd (PORT)	Bunker Rcvd (DATE)	BDN Sulphur percentage (S%)	Lab Analysis Sulphur percentage (S%)	SECA Area spec al test Sulphur percentage (
HSFO/VLSFO Tanks												Viswa lab						
HFSO Tk # 14 CP	VLSFO	282.2	1.0	752.00		246.8	228.9	0.94	31.8				SSLPK08052025001	COCHIN	MAY 09 2025	0.379		
HFSO Tk # 14 CS	VLSFO	339	1.0	355.00		142.6	132.1	0.9405	31.8				SSLPLK16042025	COCHIN	APRIL 17,2025	0.474		
HFSO Tk # 3																		
HFSO Tk # 4																		
HFSO Tk # 5																		
HFSO Tk # 7 O-FLOW	VLSFO	33.1	1.0	76		11.16	10.36	0.9633	31.8				SSLPLK16042025	COCHIN	APRIL 17,2025	0.474		
FO SETTL TK. # 22	VLSFO	67.5	1.0	282		54.1	49.90	0.941	40				SSLPLK16042025	COCHIN	APRIL 17,2025	0.474		
FO SERV TK. # 23	VLSFO	70.1	1.0	230		52.7	47.39	0.941	73				SSLPLK16042025	COCHIN	APRIL 17,2025	0.474		
FO SETTL TK. # 24	VLSFO	65.8	1.0	132		18.7	17.00	0.963	56				SSLPLK16042025	COCHIN	APRIL 17,2025	0.474		
						526.0	485.6			481.7	3.9							
ULSFO Tanks													BDN No. / Supplier Name					
LFSO Tk # 1																		
LFSO Tk # 2																		
LFSO Tk # 3																		
LFSO Tk # 4																		
LFSO Tk # 5																		
FO SETTL																		
FO SERV																		
Any Additional Tank						0.0	0.0											
LSMGO Tanks					Trim Corr.								BDN No. / Supplier Name					
LSMGO / MDO Tanks	Content	100% Cap. M3	Trim	Sdg CM	CM	M3	MT	SG.	T ºC									
DO TK. # 18S	MGO	46.1	1.0	44.00		2.9	2.45	0.8640										
DO TK. # 35	MGO	73	1.0	104.00		14.3	12.21	0.8640										
DO TK # 33 O-FLOW	MGO	33.2	1.0	0.00		00.00												
SETTL.TK. # 30	MGO	34.6	1.0	444.00		25.9	22.03	0.8640										
SERV.TK. # 29	MGO	25.1	1.0	391.00		17.0	14.77	0.8640										
Any Additional Tank																		
						60.1	51.5			38.6	12.9							
Power Pack Tank Tainers					Trim Corr.								BDN No. / Supplier Name					
Power pack Tank		Cap.	Trim	CM	CM	M3	MT	SG.	T ºC									
Power pack Tank # 1																		
Power pack Tank # 2																		
Power pack Tank # 3																		
						0.0	0.0											

100% Segregation of HS HFO and ULSFO if available		100% Segregation of HS HFO and LSMGO if available	
100% Segregation while bunkering	YES/ NO	100% Segregation while bunkering	YES/ NO
100% Segregation during transfer	YES/ NO	100% Segregation during transfer	YES/ NO
100% Segregation during purification	YES/ NO	100% Segregation during purification	YES/ NO

Remarks:

Sounding Taken by — Name: | Deck Officer — Rank: | Signature:

Sounding Taken by — Name: JOVIT GUICO | Engine Officer — Rank: 3ENG | Signature:

Chief Engineer — Name: O.Chornyi | Signature / Stamp

MSC ELSA 3

Master — Name: | Signature / Stamp

Version 01

Form: Marpol 04

2844

2133

ANNEXURE R9 - XV

PN4 0052025

MSC ELSA 3

ASSESSMENT OF WRECK MARKING

Project Name:	MSC ELSA 3
bMC Project No.:	PN4 0052025
Client´s Ref. No.:	
Date of Incident:	25 May 2025
Date of Memo:	22 June 2025
bMC Memo No	1.0
Memo Version:	1.0

brand MARINE CONSULTANTS GmbH

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Legal Domicile: Hamburg

LRQA CERTIFIED ISO 9001

PRELIMINARY

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1 PURPOSE & INTRODUCTION

The undersigned was requested to provide a technical opinion regarding the proposal to establish a physical surface marking (wreck buoy) for the sunken container vessel MSC ELSA 3 located at 9°18'51.60"N, 76°7'57.60"E in the Laccadive Sea.

