BEFORE THE NATIONAL GREEN TRIBUNAL
EASTERN ZONE BENCH KOLKATA
IN
OA No. 202/2024/EZ
(Earlier O.A. No. 1064/2024/PB)

IN THE MATTER OF:

News Item titled "Micro plastic in West Bengal's Digha and Odisha's Puri seawater at alarming levels" appearing in the Times of India dated 04.08.2024

APPLICANT(S)

VERSUS

Central Pollution Control Board & Others.

RESPONDENT(S)

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Mrinal Kanti Biswas
Regional Director & Scientist E,
CPCB, Kolkata

Filed through

Dibojyoti Chakraborty
Counsel
CPCB

Dated: 22/11/2024
Place: Kolkata

22 NOV 2024

BEFORE THE NATIONAL GREEN TRIBUNAL
EASTERN ZONE BENCH KOLKATA
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REPLY ON BEHALF OF THE RESPONDENT NO. 01 i.e CENTRAL POLLUTION CONTROL BOARD (CPCB)

1. That, Hon'ble NGT vide order dated 14.08.2024 has sought the reply of respondents, including Central Pollution Control Board (hereinafter referred to as "CPCB") in the instant matter. Thereby, the reply is made in succeeding paragraphs.
2. That, CPCB is a Statutory Board constituted under Section 3 of The Water (Prevention and Control of Pollution) Act, 1974 (hereinafter referred to as "Water Act, 1974"). It performs the functions under The Water Act, 1974, The Air (Prevention and Control of Pollution) Act, 1981 (hereinafter referred to as "Air Act, 1981") and The Environment (Protection) Act, 1986.

REPLY

3. That, it is humbly submitted that, the news article alleges about finding of the micro plastic pollution in the coastal waters and sediments of Digha, West Bengal, and Puri, Odisha, two popular beach destinations in Eastern India on the basis of the R &D study conducted by the Centre's Science & Engineering Research Board.
4. That, the respondent humbly submits, in answer to the issue of micro plastic pollution, that whilst there is no direct legislation presently in effect in India specifically targeting this issue, however, statutory provisions pertinent in this regard, include the following:

a). The Environment (Protection) Act, 1986 (with rules 1986 and 1987)

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b). Water (Prevention and Control of Pollution) Act, 1974

c). Plastic Waste Management (Amendment) Rules, 2022, (Annexure I)

5. That, it is humbly submitted that CPCB is not associated with the above study carried out by the Centre's Science & Engineering Research Board. CPCB has undertaken the following work w.r.t studies of Micro plastics.

A. That, it is humbly submitted that in compliance of Hon'ble NGT order in the matter of OA No. 99 of 2021(SZ) taken up by the Hon'ble NGT Suo Motu on the basis of a News item published in Times of India Newspaper titled "Chennai you are breathing micro-plastics", a study was carry out in Chennai by the joint committee consisting of the members from Anna University, Chennai, Central Pollution Control Board (CPCB), Regional Directorate– Chennai & Tamil Nadu Pollution Control Board (herein after referred as TNPCB), Chennai. Study report has indicated significant levels of micro plastic contamination at the Kodungaiyur and Perungudi dumpsites, with micro plastics detected in leachate, canal water and groundwater. Airborne microplastics were also found at notable levels at both sites. Detailed report submitted to Hon'ble NGT in the matter is enclosed as **Annexure-I.**

B. That, in OA No. 251 of 2022, the Tribunal referenced similar proceedings in the Southern Zone Bench at Chennai, where suo-motu cognizance was taken in OA 99/2021(SZ) and OA 174/2021(SZ), following news reports on the presence of micro plastic and harmful metals in the air **(Annexure II).**

C. That, it is humbly submitted that further vide order dated 05.04.2022 in O.A. No. 251/2022 Hon'ble NGT directed that;

"There is need for further studies, considering the studies already conducted, to be steered by the Committee comprising of CPCB, ICMR-NIREH, Central Institute of Petrochemicals Engineering & Technology (CIPET), NCSCM, and any other expert institutions as required, under the Nodal coordination of CPCB. Such studies and recommendations/ suggestions may cover standards for safe environment, remedial steps to reduce menace of micro plastic and addressing other incidental issues. CPCB may incur

expenditure on studies and other incidents out of Environmental Compensation funds.

D. That, it is humbly submitted that in compliance of Hon'ble NGT's order as mentioned above CPCB has filed report dated 10.02.2023. The report highlights micro plastics contamination across environments and organisms. The report emphasizes that the micro plastics enters water primarily through sewage, wastewater, and surface runoff, persisting due to inadequate filtration in treatment systems and contributions from plastic infrastructure. Micro plastic is also prevalent in bottled water. Airborne micro plastic poses inhalation risks in urban settings, while soil contamination occurs via plastic films and waste. Micro plastic has been found in human biological samples, suggesting potential health impacts from ingestion and inhalation routes. However, presently there are no studies on the impacts of ingested micro plastics on human health. Report submitted before Hon'ble NGT is enclosed at **Annexure-III.** In compliance of Hon'ble NGT directions dated 01.03.2023 on the matter, MoEF&CC has prepared an action plan, specifying activities related to micro plastics to be taken up by CPCB. The Action Plan is annexed herewith as **Annexure-IV**.

E. It is also submitted that in light of the estimated increase in Abandoned, Lost & Discarded Fishing Gears (ALDFGs) and marine plastic litter in the coming years, CPCB has issued "Guidelines for One-Time Financial Support for Establishing Recycling Plants & Machinery for Abandoned, Lost & Discarded Fishing Gears (ALDFG) and High littering Plastic Wastes in Coastal Areas" to encourage recycling of fishnet/ghost net in the coastal states. The guidelines issued are enclosed at **Annexure-V.**

6. That, the answering respondent respectfully seeks leave of this Hon'ble Tribunal to submit an additional reply, if deemed necessary, in the future.
7. That, in light of the above submission, it is respectfully submitted that this Answering respondent i.e. CPCB, shall abide by any order(s) or direction(s) passed by this Hon'ble tribunal in the instant OA.

Mrinal Kanti Biswas
Regional Director & Scientist E,
CPCB, Kolkata

Identified by me
Sagyoti Chakrabarti
Advocate
for CPCB 22/11/2024
Enrolment No:- WB/1239/2010

BHATTACHARYA NOTARY, CALCUTTA Regd. No. Govt. of India

22 NOV 2024

BEFORE THE NATIONAL GREEN TRIBUNAL
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VERSUS

Central Pollution Control Board & Others.

RESPONDENT(S)

AFFIDAVIT

I, Mrinal Kanti Biswas, son of Shri Saroj Kumar Biswas, aged about 43 years, having office at the Regional Directorate, Central Pollution Control Board, Southend Conclave' Block No.502, 5th& 6th Floor, 1582, Rajdanga Main Road, Kolkata-700107, do hereby solemnly affirm and sincerely state as follows: -

1. That, the deponent is authorized representative to represent the Respondent CPCB in the present case, and as such, I am well conversant with the facts and circumstances of the present case on the basis of the information derived from the official records, and hence, I am competent and authorized to verify, sign and swear this affidavit on behalf of the Respondent CPCB.

2. That, the accompanying reply may be read part and parcel of the present affidavit.

3. That, the accompanying reply has been drafted and filed under my instructions and authority the contents thereof are true and correct on the basis of the record maintained during ordinary course of business of CPCB and available records and documents and the contents of the same are read over and explained to me and are not repeated herein for the sake of brevity.

Identified by me

Sibajyoti Chakraborti
Advocate
for CPCB
22/11/2024

Samir Bhattacharya
Notary Govt. of India
Regd. No. 940/97
City Civil Court, Calcutta

DEPONENT

Declared ... CPC/U/S ... Cr.P.C
22.11.24
Notary

22 NOV 2024

VERIFICATION

Verified at Kolkata on this day of 22/11/24 2024 that the contents of the above reply are correct and true on the basis of the record of the cases as mentioned in the day to day affairs of the CPCB. Nothing has been concealed therefrom or mis-stated.

Verified at Kolkata on this the 22nd Day of November 2024.

DEPONENT

Identified by me

Sabyasachi Chakraborti

Advocate

for CPCB 22/11/2024.

SAMIR BHATTACHARYA
NOTARY, CALCUTTA

SAMIR BHATTACHARYA
Regd. No. 42097
GOVT. of India
NOTARY, CALCUTTA

22 NOV 2024

रजिस्ट्री सं. डी.एल.- 33004/99

REGD. No. D. L.-33004/99

Annexure - A1

भारत का राजपत्र
The Gazette of India

सी.जी.-डी.एल.-अ.-07072022-237182
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असाधारण
EXTRAORDINARY

भाग II—खण्ड 3—उप-खण्ड (i)
PART II—Section 3—Sub-section (i)

प्राधिकार से प्रकाशित
PUBLISHED BY AUTHORITY

सं. 484] नई दिल्ली, बृहस्पतिवार, जुलाई 7, 2022/आषाढ़ 16, 1944
No. 484] NEW DELHI, THURSDAY, JULY 7, 2022/ASHADHA 16, 1944

पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय

अधिसूचना

नई दिल्ली, 6 जुलाई, 2022

सा.का.नि. 522(अ).—प्लास्टिक अपशिष्ट प्रबंधन नियम, 2016 का और संशोधन करने के लिए प्रारूप नियम अधिसूचना सं. सा.का.नि. 22(अ) तारीख 18 जनवरी, 2022 *द्वारा* भारत के राजपत्र, असाधारण, भाग II, खंड 3, उप-खंड (i) में तारीख 18 जनवरी, 2022 को प्रकाशित की गई थी, जिसमें उन सभी व्यक्तियों से जिनकी प्रभावित होने की संभावना उक्त प्रारूप नियमों को अंतर्विष्ट करने वाले राजपत्र की प्रतियां जनता को उपलब्ध कराई गई थी जिसके साठ दिनों के भीतर आपत्तियां और सुझाव आमंत्रित किए गए थे;

और, उक्त प्रारूप नियमों अंतर्विष्ट करने वाले राजपत्र की प्रतियां जनता को तारीख 18 जनवरी, 2022 को उपलब्ध कराई गई;

और, उपरोक्त अवधि के भीतर प्राप्त आपत्तियों एवं सुझावों पर केंद्रीय सरकार द्वारा सम्यक रूप से विचार किया गया है;

अत: अब, केंद्रीय सरकार पर्यावरण (संरक्षण) अधिनियम, 1986 (1986 का 29) की धारा 3, धारा 6 और धारा 25 द्वारा प्रदत्त शक्तियों का प्रयोग करते हुए, प्लास्टिक अपशिष्ट प्रबंधन नियम, 2016 का और संशोधन करने के लिए निम्नलिखित नियम बनाती है, अर्थात:-

1. संक्षिप्त नाम और प्रारंभ:- (1) इन नियमों का संक्षिप्त नाम प्लास्टिक अपशिष्ट प्रबंधन (द्वितीय संशोधन) नियम, 2022 है।

(2) वे राजपत्र में अपने प्रकाशन की तारीख से प्रवृत्त होंगे।

2. प्लास्टिक अपशिष्ट प्रबंधन नियम, 2016 (जिसे इसके पश्चात् उक्त नियम कहा गया है), नियम 3 में,-

(i) खंड (कख) के पश्चात्, निम्नलिखित खंड अंत:स्थापित किया जाएगा, अर्थात्:-

'(कग) "जैव-अवक्रमणीय प्लास्टिकों" से, कंपोस्टेबल प्लास्टिक के सिवाय ऐसे प्लास्टिक अभिप्रेत है, जो केंद्रीय प्रदूषण नियंत्रण बोर्ड द्वारा प्रमाणित और भारतीय मानके ब्यूरो के अधिकांशत: मानकों का अनुपालन करते हुए, किन्हीं माइक्रो प्लास्टिकों, या स्पष्ट रूप से दृश्य या अलग करने योग्य या विषाक्त अवशेष, जिनका पर्यावरण पर प्रतिकूल प्रभाव पड़ता है, छोड़े बिना, परिवेशी पर्यावरणीय (स्थलीय या जलीय) दशाओं के अधीन जैविक प्रक्रियाओं द्वारा अवक्रमित हो जाता है-;';

(ii) खण्ड (ख) में, "ब्रांड लेवल्स;" शब्द, के पश्चात् "और ट्रेडमार्क।" शब्द अंत:स्थापित किया जाएगा;

(iii) खंड (ग) में "अर्थात् तैयार की गई थैलियां" शब्दों से पूर्व "(अनुसूची-2 में दिए गए खंड (5.1) (ii) – प्लास्टिक पैकेजिंग की श्रेणी-।। के अधीन शामिल)" शब्द और कोष्ठक अंत:स्थापित किए जाएंगे।

(iv) खण्ड (छक) को "(छख)" के रूप में पुन:संख्यांकित किया जाएगा और इस प्रकार पुन:क्रमांकित किए गए खंड (छख) से पूर्व निम्नलिखित खण्ड अंत:स्थापित किया जाएगा, अर्थात्:-

'(छक) "उपयोग की अवधि समाप्त होने पर निपटान" से प्रवृत्त सुसंगत दिशानिर्देशों के अध्यधीन ऊर्जा उत्पादन के लिए प्लास्टिक अपशिष्ट का उपयोग, जिसमें सह-प्रसंस्करण (उदाहरण के लिए सीमेंट, इस्पात या कोई अन्य ऐसे उद्योग में) या अपशिष्ट से तेल उत्पादन, उन मामलों को छोड़कर जिनमें फीडस्टॉक रसायनों का उत्पादन प्लास्टिक के उत्पादन में पुन: उपयोग हेतु किया जाता है जिस पर पुनर्चक्रण के अधीन विचार किया जा सकता है, या भारतीय सड़क कांग्रेस द्वारा जारी मार्गदर्शी सिद्धांतों के अनुसार सड़क निर्माण के लिए उपयोग संबंधित है।"

(v) खण्ड (ट) के स्थान पर निम्न खंड रखा जाएगा, अर्थात् :-

'(ट) "आयातक" से वह व्यक्ति अभिप्रेत है जो प्लास्टिक पैकेजिंग या प्लास्टिक पैकेजिंग वाले उत्पादों या कैरी बैगों या बहु-परतीय पैकेजिंग या प्लास्टिक शीटों या इस प्रकार की अन्य सामग्रियों का आयात करता है;' ;

(vi) खण्ड (ण) के पश्चात्, निम्नलिखित खंड अंत:स्थापित किया जाएगा, अर्थात्:-

'णक' "प्लास्टिक पैकेजिंग" से विभिन्न तरीकों से उत्पादों का संरक्षण करने, उनका परिरक्षण करने, भंडारण करने, परिवहन करने के लिए प्लास्टिकों का प्रयोग करके बनाई गई पैकेजिंग सामग्री अभिप्रेत है;' ;

(vii) खण्ड (थक) के पश्चात् निम्नलिखित खण्ड अंत:स्थापित किया जाएगा, अर्थात्:-

'(थख) "प्लास्टिक अपशिष्ट प्रसंस्करणकर्ताओं" से ऊर्जा के लिए (अपशिष्ट से ऊर्जा उत्पादन) प्लास्टिक अपशिष्ट का उपयोग करने में लगी इकाइयों के साथ प्लास्टिक अपशिष्ट का पुनर्चक्रण अभिप्रेत है। जिसमें सह-प्रसंस्करण या प्लास्टिक अपशिष्ट को तेल में परिवर्तित करना (अपशिष्ट से तेल उत्पादन), उन मामलों को छोड़कर जिनमें फीडस्टॉक रसायनों का उत्पादन प्लास्टिक के उत्पादन में पुन: उपयोग हेतु किया जाता है जिस पर पुनर्चक्रण करने, औद्योगिक खाद बनाने के अधीन विचार किया जा सकता है;' ;

(viii) खंड (थख) के पश्चात् निम्नलिखित खंड अंत:स्थापित किया जाएगा, अर्थात्:-

'(थग) "पश्च-उपभोक्ता प्लास्टिक पैकेजिंग का अपशिष्ट" से उत्पाद का अंतिम उपयोग करने वाले उपभोक्ता द्वारा, पैकेजिंग का आशयित उपयोग पूर्ण होने के पश्चात् सृजित किया गया प्लास्टिक पैकेजिंग अपशिष्ट अभिप्रेत है और अब इसका उपयोग अपने आशयित प्रयोजन के लिए नहीं किया जा रहा है;' ;

(ix) खंड (द) के पश्चात्, निम्नलिखित खंड अंत:स्थापित किया जाएगा, अर्थात्:-

'(दक) "पश्च–उपभोक्ता प्लास्टिक पैकेजिंग अपशिष्ट" से प्लास्टिक पैकेजिंग के विनिर्माण के चरण पर अस्वीकार या पृथक किए जाने के रूप में सृजित प्लास्टिक पैकेजिंग अपशिष्ट और उत्पाद का अंतिम उपयोग करने वाले उपभोक्ता तक प्लास्टिक पैकेजिंग पहुंचने से पूर्व, उत्पाद की पैकेजिंग के दौरान सृजित प्लास्टिक पैकेजिंग अपशिष्ट अभिप्रेत है जिसमें अस्वीकृत, पृथक किए गए उत्पाद सम्मिलित हैं;' ;

(x) खंड (ध) के पश्चात्, निम्नलिखित खंड अंत:स्थापित किया जाएगा, अर्थात्:-

'(धक) "पुनर्चक्रक" वे इकाईयां हैं जो प्लास्टिक अपशिष्ट के पुनर्चक्रण की प्रक्रिया में कार्यरत हैं;';

(xi) खंड (प) के पश्चात्; निम्नलिखित खंड अंत:स्थापित किया जाएगा, अर्थात्:-

(पक) "पुन: उपयोग से किसी सामान की संरचना में परिवर्तन किए बिना समान प्रयोजन या अन्य प्रयोजन के लिए कोई प्रयोग किया जाने वाला सामान या संसाधन सामग्री अभिप्रेत है;",

(xii) खंड (ब) के पश्चात् निम्नलिखित खंड अंत:स्थापित किया जाएगा, अर्थात्:-

'(बक) "पुन:चक्रित प्लास्टिक का प्रयोग" से, विनिर्माण प्रक्रिया में कच्चे माल के रूप में वर्जिन प्लास्टिक के बजाय प्रयुक्त पुनर्चक्रित प्लास्टिक अभिप्रेत है;' ;

(xiii) खंड (कक) के पश्चात् निम्नलिखित खंड अंत:स्थापित किया जाएगा, अर्थात्:-

'(ककख) "अपशिष्ट से ऊर्जा उत्पादन" से, ऊर्जा के उत्पादन के लिए प्लास्टिक अपशिष्ट का प्रयोग करना अभिप्रेत है और इसमें सह-प्रसंस्करण (अर्थात् सीमेंट, इस्पात या कोई अन्य ऐसे उद्योग में) सम्मिलित है;'

3. उक्त नियम के नियम 4 में, -

(i) उप-नियम (1) में,

(क) खंड (घ) में, "-के सिवाय मोटाई" शब्दों के पश्चात् "केंद्रीय सरकार द्वारा यथा विनिर्दिष्ट" शब्द अंत:स्थापित किए जाएंगे"

(ख) उप-नियम (1) में, खंड (ज) में,-

(क) "कम्पोस्टेबल प्लास्टिक से निर्मित" शब्दों के पश्चात् "और जैव-अवक्रमणीय प्लास्टिकों" शब्द अंतस्थापित किए जाएंगे;

(ख) "आईएस 17088:2008" शब्दों और आंकड़ों के स्थान पर "आईएस/आईएसओ 17088:2021" शब्द और आंकड़े रखे जाएंगे

(ग) "कम्पोस्टेबल प्लास्टिक के विक्रेता" शब्दों के पश्चात् "और जैव-अवक्रमणीय प्लास्टिकों" शब्द अंतस्थापित किए जाएंगे;-

(ii) उप-नियम (3) में, "कम्पोस्टेबल प्लास्टिक" शब्दों के पश्चात् "और जैव-अवक्रमणीय प्लास्टिकों।" शब्द अंतस्थापित किए जाएंगे।

4. उक्त नियम के नियम 9 में, -

(i) उप-नियम (1) के स्थान पर, निम्नलिखित उप-नियम रखा जाएगा, अर्थात्-

"(1) उत्पादक, आयातक और ब्राण्ड मालिक अनुसूची-II में विनिर्दिष्ट दिशा-निर्देशों के अनुसार प्लास्टिक पैकेजिंग हेतु विस्तारित उत्पादक उत्तरदायित्व को पूरा करेंगे।"

(ii) उप नियम (2) में, "एकत्रण की योजना" शब्दों से आरंभ होने वाले और "इसके पश्चात् दो वर्ष-" से अंत होने वाले।" शब्दों का लोप किया जाएगा;

(iii) उप-नियम (4) में,- "प्रदूषण नियंत्रण बोर्ड" शब्दों से पूर्व "केंद्रीय प्रदूषण नियंत्रण बोर्ड और राज्य" शब्द अंत:स्थापित किए जाएंगे।-;

(iv) उप-नियम (5) में,

(क) "रजिस्ट्रीकरण फॉर्म के बिना" शब्दों के पश्चात् "केंद्रीय प्रदूषण नियंत्रण बोर्ड यदि दो से अधिक राज्यों या संघ राज्य क्षेत्रों में प्रचालन कर रहा हो" शब्द अंतस्थापित किए जाएंगे।

(ख) "प्रदूषण नियंत्रण समितियों-" शब्दों के पश्चात् "नियम 13 का उप-नियम (2) के अनुसार।" शब्द अंतस्थापित किए जाएंगे।

5. उक्त नियम के नियम 10 के स्थान पर, निम्नलिखित नियम रखा जाएगा, अर्थात्.-

"10 कंपोस्टेबल और जैवअवक्रमणीय प्लास्टिक सामग्रियों के लिए नयाचार.- (1) प्लास्टिक सामग्री की अवक्रमणीयता के परिमाण और अपघटन के परिमाण का अवधारण अनुसूची I में सूचीबद्ध भारतीय मानकों के नयाचारों के अनुसार होगा।

(2) कंपोस्टेबल प्लास्टिक सामग्रियां, आईएस/आईएसओ 17088:2021, समय-समय पर यथासंशोधित, के अनुरूप होंगी।

(3) जैवअवक्रमणीय प्लास्टिक, भारतीय मानक ब्यूरो द्वारा अधिसूचित और केन्द्रीय प्रदूषण नियंत्रण बोर्ड द्वारा प्रमाणित किए गए इन मानकों के अनुरूप होगा।

(4) जब तक भारतीय मानक ब्यूरो द्वारा उप-नियम (3) में निर्दिष्ट मानक अधिसूचित नहीं किया जाता, तब तक जैव-अवक्रमणीय प्लास्टिक भारतीय मानक ब्यूरो द्वारा यथाअधिसूचित अनंतिम भारतीय मानक आईएस 17899 टी:2022 के अनुरूप होंगे।

(5) एक अस्थायी उपाय के रूप में, जैव अवक्रमणीय प्लास्टिकों के लिए उन मामलों में, जहां किसी वर्तमान परीक्षण के लिए अंतरिम परीक्षण रिपोर्ट प्रस्तुत की जाती है, केंद्रीय प्रदूषण नियंत्रण बोर्ड द्वारा अनंतिम प्रमाण पत्र जारी किया जाएगा, जिसमें आईएस 17899 टी:2022 की टी 1 में क्र.सं. (i) या क्र.सं. (ii) या टी 2 की क्र. सं. (i) पर दिए गए जैव-अवक्रमणीय संबंधी आईएस 17899 टी:2022 का पहला घटक सम्मिलित होगा:-

परंतु जैवअवक्रमणीय प्लास्टिक का उत्पादन या आयात दिनांक 31 मार्च, 2023 के बाद बंद हो जाएगा इस शर्त के साथ अनंतिम प्रमाणपत्र 30 जून, 2023 तक वैध रहेगा।

(6) अंतरिम परीक्षण रिपोर्ट केन्द्रीय पेट्रो-रासायनिक अभियंत्रण और प्रौद्योगिकी या भारतीय मानक ब्यूरो की प्रयोगशाला मान्यता स्कीम, 2020 के अधीन मान्यता प्राप्त किसी प्रयोगशाला से या प्रयोगशालाओं के परीक्षण एवं अंशाकन हेतु राष्ट्रीय प्रत्यायन बोर्ड द्वारा इस प्रयोजन हेतु मान्यता प्राप्त प्रयोगशालाओं से प्राप्त की जाएगी, और वे यह प्रमाणित करेंगे कि प्लास्टिक का जैव-अवक्रमण आईएस 17899 टी:2022 के अनुरूप है।

6. उक्त नियम के नियम 11 के उप-नियम (1) में ,–

(i) खंड (क) के स्थान पर, निम्नलिखित खंड रखा जाएगा, अर्थात्:-

"(क) उत्पादक या ब्राण्ड मालिक का नाम, रजिस्ट्रीकरण संख्या और कैरी बैग तथा प्लास्टिक पैकेजिंग के मामले में मोटाई।

परंतु, यह उपबंध लागू नहीं होगा,-

(i) आयातित वस्तुओं के लिए प्रयुक्त प्लास्टिक पैकेजिंग हेतु

(ii) केंद्रीय प्रदूषण नियंत्रण बोर्ड के अनुमोदन के पश्चात्, विधिक माप विज्ञान पैकेज्ड सामग्री नियम, 2011 के नियम 26 के अंतर्गत आने वाले मामलों के लिए:

(iii) उन मामलों में, जहां इस संबंध में केंद्रीय प्रदूषण नियंत्रण बोर्ड के अनुमोदन के पश्चात् "इलैक्ट्रॉनिक और आईटी उत्पादों हेतु बीआईएस अनिवार्य रजिस्ट्रीकरण स्कीम के अधीन मानक चिन्ह के उपयोग और लेबल लगाने की अपेक्षाओं के लिए मार्गदर्शी सिद्धांतों" में दिए गए विनिर्देशों के अनुसार, इस नियम के अधीन अधिदेशित अपेक्षित सूचना को मुद्रित करना तकनीकी रूप से साध्य नहीं है।

(ii) खंड (ख) में, '1 जनवरी, 2023 से' "विनिर्माता" शब्द के स्थान पर "उत्पादक या ब्रांड स्वामी" शब्द रखे जाएंगे।

