

BEFORE THE NATIONAL GREEN TRIBUNAL,
SOUTHERN ZONAL BENCH, CHENNAI
ORIGINAL APPLICATION NO. 176 OF 2013 (SZ)
(EARLIER OA NO. 562 of 2018 (PB))

IN THE MATTER OF

V.P Krishnamoorthy

.....Applicant

Versus

Union of India & Ors

.....Respondents

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Place: Bengaluru
Date: 15.12.2020



S.Suresh
15/12/2020
S.Suresh
Regional Director
Central Pollution Control Board
Regional directorate (South)
Bengaluru - 560079

**BEFORE THE NATIONAL GREEN TRIBUNAL
SOUTHERN ZONAL BENCH, CHENNAI
ORIGINAL APPLICATION NO. 176 OF 2013 (SZ)
(EARLIER OA NO. 562 of 2018 (PB))**

IN THE MATTER OF

V.P Krishnamoorthy

.....Applicant

Versus

Union of India & Ors

.....Respondents

STATUS REPORT ON BEHALF OF RESPONDENT NO.12, CENTRAL POLLUTION CONTROL BOARD WITH REGARD TO HON'BLE TRIBUNAL ORDER DATED JULY 08, 2020

I, S. Suresh, Son of S.R. Sathyanarayana, Hindu, aged **about 58 years**, having office at the Regional Directorate (South), Central Pollution Control Board, 1st and 2nd Floors, Nisarga Bhavan, A- Block, Thimmaiah Main Road, 7th D Cross, Shivanagar, Bengaluru – 560079 do hereby solemnly affirm and sincerely state as follows:-

1. That I am presently working as Scientist 'E' & Regional Director, Regional Directorate (South), Central Pollution Control Board (hereafter called as CPCB), Bengaluru and have been authorized to file the present compliance Status Report. I am fully conversant with the facts of the case and hence, competent and authorized to depose and swear the present compliance Status report as under:
2. That the Hon'ble National Green Tribunal, South Zonal Bench, Chennai, in the matter of Original Application No. 176 of 2013 (SZ) (Earlier OA No. 562 of 2018), V.P. Krishnamoorthy Vs. Union of India & Ors, passed orders dated 08.07.2020 directing CPCB to submit the status report regarding the high level meeting to be conducted as directed by this Tribunal by order dated 08.02.2019 and if it is not done, the reason for the same as well. They can coordinate that meeting for the purpose mentioned in that order. Then they can submit the proceeding of such meeting as well to this Tribunal. The Compliance Status Report on High Level Committee meeting conducted and Action taken to comply with committed action plan is enclosed as Appendix.



VERIFICATION

It is verified that the content of this report is based on actual field observations and office records, nothing has been concealed therein.

Signed and verified on this 15th day of December 2020 at Bengaluru

COUNSEL FOR
12th RESPONDENT

S. Suresh
15/12/2020
DEPONENT
S. SURESH
REGIONAL DIRECTOR
CENTRAL POLLUTION CONTROL BOARD
REGIONAL DIRECTORATE (SOUTH)
MIN. OF ENV, FORESTS & CC, GOVT. OF INDIA
BENGALURU - 560 079. MOB : 9480672128

S. Suresh
15/12/2020
DEPONENT
S. SURESH
REGIONAL DIRECTOR
CENTRAL POLLUTION CONTROL BOARD
REGIONAL DIRECTORATE (SOUTH)
MIN. OF ENV, FORESTS & CC, GOVT. OF INDIA
BENGALURU - 560 079. MOB : 9480672128

Appendix

Compliance Status Report on High Level Committee meeting conducted and Action taken to comply with committed action plan in the matter of O. A. No 176 of 2013 (SZ) (Earlier OA No 562 of 2018 (PB)), V. P. Krishnamurthy Vs Union of India & Ors, as per order dated 08.07.2020.

Background:

The Hon'ble National Green Tribunal, Southern Bench, Chennai, in the matter of O. A. No. 176 of 2013 (SZ) (Earlier O. A. No. 562 of 2018); V. P. Krishnamoorthy Vs. Union of India & Ors, passed order dated 08.07.2020 that:

“Considering the circumstances, we feel it appropriate to grant six months’ time to both parties to comply with the direction and also file the future progress report along with the health report to be submitted by the agency viz, Indian Council of Medical Research. Since learned counsel appearing for applicants in O. A Nos., 34 to 42 of 2014 submitted that the direction to supply drinking water may be extended, learned counsel appearing for BPCL submitted that they are undertaking that social obligation and they will provide the same continuously in future as well till the completion of remediation process and water quality improvement in that area. CPCB is also directed to submit the status report regarding the high level meeting to be conducted as directed by this Tribunal by order dated 08.02.2019 and if it is not done, the reason for the same as well. They can coordinate that meeting for the purpose mentioned in that order. Then they can submit the proceeding of such meeting as well to this Tribunal.