This memorandum follows discussions wherein the Kerala State Disaster Management Authority (KSDMA) has reportedly implemented a fishing ban in a 20 mile vicinity of the wreck and has indicated a requirement for the wreck to be marked.

This document analyses the situation against the specific criteria set forth in international maritime conventions, established practices for aids to navigation, and the specific technical and operational challenges of installing a marker buoy at the site. Our assessment concludes that the physical marking of this wreck may be technically impracticable, and would be contrary to the principles of safe navigation by introducing new, foreseeable hazards.

2 EXECUTIVE SUMMARY

A detailed analysis of the wreck against the hazard criteria listed under article 6 of the Nairobi International Convention on the Removal of Wrecks, 2007[1], confirms that the wreck does not constitute a hazard to navigation. Key factors include the sufficient depth of water, its location away from established shipping lanes, the nature of the local traffic, and the contained nature of its cargo.

The primary international body governing aids to navigation, the International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA), recommends marking only those dangers that present a genuine risk to mariners[2]. Establishing an unnecessary aid to navigation is poor practice.

From a technical standpoint, the significant tidal flows and severe monsoon conditions at the site make the reliable and safe mooring of a surface buoy impracticable. The buoy would be positionally inaccurate and carry a high risk of mooring failure, creating a new and unpredictable navigational hazard.

Furthermore, installing a buoy would invariably attract local fishing vessels to use it as an unauthorized mooring point. This creates a high likelihood of damage to the aid, entanglement of fishing gear, and direct risk to the fishermen themselves.

The appropriate and internationally recognized course of action is to ensure the wreck is accurately surveyed and its position and least depth are promulgated to mariners via official nautical charts.

PRELIMINARY

[1] Nairobi International Convention on the Removal of Wrecks, 2007, Article 6, "Criteria for determining the hazard posed by a wreck".

[2] International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA), *The IALA Aids to Navigation Guide (NAVIguide)*, (latest edition).

3 NAIROBI CONVENTION HAZARD CRITERIA

The Nairobi Convention provides the definitive framework for assessing if a wreck is a hazard. Our assessment of the pertinent criteria is as follows:

3.1 DEPTH OF WATER

The wreck lies in a water depth of about 54.5 meters. The least depth of water over the highest point of the wreck is 30.0m at Mean Sea Level, which is sufficient to provide a vast margin of safety for all vessels operating in the area. This far exceeds any internationally accepted under-keel clearance (UKC) requirement.