(iii) खंड (ग) के बाद, निम्नलिखित खंड अंत:स्थापित किया जाएगा, अर्थात्:-

"(घ) आयातित कैरी बैगों या बहु-परतीय पैकेजिंग या प्लास्टिक पैकेजिंग का आयातकर्ता या उत्पादक या ब्रांड स्वामी, एक मात्र रूप से या उत्पादों सहित खंड (क) और (ख) का पालन करेगा।"

7. उक्त नियम के नियम 12 के उप-नियम (1) में,- "राज्य प्रदूषण नियंत्रण बोर्ड" शब्दों से पहले "केंद्रीय प्रदूषण नियंत्रण बोर्ड या" शब्द अंत:स्थापित किए जाएंगे।

8. उक्त नियम के नियम 13 में,-

(i) उप-नियम (1) के स्थान पर, निम्नलिखित उप-नियम रखा जाएगा, अर्थात.-

"(1) कोई भी व्यक्ति कैरी बैगों या पुनर्चक्रित प्लास्टिक बैगों या बहुपरतीय पैकेजिंग का तब तक विनिर्माण नहीं करेगा जब तक कि उस व्यक्ति ने निम्नलिखित से रजिस्ट्रीकरण प्राप्त न कर लिया हो,-

(i) संबंधित राज्य प्रदूषण नियंत्रण बोर्ड या संघ राज्य क्षेत्र की प्रदूषण नियंत्रण समिति, यदि एक या दो राज्यों या संघ राज्य क्षेत्रों में प्रचालन कर रहे हों; या

(ii) केंद्रीय प्रदूषण नियंत्रण बोर्ड, यदि दो मे अधिक राज्यों या संघ राज्य क्षेत्रों में प्रचालन कर रहे हों,"

(ii) उप-नियम (2) में,

(क) "उत्पादक" शब्द के पश्चात्, ",-या आयातकर्ता" शब्द अंत:स्थापित किए जाएंगे;

(ख) "आवेदन करना" शब्दों के पश्चात्, "अनुसूची-2 में विनिर्दिष्ट मार्गदर्शी सिद्धांतों के अनुसार" शब्द और अंक अंत:स्थापित किए जाएंगे।

(iii) उप-नियम (3) में, "प्रपत्र 2 में" शब्दों-, और अंकों के पश्चात्, "अनुसूची-2 में विनिर्दिष्ट मार्गदर्शी सिद्धांतों के अनुसार" शब्द अंक अंत:स्थापित किए जाएंगे-;

(iv) उप-नियम (6) का लोप किया जाएगा।

(v) उप-नियम (7) में, अंत में आने वाले "पंजीकरण निबंधन" शब्दों के पश्चात्, "और पंजीकरण, अनुसूची-2 में विनिर्दिष्ट प्लास्टिक पैकेजिंग हेतु विस्तारित उत्पादक उत्तरदायित्व से संबंधी मार्गदर्शी सिद्धांतों के अनुसार बाध्यताओं को पूरा करने के अध्यधीन होगा" शब्द और अंक अंत:स्थापित किए जाएंगे।

9. उक्त नियम के नियम 17 के बाद, निम्नलिखित नियम अंत:स्थापित किया जाएगा, अर्थात्,-:-

"18. पर्यावरणीय प्रतिकर का अधिरोपण - पर्यावरणीय प्रतिकर का अधिरोपण उन व्यक्तियों पर, जो केंद्रीय प्रदूषण नियंत्रण बोर्ड द्वारा अधिसूचित मार्गदर्शी सिद्धांतों के अनुसार इन नियमों के उपबंधों का अनुपालन नहीं कर रहे हैं/ रहे हैं, प्रदूषक द्वारा संदाय किए जाने के सिद्धांत के आधार पर उद्ग्रहीत किया जाएगा"।

10. उक्त नियम की अनुसूची 1 के स्थान पर, निम्नलिखित रखा जाएगा :-

"अनुसूची-1

[नियम 10 देखें]

(1)	(2)
1	आईएस/आईएसओ 14851:2019 जलीय माध्यम में प्लास्टिक सामग्रियों की अंतिम वायुजीवी जैवअवक्रमणीयता का अवधारण- किसी बंद रेस्पिरोमीटर में ऑक्सीजन मांग को मापने की पद्धति (प्रथम पुनरीक्षण)
2	आईएस/आईएसओ 14852:1999 जलीय माध्यम में प्लास्टिक वस्तुओं की अंतिम एरोबिक जैव-अवक्रमणीयता का अवधारण- विकसित कार्बनडाईऑक्साइड के विश्लेषण द्वारा मापने की पद्धति
3	आईएस/आईएसओ 14853:2016 प्लास्टिक- जलीय माध्यम में प्लास्टिक सामग्रियों की अंतिम वायुजीवी जैव-अवक्रमणीयता का अवधारण- बायोगैस उत्पादन द्वारा मापने की पद्धति (प्रथम संशोधन)
4	आईएस/आईएसओ 14855-1:2012 प्लास्टिक- नियंत्रित कम्पोस्टिंग दशाओं में प्लास्टिक सामग्रियों की अंतिम वायुजीवी जैव-अवक्रमणीयता का अवधारण- विकसित कार्बनडाईऑक्साइड के विश्लेषण द्वारा मापने की पद्धति: भाग 1 सामान्य पद्धति (प्रथम संशोधन)
5	आईएस/आईएसओ 14855-2:2018 प्लास्टिक- नियंत्रित कम्पोस्टिंग दशाओं में प्लास्टिक सामग्रियों की अंतिम वायुजीवी जैव-अवक्रमणीयता का अवधारण- विकसित कार्बनडाईऑक्साइड के विश्लेषण द्वारा मापने की पद्धति: भाग 2 प्रयोगशाला- पैमाना परीक्षण में विकमित कार्बनडाईऑक्साइड की ग्रेवीमेट्रिक माप (प्रथम संशोधन)
6	आईएस/आईएसओ 15985:2014 प्लास्टिक- उच्च ठोस अवायुजीवी- आत्ममात्करण दशाओं में अंतिम अवायुजीवी जैव-अवक्रमणीयता का अवधारण- निर्मुक्त बायोगैस के विश्लेषण से मापने की पद्धति (प्रथम संशोधन)

7	आईएस/आईएसओ 16929:2019 प्लास्टिक- प्रायोगिक पैमाना परीक्षण में परिभाषित कंपोस्टिंग दशाओं में प्लास्टिक सामग्रियों के विघटन की डिग्री का अवधारण (द्वितीय संशोधन)
8	आईएस/आईएसओ 17556:2019 प्लास्टिक- किसी रेस्पिरोमीटर में ऑक्सीजन की माप या विकसित कार्बनडाईऑक्साइड की मात्रा द्वारा मृदा में प्लास्टिक सामग्रियों की अंतिम वायुजीवी जैव-अवक्रमणीयता का अवधारण (द्वितीय संशोधन)
9	आईएस/आईएसओ 20200:2015 प्लास्टिक- प्रयोगशाला पैमाना परीक्षण में अनुकरण की गई कंपोस्टिंग दशाओं में प्लास्टिक सामग्रियों के विघटन की डिग्री का अवधारण (प्रथम संशोधन)"

11. उक्त नियमों के, प्रपत्र 1 में,-

(i) "1. उत्पादक" उपशीर्ष में क्रम संख्यांक 11 और उससे संबंधित प्रविष्टियों के स्थान पर निम्नलिखित रखा जाएगा, अर्थात् :-

"11.	अनुसूची-2 में विनिर्दिष्ट मार्गदर्शी सिद्धांतों के अनुरूप कार्य योजना"।

(ii) 'उपशीर्ष "2 ब्रांड स्वामी" क्रम संख्यांक 9 के लिए और उससे संबंधित प्रविष्टियों स्थान पर निम्नलिखित रखा जाएगा, अर्थात्-

"9.	अनुसूची-2 में विनिर्दिष्ट मार्गदर्शी सिद्धांतों के अनुरूप कार्य योजना"।

(iii) उपशीर्षक "2 ब्रांड स्वामियों" और उससे संबंधित प्रविष्टियों के पश्चात् निम्नलिखित अंत:स्थापित किया जाएगा, अर्थात:-

"3. आयातकर्ता :

भाग-क साधारण		
1.	नाम, पता और संपर्क करने के लिए नंबर	
2.	नवीकरण के मामले में, पूर्वतर रजिस्ट्रीकरण संख्या और रजिस्ट्रीकरण की तारीख	
3.	क्या इकाई, राज्य सरकार या संघ राज्य क्षेत्र के जिला उद्योग केंद्र में रजिस्ट्रीकृत है? यदि हां, तो प्रति संलग्न करें।	
4.(क)	परियोजना में निवेश की गई कुल पूंजी	
(ख)	उत्पादन प्रारंभ करने का वर्ष	
5.(क)	उत्पादों और उप-उत्पादों की सूची और मात्रा	
(ख)	प्रयुक्त कच्ची सामग्री की सूची और मात्रा	
6.(क)	आयातित या आयात किए जाने वाले उत्पादों की पैकेजिंग के लिए प्रयुक्त प्लास्टिक शीट या वैसे ही प्लस्टिक शीट की मात्रा	
(ख)	आगे और आपूर्ति या स्व उपयोग के लिए पैकेजिंग हेतु प्रयुक्त प्लास्टिक शीट या वैसे ही प्लास्टिक की मात्रा	
(ग)	आगे और आपूर्ति या स्व उपयोग के लिए बहु-परतीय पैकेजिंग की मात्रा	

	भाग-ख द्रव बहि:स्राव और गैसीय उत्सर्जनों से संबंधित	
7.	क्या इकाई के पास, जल (प्रदूषण निवारण एवं नियंत्रण) अधिनियम, 1974 (1974 का 6) के अधीन वैध सहमति है? यदि हां, तो प्रति संलग्न करें	
8.	क्या इकाई के पास, वायु (प्रदूषण निवारण एवं नियंत्रण) अधिनियम, 1981 (1981 का 14) के अधीन वैध सहमति है? यदि हां, तो प्रति संलग्न करें	
	भाग-ग अपशिष्ट से संबंधित	
9.	ठोस अपशिष्ट या अवशिष्ट : (क) उत्पन्न अपशिष्ट की कुल मात्रा (ख) संयंत्र के भीतर भण्डारण का ढंग (ग) अपशिष्टों के निपटान के लिए की गई व्यवस्था	
10.(क)	(i) पैकेजिंग के लिए प्रयुक्त आयातित (i) प्लास्टिक शीट या वैसे ही प्लास्टिक शीट और (ii) बहुपरतीय पैकेजिंग की आपूर्ति कराने वाले व्यक्ति की सूची संलग्न करें या उपलब्ध कराएं	
(ख)	(i) आगे और आपूर्ति या स्व उपयोग के लिए प्रयुक्त मात्रा सहित पैकेजिंग के लिए प्रयुक्त आयातित (i) प्लास्टिक शीट या वैसे ही प्लास्टिक शीट और (ii) आगे और आपूर्ति या स्व उपयोग के लिए प्रयुक्त मात्रा सहित आयातित बहुपरतीय पैकेजिंग की मात्रा	
11.	अनुसूची-2 में निर्दिष्ट मार्गदर्शी सिद्धांतों के अनुसार कार्य योजना	
	नाम और हस्ताक्षर पदनाम तारीख : स्थान : "	

12. उक्त नियम के प्रपत्र 4 में, क्रम संख्या (9) और उससे संबंधित प्रविष्टियों के पश्चात् निम्नलिखित अंतस्थापित किया जाएगा, अर्थात् :-

"(10). अनुसूची-2 में निर्दिष्ट मार्गदर्शी सिद्धांतों के अनुसार, संबंधित राज्य प्रदूषण नियंत्रण बोर्ड और प्रदूषण नियंत्रण समिति को प्रत्येक वर्ष तारीख 30 अप्रैल तक उपलब्ध कराए जाने वाले आंकड़े"

13. उक्त नियम के, प्रपत्र 5 में, तालिका के पश्चात् निम्नलिखित टिप्पण अंत:स्थापित की जाएगी:-

"टिप्पण: केन्द्रीय प्रदूषण नियंत्रण बोर्ड को प्रत्येक वर्ष तारीख 30 अप्रैल तक निम्नलिखित सूचनाएं उपलब्ध कराई जाएगी, अर्थात् :-

(क) कैरी बैग, पुनर्चक्रित प्लास्टिक बैग, बहुपरतीय पैकेजिंग का विनिर्माता (नियम 13के उप-निमय (1) के खंड (i) के अधीन रजिस्ट्रीकृत)

(ख) उत्पादक, आयातकर्ता, ब्रांड का स्वामी (नियम 13 के उप-निमय (1) के खंड (i) के अधीन रजिस्ट्रीकृत)

(ग) पुनर्चक्रणकर्ता और प्लास्टिक अपशिष्ट का प्रसंस्करणकर्ता (नियम 13के उप-निमय (1) के खंड (i) के अधीन रजिस्ट्रीकृत)"

14. उक्त नियम की अनुसूची-2 के पैरा (3) का लोप किया जाएगा।

उक्त नियम की अनुसूची 2 में, उप- पैरा (7.8) के स्थान पर निम्नलिखित का रखा जाएगा, अर्थात्:-

"(7.8) यदि बाध्य इकाई जैवअवक्रमणीयता प्लास्टिक से बनी प्लास्टिक पैकेजिंग का उपयोग करती है, तो नियम 10 के उपबंध लागू होंगे और विस्तारित उत्पादक उत्तरदायित्व लक्ष्य लागू नहीं होगा।"

[फा. सं. 17/24/2021-एचएसएमडी]

नरेश पाल गंगवार, अपर सचिव

टिप्पणी : मूल नियम भारत के राजपत्र में सा.का.नि. 320(अ), तारीख 18 मार्च, 2016 द्वारा प्रकाशित किए गए थे और तत्पश्चात् उनमें अधिसूचना संख्या सा.का.नि. 285(अ), तारीख 27 मार्च, 2018 और अधिसूचना संख्या सा.का.नि. 571(अ), तारीख 12 अगस्त, 2021 और अधिसूचना संख्या सा.का.नि. 647(अ), तारीख 17 अगस्त, 2021 के द्वारा संशोधन और अधिसूचना संख्या सा.का.नि. 133(अ), तारीख 16 फरवरी, 2022 के द्वारा अंतिम बार संशोधन किया गया था।

MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE

NOTIFICATION

New Delhi, the 6th July, 2022

G.S.R. 522(E).—Whereas the draft rules further to amend the Plastics Waste Management Rules, 2016, were published in the Gazette of India, Extraordinary, Part II, Section 3, Sub-section (i) dated the 18th January, 2022, *vide* notification number G.S.R. 22 (E) dated the 18th January, 2022, inviting objections and suggestions from all persons likely to be affected thereby within a period of sixty days from the date copies of the Gazette containing the said draft rules were made available to the public;

And whereas, copies of the Gazette containing the said draft rules were made available to the public on the 18th January, 2022 ;

And whereas, objections and suggestions received within the aforesaid period have been duly considered by the Central Government;

Now, therefore, in exercise of the powers conferred by sections 3, 6, and 25 of the Environment (Protection) Act 1986, (29 of 1986), the Central Government hereby makes the following rules further to amend the Plastic Waste Management Rules, 2016, namely :-

1. **Short title and commencement.-** (1) These rules may be called the Plastic Waste Management (Second Amendment) Rules, 2022.

(2) They shall come into force on the date of their publication in the Official Gazette.

2. In the Plastic Waste Management Rules, 2016 (hereinafter referred to as the said rules), in rule 3,-

(i) after clause (ab), the following clause shall be inserted, namely:-

'(ac) "Biodegradable plastics" means plastics, other than compostable plastics, which undergoes degradation by biological processes under ambient environment (terrestrial or in water) conditions, without leaving any micro plastics, or visible, or distinguishable or toxic residue, which has adverse environment impacts, adhering to laid down standards of Bureau of Indian Standards and certified by the Central Pollution Control Board;';

(ii) in clause (b), after the words "brand labels", the words "or trademark" shall be inserted;

(iii) in clause (c), before the words "means bags made" the following words and brackets "(covered under Category II of plastic packaging – Clause (5.1) (II), given in Schedule – II)" shall be inserted.

(iv) clause (ga), shall be renumbered as "(gb)" thereof and before clause (gb) as so renumbered,the following clause shall be inserted, namely :-

'(ga) "End of Life disposal" means using plastic waste for generation of energy subject to relevant guidelines in force, which includes co-processing (e.g. in cement, steel or any other such industry) or waste to oil, except in cases where feedstock chemicals are produced for further use in the production of plastic which may then be considered under recycling or for road construction as per Indian Road Congress guidelines etc.';

(v) for clause (k),the following clause shall be substituted, namely:-

'(k)"Importer" means a person who imports plastic packaging or products with plastic packaging or carry bags or multilayered packaging or plastic sheets or like;';

(vi) after clause (o), the following clause shall be inserted, namely :-

'(oa) Plastic Packaging" means packaging material made by using plastics for protecting, preserving, storing, and transporting of products in a variety of ways;' ;

(vii) after clause (qa), the following clause shall be inserted, namely :-

'(qb) "Plastic Waste Processors" means recyclers of plastic waste as well as entities engaged in using plastic waste for energy (waste to energy) including in coprocessing or converting plastic waste to oil (waste to oil) except in cases where feedstock chemicals are produced for further use in the production of plastic which may then be considered under recycling , industrial composting;';

(viii) after clause (qb), the following clause shall be inserted, namely:-

'(qc) "Post-consumer plastic packaging waste" means plastic packaging waste generated by the end-use consumer after the intended use of packaging is completed and is no longer being used for its intended purpose;';

(ix) after Clause (r), the following clause shall be inserted, namely:-

'(ra) "Pre-consumer plastic packaging waste" means plastic packaging waste generated in the form of reject or discard at the stage of manufacturing of plastic packaging and plastic packaging waste generated during the packaging of product including reject, discard, before the plastic packaging reaches the end-use consumer of the product;';

(x) after clause (s), the following clause shall be inserted, namely :-

'(sa) "Recyclers" are entities who are engaged in the process of recycling of plastic waste;';

(xi) after clause (u), the following clause shall be inserted, namely:-

'(ua) "Reuse" means using an object or resource material again for either the same purpose or another purpose without changing the object's structure;';

(xii) after clause (w), the following clause shall be inserted, namely :-

'(wa) "Use of recycled plastic" means recycled plastic used as raw material, instead of virgin plastic, in the manufacturing process;';

(xiii) after clause (aa), the following clause shall be inserted, namely :-

'(aab) "Waste to Energy" means using plastic waste for generation of energy and includes co-processing (e.g. in cement, steel or any other such industry);'.

3. In in rule 4 of the said rules, , -

(i) in sub-rule (1),

(a) in clause (d), after the words "thickness except", the words " as specified by the Central Government" shall be inserted;

(b) in clause (h),-

(A) after the words "made up of compostable plastic", the words "and biodegradable plastics" shall be inserted;

(B) for the letters and figures "IS 17088:2008,", the letters and figures "IS / ISO 17088:2021" shall be substituted;

(C) after the words "seller of compostable plastic", the words "and biodegradable plastics" shall be inserted;

(ii) in sub-rule (3), after the words "compostable plastic", the words "and biodegradable plastics" shall be inserted.

4. In rule 9 of the said rules, -

(i) for sub-rule (1), the following sub-rule shall be substituted, namely:-

"(1) The Producers, Importers and Brand Owners shall fulfil Extended Producers Responsibility for Plastic Packaging as per guidelines specified in Schedule -II.";

(ii) in sub-rule (2), the portion beginning with the words "This plan of collection" and ending with the words "two years thereafter" shall be omitted;

(iii) in sub-rule (4), before the words "Pollution Control Board", the words, "Central Pollution Control Board and State" shall be inserted;

(iv) in sub-rule (5), -

(A) after the words "without registration from" the words "Central Pollution Control Board if operating in more than two states or Union territories," shall be inserted;

(B) after the words "Pollution Control Committees", the words, brackets and figures " as per sub-rule (2) of rule 13" shall be inserted.

5. For rule 10 of the said rules, the following rule shall be substituted, namely.-

" 10. Protocols for compostable and biodegradable plastic materials.- (1) Determination of the degree of degradability and degree of disintegration of plastic material shall be as per the protocols of the Indian Standards listed in Schedule I.

(2)The compostable plastic materials shall conform to the IS / ISO 17088:2021, as amended from time to time.

(3) The biodegradable plastics shall conform to the standard notified by the Bureau of Indian Standards and certified by the Central Pollution Control Board.

(4) Until a standard referred to in sub-rule (3) is notified by the Bureau of Indian Standards, biodegradable plastics shall conform to tentative Indian Standard IS 17899 T:2022 as notified by the Bureau of Indian Standards.

(5) As a transitory measure, provisional certificate for biodegradable plastics, shall be issued by the Central Pollution Control Board, in cases, where an interim test report is submitted, for an ongoing test, which covers the first component of the IS 17899 T:2022 relating to biodegradability given at Sl. No. (i) or Sl. No. (ii) of Table 1 or Sl. No. (i) of Table 2 of the IS 17899 T:2022:

Provided that the provisional certificate shall be valid till 30th June 2023 with the condition that production or import of biodegrdable plastics shall cease after the 31st day of March, 2023.

(6) The interim test report shall be obtained from the Central Institute of Petrochemical Engineering and Technology or a laboratory recognised under the Laboratory Recognition Scheme, 2020, of the Bureau of Indian Standards or laboratories accredited for this purpose by the National Accreditation Board for Testing and Calibration Laboratories, and they shall certify the bio-degradation of plastic is in line with IS 17899 T:2022.

6. In sub-rule (1) of rule 11 of the said rules,-

(i) for clause (a), the following clause shall be substituted, namely:-

"(a) name, registration number of the producer or brand owner and thickness in case of carry bag and plastic packaging :

Provided that this provision shall not be applicable,-

(i) for plastic packaging used for imported goods:

(ii) for cases falling under rule 26 of the Legal Metrology Packaged Commodities Rules, 2011, after the approval of the Central Pollution Control Board:

(iii) for cases where it is technically not feasible to print the requisite information mandated under this Rule, as per specifications given in the "Guidelines for use of Standard Mark and labelling requirements under BIS Compulsory Registration Scheme for Electronic and IT Products" after the approval of the Central Pollution Control Board .";

(ii) in clause (b), "with effect from the 1st January, 2023" for the word "manufacturer", the words "producer or brand owner" shall be substituted.

(iii) after clause (c), the following clause shall be inserted, namely:-

"(d) the importer or producer or brand owner of imported carry bags or multi-layered packaging or plastic packaging, alone or along with the products shall adhere to clause (a) and (b)."

7. In rule 12 of the said rules, in sub-rule (1), before the words, "State Pollution Control Board" the words, "Central Pollution Control Board or" shall be inserted.

8. In rule 13 of the said rules, -

(i) for sub-rule (1), the following sub-rule shall be substituted, namely:-

"(1) No person shall manufacture carry bags or recycle plastic bags or multilayered packaging unless the person has obtained registration from,-

(i) the concerned State Pollution Control Board or Pollution Control Committee of the Union territory, if operating in one or two states or Union territories; or

(ii) the Central Pollution Control Board, if operating in more than two States or Union territories.";

(ii) in sub-rule (2),-

(A) after the word "producer", the words "or importer" shall be inserted;

(B) after the words "make an application" , the words and figures "as per the guidelines specified in Schedule -II," shall be inserted;

(iii) in sub-rule (3), after the words "in Form II", the words and figures "as per the guidelines specified in Schedule –II" shall be inserted.

(iv) Sub-rule (6) shall be omitted;

(v) in sub-rule (7), after the words "terms of registration" occurring at the end, the words and figures " and the registration shall be subject to fulfilment of obligations in accordance with the guidelines on Extended Producer Responsibility for Plastic Packaging specified in Schedule -II." shall be inserted.

9. After rule 17 of the said rules, the following rule shall be inserted, namely:-

"18. Imposition of Environmental Compensation.- The Environmental Compensation shall be levied based upon polluter pays principle, on personswho are not complying with the provisions of these rules, as per guidelines notified by the Central Pollution Control Board.".

10. For Schedule I of the said rules, the following shall be substituted, namely:-

"SCHEDULE-I

[See rule 10]

(1)	(2)
1	IS / ISO 14851: 2019 Determination of the Ultimate Aerobic Biodegradability of Plastic Materials in an Aqueous Medium — method by measuring the Oxygen demand in a closed respirometer (First Revision)
2	IS / ISO 14852: 1999 Determination of the ultimate aerobic biodegradability of plastic materials in an aqueous medium—method by analysis of evolved Carbon dioxide
3	IS / ISO 14853: 2016 Plastics — Determination of the ultimate anaerobic biodegradation of plastic materials in an aqueous system —method by measurement of biogas production (First Revision)
4	IS /ISO 14855-1: 2012 Determination of the ultimate aerobic biodegradability of plastic materials under controlled composting conditions — method by analysis of evolved Carbon dioxide: Part 1 General method (First Revision)
5	IS / ISO 14855-2: 2018 Determination of the ultimate aerobic biodegradability of plastic materials under controlled composting conditions — method by analysis of evolved carbon dioxide: Part 2 Gravimetric measurement of Carbon dioxide evolved in a laboratory- scale test (First Revision)
6	IS / ISO 15985: 2014 Plastics — Determination of the ultimate anaerobic biodegradation under high-solids anaerobic-digestion conditions — methods by analysis of released biogas (First Revision)
7	IS /ISO 16929: 2019 Plastics — Determination of the Degree of Disintegration of Plastic Materials under Defined Composting Conditions in a Pilot-Scale Test (Second Revision)
8	IS / ISO 17556: 2019 Plastics — Determination of the Ultimate Aerobic Biodegradability of plastic materials in soil by measuring the Oxygen demand in a Respirometer or the amount of Carbon Dioxide Evolved (Second Revision)
9	IS / ISO 20200 : 2015 Plastics — Determination of degree of disintegration of plastic materials under simulated composting conditions in a laboratory - Scale test (First Revision)"

11. In the said rules, in Form I,-

(i) in the sub-heading "1.Producers", for serial number 11 and the entries relating thereto, the following shall be substituted, namely:-

" 11.	Action plan in line with the guidelines specified in Schedule -II".	

(ii) in sub-heading "II Brand Owners", for serial number 9 and the entries relating thereto, the following shall be substituted, namely:-

"9.	Action plan in line with the guidelines specified in Schedule -II".	