A copy of the said order is annexed at **Annexure-I**.

1. Status of High Level Committee Meeting

In compliance to Hon'ble NGT order dated 08.02.2019, a joint meeting at the high level was held on 01.03.2019 under Chairman CPCB; along with Chairman, TNPCB; CMD, M/s Chennai Metro Rail Corporation Ltd., (M/s CMRL) and CMD, M/s Bharat Petroleum Corporation Ltd (M/s BPCL), to take stock of the situation on remediation of BPCL oil contaminated site at Tondiarpet, Chennai. Joint committee has outlined a time bound action plan for remediation of BPCL Oil contaminated and the same was submitted before the Hon'ble NGT, Principal Bench, New Delhi vide CPCB's compliance status report dated 08.03.2019. Copy of the same is given at **Annexure-II**.

CPCB reviewed the status of action taken by M/s BPCL and submitted compliance status report dated 16.09.2019, before Hon'ble NGT. A copy of the report is given at **Annexure-III**. Subsequently, Hon'ble NGT had passed an order dated 18.09.2019 that;

“the CPCB directed to undertake that process in Coordination with ICMR and the State Pollution Control Board and conduct a study on health Hazards that has happened in that area and what is the compensation payable for the locality

people on account of the contamination of ground water due to the seepage of the oil from the oil refineries due to leakage of the pipelines of BPCL”.

2. Steps taken by CPCB in compliance of Hon’ble NGT order 18.09.2019

- i. CPCB requested TNPCB vide letter dated 18.10.2019 to engage Indian Council of Medical Research (ICMR) and to organise a meeting with BPCL to decide time bound action plan to complete the study on health hazards.
- ii. Accordingly, TNPCB convened meeting on 19.11.2019 at TNPCB, H.O., Chennai to discuss the scope and modalities of health study. The meeting was attended by the officials of CPCB, TNPCB, ICMR, M/s BPCL, and representative of M/s Environment Stratus (the consultant for remediation of oil contaminated site). Representatives of ICMR and M/s BPCL were apprised about the requirement of conducting health studies in time bound manner.
- iii. Representatives of ICMR explained the procedures involved in qualitative health impact study and possible effects of VOC emissions on human health. They also explained that a field study would be necessary to prepare project proposal with detailed scope of work. ICMR had agreed to take-up the study.
- iv. As decided in the aforesaid meeting, a team of Scientists from ICMR visited the oil contaminated area along with officials of TNPCB for understanding the site conditions. A consultative meeting was also held on 06.01.2020 involving team of experts from ICMR-NIE (Indian Council of Medical Research Institute – National Institute of Epidemiology), General Medicine (Madras Medical College), Environmental Engineering Department (IIT-Madras), National Institute of Occupational Health (ICMR-NIOH) and National Institute of Epidemiology (ICMR-NIE) to discuss and finalise the work plan for study, including health impact of the population exposed to oil pipeline-leak in Tondiarpet as well as in unexposed population in Roypuram area in Chennai.
- v. Subsequently, ICMR prepared a detailed proposal comprising scope of work, methodology, procedure for quantification of health impacts including project cost and timelines to complete the study. The said proposal was submitted on 28.02.2020 to TNPCB and CPCB. Accordingly, CPCB, Regional Director, Bengaluru coordinated with TNPCB and BPCL to expedite award of project to ICMR (a copy of the letter is annexed at **Annexure-IV**).
- vi. CPCB submitted the progress report before this Hon’ble NGT (SZ) on 18.03.2020 and requested to grant about 6 months’ time for completion of qualitative health study by ICMR. Hon’ble NGT in its hearing dated 08.07.2020 considered the request and granted six months’ time to both BPCL and ICMR to comply with direction and also file the future progress report along with the health report of ICMR.