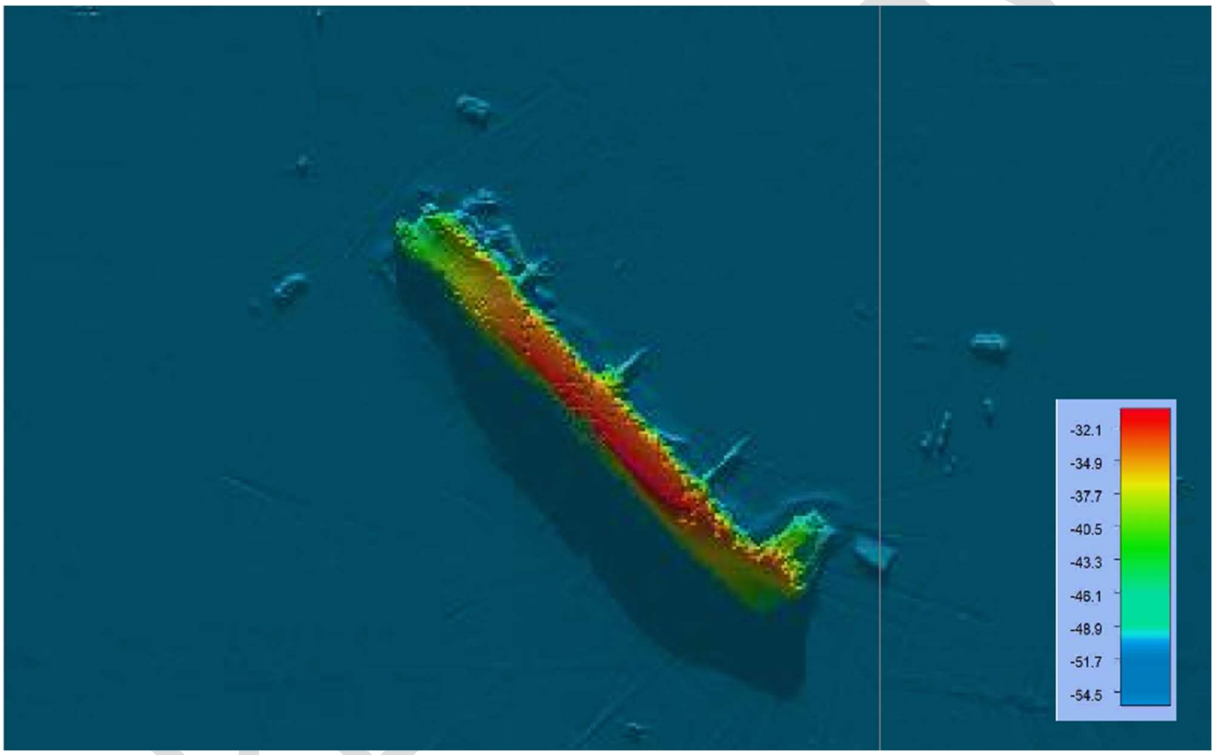

Figure 1 Wreck site bathymetry

3.2 PROXIMITY OF SHIPPING ROUTES & TRAFFIC PROFILE

As demonstrated in the below chart plotting vessel traffic density, the wreck is located well clear of any IMO-recognized Traffic Separation Schemes (TSS) or major established shipping fairways. The traffic in the immediate vicinity consists almost exclusively of fishing vessels, whose navigational drafts (typically 1.5-3m) are such that the wreck poses no collision risk.