(iii) after sub-heading "II. Brand Owners" and the entries relating thereto, the following shall be inserted, namely:-

" III- Importers

PART – A		
GENERAL		
1.	Name, Address and Contact number	
2	In case of renewal, previous registration number and date of registration	
3	Is the unit registered with the District Industries Centre of the State Government or Union Territory? If yes, attach a copy.	
4.(a)	Total capital invested on the project	
(b)	Year of commencement of production	
5. (a)	List and quantum of products and by-products	
(b)	List and quantum of raw materials used	
6 (a)	Quantity of plastic sheet or like used for packaging of imported or to be imported products	
(b)	Quantity of plastic sheet or like used for packaging for further supply or self-use	
(c)	Quantity of multilayered packaging for further supply or self-use	
PART – B		
PERTAINING TO LIQUID EFFLUENT AND GASEOUS EMISSIONS		
7.	Does the unit have a valid consent under the Water (Prevention and control of Pollution) Act, 1974 (6 of 1974)? If yes, attach a copy	
8.	Does the unit have a valid consent under the Air (Prevention and Control of Pollution) Act, 1981 (14 of 1981)? If yes, attach a copy	
PART – C		
PERTAINING TO WASTE		
9.	Solid Wastes or rejects: (a)Total quantum of waste generated (b)Mode of storage within the plant (c) Provision made for disposal of wastes	
10. (a)	Attach or provide list of person supplying imported (i) plastic sheet or like used for packaging, (ii) multilayered packaging	
(b)	Quantity of imported (i) plastic sheet or like used for packaging along with the quantity used for further supply or self use, (ii) multilayered packaging along with the quantity used for further supply or self use	
11.	Action Plan in line with Guidelines specified in Schedule - II	

Name and Signature

Designation

Date :

Place :".

12. In Form IV of the said rules, after serial number (9) and the entries thereto, the following shall be inserted, namely:-

"(10). Data to be provided as per guidelines specified in Schedule -II by 30th April of every year to the concerned State Pollution Control Board or Pollution Control Committee"

13. In Form VI of the said rules, after the table, the following note shall be inserted:-

"Note: The following informations shall be provided to the Central Pollution Control Board by 30th April of every year, namely:-(a) Manufacturer of carry bag, recycled plastic bag, multilayered packaging (Registered under clause (i) of sub-rule (1) of rule 13;

(b) Producer, Importer, Brand Owner (Registered under clause (i) of sub-rule (2) of rule 13;(c)Recycler and plastic waste processor (Registered under clause (i) of sub-rule (3) of rule 13".

14. Paragraph 3 of Schedule – II of the said rules shall be omitted. 15. In Schedule II of the said rules, for sub-- paragraph (7.8), the following shall be substituted, namely:-

"(7.8) In case, the obligated entity utilizes plastic packaging made from biodegradable plastics, the provisions of rule 10 shall be applicable and the Extended Producer Responsibility target shall not be applicable."

[F. No. 17/24/2021-HSMD]

NARESH PAL GANGWAR, Addl. Secy.

Note : The principal rules were published in the Gazette of India, vide number G.S.R. 320(E), dated the 18th March, 2016 and subsequently amended vide notification number G.S.R. 285(E), dated the 27th March, 2018, vide notification number G.S.R. 571(E), dated the 12th August, 2021, vide notification number G.S.R. 647(E), dated the 17th August, 2021 and last amended vide notification number G.S.R. 133(E) , dated the 16th February 2022.

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Annexure - II

Item Nos. 05 to 07 Court No. 1

BEFORE THE NATIONAL GREEN TRIBUNAL
PRINCIPAL BENCH, NEW DELHI

Original Application No. 251/2022

In re : News item published in The Hindu dated 29.03.2022 titled **"Detecting microplastics in human blood"**

WITH

Original Application No. 764/2022
(Earlier Original Application No. 99/2021 (SZ))

In re : News Item published in The Times of India, Chennai dated 05.04.2021 titled **"Chennai, you are breathing micro plastic"**

WITH

Original Application No. 765/2022
(Earlier Original Application No.174/2021 (SZ))

In re: News Item published in The Times of India, Chennai dated 27.07.2021 titled **"High level of metals PM 2.5 found in city's air you're breathing"**

Date of hearing: 01.03.2023

CORAM: HON'BLE MR. JUSTICE ADARSH KUMAR GOEL, CHAIRPERSON
HON'BLE MR. JUSTICE SUDHIR AGARWAL, JUDICIAL MEMBER
HON'BLE DR. A. SENTHIL VEL, EXPERT MEMBER

Respondent: Mr. Anuj Kumar Sharma, Advocate for CPCB

ORDER

1. Proceedings in all the three matters have been initiated *suo-motu* in the light of identical media reports to the effect that in absence of enforcement of environmental norms on the subject, small particles of plastics enter the blood cells of human being through food, having adverse health impact.

2. Vide order dated 05.04.2022 in O.A No. 251/2022, the Tribunal noted that identical matters were pending before Southern Bench, NGT, being OA No. 99/2021(SZ), *Tribunal on its own motion Suo Motu based on*

the news item in The Times of India Newspaper, Chennai Edition dt. 05.04.2021, "Chennai, you are breathing micro plastic" vs. The Chief Secretary to Government of Tamil Nadu Chennai and Ors. and OA No. 174/2021(SZ), Tribunal on its own motion Suo Motu based on the news item in The Times of India Newspaper, Chennai Edition dt. 27.07.2021, "High level of metals PM 2.5 found in city's air you're breathing" vs. The Chief Secretary to Government of Tamil Nadu Chennai and Ors. To avoid conflict in the order, the said matters were transferred to Principal Bench, NGT. It was further directed that study be conducted by a joint Committee comprising CPCB, ICMR, Central Institute of Petrochemicals Engineering & Technology (CIPET), NCSCM, and any other expert institutions as required, under the nodal coordination of CPCB and a report of study with suggestions for remedial action may be filed before this Tribunal.

3. In pursuance of above, CPCB has filed report dated 13.02.2023. The report acknowledges that Microplastics (MP) - both primary and secondary - pollute drinking water sources primarily through discharge of sewage/wastewater treatment plant effluent and surface runoff. As the sewage/wastewater treatment plants are not equipped for the complete removal of MP, the effluent released from these plants contains substantial quantity of MP. Upon mixing of this effluent with the freshwater sources, MP becomes part of the fresh/drinking water supply chain. Components of water treatment plants and water distribution system are usually made up of plastic materials such as high density polyethylene, polyvinyl chloride, polypropylene etc. These further contribute towards MP generation in the water they carry. The treated bottled water is also reported to contain MP. In the air, suspended MP particles have been isolated from various places such as urbanized city centres, indoor households and remote outdoor regions. As there is wide range of MP size, it is highly likely that these particles are inhaled by the humans. Soil can

get affected from plastics through various means such as plastic mulch films, municipal waste, sewage sludge, fertilizers coated with plastics. A significant positive correlation has been seen between the rate of sludge applied onto the soil and concentration of MP particles in the soil. MP concentrations have been detected in the air at dumpsites in India. MP is also being reported in human saliva, blood, placenta, colon, stool and lungs.

4. Conclusions in the report are as follows:-

"C. Conclusions

1. *Independent studies regarding microplastics have been conducted by various organizations in the country including CPCB, MoES-NCCR, NCSCM, NPC and CIPET . Further international studies have been conducted by WHO, UNEP , OECD and others.*
2. *The studies have primarily focussed on monitoring microplastics (concentration, polymer type, colour, shape) in various environmental matrices.*
3. *Occurrence of microplastics has been reported in oceans, sediments, surface water, ground water, wastewater, tap water, bottled water, air, food products, aquatic organisms, and human beings*
4. *There is currently no standard method for sampling and analysis of microplastics in the environment. ISO is currently working on the subject*
5. *Sampling and analytical methods adopted by different institutions in India are similar with minor variations. Variation in Microplastic concentrations units reported by different organizations has been observed*
6. *Uniform procedure for sampling & analysis may be developed by organizations involved in microplastic analysis (CIPET, NCSCM, MoES-NCCR) which can be adopted uniformily across the country till the time ISO standard is finalized.*
7. *Source of generation of microplastics including industries, waste management , waste water treatment, ocean activities etc. have been identified. However, exact quantum of microplastics generated from the identified source has not been determined.*
8. *Microplastic concentration in transfer media is available for soil/beach sediment, surface water bodies, biota and ocean water. Microplastic concentration for sludge , specifically when it is converted to compost for land application is not available*
9. *Microplastic concentration in end use areas including ambient air, drinking water and ground water is available.*
10. *Source monitoring, transfer end use of all possible sources listed in Table 3.1 to be covered. Emphasis to be laid on such areas for which no information is available.*
11. *Regular monitoring of various water quality parameters to be conducted to provide insight into the presence and concentration of microplastics in environmental matrices(water, sediments, biota)*

12. *Microplastic leakages and pathways may be monitored in order to identify further sources and hotspots of microplastics.*
13. *Uniform procedure for sampling & analysis as finalized by this Committee may be adopted for such studies till the time ISO Standards are finalized.*

14. ***Studies conducted on the matter have reported about the presence of microplastics in human body. Physiological or psychological impact has not been reported in these studies.***

15. *Health impact of emerging contaminants and long term studies are required to establish Cause effect relationship of microplastics on human health*

16. *The aforementioned studies should cover different type, concentration and shapes of microplastics. Impact of chemicals / biofilms associated with Microplastics on human health to be covered. The studies may include the following:*

    - *Estimation of the duration and frequency of human exposure to microplastics. Microplastic monitoring as required may be conducted for the same*
    - *Once the exposure assessment is done precisely, dose-response assessment may be carried out, where the minimum concentration (of microplastics) responsible for any observable effect (on human) shall be assessed..*

17 ***Bioassays*** *may be conducted to assess the Eco-toxicological impact of microplastics on animal life.*

18. *Standards development (Source & ambient) for microplastics may be taken up following establishment of the cause-effect relationship of microplastics on human health*

19. *Available technologies to be assessed for their efficacy for removal of microplastics.*

20. *Technologies to be developed for removal of microplastics from Air & Soil*
21. ***Source-directed interventions,***

- ***Sustainable design and manufacturing of textiles, tyres, and complementary products (, laundry detergents, road surfaces, and vehicles), to minimise the tendency of products to contribute to microplastics generation;***
- ***Restrictions on microplastics in the manufacture and sale of certain personal care and cosmetic products containing microplastics.***
- ***Product requirements for household, commercial, or industrial washing machines. For instance, Australia and France have introduced measures to phase in microfibre filters on new washing machines***

22. ***End-of-life interventions, effective solid & plastic waste management practices, to prevent waste leaking into the environment and potentially contributing to microplastics generation including the following;***

(a) Reducing the amount of plastic waste that enters landfills and dumpsites *through the implementation of waste reduction policies and initiatives, such as waste-to-energy programs and increased recycling. Microplastics can also be reduced by supporting the development and use of biodegradable plastic alternatives*

23. ***End-of-pipe interventions, wastewater, stormwater, and road runoff management and treatment, to retain the emitted microplastics before these reach water bodies.***
24. ***Maximizing clean drinking water supply to all citizens in the country***
25. ***Other Best practices as listed below for minimizing microplastics in environment may be followed:***
    - ***(a) Install physical barriers such as screens and filters on STP/WWTP systems to help reduce the amount of microplastics that enter rivers, lakes, and oceans.***
    - ***(b) Support sustainable fishing practices to reduce the amount of microplastic entering rivers from fishing equipment.***
    - ***(c) Implementation of Clean-up efforts for beaches and rivers***
26. ***Training and capacity building including microplastic monitoring, analysis, health impact studies may be taken up for effective implementation of aforementioned points."***

5. Minutes of the third meeting of the Committee annexed to the report considers methodology for developing standards for regulating MP and propose further studies for laying down standards.

6. We have duly considered the issue and the suggestions in the report. Since issue involved is common in all the three matters, to avoid duplication, we direct that O.A No. 764/2022 & O.A No. 765/2022 will stand disposed of and the matter will be dealt with in O.A No. 251/2022.

7. The report appears to be based on scientific basis and can be acted upon subject to objections, if any. The report shows clear potential of particulates of MP entering blood cells of human beings which can have adverse health impact, there is need for further remedial action for enforcing the 'Sustainable Development' and 'Precautionary' principles by way of preventive and remedial measures to neutralize anticipated harm to environment and public health, pending further scientific investigations for laying down standards, as suggested in the report.

8. We may refer to the well known observations of Hon'ble Supreme Court in *Vellore Citizens' Welfare Forum v. UoI, (1996) 5 SCC 647* :-

> *"11. Some of the salient principles of "Sustainable Development", as culled-out from Brundtland Report and other international documents, are Inter-Generational Equity, Use and Conservation of Nature Resources, Environmental Protection, the Precautionary Principle, Polluter Pays principle, Obligation to assist and cooperate, Eradication of Poverty and Financial Assistance to the developing countries. We are, however, of the vies that* ***"The Precautionary Principle" and "The Polluter Pays" principle are essential features of "Sustainable Development". The "Precautionary Principle" - in the context of the municipal law – means:***
>
> ***(i) Environment measures - by the State Government and the statutory Authorities must anticipate, prevent' and attack the causes of environmental degradation.***
>
> ***(ii) Where there are threats of serious and irreversible damage lack of scientific certainly should not be used as the reason for postponing, measures to prevent environmental depredation.***
>
> *(iii) The "Onus of proof" is on the actor or the developer/industrial to show that his action is environmentally benign.*
>
> *12. "The Polluter Pays" principle has been held to be a sound principle by this Court Indian Council for Enviro- Legal Action vs. Union of India[1]. The Court observed (SCC p. 246, para 65)*
> *"We are of the opinion that any principle evolved in this 'behalf should be simple practical and suited to the conditions obtaining in this country".*
>
> *The Court ruled that: (SCC p. 246, para 65)*
>
> > *"..."Once the activity carried on is hazardous or inherently dangerous, the person carrying on such activity is liable to make good the loss caused to any other person by his activity irrespective of the fact whether he took reasonable care while carrying on his activity. The rule is premised upon the very nature of the activity carried on".*
>
> *Consequently the polluting industries are "absolutely liable to compensate for the harm caused by them to villagers in the affected area, to the soil and to the underground water and hence, they are bound to take all necessary measures to remove sludge and other pollutants lying in the affected areas". The "Polluter Pays" principle as interpreted by this Court means that the absolute liability for harm to the environment extends not only to compensate the victims of pollution but also the cost of restoring the environmental degradation. Remediation of the damaged environment is part of the process of "Sustainable Development" and as such polluter is liable to pay the cost to the individual sufferers as well as the cost of reversing the damaged ecology.*

[1] (1996) 3 SCC 212: JT (1996) 2 SC 196

13. ***The precautionary principle and the Polluter Pays Principle have been accepted as part of the law of the land. Article 21 of the Constitution of India guarantees protection of life and personal liberty.*** *Articles 47, 48A and 51A(g) of the Constitution are as under:*

> *"47. Duty of the State to raise the level of nutrition and the standard of living and to improve public health. The State shall regard the raising of the level of nutrition and the standard of living of its people and the improvement of public health as among its primary duties and in particular, The State shall endeavour to bring about prohibition of the consumption except for medicinal purposes of intoxicating drinks and of drugs which are injurious to health.*
>
> *48A. (g) Protection and improvement of environment and safeguarding of forests and wild life. The State shall endeavour to protect and improve the environment and to safeguard the forests and wild life of the country.*
>
> *51A.(g) To protect and improve the natural environment including forests, takes, rivers and wild life, and to have compassion for living creatures."*

Apart from the constitutional mandate to protect and improve the environment there are plenty of post independence legislations on the subject but more relevant enactments for our purpose are: The Water (Prevention and Control of Pollution Act 1974 (the Water Act), The Air (Prevention and Control of Pollution) Act, 1981 (the Air Act) and the Environment Protection Act 1986 (the Environment Act). The Water Act provides for the constitution of the Central Pollution Control Board by the Central Government and the constitution of one State Pollution Control boards by various State Governments in the country. The Boards function under the control of the Governments concerned. The Water Act prohibits the use or streams and wells for disposal of polluting matters. Also provides for restrictions on outlets and discharge of effluents without obtaining consent from the Board. Prosecution and penalties have been provided which include sentence of imprisonment. The Air Act provides that the Central Pollution Control Board and the State Pollution Control Boards constituted under the later Act shall also perform the powers and functions under the Air Act. The main function of the Boards, under the Air Act, is to improve the quality of the air and to prevent. control and abate air pollution in the country. We shall deal with the Environment Act in the later part of this judgement.

14. In view of the above mentioned constitutional and statutory provisions ***we have no hesitation in holding that the precautionary principle and the Polluter Pays Principle are part of the environmental law of the country."***

9. Thus, while proposed studies may be undertaken expeditiously and completed at the earliest, interventions need to be immediately introduced as short-term measures in future designing and manufacturing of products which are potential threat for generating MP like Textiles, Tyres, and

Complementary Products (laundry detergents, road surfaces, and vehicles), manufacture and sale of certain personal care and cosmetic products containing MP, household, commercial, or industrial washing machines. Such other measures as may be identified may also be taken. For this purpose, the concerned Ministries need to consider the above report of CPCB and subject to any objections to the report which may be raised before the Tribunal, interventions may be introduced at the earliest, preferably within four months from today by the Secretary, MoEF&CC in consultation with CPCB, ICMR, Central Institute of Petrochemicals Engineering & Technology (CIPET), NCSCM, and any other expert institutions as required.

10. Compliance report may be filed before the next date by e-mail at judicial-ngt@gov.in preferably in the form of searchable PDF/ OCR Support PDF and not in the form of Image PDF.

List for further consideration on 09.08.2023.

A copy of this order be forwarded to the Secretary, MoEF&CC, CPCB, ICMR, CIPET and NCSCM by email for compliance.

Adarsh Kumar Goel, CP

Sudhir Agarwal, JM

Dr. A. Senthil Vel, EM

March 01, 2023
Original Application No. 251/2022
& Connected matters
AB

~~13~~ 29 Annexure-III

BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL,

Principal Bench, New Delhi

Original Application No. 251/2022

In re: News item published in The Hindu dated 29.03.2022 titled "Detecting microplastics in human blood"

Index

S. No.	Particulars	Page No.
1.	**Report** in compliance of order dated 05.04.2022 in OA No. 251/2022, In re: News item published in The Hindu dated 29.03.2022 titled "Detecting microplastics in human blood".	
2.	**Annexure-1:** A copy of Minutes of Meeting on "Committee Meeting in compliance of Hon'ble NGT order in the matter of O.A. No. 251 of 2022" with CIPET/ICMR /NCSCM held on April 19th, 2022.	
3.	**Annexure-2 :** A copy of Hon'ble NGT order dated 05.04.2022.	

(Divya Sinha)
Scientist E
Central Pollution Control Board
Delhi-110032

Date: 10.02.2023
Place: Delhi

~~14~~

CENTRAL POLLUTION CONTROL BOARD
DELHI

Date: 08.02.2023

Report in the matter of Tribunal on its own motion SuoMotu based on the news item published The Hindu titled "Detecting Microplastics in human blood" dated March 29, 2022 (O.A. No. 251/2022)

A. BACKGROUND

Vide order dated 05.04.2022 in aforesaid matter, Hon'ble NGT issued the following directions

Para4: *There is need for further studies, considering the studies already conducted, to be steered by the Committee comprising of CPCB, ICMR, Central Institute of Petrochemicals Engineering & Technology (CIPET), NCSCM, and any other expert institutions as required, under the Nodal coordination of CPCB. Such studies and recommendations/ suggestionsmay cover standards for safe environment, remedial steps to reduce menace of micro plastic and addressing other incidental issues. CPCB may incur expenditure on studies and other incidents out of Environmental Compensation funds*

B. ACTION TAKEN REPORT

Three meetings of the Committee members representingCPCB, *ICMR, CIPET&, NCSCM*were held on April 19, July 27 & August 5, 2022 respectively through Video Conferencing.Issues related to microplastics were discussed during the Meetings. The Minutes of the Meetings are enclosed at Annexure I. Detailed assessment of the work done by individual organization as well as available information on Microplastics has been completed and the outcome of the same is enumerated below:

1.0 About Microplastics

Microplastics is used extensively to describe plastic particles with an upper size limit of 5 mm (UNEP). Occurrence of microplastics has been reported from oceans, sediments, surface water, ground water, wastewater, tap water, bottled water, air, food products, aquatic organisms, and human (Microplstics in Drinking Water WHO 2019). Based on their origin; microplastics can be categorized into primary and secondary microplastics. Primary microplastics are intentionally manufactured in size < 5 mm to be used in various applications such as cosmetics, clothing and other textiles, fishing nets, etc. (Mai et al.

2018). Secondary microplastics originate from the breakdown of discarded plastic waste by solar radiation, mechanical degradation, microbial action etc. (Rodrigues et al. 2018; Wagner and Lambert 2018).

These microplastic particles may be of various shapes such as fragments, pellets, beads, and fibres. (Figure1.1). Further classification of microplastics on the type of plastic and its density is given in Table 1.1

Figure 1.1: Micrographs showing different types of microplastics: (a&b) fragments, (c&d) fibre/line, (e&f) film (g) foam and (h) pellet.

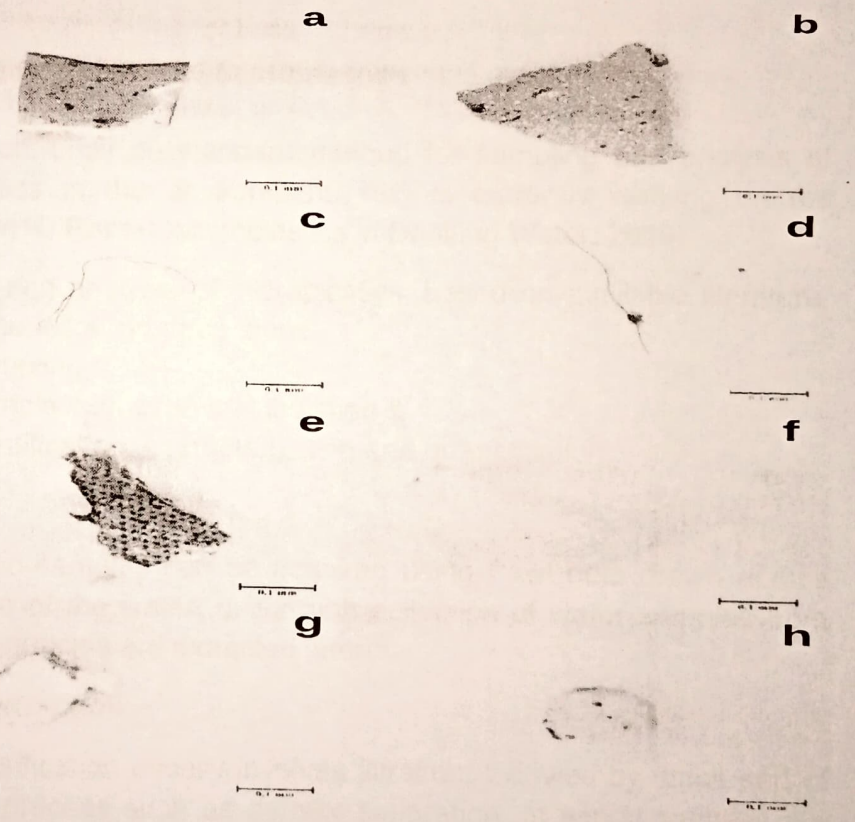

Table 1.1: Type & Density of Microplastics

Common Polymers of Microplastics	Common applications	Specific Gravity
Polyethylene (PE)	Plastic bags, six-pack rings,	0.91-0.94

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	gear	
Polypropylene (PP)	Rope, bottle caps, gear, strapping	0.90-0.92
Polystyrene (expanded) (PS)	Bait boxes, floats, cups	0.01-1.05
Seawater		~1.02
Polystyrene (PS)	Utensils, containers	1.04-1.09
Polyvinyl Chloride (PVC)	Film, pipe, containers	1.16-1.30
Polyamide or nylon	Gear, rope	1.13-1.15
Polyethylene terephthalate (PET)	Bottles, strapping, gear	1.34-1.39
Polyester resin + glass fibres	Textiles	>1.35
Cellulose acetate	Cigarette filters	1.22-1.24

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2.0 Sampling & Analysis of Microplastics

There is currently no standard method for sampling and analysis of microplastics in the environment. ISO is currently working on the subject (WHO Report :Microplastics in Drinking Water: 2019)

Sampling and analysis of microplastics, based on available literature, involves the following three steps:

a) Sampling;
b) Sample extraction and isolation &
c) Identification, characterization and quantification

2.1 Sampling

Microplastic samples can be acquired using trawl nets drawn across the surface of the water, or through collection of water samples from which the particles are extracted later.

2.2 Sample Extraction

Sample purification usually involves filtration, followed by some sort of extraction process such as density separation, in which samples are mixed with a liquid of defined density, allowing microplastic particles to float and heavier particles to sink. Further purification may require chemical or enzymatic methods to remove organic or inorganic contaminants (biofouling). The extent of the preparation is dependent on the nature of the samples: dirtier samples will require more preparation.

2.3 Analysis

2.3.1 Count of Microplastics

The simplest and the most common technique to quantify the microplasticsparticles is the optical microscopy where quantification is achieved through manual counting.Though this technique is simple, it poses limitations in terms of misidentification and reduced accuracy (underestimation (Loder et al. 2015) / overestimation (Lenz et al. 2015)). However,application of electron microscopic techniques, such as scanning electron microscopy can overcome this limitation up to some extent (Eriksen et al. 2013)

2.3.2 Chemical Composition

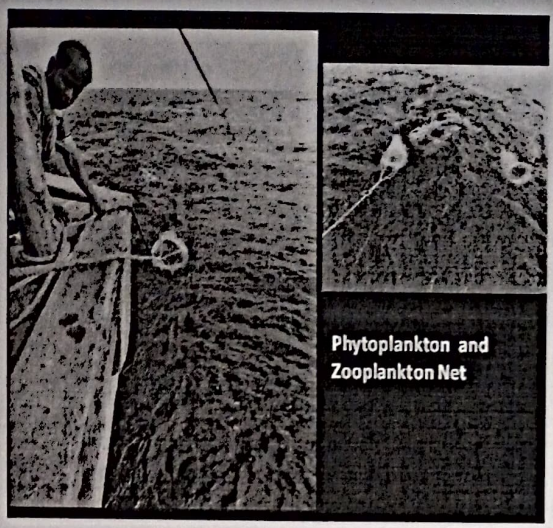
Two different approaches are available to determine the chemical composition: spectroscopic&thermoanalytical.