3. Progress made in compliance of Hon'ble NGT order dated 08.07.2020

- i. CPCB, Regional Directorate, Bengaluru followed up with M/s BPCL vide letter dated 17.08.2020 to complete the following tasks and to submit the Action Taken Report to CPCB (a copy of the letter is annexed at **Annexure-V**):
 - a) As per the action plan decided in joint committee at the high level under the chairmanship of Chairman, CPCB on 01.03.2019 - upon completion of CMRL soil excavation works, M/s BPCL to submit a Detailed Project Report (DPR) for revised remediation scheme based on re-assessment of site along with site specific target levels (SSTLs) for remediation based on human health risk assessment. BPCL was requested to submit action plan within a week.
 - b) Install Soil Gas Probes to Monitor VOCs in Vadose zone of sub-soil at 3 locations in affected area, which shall become part of revised remediation scheme.
 - c) To augment SVE system by connecting all available wells to both SVE system and to operate both SVE system continuously to optimise soil vapour extraction.
 - d) To take immediate steps to entrust the health impact study to ICMR, so as to complete the said study before November 30, 2020 and submit the study report to TNPCB/CPCB.
- ii. In response to CPCB letter, M/s BPCL has submitted a work plan for post CMRL assessment works vide its letter dated 21.09.2020. CPCB has examined the said proposal and communicated point wise observations to TNPCB vide letter dated 22.10.2020 with request to review the proposal with additional inputs, if any at their end and to communicate the same to M/s BPCL for initiating post CMRL construction site assessment (a copy of the CPCB letter dated 22.10.2020 **Annexure-VI**).
- iii. CPCB has also sent reminder to TNPCB vide letter dated 11.12.2020 with request to coordinate with M/s BPCL for awarding the project to ICMR and complete the study in time bound manner.

Prayer

CPCB made all its effort to comply with directions of Hon'ble NGT, hence it humbly prayed that, Hon'ble Tribunal may issue suitable directions as below:

- a. TNPCB to review the work plan forwarded by CPCB and may authorise M/s BPCL for initiating re-assessment of site in post construction stage of CMRL works.
- b. TNCPB to intervene for early completion of health impact study through ICMR by coordinating with M/s BPCL to award the work, as the outcome of the study would help in assessing the compensation payable to the locality people for any possible health impacts on account of contamination of groundwater due to leakage of oil from pipelines of M/s BPCL.
- c. This answering Respondent No. 12 shall abide to any directions passed by the Hon'ble Tribunal

H. D. Jha
15/12/2020.

Annexure I

Item No.7 to 16

BEFORE THE NATIONAL GREEN TRIBUNAL
SOUTHERN ZONE, CHENNAI

Original Application No. 176/2013 (SZ)
(Earlier O.A. No. 562/2018)(PB)

With

Original Application No. 34/2014 (SZ)
(Earlier O.A. No. 563/2018) (PB)

With

Original Application No. 35/2014 (SZ)
(Earlier O.A. No. 564/2018) (PB)

With

Original Application No. 36/2014 (SZ)
(Earlier O.A. No. 565/2018) (PB)

With

Original Application No. 37/2014 (SZ)
(Earlier O.A. No. 566/2018) (PB)

With

Original Application No. 38/2014 (SZ)
(Earlier O.A. No. 567/2018) (PB)

With

Original Application No. 39/2014 (SZ)
(Earlier O.A. No. 568/2018) (PB)

With

Original Application No. 40/2014 (SZ)
(Earlier O.A. No. 569/2018) (PB)

With

Original Application No. 41/2014 (SZ)
(Earlier O.A. No. 570/2018) (PB)

With

Original Application No. 42/2014 (SZ)
(Earlier O.A. No. 571/2018) (PB)

(Through Video Conference)

Original Application No. 176/2013 (SZ)

V.P. Krishnamoorthy

Versus

....Applicant(s)

The Union of India & Ors.

....Respondent(s)

Original
ApplicationNo.34/2014(SZ)

K.S. Jayaraman

Versus

....Applicant(s)

The Union of India & Ors.

....Respondent(s)

Original
Application No. 35/2014 (SZ)

R. SelviApplicant(s)
Versus
The Union of India & Ors.Respondent(s)

Original Application No.
36/2014 (SZ)

K. UmachandranApplicant(s)
Versus
The Union of India & Ors.Respondent(s)

Original Application No.
37/2014 (SZ)

Smt. S. ShanthyApplicant(s)
Versus
The Union of India & Ors.Respondent(s)

Original Application No.
38/2014 (SZ)

G. Mahesh KumarApplicant(s)
Versus
The Union of India & Ors.Respondent(s)

Original Application No.
39/2014 (SZ)

Smt. R. VijayaApplicant(s)
Versus
The Union of India & Ors.Respondent(s)

Original Application No.
40/2014 (SZ)

K. Sampath KumarApplicant(s)
Versus
The Union of India & Ors.Respondent(s)

Original Application No.
41/2014 (SZ)

K. KamalakannanApplicant(s)
Versus
The Union of India & Ors.Respondent(s)

Original Application No.
42/2014 (SZ)

G. Purushothaman

Versus

....Applicant(s)

The Union of India & Ors.