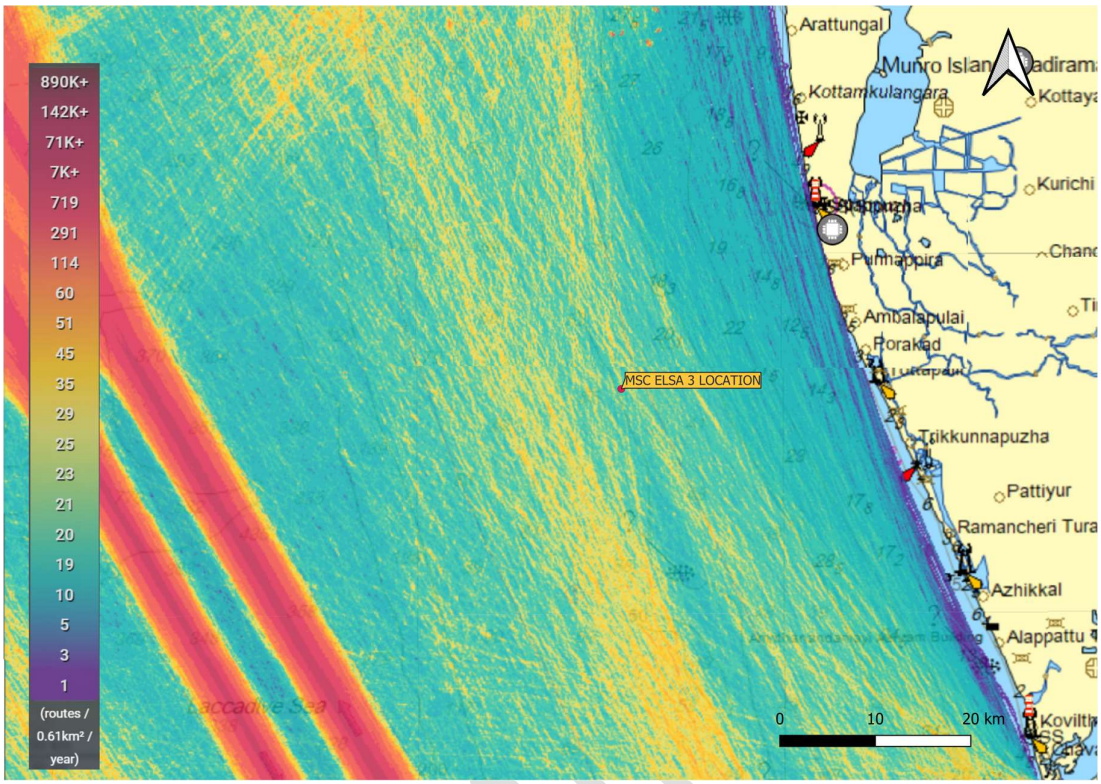

Figure 2 Traffic density chart of wrecksite

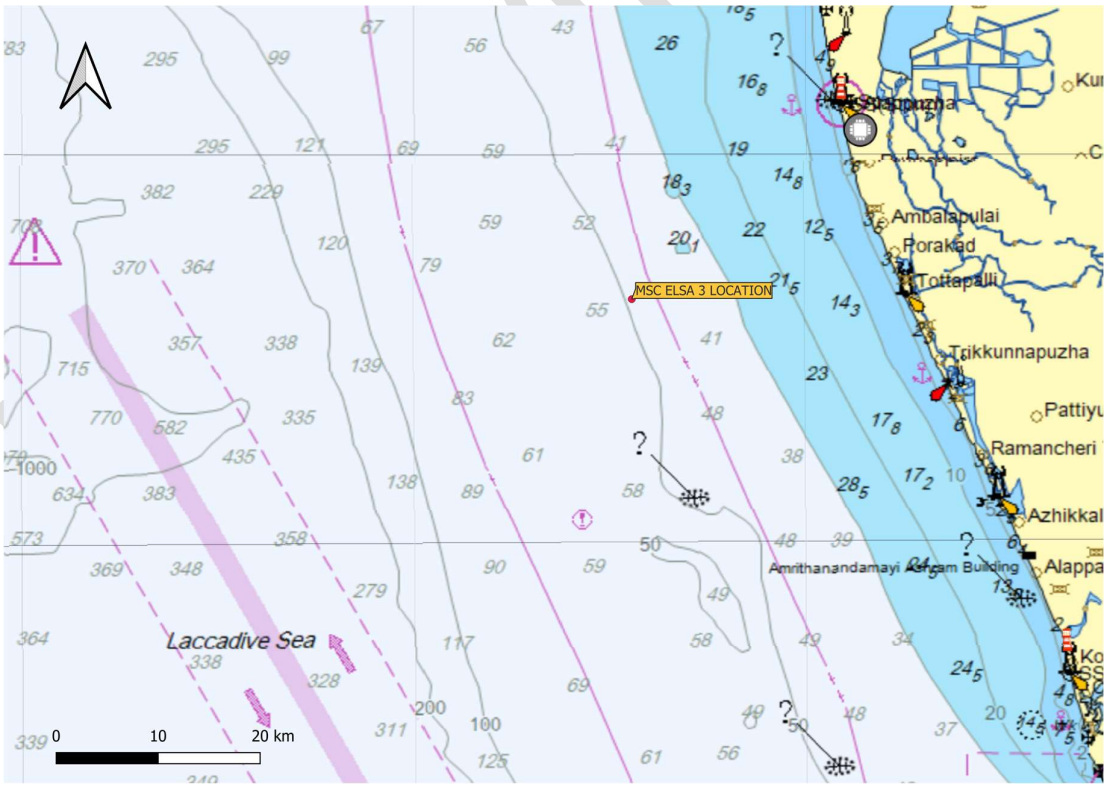

Figure 3 Nautical chart of wrecksite

3.3 NATURE AND QUANTITY OF THE WRECK'S CARGO

The vessel is a container ship. While most of the cargo remains secured, it is acknowledged that some cargo, including plastic nurdles, has emanated from the wreck. While any release into the marine environment is a matter of concern, these small particles do not pose a physical threat to marine craft. It is critical to note that a surface buoy does nothing to mitigate or monitor this sub-sea release.

With respect to larger debris, it is known that several containers lost during the initial casualty have washed ashore. While there have been no recent sightings of floating containers, the most effective way to address the legitimate concern of potential submerged debris is not a buoy, but a definitive underwater survey (e.g., by ROV or Multibeam), both of which were already completed, to confirm the wreck's stability and account for all major debris. A buoy offers no information about, or protection from, a potential sub-surface hazard.

3.4 METEOROLOGICAL AND HYDROGRAPHICAL CONDITIONS