- **Spectroscopic methods**: Used to identify the specific chemical structure of polymers by comparing their absorption or emission spectra with reference spectra. Fourier transform infrared spectroscopy (micro FTIR) Fourier transform infrared spectroscopy and Raman spectroscopy are utilized for this purpose.
- **Thermo-analytical methods**, the sample ispyrolysed under inert conditions, so that specific decomposition products of the individual polymers can be analyzed. Pyrolysis-gas chromatography/mass spectrometry (GC/MS) can provide information on additives as well as the polymer

2.4. Sampling & Analysis Methods followed in India

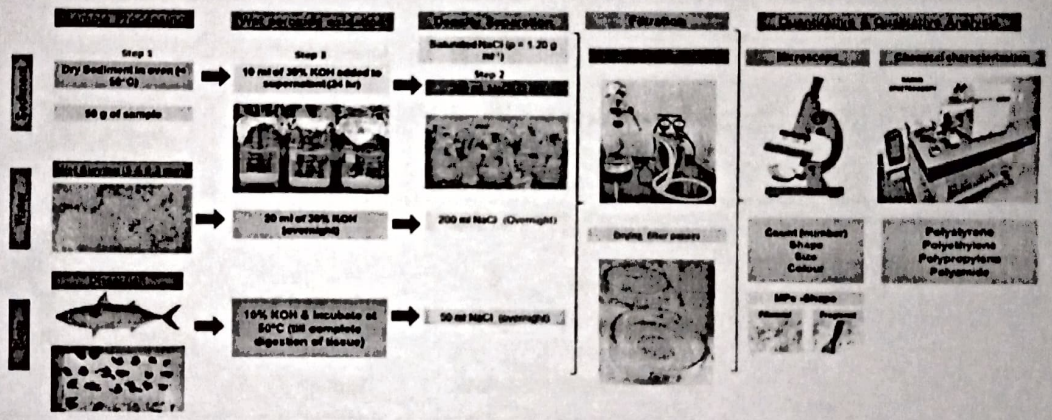
2.4.1 Ministry of Earth Sciences (National Center for Coastal Research (NCCR))

(a) Sampling Methods



(b) Sample Extraction & analysis

Laboratory Analytical Protocol



1. Wet oxidation (H_2O_2)
2. Density Separation (NaCl)
3. Filtration GF/F (0.7 µm)
4. Microscopic Analysis (count, shape, size, colour)
5. FT-IR/Raman: Chemical Analysis

2.4.2 CIPET

(a) Sample extraction techniques:

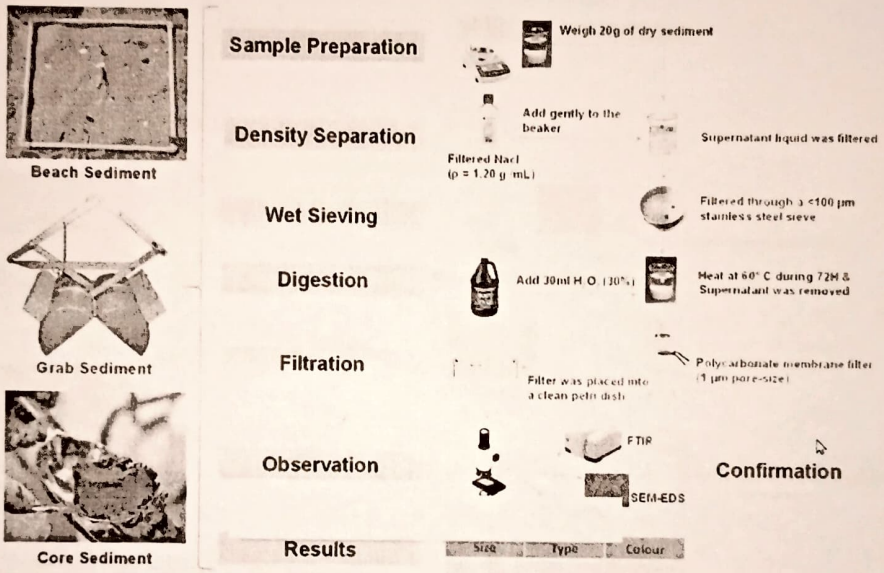
- Quality Control (Running blank samples)
- Preparation of salt solution:
- Density Separation
- Wet Peroxide Oxidation
- Sieving
- Vacuum Filtration

(b) Qualitative analysis:

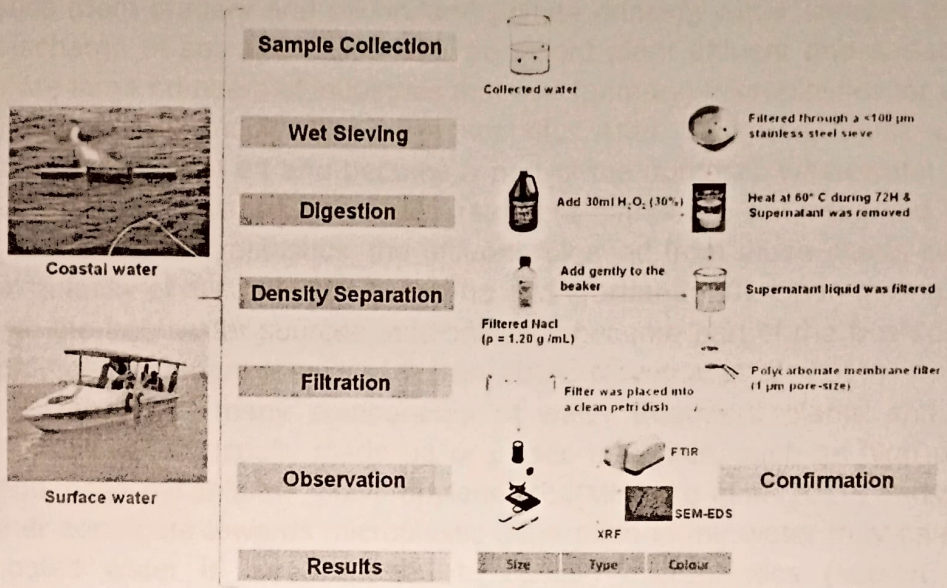
- Optical Microscope: The analysis is done through different magnification ranges i.e. 5x,10x and 20x to for various shape and sizes of microplastics.
- Micro-FTIR: In this technique, the spectra obtained by of targeted microplastics are analysed through the peaks obtained and analysing them through the functional group.
- Pyrolysis GC-MS: The thermal technique is used for the knowledge of degradation products of the microplastics found in the sample.
- Number of microplastic samples found in per litre of sample in each location was analysed along with various shapes and colours.

2.4.3 NCSCM

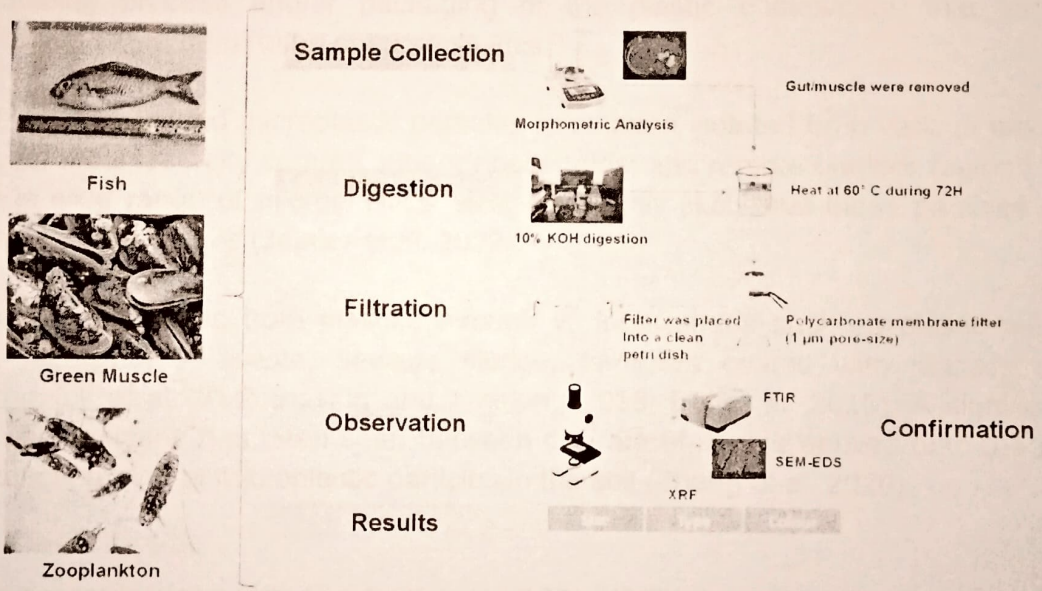
(a) Sample Extraction & analysis (Sediments)



(b) Microplastic Analysis in Water



a. Microplastics analysis in Biota



2.5 Observations

(a) Sampling and analytical methods adopted by different institutions in India are similar with minor variations

(b) Standard method for Sampling & Analysis developed by BIS/ISO is essential to formalize further action on monitoring reports.

3.0 Assessment of Microplastics

Microplastics (both primary and secondary) pollute drinking water sources primarily through discharge of sewage/wastewater treatment plant effluent and surface run-off. There are large numbers of industries that use (primary) microplastics for various applications, such as medicines, cosmetics etc. After their use, these primary microplastics get washed off and become a part of the domestic wastewater (Singh et al. 2021). As the sewage/wastewater treatment plants are not equipped for the complete removal of microplastics, the effluent released from these plants contains substantial quantity of microplastics (Amrutha and Warrier 2020). Upon mixing of this effluent with the freshwater sources, microplastics become part of the fresh/drinking water supply chain (Magnusson and Noren 2014; Novotna et al. 2019). It is also important to note that many components of water treatment plants and water distribution system are usually made up of plastic materials, such as high density polyethylene, polyvinyl chloride, polypropylene etc. (Mintenig et al. 2019) and hence, these further contribute towards microplastic generation in the water they carry.The treated bottled water is also reported to contain microplastics (Mason et al. 2018;Pivokonsky et al. 2018). Nevertheless, the smallest microplastic particle reported in case of drinking water is 1 µm (WHO 2019). Evidence suggests that it is the bottling process and/or packaging of the plastic bottles/caps that largely contributes to the generation of microplastics.

In the air, suspended microplastic particles have been isolated from various places, such as, urbanized city centres, indoor households, and remote outdoor regions. As there is wide range of microplastics' size, it is highly likely that these particles are inhaled by the humans (Jenner et al. 2022).

Soil can get affected from plastics through various means such as plastic mulch films, municipal so waste, sewage sludge, fertilizers coated with plastics etc. (McCormick et al.2014; Blasing and Amelung 2018; Liu et al. 2018). A significant positive correlation has been seen between the rate of sludge applied onto the soil and concentration of microplastic particles in the soil (Zhang et al. 2020).

Various organizations including CIPET, NCSCM, NCCR (MoES), NPC & CPCB have conducted microplsatic monitoring. Further international organization including UNEP, WHO and OECD have worked extensively on Microplastics and published comprehensive Reports. Based on aforementioned Sources of generation of microplastics, transfer media and end use areas have been identified. Further details of microplastics(concentration, type etc) for these areas have been compiled. Details are given in Table 3.1

Table 3.1 : Sources of Generation &Analysis& of Microplastics

S.N.	**Class**	**Category**	**Subcategory**	**Description**	**Analysis data**	**Reference**
1.	**Generation**					

S.N.	Class of Microplastics	Category	Subcategory	Description	Analysis data	Reference
a	Industry	(i)During production	Toothpaste		NA	UNEP
			Cosmetics	Microbeads in skin care	NA	UNEP
			Printer , ink, spray, injection moulding		NA	UNEP
			Plastic production	Emissions/ spillages	NA	UNEP
			Ship breaking		NA	UNEP
			Cigarette filters		NA	UNEP
		(ii)During Usage	Synthetic textiles	Use & washing	100 microfibers/L	UNEP,OECD
			Horticulture	Plastic Sheeting / Tube	NA	UNEP
			Road Transport	Tyre & Road wear particles	NA	OECD, WHO
			Paint from Building & Ships		NA	OECD
			Bottled Water	Caps & bottle	Section 3.1	WHO
			Synthetic Soles of Shoes		NA	WHO
b	Improper waste management	(i) Land Litter		Degradation under specific temp & UV rays	NA	UNEP, WHO
		(ii)Dumpsites		Degradation under specific temp & UV rays	NA	UNEP, WHO

S.N.	Class	Category	Subcategory	Description	Analysis data	Reference
		(iii)Marine litter		Degradation under specific temp & UV rays	NA	UNEP
c	Ocean Activities			Fishing Nets, Boxes, Rope, galley waste;	NA	UNEP, MoES
				Aquacuture - nets, floating	NA	UNEP
				Coastal Tourism	NA	UNEP NCSCM
				Offshore Oil & Gas Platform	NA	UNEP
d	Outflow from sewage treatment plant			Waste water treatment plant can effectively remove microplastics , but in most area adequate sewage treatment systems not provided	NA	WHO
e	Agricultural Runoff			When waste water sludge is used as compost	NA	WHO
f	Stormwater drains			Carrying Road dust	NA	WHO
g	Leachate			Leachate	Section 3.2	CPCB
2	**Transfer of Microplastics**					
a	Surface Water				Section 3.3	CPCB, NPC
b	Soil / Beach Sediment				Section 3.4	MoES, NCSCM
c	Sludge				NA	
d	Fish				Section 3.5	MoES **NCSCM**
e	Ocean				Section	MoES,

S.N.	Class	Category	Subcategory	Description	Analysis data	Reference
	water				3.6	NCSCM
3	**End use**					
a	Ground Water				Section 3.7	CPCB. WHO
b	Drinking Water			Microplastics have been identified in drinking-water as small as 1 µm, based on the smallest particle size detected by current methods. Large particles occur less frequently than small particles. The predominant particle shapes are fragments and fibres. The predominant plastic types are PET and PP	Table 3.1	WHO
c	Ambient Air			Tyre & Road wear dust	Section 3.8	WHO, CPCB

3.1: Drinking Water & Bottled Water

(a) WHO

Table 3.2 : MP comncentration in Tap Water / Bottled Water

Author	Water type	Lower size bound (µm)	Particles/L in sample (average)	Particles/L in blanks (average)
Oßmann et al.	Bottles (mineral water)	1	3074-6292	384

	•Glass •Single use PET •Reusable PET		2649 4889	
Pivokonsky et al. (2018)	DWTP from surface water sources (3 sites	1	628 338 369	<5% of counts in samples
Schymanski et al. (2018)	Bottles •Single use •Returnable •Glass •Beverage carton	5-20	 14 118 50 11	14±13
Mason, Welch and Neratko (2018)	Bottled	6.5-100 Lower bound based on microscope and software	315	23.5
Strand et al. (2018)	Tap from ground-water sources	10-100	0.2, 0.8 and 0.0 (LoD = 0.3)[4]	Unknown
Mintenig et al. (2019)	Tap from ground-water sources.	20	0.0007	0.67 particles/ L 0.3 fibres/L
Uhl, Eftekhardadkhah , and Svendsen (2018)	Tap from 24 sources	60	Average not reported since only a single result above LoQ (that result was 5.5)	0.5 (LoQ = 4.1 LoD= 0.9)
Mason, Welch and Neratko (2018)	Bottled	>100	10.4	4.15
Strand et al. (2018)	Tap from ground-water sources	>100 (10 µm sieve size)	0.312 (LoD = 0.58)	0.26
Kosuth, Mason and Wattenberg (2018)	Tap from unspecified sources	100 lowest reported	5.45	0.33 (based on 5 particles in 30 blanks (ea. 500mL))

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3.2 Leachate from Dumpsite

Table 3.3. : Leachate (CPCB)

Location	Type of water	Microplastics concentration (particles/ L)	Reference
South China	Leachate	3 to 25 particles/L	Wan et al. 2022
Suzhou, China	Leachate	235.4 ± 17.1 particles /L	Sun et al. 2021
China	Leachate	0.42 to 24.58 particles/L	He et al. 2019
Shanghai, China	Leachate	4 ± 13 particles/L	Su et al. 2019
Lahti, Finland	Leachate	1.97 particles/L	Praaghet al. 2018
Alfsnes, Iceland	Leachate	4.51 particles/L	Praaghet al. 2018
Kodungaiyur, India	Leachate	0.75 to 16.2 particles/L	CPCB
Perungudi, India	Leachate	0.8 to 32 particles/L	CPCB

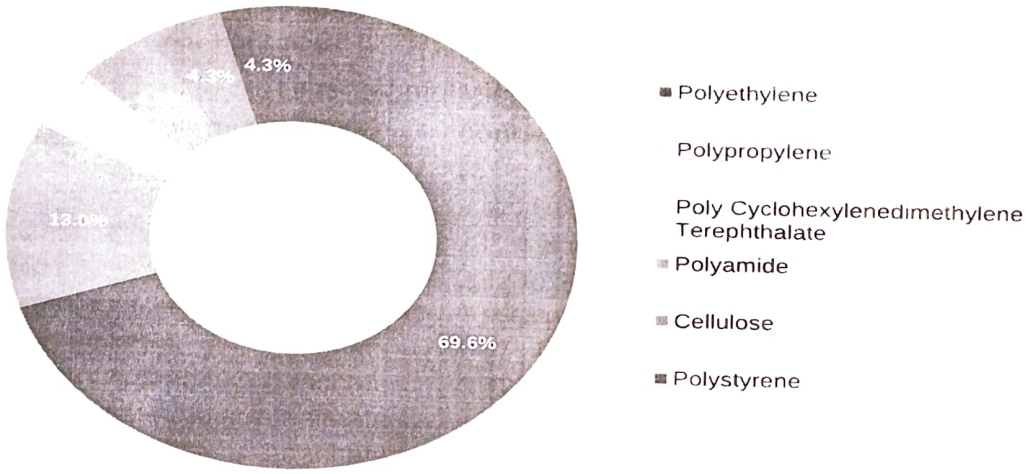

Figure 3.1 : Percentage composition of different types of plastics found in Leachate (CPCB)

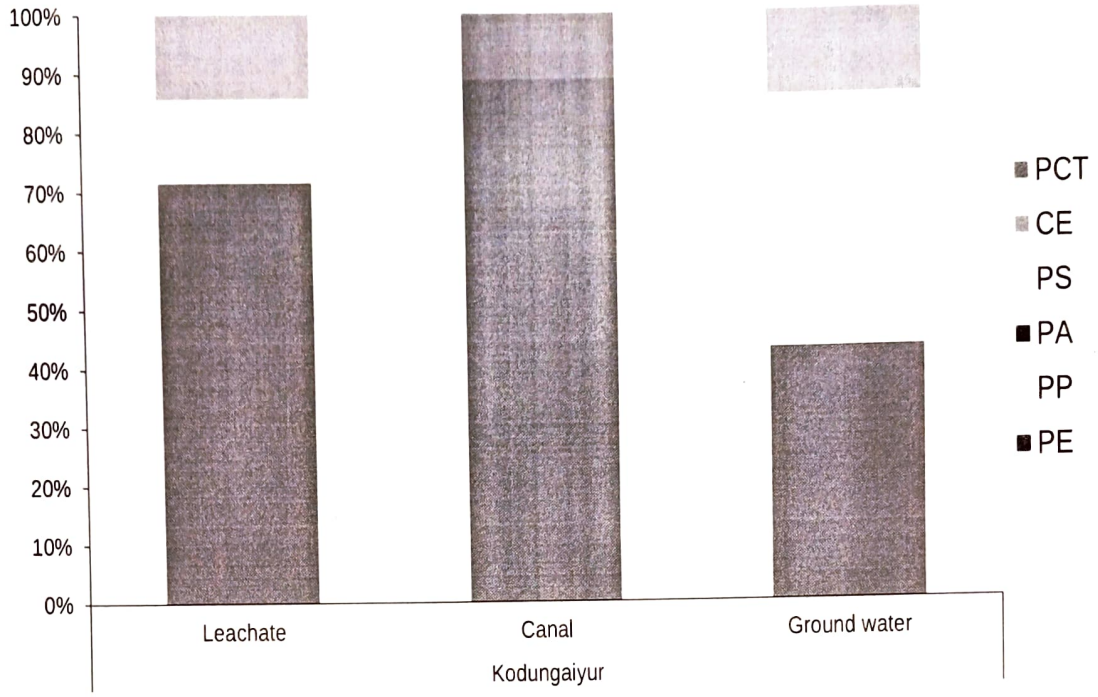

Figure 3.2: Percentage composition of microplastics in leachate, canal and groundwater samples around in dumpsite (CPCB)

3.3 Surface water

Table 3.4 Microplastics in Surface Water (WHO)

Location	Results reported (particles/L)	Sieve size (µm)	Study
Groundwater, Germany	Average:[b]0.7×10^{-3} Range:[b]$0\text{-}7\times10^{-3}$	3	Minteniget al. 2019
Three Gorges Reservoir, China	Average: 4.7 Range: 1.6 – 12.6	48	Di and Wang, 2018
Dongting Lake and Hong Lake, China	Averages: 1.2 and 2.3 Ranges: 0.9-2.8 and 1.3-4.7	50	Wang et al. 2018
Wuhan, China	Range: 1.6-8.9	50	Wang et al. 2017
Rhine river, Switzerland, France, Germany, Netherlands	Average: 0.0056	300	Mani et al. 2015
Western Lake Superior, USA	Average: 0.00026	333	Hendrickson, Minor, and Schreiner, 2018

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Figure 3.3 Microplastics identified in the River
(Sizes of Plastic like Particles in Water Samples in percentage in four cities)(NPC)

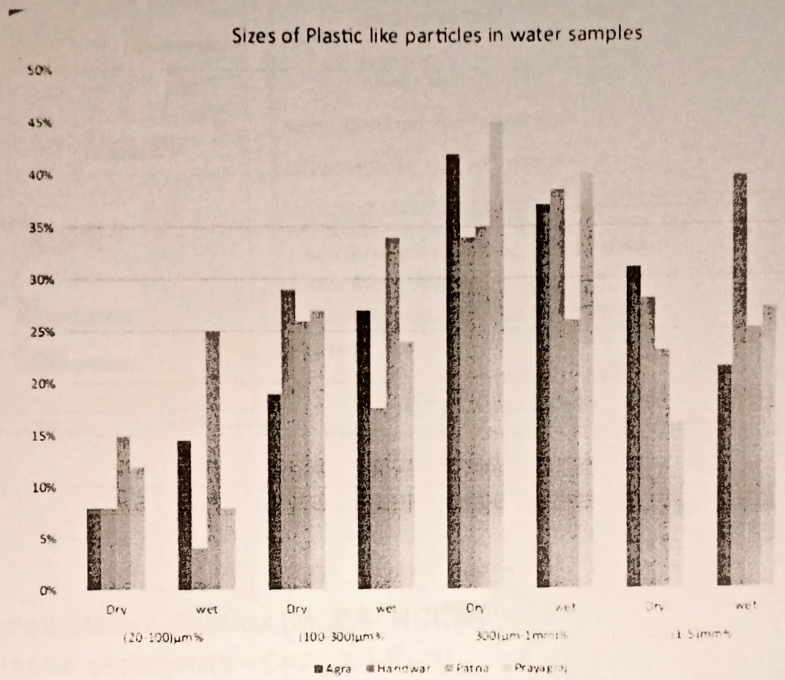
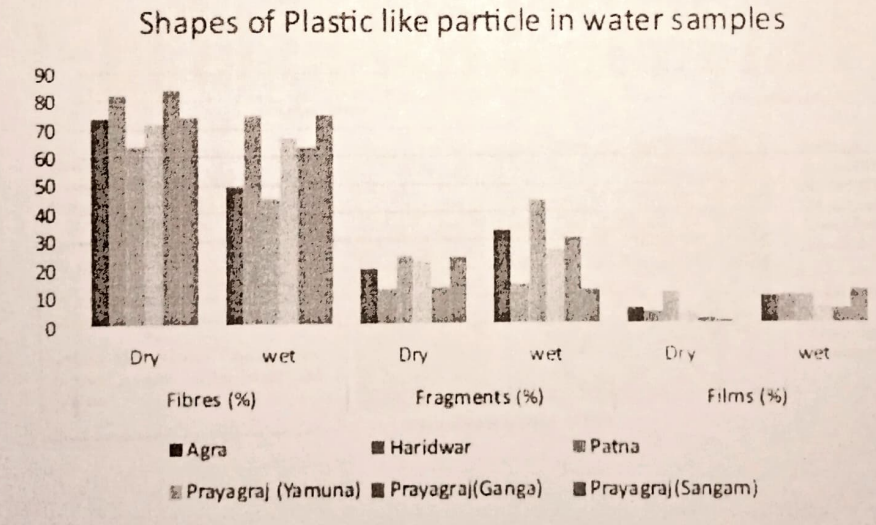
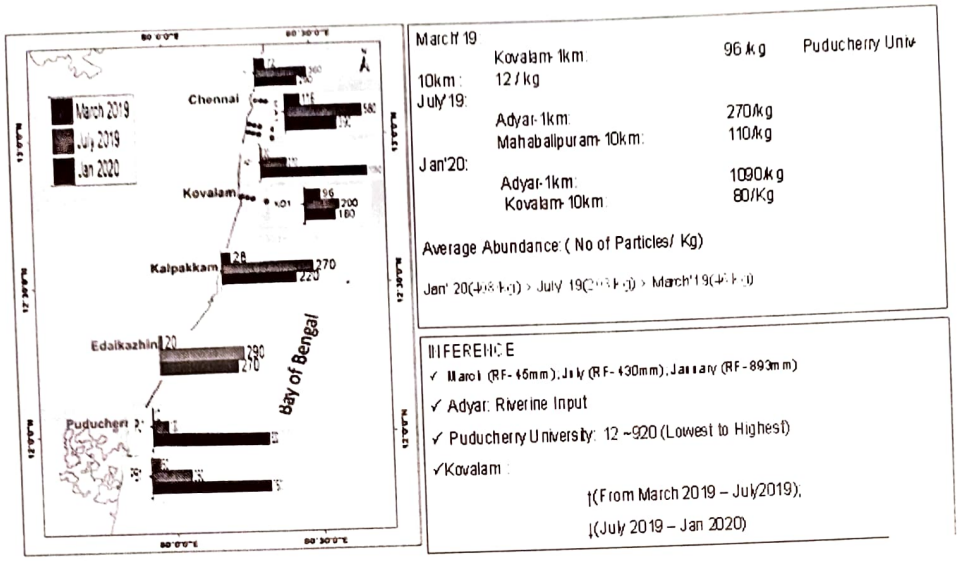