....Respondent(s)

Date of hearing: 8.7.2020

CORAM:

HON'BLE MR. JUSTICE K. RAMAKRISHNAN, JUDICIAL MEMBER
HON'BLE MR. SAIBAL DASGUPTA, EXPERT MEMBER

Original Application No. 176/2013 (SZ)

For Applicant(s) :

Mr. S. Saravanan for

Mr. A.Yogeshwaran

For Respondent(s):

Mrs. Sumathi for

Mr. G. Karthikeyan, Asst. Solicitor
General for R1, R9 & R10

Mr. M. Mani Gopi for R2

Mr. Abdul Saleem &

Mr. S. Saravanan for R3

Mr. S. Saravanan for

AAV Partners R4

Mr. R. Senthilkumar for

Mr. Arjun Suresh for R5

Mr.Krishna Srinivasan &

Mr. Sivathanu Mohan for

Ramasubramaniam Associates - R6
BPCL

Mr.M.R.Gokulkrishnan for MoEF&CC - R7

Mr. Kumaresan for King & Patridge - R8

Mr. D.S. Ekambaram and

Mrs. Jayalakshmi for R12

Original Application No. 34/2014 to 42/2014 (SZ)

For Applicant(s) :

Mr. Kandhan Duraiswamy

For Respondent(s):

Mrs. M. Sumathi for

Mr. G. Karthikeyan, Asst. Solicitor
General - R1

Mr. M.R. Gokul Krishnan for R2

Mr. Krishna Srinivasan

Mr. Sivathanu Mohan for

Ramasubramaniam Associates – R3

Mr. M. Mani Gopi for R4.

Mr. Abdul Saleem &

Mr. S. Saravanan for TNPCB –R5

Mr. Kumaresan for

M/s. King & Patridge – R6

Mr. S. Saravanan for

M/s. A.A.V. Partners – R7

Mr. Arjun Suresh for

Dua Associates – R8

ORDER

As per order dated 8.2.2019, this Tribunal disposed of the cases, retaining the scope of remedial measures to be taken to restore the damage caused to environment with the following directions:

“In view of the above, the process of remediation is required to be completed at the earliest by the BPCL. The Chennai Metro Corporation has fully cooperate and remove every obstruction. Coordination of

BPCL and TNPCB is also necessary. The supervisory authority in the matter can be the Chairman, CPCB.

Accordingly, we direct that a joint meeting be held at the highest level with the participation of the Chairman, CPCB, Chairman, TNCPB, CMD, Chennai Metro Corporation and the CMD, BPCL within one month from today to take stock of the situation and to finalise further action plan in the matter. It may be considered whether the period of completion of work can be minimum and remediation work is completed at the earliest possible since almost six years have gone.

Apart from a sum of Rs.6 Lakhs deposited under the interim order, we direct the BPCL to deposit a further sum of Rs.3 Lakhs with the TNPCB within one month. The said amount may be paid to nine applicants before this Tribunal by TNPCB which will be treated as an ex-gratia payment. If some amount has already been withdrawn, the same will be adjusted.

We take on record the statement that the affected inhabitants were provided free potable water by the BPCL and other authorities.

The CPCB may furnish status report in the matter after six months by e-mail at ngt.filing@gmail.com. “

and posted the case to 18.9.2019 for consideration of report.

2. On 18.9.2019, this Tribunal had considered the report submitted by Central Pollution Control Board dated 16.9.2019 and passed the following order:

“Some of the residents of the affected locality who are present in person submitted that the contamination of ground water has not been remedied and the contamination is still subsisting. The officials of the CPCB also submitted that the contamination still subsists and it will take at least 5 to 6 years to rectify the same. The Pollution Control Board is directed to continue to check up the ground water quality and further remedial measures if any required can be directed by them which has to be done by the BPCL. The counsel appearing for the BPCL submitted that they are supplying the water in tankers for the use of the residents of the affected locality that is being still continued. The same can be continued until further orders passed by the Hon’ble Tribunal or till the remediation method has been completed and found successful and the quality of the ground water is improved to the extent of potable water whichever is later.

The CPCB officials submitted that the residents of the locality may be directed not to use the ground water for drinking purposes. They cannot use the ground water from the affected are we directed so. The official of the CPCB submitted that the assessment of compensation in coordination with the ICMR till take some more time. The CPCB is

directed to undertake that process in coordination with the ICMR and the State Pollution Control Board and conduct a study on health hazards that has happened in that area and what is the compensation payable for the locality people on account of the contamination of ground water due to the seepage of the oil from the oil refineries due to leakage of the pipelines of BPCL.

The committee is directed to complete the exercise within a period of 6 months and submit a report to this Tribunal by e-mail for consideration of the report.