While these conditions are a factor in assessing risk, in this case, they are more relevant to the infeasibility of the proposed solution (the buoy), as detailed in Section 4.0 below.

3.5 CONCLUSION OF HAZARD ASSESSMENT

Based on a systematic review of the international criteria, the wreck of MSC ELSA 3 does not constitute a *navigational* hazard. There is no risk to surface navigation from the wreck or the cargo debris laying at the seabed at a depth of upto 54.5 meters, and marking by means of a surface buoy is not required.

4 TECHNICAL & OPERATIONAL IMPRACTICABILITY OF MARKING

Attempting to deploy a wreck buoy in this specific environment is ill-advised and introduces unacceptable risks.

4.1 MOORING SYSTEM COMPLEXITY

To moor a buoy in 50+ meters of water subject to strong environmental forces requires a robust mooring system with a scope of at least 3:1, translating to over 150 meters of chain/wire.

4.2 POSITIONAL INACCURACY DUE TO LOCAL CONDITIONS

A buoy on such a mooring scope will have a large "watch circle." This problem is severely exacerbated by the local hydrography. The area is subject to significant tidal streams and the severe, reversing stresses of seasonal monsoon conditions. The buoy would swing in a wide radius, failing to accurately mark the wreck's position and making it an unreliable navigational mark.