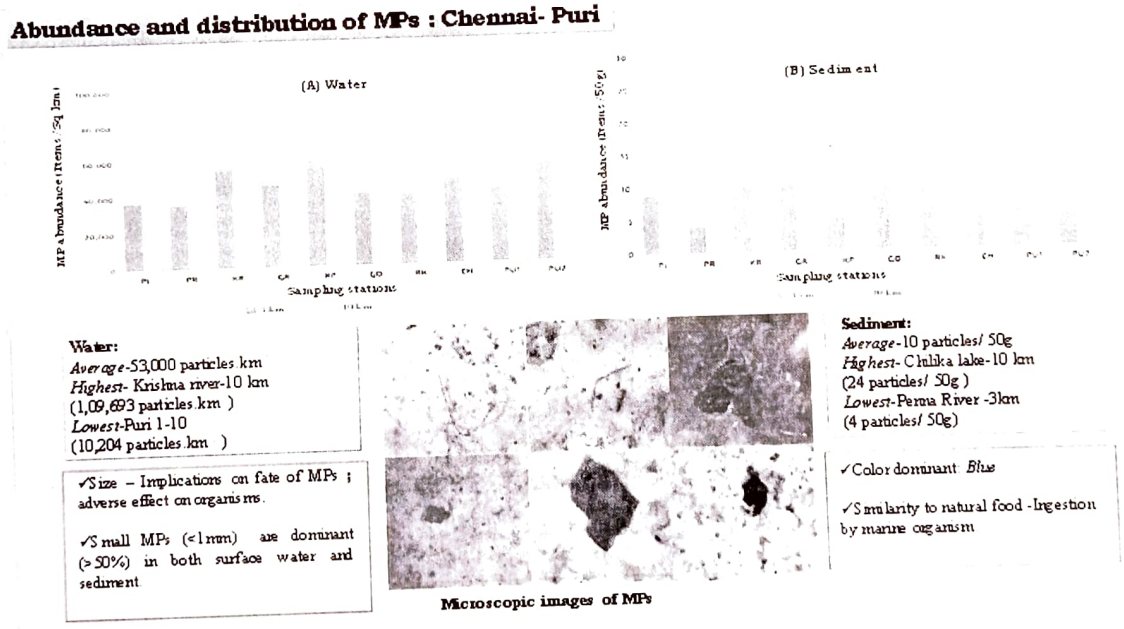
Figure 3.4 Microplastics identified in the River
(Shapes of Plastic like Particles in Water Samples amongst Fibres/Fragments/Films in percentage in four cities) (NPC)



Section 3.4 :Beach Sediment/ Deep Sea Sediments
(a) Figure3.5 Microplastics (MoES- NCCR)
(Microplastic sediments –Chennai-Puducherry)



(b) Figure3.6Microplastics (MoES- NCCR)
(Microplastic sediments –Chennai-Puri)



(c) Beach sediments (NCSCM)

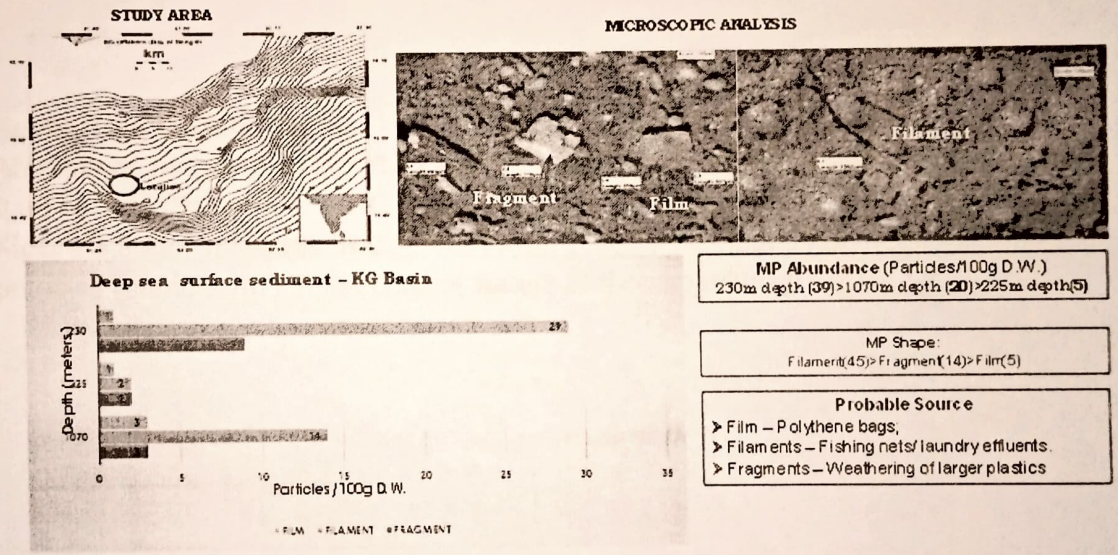
Abundance of microplastics in terms of numbers of particles and their range, in the beach sample reported from different parts of the world and long the Tamil Nadu coast () Table 3.5

S.No.	Location	Range	Mean ±	Reference

1.	Charleston, Harbor, USA	42 to 1196/m^2	413.8 ± 76.7/ m^2	Grayet al. 2018
2.	Winyah Bay, USA	51 to 441/m^2	221.0 ± 25.6/ m^2	Grayet al. 2018
3.	Guanbara Bay, Brazil	12 to 1300/m^2	-	Carvalho and BaptistaNeto , 2016
4.	Bostanu, Persian Gulf	-	1258 ± 291/kg	Najiet al. 2016
5.	Gorsozan, Persian Gulf	-	122 ± 23/kg	Najiet al. 2016
6.	Norther Gulf on Mexico	-	50.6 ± 9.96/ m^2	Wessel et al.2016
7.	South Korea	2 to 92,217/m^2	8205/m^2	Lee et al. 2013
8.	Chile	1 to 169/m^2	30 ± 2.6/m^2	Hidalgo-Ruz and Thiel, 2013
9.	Easter Island	-	800 ± 320/m^2	Hidalgo-Ruz and Thiel, 2013
10.	South Korea	-	976 ± 405/m^2	Heoet al. 2013
11.	Mumbai, India	12 to 960/m^2	68.8/m^2	Jayasiriet al. 2013
12.	Otzias beach, Eastern Mediterranean	20 to 1218/m^2	575/m^2	Kaberiet al. 2013
13.	Portugal coast	1 to 137/m^2	26.6 ± 32.5/m^2	Martins and Sobral, 2011
14.	Malta, Central Mediterranean	0 to 1462/m^2	33.3/m^2	Martins and Sobral, 2011
15.	Belgium	-	91.9/kg	Claessenset al. 2011
16.	Hawaiian Archipelago	4 to 17,645/m^2	-	McDermid and McMullen, 2004
17.	Tamil Nadu Coast, India	2 to 178/m^2	46.6 ± 37.2/m^2	R. Karthik et al.

Figure 3.7 Deep Sea MicroplasticConcentration (MoES)

Deep Sea Sediment - Microplastics



Section 3.5 Microplastics in Fish

Figure 3.8Microplastics in Biota (MoES)

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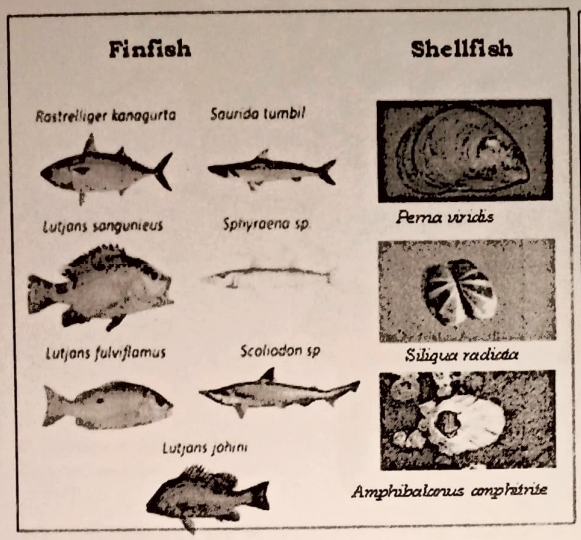
MPs in biota - Chennai coast



- 7- Finfish & 3- Shellfish
- Average ingestion of MPs was higher in Shellfish (28.2±10.9 Nos./Ind.) than finfish (1.3±1.1 Nos./Ind.)
- Shape -Dominant - Fibres.
- Dominant size range - 1-1000 µm
- Red MPs (finfish), black MPs(Shellfish) are predominant
- Major polymers - Polyamide (PA), Polyethylene (PE), and Polypropylene (PP)

Section 3.6 Coastal Water

Abundance ranged between 0.22 and 3.58 particles/m3 with an average of 1.25 ± 0.88 particles/m3 (n = 14) (NCSCM).

Figure 3.9Microplastics in Coastal Water (Global distribution of mean microplastic particles (particles/m') in the coastal waters and comparison)

Section 3.7 Microplastics in Groundwater

Table 3.6:Microplastics in Groundwater (CPCB)

Location	Type of water	Microplastics concentration (particles/ L)	Reference
South China	Leachate	3 to 25 particles/L	Wan et al. 2022
Suzhou, China	Leachate	235.4 ± 17.1 particles /L	Sun et al. 2021
China	Leachate	0.42 to 24.58 particles/L	He et al. 2019
Shanghai, China	Leachate	4 ± 13 particles/L	Su et al. 2019
Lahti, Finland	Leachate	1.97 particles/L	Praaghet al. 2018
Alfsnes, Iceland	Leachate	4.51 particles/L	Praaghet al. 2018
Kodungaiyur, India	Leachate	0.75 to 16.2 particles/L	CPCB study 2022
Perungudi, India	Leachate	0.8 to 32 particles/L	CPCB study 2022
South China	Groundwater	11 to 17 particles/L	Wan et al. 2022
Australia	Groundwater	16 to 97 particles/L	Samandraet al. 2022
Karst, US	Groundwater	15.2 particles/L	Pannoet al. 2019
Kodungaiyur, India	Groundwater	0.87 particles/L	CPCB study 2022
Perungudi, India	Groundwater	2.1 particles/L	CPCB study 2022

Section 3.8 Microplastics in Ambient Air

Table 3.7: Microplastics concentrations detected in the air at Dumpsites in India vsMicroplastics measured at different locations across the globe(CPCB)

Location	Samples Type	Method	Microplastics conc. (particles/m^3)	Reference
Shanghai, China	Urban megacity	KB-120F type intelligent middle flow total suspended particulate sampler	0–4.18	Liu et al. 2019a
Paris, France	Indoor and outdoor of Residential area of Paris city	Simple vacuum filtration array	0.3–1.5	Driset al. 2017
Asaluyeh County, Iran	Industrial area	ECHO PM ambient filter sampler	0.3–1.1	Abbasiet al. 2019
West Pacific Ocean	Coastal area	KB-120F type intelligent middle flow total suspended particulate sampler	0.13 ± 0.24	Liu et al. 2019a
Cal State University, USA	Across 100 km of coastal Southern California, Semi-urbanized landscape	Simple vacuum filtration array	0.7–19.6	Gaston et al. 2020
Kodungaiyur, Chennai, India	Urban area,landfill site	High Volume Air Sampler	0.37–0.92 (PM10) 0.50–0.97 (PM2.5)	CPCB study 2022
Perungudi, Chennai, India	Urban area, landfill site	High Volume Air Sampler	0.22–0.72 (PM10) 0.50–3.88 (PM2.5)	CPCB study 2022

3.9 Observations

- Quantification of Microplastic generation at source has not been done for most of the Sources
- Variation in Microplastic concentrations units reported by different organizations observed
- Most of the monitoring has been done in Coastal Areas

4.0 Risk Assessment

Microplastics can present several unique challenges for traditional human health risk assessment approaches. Findings of World Health Organization and ICMR are highlighted in this section

4.1 WHO

WHO in its report on Microplastics in Drinking water: WHO Report 2019" has highlighted the following issues

- Microplastics can present several unique challenges for traditional human health risk assessment approaches. Plastic polymers are generally considered to be of low toxicity. Being insoluble, they are unlikely to be absorbed from the gastrointestinal (GI) tract and generally do not interact with biological matrices, although particle size may influence absorption and toxicity (i.e. smaller particles may represent a greater hazard). However, plastics can contain additives and unbound monomers, which may leach out either into the surrounding water environment prior to human consumption or potentially, into the GI tract to become bioavailable under some circumstances. Further, plastic particles can sorb chemicals from the environment, some of which are of toxicological concern.
- Investigation of potential risks related to particles indicate that it is possible that some smaller plastic particles may be able to pass through the gut wall and translocate to tissues remote from the mucosa, although this may not necessarily translate to a health risk. Humans have always ingested particles and have ingested plastic particles for decades with no related indication of adverse health effects. In addition, a good deal of evidence suggests that microplastics pass through the GI tract into the faeces.
- There is currently a paucity of information to quantitatively assess any potential risk associated with exposure to microplastic particles Most toxicological tests of microplastics have focused on aquatic organisms or ecotoxicology. No epidemiological or human studies on ingested microplastics

have been identified. Data from studies on laboratory animals are scant and inadequate to confirm human health risk assessment of microplastics ingestion. **There are no studies on the impacts of ingested microplastics on human health and there are only a limited number of animal studies of questionable reliability and relevance**

- There is currently no evidence to suggest a human health risk from microplastic associated biofilms in drinking-water. The risks from pathogens in microplastic-associated biofilms is considered far lower than the well-established risk posed by the high concentrations and diversity of pathogens present in human and livestock waste, which often make their way into drinking-water sources with inadequate treatment
- **Routine monitoring of microplastics in drinking-water is not recommended at this time, as there is no evidence to indicate a human health concern**

4.2 **ICMR**

ICMR has informed that they have not carried out any study on impact of microplastics on human health so far. However, as per the study carried out so far, Microplastics have been reported in human saliva, blood, placenta , colon, stool and lungs. Overview of the findings of the study carried out on impact of Microplastics on human health , as reported by ICMR, is given below:

	No. of Studies	No. of Human Samples	MP Reported	Impact on Human Health
Blood	1	22	1.6 microgm/mL	Not reported
Placenta	1	6	12 particles in 4 out of 6 samples tested	Not reported
Lungs	2	13 (First Study)	0.69±0.85 gm/L of Lung tissue; 39 particles in 11/13 samples tested	Not reported
		20 (Second study)	37 particles in 13 out of 20 samples tested	Not reported
Stool	2	8 (First Study)	2 particles per gm of Stool	Not reported
		24 (Second study)	1-36 particles per gm of stool	Not reported
Saliva	1	2000	No. of sample in which MP reported: 650;	Not reported

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			Avg. concentration: - 0.33 MP/individual	
Genotoxic& cytotoxic effects of MP in Human blood	In-vitro	2	Size studied: 10-45 microm; Concentration – 25,50, 100, 250, 500 microg/L; Type:PE	Genomic instabilities were reported
Cytotoxic effect of MP with metal nano particles in human celebral& epithelial cells	In-vitro		Size studied: 3-16 microm; Concentration – 50 microg/L-10 mg/L; Type:PE&PS	Oxidative stress was reported

It was further informed by ICMR that studies are only about the presence of microplastics in human body and not about their physiological or psychological impact. Studies showing genotoxic& cytotoxic impacts are invitro studies conducted on only two individuals. Health impact of emerging contaminants are chronic and long term studies are required to establish Cause effect relationship. It would not be appropriate to set standards for drinking water for microplastics without establishing the cause-effect relationship

4.3 Observations

- Further studies are required understand the uptake and impact of microplastics on human health
- Influence of particle size, shape and chemical composition of microplastics to be studied in detail

  Studies are also required to assess the impact of associated chemicals & biofilm on human health

5. Remediation techniques:

5.1 Available technology for Microplastic removal

Microplastic treatment technologies are in the nascent stage. Removal methods in case of air and soil matrices have not been reported yet. Treatment technology options for microplastics in water include the

- Conventional Water treatment system: In the conventional water treatment technology, primary and secondary treatment processes help in the removal of microplastics 50 – 98% of microplastics could be removed during primary treatment and 0.2 – 14% during secondary treatment (Sun et al. 2019). Microplastic concentration can be significantly reduced by ultrafiltration and reverse osmosis (Ziajahromi et al. 2017). Combination of secondary and tertiary treatment processes has also been useful in the removal of microplastics.

- Microbial Degradation (Biodegradation): Environmental friendliness, cheap cost and low energy input, as well as a reduced carbon footprint, are all advantages of biodegradation. Plastics can be used by microorganisms as carbon and nitrogen sources, allowing them to survive and reproduce.

- Photodegradation/ Photocatalytic degradation: Photocatalytic degradation of typical microplastics can be carried out by UV light radiation and degradation for various sizes of microplastics will be studied.

5.2 Observations

- Available technologies for removal of microplastics need to be studied in detail to assess their efficacy
- Research studies to be conducted for removal of microplastics from air & soil

6.0 Initiatives taken to reduce Microplastics

- The Microbead-Free Waters Act has been notified inUS which prohibits the manufacture and distribution of nonprescription drugs that are also cosmetics and that contain plastic microbeads for the purposes of exfoliating or cleansing any part of the human body. Common examples of rinse-off nonprescription drugs that are also cosmetics include, but are not limited to, anti-cavity (fluoride) toothpastes, acne scrubs, anti-bacterial soaps, and anti-dandruff shampoos
- **BIS 2017 :** Plastic microbeads of diameter 5 mm or less, that are insoluble in water, and solid plastic particles used to exfoliate or cleanse in personal care products have been listed in the banned list
- **Plastic Waste Management (Second Amendment) Rules, 2022:**
  a. Banned all single-use plastics from 1st July 2022.
  b. mandate to increase the thickness of plastic carry bags to over 120 microns from December 31.
  c. Banned imports of solid plastic waste from March 2019

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C. Conclusions

1. Independent studies regarding microplastics have been conducted by various organizations in the country including CPCB, MoES-NCCR, NCSCM, NPC and CIPET . Further international studies have been conducted by WHO, UNEP , OECD and others.
2. The studies have primarily focussed on monitoring microplastics (concentration, polymer type, colour, shape) in various environmental matrices.
3. Occurrence of microplastics has been reported in oceans, sediments, surface water, ground water, wastewater, tap water, bottled water, air, food products, aquatic organisms, and human beings
4. There is currently no standard method for sampling and analysis of microplastics in the environment. ISO is currently working on the subject
5. Sampling and analytical methods adopted by different institutions in India are similar with minor variations.Variation in Microplastic concentrations units reported by different organizations has been observed
6. Uniform procedure for sampling & analysis may be developed by organizations involved in microplastic analysis (CIPET, NCSCM, MoES-NCCR) which can be adopted uniformily across the country till the time ISO standard is finalized.
7. Source of generation of microplastics including industries, waste management , waste water treatment, ocean activities etc. have been identified. However, exact quantum of microplastics generated from the identified source has not been determined.
8. Microplastic concentration in transfer media is available for soil/beach sediment, surface water bodies, biota and ocean water. Microplastic concentration for sludge , specifically when it is converted to compost for land application is not available
9. Microplastic concentration in end use areas including ambient air, drinking water and ground water is available.
10. Source monitoring, transfer end use of all possible sources listed in Table 3.1 to be covered. Emphasis to be laid on such areas for which no information is available.
11. Regular monitoring of various water quality parameters to be conducted to provide insight into the presence and concentration of microplastics in environmental matrices(water, sediments, biota)
12. Microplastic leakages and pathways may be monitored in order to identify further sources and hotspots of microplastics.
13. Uniform procedure for sampling & analysis as finalized by this Committee may be adopted for such studies till the time ISO Standards are finalized

14. Studies conducted on the matter have reported about the presence of microplastics in human body. Physiological or psychological impact has not been reported in these studies.
15. Health impact of emerging contaminants and long term studies are required to establish Cause effect relationship of microplastics on human health
16. The aforementioned studies should cover different type, concentration and shapes of microplastics. Impact of chemicals /biofilms associated with Microplastics on human health to be covered. The studies may include the following:
    - Estimation of the duration and frequency of human exposure to microplastics. Microplastic monitoring as required may be conducted for the same
    - Once the exposure assessment is done precisely, dose-response assessment may be carried out, where the minimum concentration (of microplastics) responsible for any observable effect (on human) shall be assessed..

17. **Bioassays** may be conducetd to assess the Eco-toxicological impact of microplastics on animal life.
18. Standards development (Source & ambient) for microplastics may be taken up following establishment of the cause-effect relationship of microplastics on human health
19. Available technologies to be assessed for their efficacy for removal of microplastics.
20. Technologies to be developed for removal of microplastics from Air & Soil
21. **Source-directed interventions,**
    - Sustainable design and manufacturing of textiles, tyres, and complementary products (, laundry detergents, road surfaces, and vehicles), to minimise the tendency of products to contribute to microplastics generation;
    - Restrictions on microplastics in the manufacture and sale of certain personal care and cosmetic products containing microplastics.
    - Product requirements for household, commercial, or industrial washing machines. For instance, Australia and France have introduced measures to phase in microfibre filters on new washing machines

9. **End-of-life interventions,** effective solid & plastic waste management practices, to prevent waste leaking into the environment and potentially contributing to microplastics generation including the following;

    (a) Reducing the amount of plastic waste that enters landfills and dumpsites through the implementation of waste reduction policies and

initiatives, such as waste-to-energy programs and increased recycling.Microplastics can also be reduced by supporting the development and use of biodegradable plastic alternatives

10. **End-of-pipe interventions,** wastewater, stormwater, and road runoff management and treatment, to retain the emitted microplastics before these reach water bodies.
11. Maximizing clean drinking water supply to all citizens in the country
12. Other Best practices as listed below for minimizing microplastics in environment may be followed:
    - **(a)** Install physical barriers such as screens and filters on STP/WWTP systems to help reduce the amount of microplastics that enter rivers, lakes, and oceans.
    - **(b)** Support sustainable fishing practices to reduce the amount of microplastic entering rivers from fishing equipment.
    - (c) Implementation of Clean-up efforts for beaches and rivers

13. Training and capacity building including microplastic monitoring, analysis , health impact studies may be taken up for effective implementation of aforementioned points

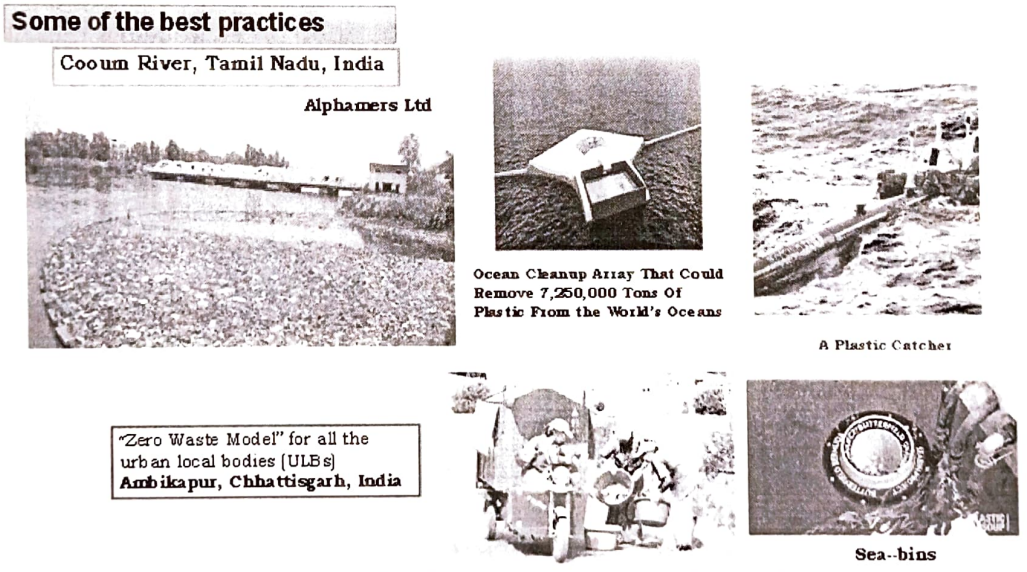

Figure 6.1 : Best practices for litter management in marine

Minutes of Meeting on "Committee Meeting in compliance of Hon'ble NGT order in the matter of O.A. No. 251 of 2022" with CIPET/ICMR /NCSCM held on April 19th , 2022

A Committee meeting was held virtually via video conferencing on April 19, 2022 in compliance of Hon'ble NGT order in the matter of O.A. No. 251 of 2022 for study of microplastics impact on environment and human health. The meeting was coordinated by UPC-II division, CPCB, Delhi. Various stakeholders including representative of CIPET, ICMR, and NCSCM participated in the meeting (List of participants is placed as **Annexure-I**).

DH UPC-II briefly explained directions of NGT for the study to be conducted which covers standards for safe environment, remedial steps to reduce menace of micro plastic and addressing other incidental issues.

She also explained the steps taken by CPCB with regards to microplastics which mainly include assessment of microplastic with NCSCM in Ground Water & Ambient Air in compliance of NGT's order O.A. no. 99 of 2021. She also informed about the study undertaken by National Productivity Council on assessment of microplastics in river Ganga. It was further informed that Ministry of Science and Technology has constituted a committee and working on methods for removal of micro-plastics from water. It was proposed that the as the objective of the two Committees are interlinked, this committee may include representation from NEERI and DST.

The report submitted in O.A. No. 99 of 2021 was shared by CPCB with committee members and it was emphasized that study to should focus on identification of source of micro-plastic in water bodies, standardisation of monitoring techniques, risk assessment or health impact of micro plastics, methods of remediation and mitigation measures.

Dr. Mohanty from CIPET informed about the various studies being conducted regarding micro plastics are given below:

- Estimation of micro plastics in Tapi and Damanganga under Indo-Norway joint project(INOPOL) in Gujarat region in which it was observed t that land based resources are main contributor for the micro plastics.

- Standards for micro plastics determination being developed by ISO are at draft stage.
- Study for estimation of Micro plastic due to Compostable plastic is under way.

She also said that the CIPET can undertake study related to analysis of microplastic in water, soil, oceans etc part can be taken care by CIPET. Effect of microplastics on water content can be correlated with the releavant ISO Standards.

Dr Raj Narayan Tiwari from ICMR, Bhopal informed that they have taken up the studies for identification of micro plastic in different matrices in Bhopal. He further informed that articles published in Journals which highlight genotoxicity and cytotoxicity due to Microplastica. However health related studies due to microplastics in India have not been carried out so far.