The CPCB is also directed to conduct a water quality study in that area and submit a report in that regard as well before the next date of hearing.”

and posted the case to 18.3.2020 for consideration. On 18.3.2020, Central Pollution Control Board has submitted a report and wanted six months time to submit the final report and at the request of M/s. Bharat Petroleum Corporation Ltd, it was adjourned for filing of objection to the report and in the mean time directed the committee to proceed with the ongoing remediation process. The Tribunal also considered the submission made by some of the applicants who were present in court that adequate quantity of potable water was not being supplied and they were earlier providing 12,000 litres per day and now it had been reduced to 9,000 litres and there was a lot of

leakage of water from the tanker thereby necessary quantity of water **did** not reach the beneficiaries. Learned counsel for M/s. Bharat Petroleum Corporation Ltd., submitted that they were supplying 18,000 litres of potable water per day through Chennai Metro Water Supply Ltd., and if there was any loss of water due to leakage, Chennai Metro Water Supply Ltd., has to rectify the same. We had directed M/s. Bharat Petroleum Corporation Ltd., to produce the documents showing the quantity of water supplied by them and posted the case to consider the question of meeting of the expenses for conducting the health studies and also objections to be filed by M/s. Bharat Petroleum Corporation Ltd., and adjourned to 6.5.2020. On 6.5.2020, the case was adjourned to 9.6.2020 by notification. On 9.6.2020, it was taken up through Video Conference and for consideration of reply and documents; the matter was adjourned to 22.6.2020. On 22.6.2020, this Tribunal had considered the report of Central Pollution Control Board and also the compliance report submitted and posted the case to today.

3. When the matter came up for hearing today through Video Conference , Mr. S. Saravanan represented Mr. Yogeswaran, counsel for appellant in O.A.No.176 of 2013, Mr. Kandan Duraiswamy represented applicants in O.A.Nos.34 to 42 of 2014, Mrs. M. Sumathi represented Mr. G. Karthikeyan, Assistant Solicitor General for first respondent in O.A.No.176 of 2013, Mr. Mani Gopi represented second

respondent in O.A.No.176 of 2013 and fourth respondent in O.A.Nos.34 to 42 of 2014, Mr. M.R. Gokul Krishnan appeared for MoEF & CC in all these cases, Mr. Abdul Saleem through Mr. S. Saravanan represented Tamil Nadu Pollution Control Board in all these cases, Mr. Krishna Srinivasan appeared for BPCL in all these cases, Mr. D.S. Ekambaram represented through Mrs. P. Jayalakshmi for Central Pollution Control Board in O.A.176 of 2013, Mr. Arjun Suresh represented CPCL, Mr. Kumaresan represented M/s. King and Patridge for HPCL.

4. We have extracted the objections filed by BPCL in our order dated 22.6.2020. We have also extracted the reply affidavit filed by Central Pollution Control Board dated 19.6.2020.

5. Learned counsel appearing for BPCL submitted that as regards the compensation aspect is concerned, claim by the applicants in O.A.Nos.34 to 42 of 2014 has been closed by virtue of the order dated 8.2.2019 passed by the Principal Bench of NGT through Video Conference. The other question remains is only regarding remediation process alone. On the other hand, learned counsel appearing for applicants in all these cases mentioned that apart from compensation, they have also made a prayer for restoration of damage caused to environment which has to be considered on the basis of remediation process undertaken by BPCL. It may be