PRELIMINARY

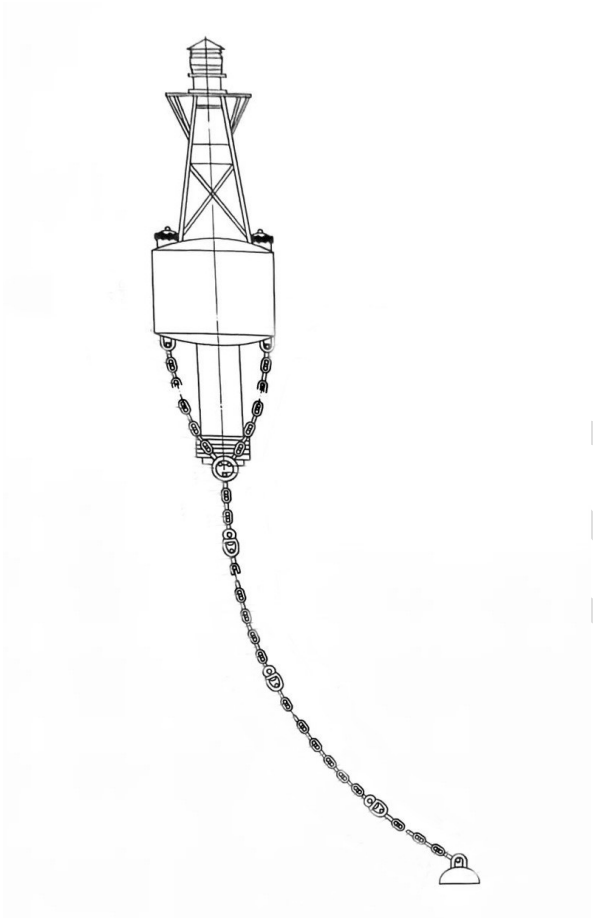

Figure 4 Basic buoy mooring system

4.3 RISK OF MOORING FAILURE

The extreme dynamic forces from monsoon waves and strong currents dramatically increase the risk of fatigue and catastrophic failure of the mooring system. A failed mooring would allow the buoy and its chain to drift unpredictably, creating a new, unlit, and uncharted hazard of grave concern to the local fishing fleet as well as any other vessels in the vicinity.

4.4 CREATION OF AN UNINTENDED HAZARD FOR FISHING VESSELS

It is an operational certainty that local fishing vessels will see the buoy as an unauthorised mooring point. Fishing vessels will be attracted to it and will attempt to moor to it. This creates significant risks:

1. Damage to the Aid: Mooring lines will damage the buoy's solar panels, lantern, and sensors, disabling it.
2. Entanglement: Fishing nets will inevitably snag on the mooring system, leading to financial loss for fishermen and compromising the mooring's integrity.
3. Risk to Life: An attempt to moor to an unstable buoy in open sea conditions puts the fishing vessel and its crew in direct physical danger.

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Deploying a buoy would, therefore, be an action that actively endangers the very community it is ostensibly intended to protect.

5 REGULATORY FRAMEWORK AND RECOMMENDED PRACTICE (IALA)

IALA guidance is clear that aids to navigation should only be established to meet a demonstrated need. As established in Section 3, no such need exists.

The standard procedure for a non-dangerous wreck is hydrographic. The National Hydrographic Office (NHO) should survey the wreck to confirm its position and least depth and distribute this information via a Notice to Mariners and inclusion on all official nautical charts (ENC and paper). This provides permanent, accurate information to all mariners.

PRELIMINARY

6 CONCLUSION AND RECOMMENDATION

The wreck of MSC ELSA 3 is not a hazard as defined by the Nairobi Convention. The proposal to mark it with a buoy is technically unsound due to the local environmental conditions, and operationally dangerous as it would create a new and significant hazard to the seafarers it is meant to protect.

We respectfully recommend that the Directorate General of Shipping advise all relevant authorities, including the DGLL and KSDMA, of the following:

1. That our assessment against international criteria has concluded the wreck is not a hazard and does not require physical marking.
2. That the appropriate and standard action is to ensure the National Hydrographic Office has officially charted the wreck, similar to the 4 other wrecks in the vicinity of the MSC ELSA 3, which have been appropriately marked as wrecks (not dangerous to surface navigation).
3. That, based on this assessment, any restrictions on surface activities, such as the current fishing ban, which was predicated on a perceived navigational danger, should be lifted forthwith.

We trust this opinion provides the necessary technical and regulatory clarity to resolve the matter.

PRELIMINARY

Brand Marine consultants GmbH

This report is given to the best of knowledge and ability of the undersigned surveyor.