Mr. Mrinal K. Biswas, RD Kolkata, CPCB discussed that the study shall be conclusive and it should include source, quality, quantity, impact on environment & human health and finally development of the standards for micro plastics. He also pointed out that the current available studies as well as journals are required to be considered for framing of action plan for the study to be carried out. Apart from that, study is required to be done in short term and long term manner to propose standards for microplastics.

Mr Robin form NCSCM, informed that they are working in coastline riverine system of India for characterisation, quantification and ecotoxical aspects of microplastics. He said leakage study i.e. quantity of micro plastic from leachate, landfills and sewage entering into nearby water body and ground water are required to be conducted in this field.

Further Ms. Divya Sinha -DH, UPC-II concluded the discussions and informed that the study shall cover inventorization, method of analysis, risk assessment or health impact of micro plastics, standards for treated sewage, drinking & ground water and methods of remediation and mitigation measures. She also informed that the standard for micro plastics in air is being developed by Air Quality Division CPCB.It was also important to identify which type plastics contribute maximum to the

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generation of micro plastics

All the group members were requested to share the information and studies carried out in field of micro plastics with the Committee as well as provide any further inputs on the subject . Mr Mrinal K Biswas RD Kolkata was requested to to prepare draft Action Plan covering the Action Points discussed during the meeting as identifying the roles to be assigned to different organization. The same shall be circulated to the Committee members for finalization

The meeting ended with vote of thanks to the chair.

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Annexure-I

List of Participants

S.N.	Name and Designation
1.	Dr. Raj Narayan Tiwari, Director, ICMR-NIREH, Bhopal
2.	Dr.R.S.Dhaliwal, Scientist G & Head, NCD, ICMR Hqrs
3.	Dr. Smita Mohanty, Director & Head (Principal Scientist) CIPET Bhuwneshwar
4.	Dr Robin , NCSCM Chennai
5.	Ms. Divya sinha Additional Director & I/c UPC-II, CPCB
6.	Mr. Mrinal Kanti Biswas Scientist "E" & Regional Director, CPCB
7.	Ms. Yogesh Chandra Scientist- B, CPCB

Sl.No	Action Point Description			Responsible Organization	Timeline (tentative)
1	Compilation of existing information on Microplastics	a	Committee members shall share information available with them	CPCB CIPET ICMR NCSCM	30.4.22
		b	Compilation of information	CPCB- RD Kolkata	7.5.22
		c	Identification of Gap Areas	CPCB – RD Kolkata	7.5.22
2	Standardization of methodology for monitoring, characterization & analysis of microplastics. Parameters for characterization to include size, type of plastic etc. Instruments required for monitoring / analysis and testing protocols to be delineated			CIPET/ NCSCM	15.5.22
3	Assessment of microplastics covering source, transfer media & end use. Available information as per Section 1 above shall be compiled and emphasis shall be on areas not covered as well as at the end use points. Number of samples to be collected shall be limited by the available infrastructure for monitoring as well as time			Assessment to be carried out by CIPET/ NCSCM – depending upon the available infrastructure. CPCB/Concerned SPCB/PCC to provide requisite support for the monitoring. Assessment to be coordinated & Report to be prepared by CPCB – RD Kolkata	15.6.22
	Source Monitoring	a	Source emissions from industries /activities - Identification of specific industrial sectors contributing to microplastics through literature survey and monitoring microplastics at source		
		b	Leachate from		

			dumpsite/ landfill site		
		c	Sewage treatment plant inlet / outlet		
	Transfer media	c	Surface Water bodies		
		e	Soil		
		f	Marine water		
		g	Fish		
	End- use	f	Water Supply plants (Inlet & Outlet)		
		g	Ground water		
		h	Ambient Air		
4	Source identification of microplastics based on Assessment report			CPCB	
5	Risk Assessment : To be carried out based on the Assessment report specifically w.r.t microplastic concentration at end use point .Parallelly reports in media on adverse impact of microplastics may be reviewed and study taken up as per requirement. Recommendation of safe level of microplastics in drinking water based on literature survey/ experimental studies			ICMR / BIS	15.6.22
6	Development of treatment methods for remediation of microplastics from water / wastewater.			NEERI/ DST/ CPCB	15.6.22
7	Recommendation of measures for reduction of microplastics in environment based on Assessment report including the following: • Measures for Control of coastal zone/ deep sea pollution due to marine litter • Developing regulatory & market based instruments for preserving riverine and marine ecosystems			CPCB	15.7.22
8	Identification of areas were standards have to be notified (drinking water standards, effluent discharge standards & ambient air quality standards)			CPCB	31.7.22
9	Training of SPCBs/PCC/CPCB staff on monitoring and analysis of microplastics &			CIPET / NCSMS	31.7.22

	including identification of measures/ for strengthening of laboratory infrastructure (Parallel activity)		
10	Submission of report to MoEF&CC	CPCB	15.8.22

Minutes of Meeting on "Second Committee Meeting in compliance of Hon'ble NGT order in the matter of O.A. No. 251 of 2022" with CIPET/ICMR /NCSCM held on July 27th , 2022

Second Committee meeting was held virtually via video conferencing on July 27, 2022 for study of micro plastics impact on environment and human health. Various stakeholders including representative of CIPET, ICMR, and NCSCM participated in the meeting (List of participants is placed as **Annexure-I**).

RD Kolkata, CPCB made brief presentation on research gap in Indian scenario based on the research document shared by CIPET, ICMR, and NCSCM. Gaps in Standardization of Qualitative and Quantitative techniques, gaps in Matrices covered under the published literature from various Geographical regions, were highlighted during the presentation. Presentation made is enclosed as **Annexure-II.**

Further discussions regarding need for future research was held by the members and DH UPC-II requested to all the group members to make brief presentation in next meeting as per details given below:

- RD Kolkata, CPCB
  - Methodology for development of standards covering sample requirement
  - Source of micro plastic
  - Areas of monitoring
  - Requirement for sampling methods and analysis
  - Capacity building
  - Availability and Gaps
- CIPET and NCSM
  - Available resources of monitoring sampling and analysis
  - Possible coverage for monitoring with existing resources
  - Institutional mechanism to fulfill additional sampling/analysis requirements, if any.
- ICMR
  - Existing studies on impact of micro plastic on human health
  - Identification of areas for further intervention to assess impact of micro plastic on human health.

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The meeting ended with vote of thanks to the chair.

Annexure-I

List of Participants

S.N.	Name and Designation
1.	Dr. Raj Narayan Tiwari, Director, ICMR-NIREH, Bhopal
2.	Dr. Surya Singh ICMR-NIREH, Bhopal
3.	Dr.R.S.Dhaliwal, Scientist G & Head, NCD, ICMR Hqrs
4.	Dr. Smita Mohanty, Director & Head (Principal Scientist) CIPET Bhuwneshwar
5.	Dr Robin , NCSCM Chennai
6.	Ms. Divya sinha Additional Director & I/c UPC-II, CPCB
7.	Mr. Mrinal Kanti Biswas Scientist "E" & Regional Director, CPCB
8.	Ms. Yogesh Chandra Scientist- B, CPCB

CPCB

Minutes of Meeting on "Third Committee Meeting in compliance of Hon'ble NGT order in the matter of O.A. No. 251 of 2022" with CIPET/ICMR /NCSCM held on August 5th, 2022.

Third Committee meeting was held virtually via video conferencing on August 5th, 2022 in compliance of Hon'ble NGT order in the matter of O.A. No. 251 of 2022 for study of micro plastics impact on environment and human health. Various stakeholders including representative of RD Kolkata, CIPET, ICMR, and NCSCM participated in the meeting (List of participants is attached as ***Annexure-I***).

Mr Mrinal K Biswas, RD Kolkata, CPCB, described the action plan for development of standards for microplastics. He provided examples from other countries which already have their own practices for managing microplastics. RD Kolkata ended their presentation with the proposed execution plan and the roles to be assigned to different organizations, for developing environmental standards. (The presentation is here attached as ***Annexure-II***)

The meeting progressed with the second presentation by NCSCM, where the information about protocol for analysis of microplastic in sediment, water & biota was briefly explained by them. They also explained the importance of surrounding environment from which sample has been taken, for analysis of microplastic.

Last presentation of the meeting was given by ICMR-NIREH Bhopal, where the results from the studies which have already been done on the presence of microplastic and their possible effects on human body, were discussed. Instruments which may be used for estimating the concentration of microplastics were also discussed during the presentation. (The presentation is here attached as ***Annexure-III***)

Ms. Divya Sinha -DH, UPC-II concluded the discussions with request to provide detailed information as annexed below, latest by **22/08/2022**, regarding the efficient methodologies adopted by CIPET & NCSCM for analysis of samples for microplastics in the environment.

The meeting ended with vote of thanks to the chair.

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CIPET and **NCSCM** are required to provide the following information, latest by 22/08/2022, on testing and analysis of microplastics for drinking water, groundwater, compost/leachate samples:

Heads	Drinking water Sample	Groundwater Sample	Compost/leachate Sample
Methodology for testing and analysis			
Instruments Required			
Time period required for analysis			
Cost incurred per sample			
Presence/Coverage area of Organization			
Studies available			

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Annexure I

List of Participants	
S. No.	**Name and Designation**
1.	Mr. Mrinal Kanti Biswas Scientist "E"; Regional Director, CPCB
2.	Dr. Raj Narayan Tiwari, Director, ICMR-NIREH, Bhopal
3.	Dr. Surya Singh, ICMR-NIREH, Bhopal
4.	Dr. Smita Mohanty, Director & Head (Principal Scientist), CIPET Bhuwaneshwar
5.	Mr. Himalaya Vardikar, CIPET LARPM, Bhuwaneshwar
6.	Ms. Divya sinha, Additional Director & I/c UPC-II, CPCB
7.	Ms. Yogesh Chandra, Scientist- B, CPCB
8.	Mr. Madnesh Kumar Dubey, Scientist- B, CPCB
9.	Mr. Mayank Raj Purbey, Scientist- B, CPCB

ANNEXURE-II

3rd Meeting of the 55 expert committee on "Development of standards for Microplastics"

CPCB

-By-

Central Pollution Control Board

Regional Directorate, Kolkata

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NGT order

- As per the Hon'ble NGT order dated 05.04.2022 pertaining to OA no. 251/2022 of 2022, where it has been directed that:

> *"There is need for **further studies**, considering the studies already conducted, to be steered by the Committee comprising of CPCB, ICMR, Central Institute of Petrochemicals Engineering & Technology (CIPET), NCSCM, and any other expert institutions as required, under the Nodal coordination of CPCB. Such studies and recommendations/ suggestions **may cover standards for safe environment**, **remedial steps** to **reduce menace of micro plastic** and **addressing other incidental issues**. CPCB may incur expenditure on studies and other incidents out of Environmental Compensation funds."*

&

- *" Having regard to the media report that violation of environmental norms in handling of plastics is resulting in serious adverse health effect on human beings, it appears to be necessary to **ensure strict compliance of environmental norms** and to undertake **further study** to consider **whether the existing policies of enforcement of environmental norms need to be revisited in any manner in the interest of human health.**"*

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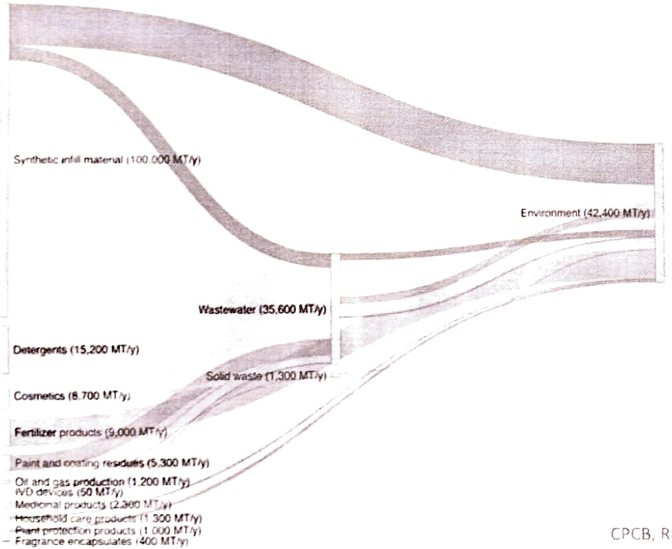
57 International initiatives - EU

Regulations to control the pollution:

- Registration, Evaluation, Authorization and Restriction of Chemicals (REACH)
- Committee for Socio-Economic Analysis (SEAC)



- Sankey plot showing major sources and sinks of primary microplastic emissions in the EU. Emissions to the environment include those to both the aquatic and terrestrial compartment. (Rheinberger et al., 2021)

.....International initiatives till date – Europe

- In 2018, Commission adopted European Strategy for Plastics – a Circular Economy, about €100 million (for 2 yrs) has been allocated for implementation of plastics strategy and R&D projects.
- In January 2019, ECHA(European Chemical Agency) proposed a wide-ranging restriction on microplastics expecting to **prevent** the release of **5,00,000 tonnes of microplastics over 20 years.**
- **Development in 2022.....**

Specific laws with partial objectives	Directives for unintentional formation of microplastics	Production & release into the environment, both directly and indirectly
1. Marine Strategy Framework 2. Fertilising Products Regulation 3. REACH restriction proposal	1. Plastics Waste Framework strategy 2. Waste Framework Directive 3. Marine Strategy Framework Directive	1. Eco-design Directive 2. Waste Framework 3. Urban Waste Water Treatment Sewage Sludge 4. Directive on air quality 5. Industrial Emissions 6. Regulation on tyre labelling 7. Regulation on motor vehicle type approval

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.....International initiatives till date – USA

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- December 18, 2015, Congress amended the Federal Food, Drug and Cosmetic Act (FD&C Act) by passing the **Microbead-Free Waters Act of 2015**.
  - ❖Prohibits manufacturing, packaging, and distribution of rinse-off cosmetics containing plastic microbeads.
  - ❖This new law also applies to products that are both cosmetics and non-prescription (also called “over-the-counter" or "OTC") drugs, such as toothpastes.

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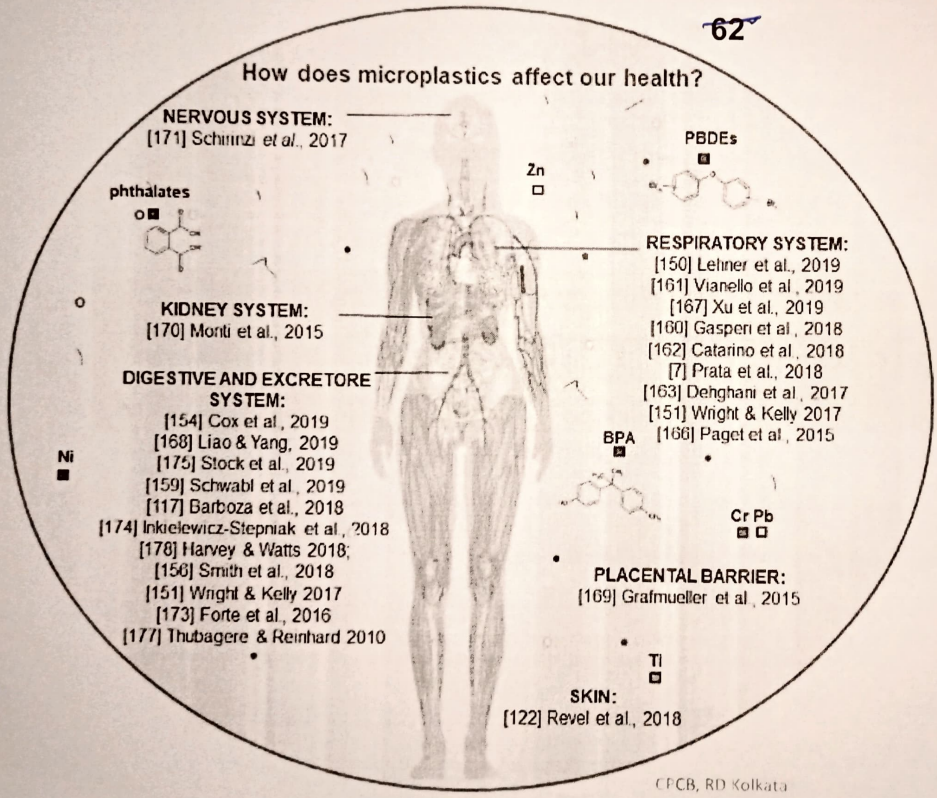
Indian scenario

BIS 2017 : Plastic microbeads of diameter 5 mm or less, that are insoluble in water, and solid plastic particles used to exfoliate or cleanse in personal care products are banned

Plastic Waste Management (Second Amendment) Rules, 2022:

a. Banned all single-use plastics from 1st July 2022.
b. mandate to increase the thickness of plastic carry bags to over 120 microns from December 31.
c. Banned imports of solid plastic waste from March 2019

Why do we need a standard?



CPCB, RD Kolkata

Overview of scientific studies focused o the effects of micro and nanoplastics o human health.

Colored squares represent pollutant (organic and inorganic) that could b present in environmental matrices (fre or associated with micro an nanoplastics) and that could enter int the human body through different entr routes.

Campanale et al., 2021

Pollutants being carried by MP

Organism exposed to MP

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How to develop a standard?

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1. Scientific stages

(a) Knowledge of the hazard: involves identification and characterization of microplastic.

(b) Evaluation of the risk: establishes the probability and severity of potential adverse effects of microplastic on health and safety.

(c) Assessment of hazard: determination routes of microplastic exposure and estimation of the number of people exposed.

2. Political and administrative stage

(a) Acceptance to the tolerable risk

(b) Determination to safeguard the public

(c) Consideration of human ecology

(d) Choice of control technology requires both formulations of strategy and selection

(e) Legislation standards consider the existing national legal framework and identify necessary legal strategies.

(f) Economics

Segments for Developing Environmental standard

Segment	Execution plan
1. Identification of priority pollution issue	❑ **Standard methodology for Sampling, processing and analysis** ❑ **Finalization of the matrix: Assessment of Quality & Quantity** A. Water (River, Lakes, Dams, Marine, Leachates & Ground Water B. Solid (Sediments, Sludge, Soil) C. Air (Rural, Urban & fugitive industrial emission) D. Biota (Fishes, Micro invertebrates) E. Packaged foods/drinks F. Existing water and waste water treatment facilities
2. Information on health effects	**ICMR-NIREH**
3. Assessment of exposure	Through Outcome of 1 & 2: A. Major Sources & budgeting B. Quality & Quantity C. Impact (includes risk) on Environment & Human D. Removal efficiencies of existing facilities
4. Strategies for prevention and control	A. Identification & Banning of selective additives usage and processes B. Technological intervention for removal MP and reuse of Plastic C. Issuance of directives restricting production and release D. Source control by legislation and awareness programs E. Promoting alternatives

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.....Segments for Developing Environmental standar

Segment	Execution plan
5. Legal framework	1. Nature of the decision 2. Scope and development of environmental legislation 3. Content and structure of regulation 4. Institutional consideration 5. Geographical dimension of environmental problems 6. Supporting measures for regulatory strategy
6. Consequences of different approaches to environmental health protection	1. Optimisation of Preventive methods and socio-economic impacts
7. Decision-making process	1. Interaction between science and policy 2. Constraints affecting development of the country 3. Finalization of the standards for **a) Discharge into** i. Inland surface water, ii. Public Sewers, iii. Land for irrigation and iv. Marine coastal areas b) **Acceptable limits** for drinking water supply

Work Distribution for identification & exposure study

- Distribution to cover the Matrices, Locations to address the gap

Sl no	Segment	Institutional Distribution
1	Spatial Analysis of Water, Soil & biota STPs/WTP, Solid waste Dump sites	Eastern Zone: CPCB – RD Kolkata Western Zone: CPCB – RD Vadodara Central Zone: ICMR – NIREH, Bhopal Northern Zone: CPCB Delhi Southern Zone: NCSCM, Chennai
2.	Air pollution	CPCB Delhi
3.	Coastal & Marine pollution	NCSCM, Chennai
4.	Health effect study	ICMR – NIREH, Bhopal
5.	Cosmetics, Packaged food & drinks	CIPET

CIPET having adequate infrastructure and network, may initiate sampling and analysis in all the 4 zones (except south), till capacity building is done in other participatory institutes

Matrix and Location wise work plan: Rive

Sl. no.	Matrix	Segment	Existing study (Approx.) by independent researcher		Proposed representative study area (Water, Sediment & Biota)			
					Control group		Polluted stretch	
			Number	Name	Number	Name	Number	Name
1.	Water, Sediment & Biota, Water intake points	River	9	1. Ganga* 2. Brahmaputra* 3. Meghna 4. Adyar 5. Kosasthalaiyar 6. Multhirappuzhayar 7. Netravati 8. Alakananda 9. Indus * Few locations covered only	1	Umngot /Dawki	17	1.Ganga 2. Damodar 3. Bidyadhari 4. Yamuna 5. Cauvery 6. Mahanadi 7. Godavari 8.Krishna 9. Narmada 10. Tapi 11. Mandovi & Zuari 12. Netravati & Sharavathi 13. Kochi Backwaters 14. Neendakara 15. Perumadhura

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Lake

Sl no	Matrix	Segment	Existing study (Approx) by independent researcher		Proposed representative study area (Water, Sediment & Biota)			
					Control group		Polluted stretch	
			Number	Name	Number	Name	Number	Name
2.	Water, Sediment, Biota Water intake points	Lakes	5	1. Veeranam lake, TN 2. Red hills Lake, TN 3.Vembanad lake, Kerala 4. Renuka lake, HP 5. Anchar lake, Northwest Himalaya	2	Kankaria lake, Gujrat Gurudongmer, Sikkim	15	1. Mirik lake, WB 2. Santragachi, WB 3. Ambazari Lake, Maharashtra 4. Puskar Lake, Rajasthan 5. Naraina Lake, Gujarat 6. Dal lake, J&K 7. Bellandur Lake, Bangalore 8. Naini lake, UK 9. Hussain Sagar, Telangana 10. Chilika Lake, Odisha 11. Vembanad lake, Kerala 12. Pulicat Lake, AP 13. Kolleru Lake, AP 14. Upper lake, MP 15. Lower lake, MP

Dam

Sl no	Matrix	Segment	Proposed representative study area (Water, Sediment & Biota)	
			Polluted stretch	
			Number	Name
3.	Water, Sediment & Biota, Water intake points	Dams	10	1. Panchet, WB 2. Mythan, Jharkhand 3. Hirakund, Odisha 4. Nizam Sagar Dam, Telangana 5. Sardar sarovar, Gujarat 6. Tehri, UK 7. Tungavadra, Karnataka 8. Uri Hydroelectric Dam, J& K 9. Gandhi Sagar Dam, MP 10. Kolar Dam, MP 11. Idukki Dam, Kerala 12. Govind Ballabh Pant Sagar Dam , UP 13. Jayakwadi Dam, Maharashtra

72 Ground water & Marine wate

Sl no	Matrix	Segment	Existing study (Approx) by independent researcher		Proposed representative study area (Water, Sediment & Biota)
			Number	Name	Polluted stretch
4.	Water, Sediment & Biota	Ground Water (water extraction point)	2	Chennai, TN Punakayal, TN	State wise, representative data collection considering both urban and rural areas.
	Water, Sediment & Biota	Marine water & Coastal Pollution	41	Karnataka Kerala Tamilnadu Andaman Nicober Lakshyadweep	Sampling point: 1. Transect at every 200km interval along the coastal line of West Bengal, Odisha, AP, Goa, Maharashtra, Gujarat 2. Upto 200m depth contour (continental shelf)

Others

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Sl no	Matrix	Segment	Existing study (Approx) by independent researcher		Proposed study area	
					Polluted location	
			Number	Name	Number	Name
5.	Soil, Leachate & affected GW	Solid waste Dumpsite	0	none		State wise 1 or 2 major dumpsite
6.	Air	Urban	4	Chennai, TN Patna , Bihar Nagpur, Maharashtra Varanasi, UP	**As per the ongoing study by CPCB**	
7.	Health effect	Animal study Clinical study Human study	11	Arthropod and fishes	**Plan to be developed by ICMR NIREH**	

Evaluation of existing treatment technologies

Sl. No.	Treatment	Matrix	Technology wise evaluation (State wise evaluation)	
			Conventional	Advanced
1	Sewage treatment plants	Water & sludge	AL OP ASP TF	SBR MBBR FBAS MBR & others
2	Water treatment plants		State-wise evaluation	State-wise evaluation

Immediate actior

Preparation and submission of interim report to Hon'ble NGT:

1. Distribution of microplastics in the environment – based on LIMITED studies in Indian context.
2. Impact on Environment – based on international studies
3. Impact on Human Health – based on international studies
4. Gap analysis & proposed methodology for the study indicating requirement for establishing a strong database, budgeting, impact, prevention and control.