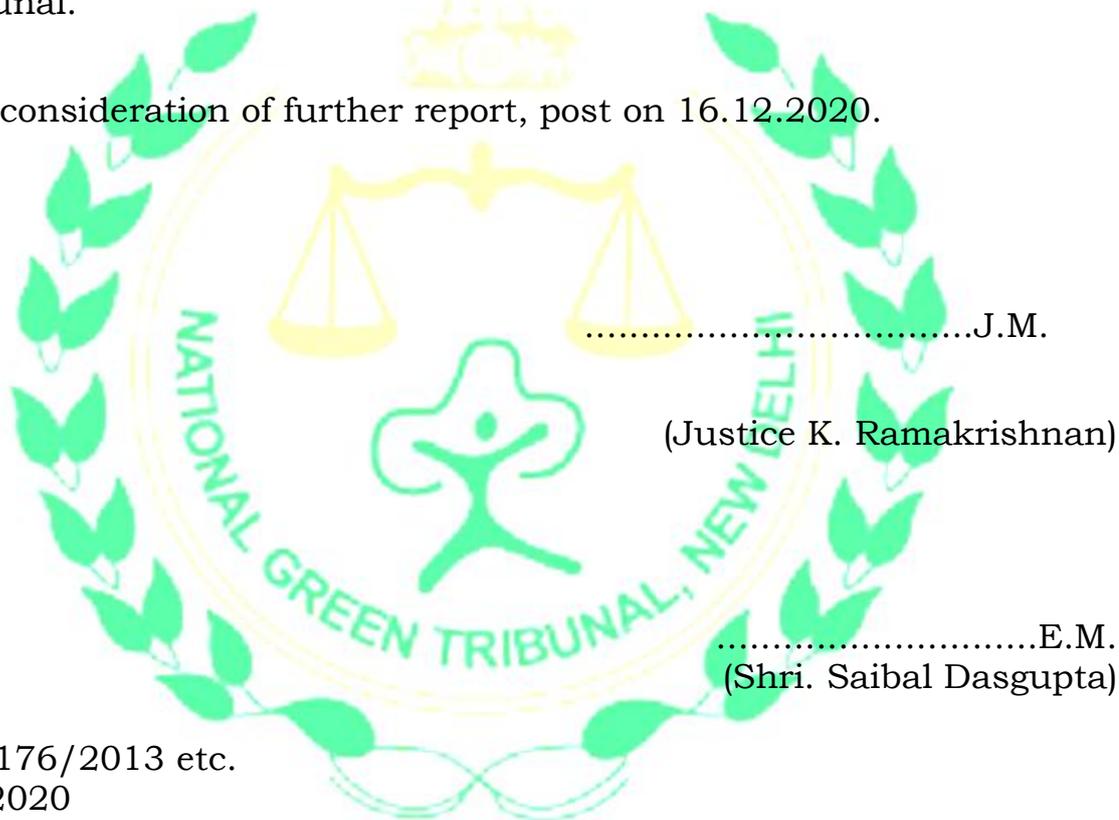
mentioned here that while disposing of the matter, this Tribunal has retained the supervision regarding remediation to be undertaken by BPCL on the basis of the report to be filed by CPCB. Further, by the subsequent order on the basis of the recommendation made by CPCB, it was found that the water in that area has been affected and is not fit for drinking purpose. It is on that basis we have directed the BPCL to supply water to the people of the locality. Along with the counter statement filed by the BPCL, they have also produced certain documents to show the supply of water as directed. We also directed BPCL to undertake the health study by Indian Council for Medical Research. That is for the purpose of considering the question of over all health impact on the villagers caused on account of pollution of ground water and further responsibility to be imposed on BPCL to resolve that issue. It is also seen from the statement filed by BPCL that they have made arrangement by floating tender and due to the present situation they are not able to complete the same for which they want some more time, as presently Expert from Indian Council of Medical Research may not be available. Central Pollution Control Board is directed to give terms and conditions and scope of the study to be conducted by Indian Council of Medical Research so that this can be placed before Indian Council of Medical Research when tenders are finalised for that purpose. Learned counsel for BPCL submitted that OA.34/14 to 42/14 can be closed.

6. So considering the circumstances that the remediation process is still in progress, we direct Central Pollution Control Board to consider the objections filed by BPCL in respect of their report regarding the deficiencies in the present method of remediation if any, or any other direction is to be given in that regard **and** after conducting scientific study such direction can be given by them. BPCL is directed to complete the tender process for entrusting to Indian Council of Medical Research to conduct the health study at the earliest so that the Indian Council of Medical Research can proceed with the study and submit the report to CPCB who can forward the same to this Tribunal along with their status report regarding the progress of remediation that is going on along with further direction if any given by them after considering the objection filed by BPCL in respect of the deficiencies noted by them in the present remediation process of remedying the soil contamination.

7. Considering the circumstances, we feel it appropriate to grant six months time to both parties to comply with the direction and also file the future progress report along with the health report to be submitted by the agency viz., Indian Council of Medical Research. Since learned counsel appearing for applicants in O.A.Nos.34 to 42 of 2014 submitted that the direction to supply drinking water may be extended, learned counsel appearing for BPCL submitted that they are undertaking that social obligation and they will provide the same

continuously in future as well till the completion of remediation process and water quality improvement in that area. CPCB is also directed to submit the status report regarding the high level meeting to be conducted as directed by this Tribunal by order dated 8.2.2019 and if it is not done, the reason for the same as well. They can coordinate that meeting for the purpose mentioned in that order. Then they can submit the proceeding of such meeting as well to this Tribunal.

For consideration of further report, post on 16.12.2020.



.....J.M.