Consultants: Captain Ajay Prasad / James Swinburn

Date: __.__.____

Place: Kochi / India

PRELIMINARY

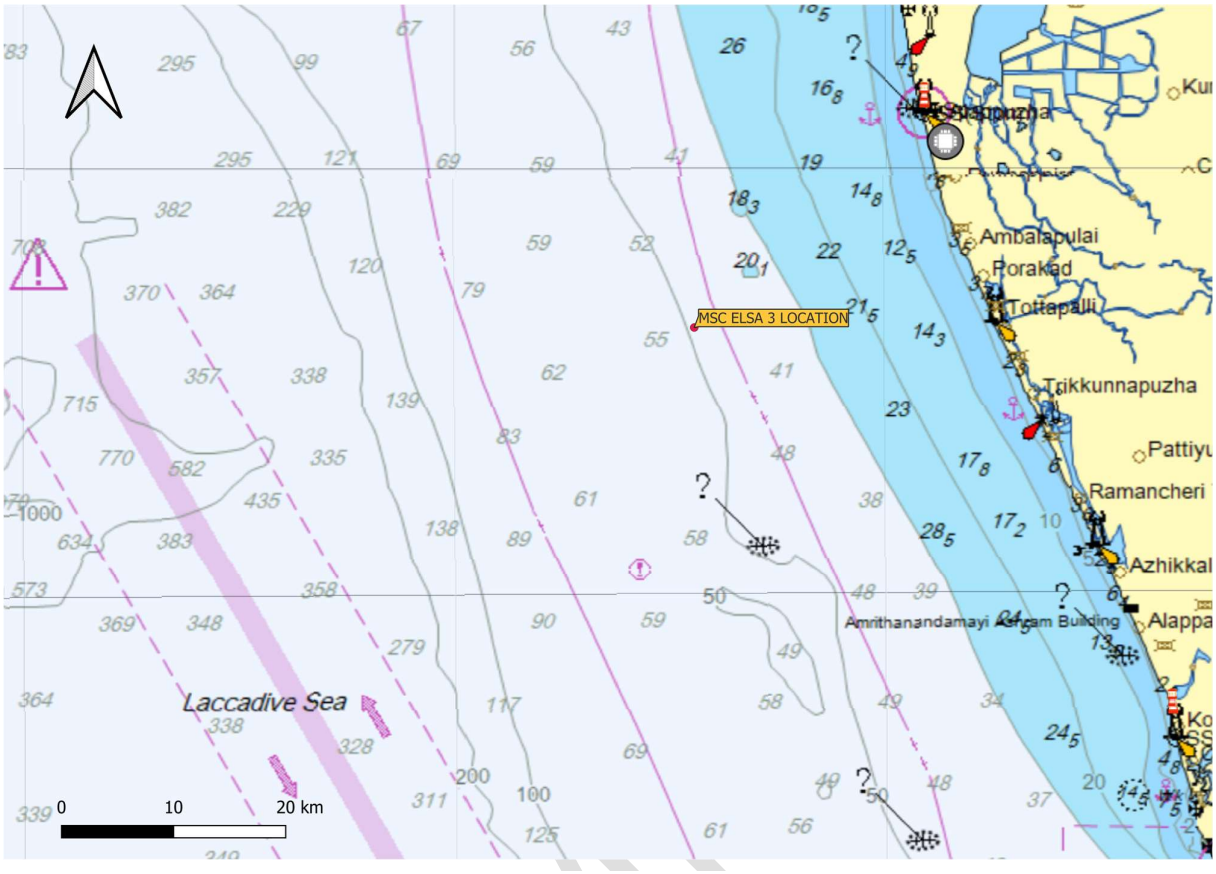

Figure 5 Nautical chart of wreck area

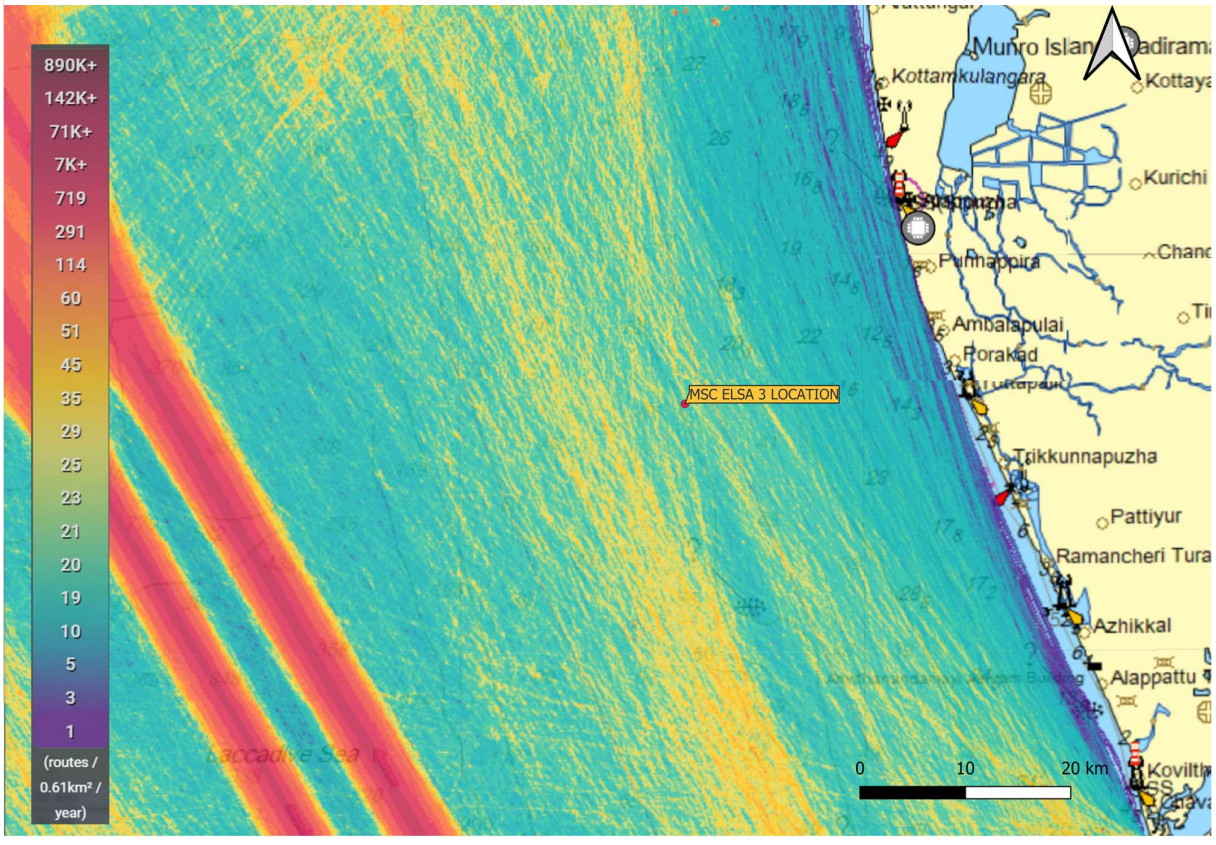

Figure 6 Traffic density chart of wreck area

Gmail Arvind Gupta <akg.lawassociates@gmail.com>

OA NO.270/2025 TITLED AS "NEWS ITEMS TITLED 'CONTAINERS FROM SUNKEN SHIP LIKELY TO DRIFT TOWARDS ALAPUZHA, KOLLAM COAST IN 48 HRS." APPEARING IN HINDU DT.25TH MAY 2025

1 message

Arvind Gupta <akg.lawassociates@gmail.com> Wed, Jan 7, 2026 at 12:39 PM
To: ms.kspcb@gov.in, lakshadweeppco@gmail.com, mscb.cpcb@nic.in, secy-moef@nic.in, secyship@nic.in, cgvc-pers@indiancoastguard.nic.in, director@incois.gov.in, md@vizhinjamport.in, ceo@vizhinjamport.in, mail@vizhinjamport.in, comm@mscindia.com, pccf.for@kerala.gov.in, prlsecy.forest@kerala.gov.in, samarvir.singh@sschambers.in, Gigicgeorge.adv42@yahoo.in, Srishti Govil <govil.srishti@gmail.com>, nrshonker@gmail.com

Sir,

Please find enclosed herewith the advance service of the reply affidavit on behalf of respondent no.9 in the above captioned matter.

You are kindly requested to acknowledge the receipt of the same.

Warm Regards
ARVIND KUMAR GUPTA
(Advocate)

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Y-1, Hauz Khas,
New Delhi-1100016
Mobile:9811088800
Tel.:011-26965000, 41656588

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Delhi High Court, Sher Shah Road
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