Thank You
D Kolkata
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Table 2 Types of pollutants carried by different types of microplastics

Microplastic	Pollutant	Reference
PA	Benzene derivative	Rehse et al. (2018)
PBAT	Heavy metals	Kedzierski et al. (2018)
PE	Lubrication oil	Haghi and Banaee (2017)
	PAH	Oliveira et al. (2013)
	Paraquat	Rochman et al. (2013b)
	PBDE	Llorca et al. (2018)
	PCB	Wang et al. (2015)
	Per- and polyfluoroalkyl substances	Fisner et al. (2017)
	PFOSA	Zhan et al. (2016)
	PPCP	Hu et al. (2017)
	Triclosan	Frydkjær et al. (2017)
PET	Heavy metals	Rochman et al. (2013a)
PP	Heavy metals	Rochman et al. (2013b)
	PAH	Fisner et al. (2017)
PS	Antibiotic	Wen et al. (2018)
	Cadmium	Zhang et al. (2019b)
	Lubrication oil	Llorca et al. (2018)
	PCB	Wang et al. (2015)
	Per- and polyfluoroalkyl substances	Guo et al. (2018)
	PFOSA	Zhan et al. (2016)
	Roxithromycin	Hu et al. (2017)
PVC	17α-Ethinylestradiol	Qu et al. (2018)
	Antibiotic	Sleight et al. (2017)
	Benzene derivatives	Kedzierski et al. (2018)
	Heavy metals	Rochman et al. (2013a)
	Odesmethylvelafaxine	Pascall et al. (2005)
	PCB	Wu et al. (2016)
	PFOSA	Guo et al. (2018)
	Phenanthrene	
	Venlafaxine	
LDPE	Heavy metals	Rochman et al. (2013a)
HDPE	Heavy metals	Holmes et al. (2014)

PBAT polybutylene adipate terephthalate, *HDPE* high-density polyethylene, *PFOSA* perfluorooctanesulfonamide, *PPCP* pharmaceuticals personal care product

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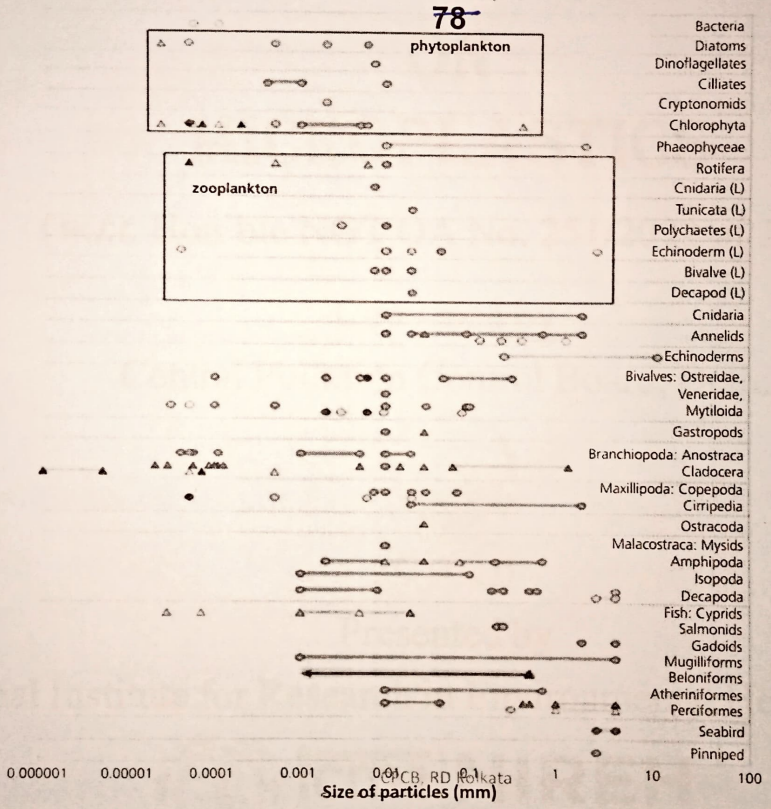
Summary of laboratory experiments (published up to the end of December 2016), in which organisms were exposed to micro- and nanoplastics



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24 65

ANNEXURE-III

3RD MEETING OF THE EXPERT COMMITTEE ON MICROPLASTICS

(*w.r.t.* Hon'ble NGT OA No. 251/2022 of 2022)

Convened by

Central Pollution Control Board, Delhi

Presented by

ICMR – National Institute for Research in Environmental Health (NIREH), Bhopal

Human Health Research Scenario

Microplastics have been reported and estimated in:

- Human saliva
- Human blood
- Human placenta
- Human colon
- Human stool
- Human lungs

Human Saliva

Total number of studies till date: 1

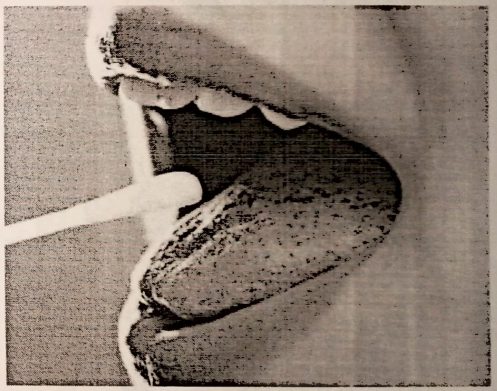
No. of human samples: 2000

Instrument: μRaman Spectroscopy

Total number of particles reported: 650

Concentration of MP reported: 0.33 particles / individual

Impact on health: Not reported



Ref. Abbasi et al. 2021, Human exposure to microplastics: A study in Iran

Human Blood

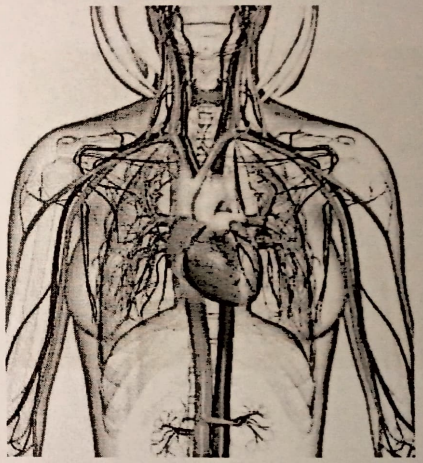
Total number of studies till date: 1

No. of human samples: 22

Instrument: Pyr GC – MS (limitation 700 nm)

Concentration of MP reported: 1.6 µg / mL

Impact on health: Not reported



Ref. Leslie et al. 2022, Discovery and quantification of plastic particle pollution in human blood

Human Placenta

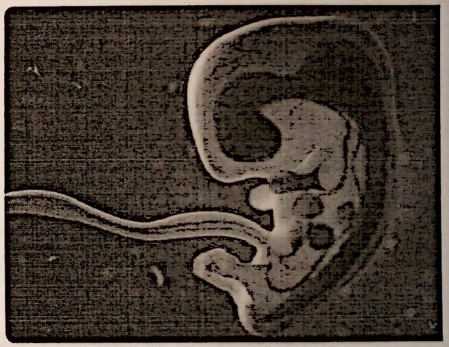
Total number of studies till date: 1

No. of human samples: 6

Instrument: μRaman Spectroscopy (limitation 5 μm)

No. of MP particles reported: 12 particles in 4 samples out of 6 tested

Impact on health: Not reported



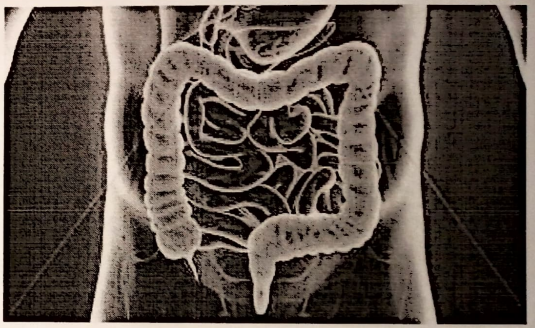
Ref. Rasuga et al. 2021, Plasticenta: First evidence of microplastics in human placenta

Human Colon

No. of human samples: 11

Instrument: FTIR Microscope

Concentration of MP reported: 28 ± 15.4 particles / g colon tissue



No. of MP particles reported: 331 particles / individual specimen

Impact on health: Not reported

Ref. Ibrahim et al. 2020, Detection of microplastics in human colectomy specimens

Human Stool

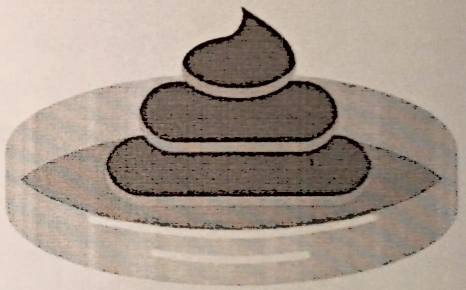
First Study

No. of human samples: 8

Instrument: FTIR microspectroscopy (limitation 50 µm)

Concentration of MP reported: 2 particles / g of stool

Impact on health: Not reported



Second Study

No. of human samples: 24

Instrument: FTIR microspectroscopy

No. of MP particles reported: 1 particle / g - 36 particles / g of stool

Impact on health: Not reported

Ref. Schwabl et al. 2019, Detection of various microplastics in human stool
Zhang et al. 2021, You are what you eat: Microplastics in feces of young men living in Beijing

Human Lungs

First Study

No. of human samples: 13

Instrument: μFTIR Spectroscopy (limitation 3 μm)

Concentration of MP reported: 0.69 ± 0.84 particles / g lung tissue

No. of MP particles reported: 39 particles in 11 samples out of 13 tested

Impact on health: Not reported

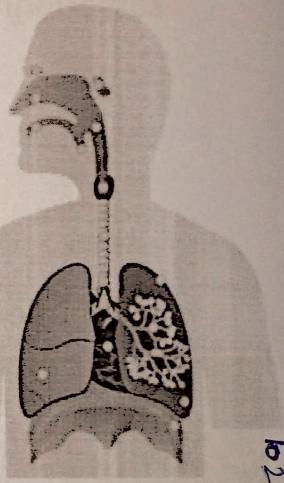
Second Study

No. of human samples: 20

Instrument: Raman Spectroscopy (limitation 20 μm)

No. of MP particles reported: 37 particles in 13 samples out of 20 tested

Impact on health: Not reported



Ref. Jenner et al. 2022, Detection of microplastics in human lung tissue using μFTIR spectroscopy
Amato-Lourenco et al. 2021, Presence of airborne microplastics in human lung tissue

Human Health Research Scenario in the Area of Microplastics

Genotoxic and cytotoxic effects of microplastics in human blood lymphocytes

No. of human samples: 2

Size of microplastic particle studied: 10 – 45 µm

Type of microplastic particle studied: Polyethylene

Concentrations of MP studied: 25, 50, 100, 250, 500 µg/mL of blood

Type of study: *in-vitro*

Result: Genomic instabilities were reported

Mechanism: Unknown

Ref. Cobanoglu et al. 2021, Genotoxic and cytotoxic effects of polyethylene microplastics on human peripheral blood lymphocyte

Human Health Research Scenario in the Area of Microplastics

Cytotoxic effects of microplastics *accompanied by* metal nanoparticles in human cerebral and epithelial cells

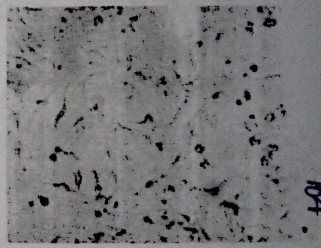
Size of microplastic particle studied: 3 – 16 µm

Type of microplastic particle studied: Polyethylene & polystyrene

Concentrations of MP studied: 50 µg/L to 10 mg/L

Type of study: *in-vitro*

Result: Oxidative stress was reported



Ref. Schirinzi et al. 2017, Cytotoxic effects of commonly used nanomaterials and microplastics in cerebral and epithelial human cells

Key Takeaways.

- ***Studies are only about the presence of microplastics in human body, NOT about their physiological / psychological impact***
- ***Studies showing the genotoxic and cytotoxic impacts of the microplastics are in-vitro studies, conducted over ONLY two individuals***
- ***Health impacts of emerging contaminants (e.g. MPs) are chronic. So, long-term studies are required to establish CAUSE-EFFECT RELATIONSHIP***
- ***Without establishing cause-effect relationship, it would not be appropriate to set STANDARDS for drinking water having microplastics***

Item No. 06 (Court No. 1)

BEFORE THE NATIONAL GREEN TRIBUNAL
PRINCIPAL BENCH, NEW DELHI

(By Video Conferencing)

Original Application No. 251/2022

In re: News item published in The Hindu dated 29.03.2022 titled **"Detecting microplastics in human blood"**

Date of hearing: 05.04.2022

CORAM: HON'BLE MR. JUSTICE ADARSH KUMAR GOEL, CHAIRPERSON
HON'BLE MR. JUSTICE SUDHIR AGARWAL, JUDICIAL MEMBER
HON'BLE MS. JUSTICE PUSHPA SATHYANARAYANA, JUDICIAL MEMBER
HON'BLE PROF. A. SENTHIL VEL, EXPERT MEMBER

ORDER

1. Proceedings have been initiated in light of captioned media report to the effect that in absence of enforcement of environmental norms on the subject, small particles of plastics enter the blood cells of human being through food, having adverse health impact.

2. Having regard to the media report that violation of environmental norms in handling of plastics is resulting in serious adverse health effect on human beings, it appears to be necessary to ensure strict compliance of environmental norms and to undertake further study to consider whether the existing policies of enforcement of environmental norms need to be revisited in any manner in the interest of human health.

3. It appears from the record that the Southern Bench of NGT has taken up Suo Moto based on similar media reports in OA No. 99/2021(SZ), *Tribunal on its own motion Suo Motu based on the news*

item in The Times of India Newspaper, Chennai Edition dt. 05.04.2021, "Chennai, you are breathing micro plastic" vs. The Chief Secretary to Government of Tamil Nadu Chennai and Ors. and OA No. 174/2021(SZ), *Tribunal on its own motion Suo Motu based on the news item in The Times of India Newspaper, Chennai Edition dt. 27.07.2021, "High level of metals PM 2.5 found in city's air you're breathing" vs. The Chief Secretary to Government of Tamil Nadu Chennai and Ors.*, wherein CPCB carried out study on analysing micro plastic in ground water in context of landfills leachate and analysis through National Centre for Sustainable Coastal Management (NCSCM), Chennai. To avoid conflicting orders, the said matters stand transferred to the Principal Bench of this Tribunal for being dealt alongwith the present matter. Counsel appearing in the said matters be informed by e-mail. If they have any objection, they are at liberty to move this Tribunal. Record of the said matters be called for in the form of scanned documents. It is not necessary for the time being to call for the original record which may be retained at Chennai Bench. The date fixed in the said matters will stand deferred to 19.10.2022 on which the present matter will now be listed. The titles of the said matters be now modified as *In re: News Item published in The Times of India, Chennai dated 05.04.2021 titled* ***"Chennai, you are breathing micro plastic"*** in OA No. 99/2021(SZ) and *In re: News Item published in The Times of India, Chennai dated 27.07.2021 titled* ***"High level of metals PM 2.5 found in city's air you're breathing"*** *in* OA No. 174/2021(SZ).

4. There is need for further studies, considering the studies already conducted, to be steered by the Committee comprising of CPCB, ICMR, Central Institute of Petrochemicals Engineering & Technology (CIPET), NCSCM, and any other expert institutions as required, under the Nodal coordination of CPCB. Such studies and recommendations/ suggestions

may cover standards for safe environment, remedial steps to reduce menace of micro plastic and addressing other incidental issues. CPCB may incur expenditure on studies and other incidents out of Environmental Compensation funds.

5. The report of the study with suggestions for remedial action may be filed before this Tribunal by e-mail by August 31, 2022 with a copy to the Secretary, MoEF&CC as input for consideration of policy on the subject. MoEF&CC may file its action taken report in the matter before the next date by e-mail at judicial-ngt@gov.in preferably in the form of searchable PDF/ OCR Support PDF and not in the form of Image PDF.

List for further consideration on 19.10.2022.

A copy of this order along with the media report be forwarded to CPCB, ICMR, CIPET, NCSCM, Chennai and MoEF&CC by e-mail for compliance.

Adarsh Kumar Goel, CP

Sudhir Agarwal, JM

Pushpa Sathyanarayana, JM

Prof. A. Senthil Vel, EM

April 05, 2022
Original Application No. 251/2022
SN

Annexure – IV

Action Plan

S.No.	Conclusions of the Report prepared by CPCB, ICMR,CIPET and NCSCM	Concerned Ministries/Department/ Body	Action plan with time line
1.	Uniform procedure for sampling & analysis may be developed by organizations involved in micro plastic analysis (CIPET, NCSCM, MoES-NCCR) which can be adopted uniformly across the country till the time ISO standard is finalized.	CPCB to develop uniform procedure for sampling and analysis along with Central Institute of Petrochemicals, Engineering & Technology (CIPET), National Centre for Sustainable Coastal Management (NCSCM) and National Centre for Coastel Research (NCCR), CSIR- IITR and CSIR-NEERI	i. First meeting for finalization of uniform methodology for sampling and analysis of micro plastics conducted on November 09, 2023(Minutes placed at Annexure I) ii. Second meeting proposed to be during November 2023 to finalize Uniform procedure for sampling & analysis
2.	Source of generation of micro plastics including industries, waste management, waste water treatment, ocean activities etc. have been identified. However, exact quantum of microplastics generated from the identified source has not been determined.	CPCB, CIPET/DCPC, NCSCM/MoEFCC, NCCR/MoES, CSIR- IITR and CSIR-NEERI	Point 2-6, 13,14, 26 i. Preliminary listing of all points to be monitored. ii. Proposed SOP for monitoring. iii. Compilation of technologies for Micro plastic removal. iv. Meeting with Stake holders v. Awarding of work vi. Execution of work
3.	Microplastic concentration in transfer media is available for soil/beach sediment, surface water bodies, biota and ocean water. Micro plastic concentration for sludge, specifically when it is converted to compost for land application is not available	CPCB, CIPET/DCPC, NCSCM/MoEFCC, NCCR/MoES CSIR- IITR and CSIR-NEERI	
4.	Source monitoring, transfer end use of all possible sources listed in Table 3.1 of the report to be covered. Emphasis to be laid on such areas for which no information is available.	CPCB, NCSCM/MoEFCC, NCCR/MoES, CSIR- IITR and CSIR-NEERI	

5.	Regular monitoring of various water quality parameters to be conducted to provide insight into the presence and concentration of microplastics in environmental matrices (water, sediments, biota)	CPCB, NCSCM/ MoEFCC, NCCR /MoES, CSIR- IITR and CSIR-NEERI	
6.	Microplastic leakages and pathways may be monitored in order to identify further sources and hotspots of microplastics.	CPCB, NCSCM/ MoEFCC, NCCR /MoES, CSIR- IITR and CSIR-NEERI	
7.	Uniform procedure for sampling & analysis as finalized by this Committee may be adopted for such studies till the time ISO Standards are finalized.	CPCB, CIPET/DCPC, NCSCM/MoEFCC, NCCR/ MoES, CSIR- IITR and CSIR-NEERI	Covered in 1
8.	Health impact of emerging contaminants and long term studies are required to establish Cause effect relationship of microplastics on human health	Indian Council of Medical Research/DHR, CPCB, CIPET/DCPC, NCSCM/MoEFCC, NCCR/MoES	Nodal Agency - ICMR
9.	Studies conducted on the matter have reported about the presence of microplastics in human body. Physiological or psychological impact has not been reported in these studies.	ICMR/DHR	Nodal Agency - ICMR
10.	The aforementioned studies should cover different type, concentration and shapes of microplastics. Impact of chemicals/biofilms associated with Microplastics on human health to be covered. The studies may include the following: Estimation of the duration and frequency of human exposure to microplastics. Microplastic monitoring as required may be conducted for the same. Once the exposure assessment is done precisely, dose- response assessment may be carried out, where the minimum concentration(of microplastics) responsible for any observable effect (on human) shall be assessed..	Indian Council of Medical Research/DHR, CPCB, CIPET/DCPC, NCSCM/MoEFCC, NCCR/MoES	Nodal Agency – ICMR

11.	Bioassays may beconducted to a ssess the Eco- toxicological impa ct of micro plastics on animal life.	CPCB, CSIR-IIT R, CSIR-NEERI	Nodal Agency – ICMR
12.	Standards development (Source & ambient) for microplastics may be taken up following establishm ent of the cause-effect relationship of micro plastics on h uman health	CPCB, ICMR/DH R	Post completion of Activities listed at 2-11
13.	Available technologies to be asse ssed for theirefficacy for removal of microplastic	CPCB, DCPC/CI PET, MoEFCC/N CSCM, MoES/N CCR, CSIR- IIT R and CSIR-NE ERI	
14.	Technologies to be developed fo r removal of micro plastics from A ir & Soil	CPCB, DCPC/CI PET, MoEFCC/N CSCM, MoES/N CCR, CSIR-NEE RI, CSIR- IITR a nd CSIR-NEERI	
15.	Source-directed interventions, Sustainable design and manufac turing of textiles, tyres, and comp lementary products (laundry dete rgents, road surfaces, and vehicl es), to minimize the tendency ofp roducts to contribute to microplas tics generation; Restrictions on microplastics in th e manufacture and sale of certain personal care and cosmetic prod ucts containing microplastics. Product requirements for househ old, commercial, or industrial was hing machines. For instance, Aus tralia and France have introduce d measures to phase in micro fib re filters on new washing machin es	Ministry of Textil es, Department of Pr omotion and Ind ustry and Interna l Trade, Ministry of Heavy Industries, Ministry of Road Transport and Hi ghways, Department of Chemicals and P etro-Chemicals CDSCO/Depart ment of Health a nd Family Welfar e, Department of P harmaceuticals Department of Pr omotion and Ind ustry and Interna l Trade	

16.	End-of-life interventions, effective solid & plastic waste managemen t practices, to prevent waste leaking into the environment and potentially contributing to micropl astics generation including the fo llowing; Reducing the amount of plastic w aste that enters landfills and dum psites through the implementatio n of waste reduction policies and initiatives, such as waste-to-ener gy programs and increased recyc ling. Microplastics can also be reduce d by supporting the development and use of biodegradable plastic alter natives	Department of Dr inking Water and Sanitation, Ministry of Housing and Urb an Affairs,	
17.	End-of-pipe interventions, waste water, stormwater, and road runo ff management and treatment, to retain the emitted microplastics b efore these reach water bodies.	Department of W ater Resources, River developme nt and Ganga Re juvenation, Department of Dr inking Water and Sanitation, Ministry of Housing and Urb an Affairs	
18.	Maximizing clean drinking water supply to all citizens inthe countr y	Department of Dr inking Water and Sanitation	
19.	Other Best practices as listed bel ow for minimizing microplastics in environment may be followed: Install physical barriers such as s creens and filters on STP/WWTP systems to help reduce the amou nt of microplastics that enter river s, lakes, and oceans. Support sustainable fishing practi ces to reduce the amount of micr oplastic entering rivers from fishi ng equipment.	Department of Dr inking Water and Sanitation, Ministry of Housing and Urb an Affairs. Department of W ater Resources, River developme nt and Ganga Re juvenation,	

	Implementation of Clean-up efforts for beaches and rivers	Department of Fisheries Ministry of Earth Science	
	Training and capacity building including microplastic monitoring, analysis, health impact studies may be taken up for effective implementation of aforementioned points."	CPCB, DCPC/CIPET, MoEFCC/NCSCM, MoES/NCCR, CSIR- IITR and CSIR-NERI	
	Other conclusions given in the report		
20.	Independent studies regarding microplasticshave been conducted by various organizations in thecountry including CPCB, MoES- NCCR, NCSCM, NPC and CIPET .Further international studies have been conducted by WHO, UNEP, OECD and others.		
21.	The studies have primarily focused on monitoring microplastics (concentration, polymer type, colour, shape) in various environmental matrices.		
22.	Occurrence of microplastics has been reported in oceans, sediments, surface water, ground water, wastewater, tap water, bottled water, air, food products, aquatic organisms, and humanbeings		
23.	There is currently no standard method for sampling and analysis of microplastics in the environment. ISO is currently working on the subject		
24.	Sampling and analytical methods adopted by different institutions in India are similar with minor variations.Variation in Microplastic concentrations units reported by different organizations has been observed		

25.	Microplastic concentration in end use areas including ambient air, drinking water and ground water is available.		

GUIDELINES FOR ONE-TIME FINANCIAL SUPPORT FOR ESTABLISHING RECYCLING PLANTS & MACHINERY FOR ABANDONED, LOST & DISCARDED FISHING GEARS AND HIGH LITTERING PLASTIC WASTES IN COASTAL AREAS

CPCB

In Pursuit of Clean Environment

CENTRAL POLLUTION CONTROL BOARD

Ministry of Environment, Forest & Climate Change

Government of India

September, 2024

TABLE OF CONTENT

Guidelines for One-Time Financial Support for Establishing Recycling Plants & Machinery for Abandoned, Lost & Discarded Fishing Gears (ALDFGs) and High littering Plastic Wastes in Coastal Areas

A. BACKGROUND

Marine litter is defined as any persistent, manufactured or processed solid material discarded, disposed or abandoned in the marine and coastal environment[1]. Plastic is the most dominant component in marine litter[2], comprising of fishing nets, plastic packaging and other items that are either deliberately discarded or accidentally lost into the sea or onto beaches. Additionally, plastic materials can be carried indirectly to the sea through rivers, sewage, stormwater or winds[3]. The increasing quantity of plastic waste, combined with the slow degradation of plastic litter, has become a significant environmental concern along the country's extensive coastline.

The fishing sector is known to be a substantial contributor to marine litter in the oceans[4]. With a large number of fleet, India is the third largest fish producing country worldwide[5]. Plastic is used in the fishing industry for a variety of purposes such as fishing nets, rope, monofilament lines, buoy, floater, traps[6], etc. The primary way by which commercial fishing generates plastic litter is through Abandonment, Loss, or Discard of Fishing Gear (ALDFGs), which is a significant threat to marine biodiversity. ALDFGs are generally made of non-biodegradable synthetic materials, such as High Density Polyethylene (HDPE), Polyethylene Terephthalate (PET), Polyamide/ nylon (PA), polypropylene (PP), etc. that persist in the marine environment

[1] https://www.imo.org/en/MediaCentre/HotTopics/Pages/marinelitter-default.aspx#:~:text=Marine%20litter%20consists%20of%20items,)%3B%20or%20deliberately%20left%20by

[2] Sivadas, S.K., Mishra, P., Kaviarasan, T., Sambandam, M., Dhineka, K., Murthy, M.R., Nayak, S., Sivyer, D. and Hoehn, D., 2022. Litter and plastic monitoring in the Indian marine environment: A review of current research, policies, waste management, and a roadmap for multidisciplinary action. Marine Pollution Bulletin, 176, p.113424.

[3] https://www.unep.org/topics/ocean-seas-and-coasts/regional-seas-programme/marine-pollution#:~:text=Marine%20litter%20consists%20of%20items,at%20sea%20in%20bad%20weather

[4] https://plasticoceans.org/wp-content/uploads/2017/11/UNEP-research.pdf

[5] https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1910415#:~:text=India%20is%20the%20third%20largest,12.12%20Million%20Tonnes%20from%20Aquaculture

[6] Daniel, D.B., Thomas, S.N. Abandoned, Lost and Discarded Fishing Gear from the Fishing Sector of Kerala, India. Ocean Sci J 57, 398–410 (2022) https://doi.org/10.1007/s12601-022-00074-y

for years or decades[7]. In India, fishing nets are made from these synthetic fibers in different forms, such as braided or twisted[8].

The quantity of fishing net waste varies in States/ UTs depending on factors such as the size of the fishing industry, the length of the shoreline, and local waste management practices. Further, they are generally replaced every 1-3 months influenced by factors such as rocks, damage due to boats, machine boat impact and interference from crabs and other species.