(Justice K. Ramakrishnan)

.....E.M.
(Shri. Saibal Dasgupta)

O.A. 176/2013 etc.
8.7. 2020
Kkr

Annexure II

**BEFORE THE NATIONAL GREEN TRIBUNAL
PRINCIPAL BENCH, NEW DELHI
O.A. NO. 562/2018
(Earlier O. A. No. 176/2013 (SZ))**

IN THE MATTER OF:**V.P. KRISHNAMOORTHY****APPLICANT****VERSUS****UNION OF INDIA & ORS****RESPONDENTS****INDEX**

SI. NO.	PARTICULARS	PAGE NO.
1.	MINUTES OF THE MEETING ON FURTHER ACTION PLAN FOR REMEDIATION OF BPCL OIL CONTAMINATED SITE AT TONDIARPET HELD ON 01/03/2019 AT CHENNAI.	
2.	ANNEXURE- I LIST OF OFFICIALS PARTICIPATED IN AFORESAID MEETING.	
3.	ANNEXURE- II HON'BLE TRIBUNAL ORDER DATED:- 08.02.2019	


B. VINOD BABU
ADDITIONAL DIRECTOR
CENTRAL POLLUTION CONTROL BOARD
PARIVESH BHAWAN, EAST ARJUN NAGAR
DELHI- 110032

DATED: - 08.03.2019**PLACE: - DELHI**

Minutes of the Meeting on Further Action Plan for Remediation of BPCL Oil Contaminated site at Tondiarpet held on 01/03/2019 at Chennai – Hon'ble NGT in the matter of O. A. No. 562/2018 (earlier O. A. No. 176/2013 (SZ))

While disposing the Original Application No. 562/ 2018 (earlier O. A. No. 176/2013 (SZ)); V.P. Krishnamoorthy Vs Union of India & Ors on 08/02/2019, Hon'ble NGT directed that a joint meeting at the highest level be held under supervision of Chairman, CPCB, along with Chairman, TNPCB; CMD, Chennai Metro Rail Corporation Ltd (CMRL) and CMD, Bharat Petroleum Corporation Ltd (BPCL) to take stock of the situation on present remediation of BPCL oil contaminated site at Tondiarpet, Chennai and to finalize further Action Plan on Remediation. The said meeting was held under the chairmanship of Chairman, CPCB at Chennai on March 01, 2019.

Prior to meeting, Chairman CPCB, along with officials from CPCB, TNPCB, CMRL and BPCL visited the contaminated area and the Soil Vapour Extraction (SVE) System, which has been functioning partially since commencement of CMRL works. The team also visualised on-going construction work of CMRL and how the CMRL works have hampered original SVE installations. Space limitations for connecting existing SVE system to remaining remediation wells was also shown and explained to inspecting team. Subsequently, meeting was held at nearby BPCL Terminal at Tondiarpet. List of officials participated in aforesaid meeting is given at **Annexure -I**.

1. Chairman, CPCB welcomed all participants and asked for background information and details of remediation activities carried out so far.
2. Representative of BPCL along with a consultant provided following information;
 - i. Leakage of Motor Spirit and High Speed Diesel occurred from underground 16-inch diameter product pipe lines laid between Chennai port to BPCL terminal. These pipelines were decommissioned subsequent to reports of leakage at Varadaraja Perumal Street, at Tondiarpet.
 - ii. A public complaint was received from public of Tondiarpet regarding contamination of groundwater with petroleum products and the complaint was investigated by TNPCB on 13/07/2013. Inspection revealed presence of petroleum products in groundwater.
 - iii. A PIL petition was filed in Hon'ble NGT, South Bench, Chennai by Mr. V.P. Krishnamoorthy and 8 other residents against 11 respondents, which was admitted as Application no. 176 of 2013 in August 2013.
 - iv. As per the directions issued by Central Pollution Control Board, BPCL has stopped use of the oil pipelines from 20/07/2013 onwards. BPCL removed 10m segment of the unused pipelines, pipelines were dummied by closing the open end with welded flange and abandoned the pipeline.



- v. BPCL started supplying drinking water to the affected residents and started cleaning of affected Bore well from 15/07/2013.
- vi. BPCL bailed out around 7,287 litre of oil and 2,07,395 litre of oil contaminated water from 18 bore wells between July, 2013 – January, 2015. The oil contaminated products were collected and stored in the tank within terminal facility of BPCL. These contaminated water was treated in the ETP owned by M/s Chennai Petroleum Corporation, Manali.
- vii. As per instruction of TNPCB, BPCL utilised expert services of Indian Institute of Technology, Madras (IITM) to carryout initial investigation regarding extent of a petroleum release to the subsurface. Subsequent to preliminary investigation by IITM, BPCL called tenders to engage a remediation contractor M/s Stratus Environment INC. in December, 2014.
- viii. Sorbent material was placed in existing wells to remove free phase petroleum.
- ix. Consultant took 17 months to complete survey, preparation of work plan, concurrence from IITM, permission from different agencies to install bore wells/ 27-ground monitoring wells, 13-Soil Vapour Extraction wells & 10-Air Sparge wells.
- x. Remediation work was monitored by IIT-M till March, 2016, thereafter NGT in its order dated 17/03/2016 directed CPCB to take up the supervision of remediation process, accordingly, CPCB monitored the remediation work and submitted outcome report to Hon'ble NGT.
- xi. In consultation of IITM, M/s Stratus environmental, INC. opted Soil Vapour Extraction system as remedial option and the same was commissioned on 20/05/2016 by connecting Air Sparging wells and SVE wells.
- xii. Underground piping network of SVE system got disconnected due to commencement of excavation work for underground CMRL Metro Station. This has resulted into stoppage of SVE system with effect from 16/09/2018 and relocation to another space within the Plot of M/s Devi Polymers and re-commissioning of the system from 24/10/2018 with connection to only 3 wells.
- xiii. As per the instructions of CPCB, excavated soil was tested for Total Petroleum Hydrocarbon (TPH) concentration and after confirming the concentration to less than 5000 mg/kg, the soil was disposed of.
- xiv. Extracted oil contaminated water of 5,450 kL was collected in course of soil excavation by CMRL and the same being stored in one of the storage tanks (T-22) in Oil Depot.