According to the information submitted in the Annual Report, 2022–23 by thirteen State Pollution Control Boards / Pollution Control Committees (SPCBs/PCCs) located in coastal areas, a total of 2.37 million tonnes of plastic waste was generated in the States/ Union Territories (UTs). According to the data from the Centralized Extended Producer Responsibility (EPR) portal for plastic packaging, a total of 1.63 million tonnes of plastic waste had been recycled till August 2024 in eleven States/ UTs of coastal area[9]. There are total 899 number of plastic waste recycling units in these states/UTs, with the highest number in Gujarat (426), followed by Maharashtra (218) and Karnataka (94).

Based on the information received from respective SPCBs/PCCs, the estimates suggest that quantity of fishing net waste is 75 kg per annum in Puducherry, about 1.5 tonnes per annum in Goa, 17.51 tonnes per annum in Odisha, 800 to 1,000 tonnes per annum in Gujarat, and 7,342 tonnes per annum in Karnataka. The variation of quantity of collection of fishing net may be due to variation in marine demographics, coastal length, fishing intensity, fishing practice, etc. Presently, various actions are underway to manage ALDFGs generated in the country, which includes establishing designated collection centers (e.g., Kasimedu in Chennai, Veraval and Porbandar in Gujarat, Udupi in Karnataka), setting up recycling facilities (e.g., Madurai in Tamil Nadu, Porbandar in Gujarat, Puducherry), and others. However, in light of the estimated increase in ALDFGs and marine plastic litter in the coming years, there is need for additional waste management actions apart from ongoing measures.

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[7] Gunasekaran, K., Mghili, B., Bottari, T., Mancuso, M. and Machendiranathan, M., 2024. Ghost fishing gear threatening aquatic biodiversity in India. *Biological Conservation*, *291*, p.110514.

[8] https://krishi.icar.gov.in/jspui/bitstream/123456789/78825/1/Assam%20Training%20Manual-6-408-164-169.pdf

9 The data for recycling of plastic packaging for the state of Odisha and the Andaman & Nicobar Islands is not available

The Blue Flag Beach Criteria[10] specifies that the beach must comply with the Blue Flag requirements which includes no floating plastics, providing facilities for separation of recyclable waste materials at the beach and local authority/beach operator must indicate facilities for the recycling of waste. If no such facilities exist, the applicant must apply for a dispensation from this criterion. Further, Blue Flag encourages all local authorities/beach operators to promote recycling and waste separation at the beach, even if the community does not have a local recycling facility. In India, there are following twelve Blue Flag certified beaches located across six States and three Union Territories.

1. Shivrajpur, Devbhumi Dwarka District, Gujarat
2. Ghoghla (Diu) Dadara Nagar Haveli and Daman & Diu
3. Padubidri, Udupi District, Karnataka
4. Kasarkod, Karwar District, Karnataka
5. Kappad, Kozhikode District, Kerala
6. Kovalam, Kanchipuram District, Tamil Nadu
7. Eden, Puducherry District, Puducherry
8. Rushikonda, Vishakhapatnam District, Andhra Pradesh
9. Golden, Puri District, Odisha
10. Radhanagar (Havelock), Andaman & Nicobar Islands
11. Minicoy Thundi Beach, Lakshadweep
12. Kadmat Beach, Lakshadweep

(Source: PIB press release July 21 2022, October 26, 2022)

In order to facilitate and enhance control of pollution in coastal areas, these guidelines have been developed to provide one-time financial support to project proponents towards capital costs of setting up recycling plant & machinery for Abandoned, Lost & Discarded Fishing Gears and other plastic waste with high littering potential in coastal areas. The units can be single plastic, multi-plastics or multi-plastics with nylon recycling facilities The objective is to protect and conserve

[10] https://beachawards.ie/wp-content/uploads/2021/05/Blue-Flag-Beach-Criteria-2021.pdf

the marine ecosystem from plastic litter. The focus is on enhancing and establishing plastic waste recycling facilities in the twelve Blue Flag certified beaches having gaps/limited or non-existing infrastructure to improve waste management in these pristine regions.

B. OBJECTIVES

1. Enabling reduced plastic waste and ALDFGs littering in the twelve Blue Flag certified beaches in the country, by facilitating establishment of plastic recycling facilities and thus, encouraging channelization of plastic waste from collection to recycling.
2. Reducing usage of virgin plastics, encouraging and promoting a circular economy

C. DETAILS OF PLASTIC RECYCLING FACILITIES[11,12]

The plastic can be recycled through two process routes, mechanical and chemical recycling.

Mechanical Recycling – Mechanical recycling is generally a main method of plastic waste recycling, which involves processing of plastic waste into secondary raw materials without significantly altering the chemical composition of the material. The process involves the following steps:

1. Collection and Segregation: Plastic materials have varying densities, so they are separated using a flotation process.
2. Cleaning and Drying: Plastic waste must be thoroughly cleaned and dried.
3. Sizing (Grinding): The cleaned plastic waste is then ground into flakes. These flakes are fed into an extruder, where they are heated until molten and forced through a die to form continuous polymer strands.
4. Pelletizing: The strands are cooled with water and cut into pellets, resulting in reprocessed granules.

[11] https://openknowledge.fao.org/server/api/core/bitstreams/f126ddd0-b423-430d-89c8-488667a9add9/content
[12] Shanker, R., Khan, D., Hossain, R. et al. Plastic waste recycling: existing Indian scenario and future opportunities. Int. J. Environ. Sci. Technol. 20, 5895–5912 (2023). https://doi.org/10.1007/s13762-022-04079-x

5. Fabrication into end product: The reprocessed granules are used as raw materials to produce final products.

Chemical Recycling[13] – Chemical recycling is a process in which a plastic or polymer is broken down into its basic components, i.e. monomer. This process is called de-polymerization. The monomers may be used as raw materials for manufacturing a new polymer. There are various chemical recycling processes, such as pyrolysis and gasification, which converts plastic into gases, and hydrolysis and purification which breaks polymers into monomers and raw materials. The de-polymerization process reverses polymerization by breaking down plastics into their monomers or shorter fragments (oligomers). The resulting monomers are of comparable quality to those used in the original polymer production, making the recycled plastics nearly equivalent to virgin materials. However, de-polymerization is primarily effective for 'condensation' polymers such as PET and polyamides.

It is important to note that Nylon-6 is a commonly used polyamide for making fishing gear and nets. The process diagram of Nylon fishing net recycling facility is presented below (Figure 1). The challenge in recycling of the nylon fishing nets is the removal of contamination such as moisture, algae and sand in the nodes of the net. As nylon is sensitive to temperature variation during extrusion, temperature of 200 – 250°C is maintained. Thus, the fishnet recycling unit differs from plastic waste processing unit and machineries such as shredder, crusher, wash line and extruders are modified according to the requirement of nylon recycling. Also, drying process is a requirement for nylon recycling.

The plastic waste recycling facilities produce wastewater from washing lines. It is encouraged to install a closed loop effluent system to ensure reuse of the wastewater. Based on quantity and quality of effluent generated a typical Effluent Treatment Plant (ETP) may comprise screening & settling mechanism, anaerobic / aerobic treatment system and tertiary treatment units, as needed.

[13] https://www.bpf.co.uk/plastipedia/chemical-recycling-101.aspx

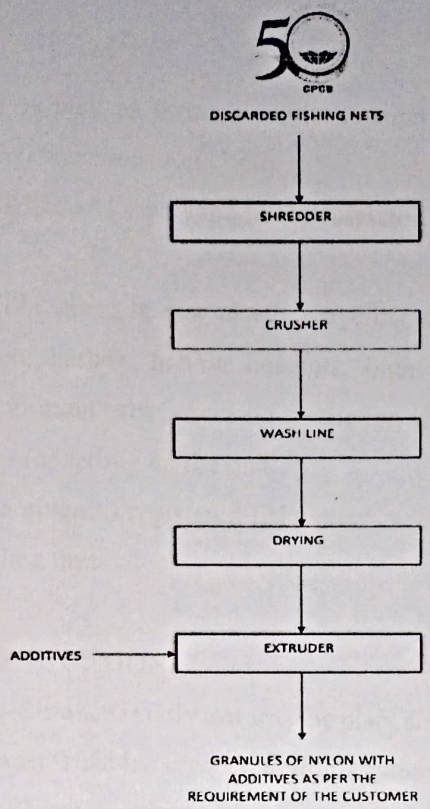

Figure 1 – Process diagram of nylon fishing net recycling facility[14]

D. ELIGIBILITY CRITERIA

1. New plastic waste recycling units for recycling of fishing gears/ nets and other plastic waste with high littering potential to be established by entities, entrepreneurs, or companies
2. The unit should have a valid Consent to Establish from concerned SPCB/PCC for establishing a plastic waste recycling unit.
3. The Unit located beyond Coastal Regulation Zone (CRZ) and permissible under local bylaws and extend regulations will be eligible for one-time financial assistance under CPCB Extended Producer Responsibility (EPR) funds including Environmental

[14] M/s. Sun Polymers, Shivaganga, Tamilnadu

Compensation as well as through Environmental Protection Fund[15] created under the Environmental (Protection) Act, 1986.

4. The unit should have its own valid land possession letter or lease agreement of minimum 10 years[16].
5. Preference will be given to new plastic recycling units proposed to be located optimally closer to beach, harbor, fishing hotspots, high tourist footfall area and any other strategically important area where no restriction is imposed by any of the Government institution/body for setting up the unit.
6. Priority will be given to registered fishermen's societies interested in setting up fishing gear/ net recycling units.

E. INCLUSIONS & EXCLUSION

One-time financial assistance is only towards the plant and machinery cost which includes cost of washing line, grinder/ shedder/ crusher, drying, agglomerator, extruder and pollution control device (including Effluent Treatment Plant) as per regulatory requirements. Cost of land for setting up of aforementioned facilities including other civil and electrical works shall be borne by the proponent. However, no assistance will be provided for meeting O & M costs, or any other recurring expenses. Any financial liability that may rise due to time and cost over runs shall be borne by the proponent.

F. PROCESS OF APPLICATION, EVALUATION & APPROVAL MECHANISM

a. Step 1 – Process of application & Screening by SPCB/ PCC

The proponent shall submit completely filled application in the prescribed format (Annexure I) to the Member Secretary of the concerned SPCB/PCC of the coastal State / UT where the plastic waste recycling unit is proposed to be established. The application

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[15] Section 16(3) (b) of the Environment (Protection) Act, 1986 amended through **The Jan Vishwas (Amendment of Provisions) Act, 2023**, states, "The Fund shall be applied for— the expenses for achieving the objects and for purposes of the Air (Prevention and Control of Pollution) Act, 1981(14 of 1981) and under this Act". The E(P) Act aims to provide for the protection and improvement of the environment and related matters

[16] Considering 03 years duration of the scheme and 07 years of continual operation of the plant

form shall be accompanied with Financial Statement of the proponent for past three financial years[17] and land possession letter/ lease agreement.

A committee shall be constituted within the SPCB/PCC, chaired by the Member Secretary of the SPCB/PCC and comprising members from the State Coastal Zone Management Authority (SCZMA), Fisheries Department and relevant Urban Local Bodies. This committee will review the application and eligibility conditions, address issues related to prioritizing proposals in cases of competing demands, and resolve conflicts concerning the prioritization of applicants. Besides suggested committee members from the institutions/ Organizations, if registered fisherman society/association exists in the State/UT, representative from the same may be included as one of the members in the Committee.

The Project Proponent shall make a presentation to the Committee and additional details may be sought, if required. In the case of a favorable recommendation, Member Secretary, SPCB/PCC shall forward the application to CPCB along with the recommendation letter mentioning proposed recycling capacity, process type and estimated item-wise cost of machinery within 30 days of receipt of the application. SPCB/PCC shall ensure that proponent is fulfilling all essential regulatory conditions for setting up the plastic waste recycling unit, prior to forwarding the recommendation to CPCB. In case of unfavorable recommendation, the SPCB/PCC shall inform the same to the project proponent.

b. Step 2 – Evaluation of application by Central Committee & Accord of Approval

The applications and the recommendations of the respective SPCB/PCC shall be evaluated within 30 days of receipt from SPCB/ PCC by a Central Committee to be chaired by Member Secretary, CPCB and comprising representative (s) from National Coastal Zone Management Authority (NCZMA), National Centre for Sustainable Coastal Management (NCSC), Department of Fisheries and concerned official from CPCB. After evaluation, in case of favorable recommendations from the Central Committee, the proposal may be placed to the Competent Authority, CPCB, for approval for release of funds.

[17] Exemptions as per applicable regulation for eligible Startups and MSEs

G. FINANCING STRUCTURE

The one-time financial assistance will be provided from CPCB Extended Producer Responsibility (EPR) funds including Environmental Compensation as well as through Environmental Protection Fund[18] created under the Environmental (Protection) Act, 1986.

a. **Quantum of financial support for capital expenditure for plants and machinery**
Financial support will be provided as a one-time grant of either, Rs. 19 lakhs per TPD of production capacity or 40% of the capital cost of the plastic waste recycling plant and machinery, whichever is lower, subject to a maximum of Rs. 38 lakhs per proposal.

This is based on average estimated cost available from existing recyclers for installing plastic waste recycling machinery such as plastic scrap grinders, shredders, cutters, crushers, wash lines, dryers, agglomerators, extruders, and pollution control devices (including Effluent Treatment Plant).

For setting up nylon fishing gear/ net recycling plant, onetime financial support will be provided of either, Rs. 24 Lacs per TPD of production capacity, or 40% of the capital cost of nylon fishing gears/net recycling plant & machinery, whichever is lower, subject to a maximum of Rs. 48 lakhs per proposal.

A total of 25 units are planned to be established near Blue Flag certified beaches under the scheme, including 13 nylon fishing gear/net recycling units and 12 plastic waste recycling units.

b. **Cost sharing ratio** – The cost shall be borne in the ratio of 40:60, by CPCB and project proponent, respectively. Proponent may avail financial grant from other schemes, however,

[18] Section 16(3) (b) of the Environment (Protection) Act, 1986 amended through **The Jan Vishwas (Amendment of Provisions) Act, 2023**, states, "The Fund shall be applied for— the expenses for achieving the objects and for purposes of the Air (Prevention and Control of Pollution) Act, 1981(14 of 1981) and under this Act". The E(P) Act aims to provide for the protection and improvement of the environment and related matters

40% cost of total plant and machinery is required to be borne by the applicant, so as to ensure responsible ownership and operation of the unit.

c. Mechanism of disbursement and the number of instalments

After the accord of approval by Competent Authority, CPCB, the funds shall be transferred into the EPR account of the concerned SPCB/ PCC within 30 days. The first instalment shall be released only after ascertaining that the unit possesses a valid Consent to Establish and verification of the unit through a physical inspection by the concerned SPCB/PCC. The funds shall be released directly by SPCB/PCC into the proponent's account as per the following installment schedule[19],

I. 40 % of the payment shall be released by SPCB/ PCC to the project proponent within 30 days of receipt of funds from CPCB
II. 30% of the payment shall be released on submission of interim physical and financial progress reports
III. 20% of the payment shall be released on commissioning of the unit
IV. 10% of the payment shall be released only after operationalization of the unit

H. PURPOSE-BOUND FUND CONDITION

To ensure that the funds are used effectively and appropriately for their intended purpose, the proponent must submit Bank Guarantees (BG) in favour of the concerned SPCB/PCC, totaling the amount of financial support in four parts. The conditions for both the submission and release of bank guarantees at different stages of the installment schedule are outlined as below,

[19] As approved during 203rd Board Meeting of CPCB dated May 08, 2024, and suitably modified for present scheme

Submission of Bank Guarantees	Release of Bank Guarantees
BG 1 for 40% of the support amount to be furnished along with request for release of first installment	BG 1 and 2 will be released upon the issuance of a valid Consent to Operate by the concerned SPCB/PCC
BG 2 for 30% of the support amount to be furnished along with request for release of second installment	
BG 3 for 20% of the support amount to be furnished along with request for release of third installment	BG 3 will be released on generation of first invoice for the sale of product
BG 4 for 10% of the support amount to be furnished along with request for release of fourth installment	BG 4 will be released thereafter three months of production

I. OVERSIGHT MECHANISM

a) Scope of SPCBs/ PCCs

- Once sanctioned, SPCB/PCC shall monitor the progress of the project and ensure its timely completion.
- SPCB/ PCC shall submit stage wise completion/ commissioning report to CPCB. Based on satisfaction of completion of work, disbursement as per the instalment may be made by SPCB/PCC to the project proponent and shall intimate the same to CPCB.
- Post-commissioning, SPCB/PCC shall periodically monitor the plastic recycling unit to ensure that it is recycling plastic wastes collected from blue flag certified beach and fishing nets/ gears. It can also recycle other plastic wastes available and process waste from fishing net yarn subject to availability of the adequate recycling capacity. Additionally, SPCBs shall periodically monitor the unit to verify compliance to relevant provisions under the Plastic Waste Management Rules, 2016 including EPR guidelines (as applicable) and amendments from time to time.

- CPCB/SPCB/PCC shall have the powers of physical inspection of the units after its commercial operation to ensure effective implementation of the guidelines.
- SPCBs/PCCs shall have the authority to verify the relevant records at any time. If it is found that the conditions outlined in these guidelines or those imposed by the concerned SPCB/PCC are not complied with, or if there has been misuse of funds, the bank guarantee submitted by the proponent may be forfeited, and the amount deposited with the CPCB in CPCB-EPR account.
- Copy of the Annual Report (Annexure II) shall be forwarded by SPCB/ PCC to CPCB before 31st May of every year.
- The SPCBs/PCCs shall ensure that following conditions are adequately covered or addressed in the Consent to Operate issued to Fishing gear recyclers and Marine Plastic Waste Recycler,

1. The unit shall be considered under orange category for the purpose of validity period of consent.
2. The unit shall use only discarded fishnets, pre manufacture waste from fishnet manufacture industries and marine plastics waste as raw material.
3. The unit shall maintain adequate ventilation and lights to maintain good working conditions.
4. The workers shall be provided with adequate safety gears/personal protective equipment (PPEs).
5. The unit shall ensure adequate fire extinguishing system.
6. The unit shall treat and dispose domestic wastewater in line with consent condition. The trade effluent shall be recycled for washing/process purpose after necessary treatment. In case of need of disposal of excess treated trade effluent, the mode of disposal, applicable norms and required treatment facility shall be clearly prescribed in the consent.
7. The conveyor system having potential for generation of fugitive emissions shall be covered with required enclosure.
8. Agglomerators and extruders shall be provided with adequate suction hood connected with vent routed through charcoal column scrubber to treat the volatile emissions.
9. There shall not be any flue gas or process gas generation from the process.
10. The unit shall take adequate measures to control noise levels from its own source within the premises so as to maintain ambient air quality standards.

11. The unit shall maintain proper records of quantity of discarded fishnets, pre manufacture waste from fishnet manufacture industries and marine plastics used as raw material, processed and quantity of recycled product/granules sold. The records shall be submitted to CPCB and SPCB on half yearly basis.
12. The raw material shall be transported in dry condition so that leakage/seepage of leachate or liquid waste does not take place. Truck/lorries used for transportation of waste shall be properly covered with tarpaulins.
13. The unit shall obtain NOC from designated Authorities as per the prevailing Rules of the State in case the source of water is bore well/ground water.
14. The electromagnetic flow meters shall be installed at raw water intake, proper records and log books shall be maintained.
15. The electromagnetic flow meters shall be installed at inlet & outlet of ETP. Records or Logbooks shall be maintained for effluent generated, treated effluent recycled or reused; excess treated effluent disposed as per consent condition.
16. The unit should put up two sign boards (6x4 ft. each) at publicly visible places at the main gate indicating the products, effluent discharge standards, air emission standards, hazardous waste quantities and validity of CTO and exhibit the CTO order at a prominent place in the factory premises.
17. The solid waste generated, if any from the process/activity should be disposed in line with consent conditions or conditions imposed by local authority. The waste should not be dumped/thrown/littered or burnt.
18. The industry shall develop green belt all along the periphery to maximum extent possible and in the available vacant land.
19. The industry shall maintain the following records and the same shall be made available to the inspecting officers of the Board:
    - ✓ Daily receipt of discarded fishnets, pre manufacture waste from fishnet manufacture industries and marine plastics waste and daily production details.
    - ✓ Power/energy consumption details.
    - ✓ Log Books for pollution control systems.
    - ✓ Solid waste generated, recycled/disposed.
20. Other conditions can also be added as per local requirements.

b) Scope of CPCB

- CPCB shall review the Annual Report submitted by SPCBs/ PCCs and may at any time direct withdrawal of financial support or forfeiture of the bank guarantee submitted by Project Proponent, if the terms and conditions of these guidelines have been violated or if there has been misuse of funds. In such case, the fund shall be deposited back to CPCB-EPR account.
- A dedicated portal shall be established for monitoring project progress, generating electronic annual reports, and managing the disbursement of funds including tracking of financial transactions.

c) Scope of Urban Local Bodies (ULBs)[20]

ULBs shall establish and implement mechanisms for the collection, storage, and transportation of discarded fishing gears/nets and plastic waste from the 12 blue flag certified beaches. ULBs may collaborate with fishing communities, startups, civil society, and informal sector to develop effective collection and transportation systems, to ensure availability of wastes for the recycling units.

d) Monitoring Committee

For effective monitoring of implementation of the projects sanctioned under this scheme following monitoring Committee shall be constituted at State/ UT level:

1) Official from Regional Office of SPCB (Regional Officer)
2) Official from Department of Fisheries
3) Official from Regional Directorate of CPCB (Not below the rank of Scientist B)

The Committee shall inspect the unit once in six months and submit the joint inspection report to SPCB/CPCB. The Committee shall verify records of raw material procured, processed and product sold. All pollution control measures shall also be verified to ensure proper functioning.

[20] Provisions under Rule 6 of the Plastic Waste Management Rules, 2016 (as amended)

J. OTHER TERMS & CONDITIONS

- Applications will be considered on first-come-first-serve basis.
- Unit shall comply with conditions prescribed in the consent issued.
- Preference shall be given to proposals having agreements with local authorities, fishing communities, or any other agency for the assured availability of fishing nets/gears and plastic wastes from Blue Flag certified beaches.
- Preference will be given to proposals planning to install plant and machinery manufactured under 'Make in India' program.
- Machinery should be purchased and plant shall be made operational within 01 year of transfer of funds. Bills/ invoices shall be submitted to SPCBs/PCCs subsequently.
- CPCB shall have the powers to modify the guidelines in any manner as may be deemed necessary for its successful implementation and for removing any difficulties in its operationalization.
- There is no provision for retrospective funding. Units possessing Consent to Operate (CTO) dated prior to the issuance of these guidelines are ineligible for financial assistance under the scheme.
- In case of any dispute, the decision of Chairman, Central Pollution Control Board would be final.

Annexure – I

APPLICATION FORM FOR ONE- TIME FINANCIAL ASSISTANCE FOR SETTING UP RECYCLING UNITS FOR FISHING NETS AND OTHER PLASTIC WASTE HAVING HIGH LITTERING POTENTIAL IN THE COASTAL AREAS

A. General Information

1. Name of the Project Proponent:
2. Permanent/ registered address of the proponent:
3. Mobile number:
4. Email address:
5. Aadhar Number:
6. PAN Card:
7. GST Number:
8. Previous projects, if any, (attach relevant documents):

B. Brief Description of the Recycling Facility proposed to be established

1. Title of the proposed recycling facility:
2. Address and GPS coordinates of the location:
3. Distance from Coastal Regulation Zone and permissible areas as per local bylaws (in Km):
4. Any strategically important landmark near proposed facility (beach, harbor, fishing hotspots, high tourist footfall area or any other (mention travelling distance in Km):
5. Copy of land possession letter / lease agreement (attach):
6. Copy of financial statements for past three financial years:
7. Details of valid Consent to Establish (CTE) (attach document):
8. Production capacity (TPH):
9. Details of plant and machinery proposed to be installed and processing capacity of each machinery:
10. Item-wise estimated cost of plant and machinery (attach supporting document or price quotation):
11. Recycling Process flow chart:

12. Identified Source of Plastic Waste:
13. Potential market for selling the product:
14. Details of funding commitment received from other sources, if applicable (attach relevant documents):
15. Any agreements with local authorities, fishing communities, or any waste management agency for the assured availability of fishing nets/gears and plastic wastes from Blue Flag certified beaches (If yes, attach document):
16. Plant and machinery manufactured under 'Make in India' program (If yes, attach relevant document)
17. Attach copy of project proposal:

SELF DECLARATION

I .....(name), ... (designation), ... (name of the unit) hereby declare that all the information provided in the application form and supporting documents is true, accurate, and complete to the best of my knowledge and belief. I understand that any false information or misrepresentation may lead to the rejection of my application. I confirm that any financial support granted under this scheme will be utilized solely for the purpose of setting up and operating the aforementioned recycling unit, as detailed in the application.

.....

Signature

Name & Designation

Date & Place

NOTE

Please send the duly filled up Application Form to the Member Secretary of concerned SPCBs/PCCs, in hard or soft copy clearly marked as 'Application for Establishing Recycling Plants & Machinery for Abandoned, Lost & Discarded Fishing Gears (ALDFG) and High littering Plastic Wastes in Coastal Areas'.

Annexure – II

FORMAT FOR ANNUAL REPORT TO BE SUBMITTED BY SPCB/ PCC

To be submitted to CPCB before May 31st of every year, for three years from sanctioning of the project(s)

Name of Scheme: One- time financial assistance for establishing recycling plants & machinery for Abandoned, Lost & Discarded Fishing Gears (ALDFG) and High littering Plastic Wastes in Coastal Areas

1. For the Financial Year:
2. Report Date:
3. Name of State Pollution Control Board / Pollution Control Committee:
4. Project Title(s):
5. Project Proponent(s):
6. Details of fund received in FY:
7. Details of payment released in FY:
8. Unused balance in FY:
9. Machinery wise status of installation and commissioning, EPR registration status (as applicable) & Payment released for each unit:

S. No.	Name of unit	Details of plant & machinery installed	Operational Status	Payment released (Rs.)	EPR registration status

10. In case unit(s) is operational now, provide following details:

	Targeted (as per installed production capacity)	**Actual**	**Target for Next FY**
Plastic waste recycled (tonnes)			
Fishing gears/ fishing nets recycled (tonnes)			
Recycled plastic recovered (tonnes)			
Revenue generated from sale of product by the beneficiary unit(s) (Rs)			

Name of the Authorized Signatory from SPCB/ PCC

Designation

Date

Attachments: As needed

Central Pollution Control Board

Ministry of Environment, Forest & Climate Change
Government of India

Parivesh Bhawan, East Arjun Nagar, Delhi-110032

Website
https://cpcb.nic.in/index.php