- xv. As per monitoring carried out by M/s Stratus environmental, INC., around 12,556 kg of TPH out of estimated quantity of 32,797 kg (29,952 kg of DRO + 2,845 kg of GRO) was removed from contaminated soil. About 70 litre of petroleum products also recovered by using 104 absorbent socks. No freer flow oil observed since December, 2018.
- xvi. At present SVE system is operated with 3 wells. However, there is scope for connecting 7 more wells (3 SVE wells and 4 Air Sparge wells) located in highly affected area once the CMRL / Local authorities provides access.
3. After hearing details of activities carried out for remediation, Chairman, CPCB discussed the following points with concerned officials of TNPCB, BPCL, CMRL and Consultant;
- (i) Validity of method adopted for assessing quantity of petroleum product leaked into sub soil vis-à-vis quantity of oil substances recovered and total quantum of contaminated soil/groundwater.
 - (ii) Time required for complete remediation.
 - (iii) Standard Operating Procedure adopted to achieve remediation level.
 - (iv) Details of health studies, if any conducted in affected population.
 - (v) Scope and time required for connecting additional wells to existing SVE system.
 - (vi) Adequacy of existing SVE system to speed up remediation activity.
 - (vii) Status of water supply and its quantity being provided to residents residing in the area.
 - (viii) The status of monitoring of water extracted during excavation and its treatment and disposal
4. After detailed deliberations with representatives of BPCL, CMRL and TNPCB and considering prevailing field difficulties and statutory requirements, further action plan for remediation of BPCL Oil Contaminated Site is outlined below;

Further Action Plan for Remediation of BPCL Oil Contaminated Site

S. No.	Further Action Point	Time Frame & Agency
1.	BPCL to connect remaining 7 wells to existing SVE system to increase current rate of extraction. They shall work out right way to install pipelines of about 70m length in consultation with TNPCB. Statutory permissions shall be taken.	1 Month
2.	After obtaining statutory permission from concerned departments, the pipelines to be connected within 30 working days	30 days after obtaining local permission
3.	BPCL to find alternate place to install new SVE system in consultation with TNPCB to speed up the remediation activity.	1 Month

S. No.	Further Action Point	Time Frame & Agency
4.	Local authority shall provide a space of 20 x 20 sq. ft. government land temporarily for relocating SVE system from current location.	BPCL to submit proposal immediately.
5.	Upon completion of structure, if required, CMRL shall provide temporary space of 20ft x 20ft on roof top of its structure.	CMRL
6.	A qualitative health impact study on the population in affected area be conducted by obtaining information from local government hospitals, primary health centres etc.. TNPCB may engage any expert or an agency who can conduct such studies. The study to be funded by BPCL	TNPCB 3 months
7.	BPCL to install Soil Gas Probes to monitor VOCs in vadose zone of sub-soil at 3 locations in affected area, which shall become part of revised remediation scheme post completion of CMRL works.	2 Months
8.	Identify applicable standards in monitoring or assessing remediation works in similar contamination matrices.	CPCB
9.	Upon completion of soil excavation works, a revised remediation scheme to be implemented. BPCL to submit a Detailed Project Report (DPR) for revised remediation scheme based re-assessment of site along with site specific target levels (SSTLs) for remediation based on human health risk assessment. It shall specify committed duration to complete the remediation. A scope of work for DPR be submitted to TNPCB within 3 weeks.	3 weeks
10.	To ensure adequate storage capacity to store the extracted water from CMRL site till finalisation of treatment plan. TNPCB/CPCB to identify parameters as per international standards for disposal of treated water without harming environment.	3 Months
11.	BPCL to submit proposal to TNPCB for disposal of 7,287 litre of oil and 2,07,395 litre of oil contaminated water presently stored in a tank within BPCL Storage Depot.	2 Weeks

K.S.

S. No.	Further Action Point	Time Frame & Agency
12.	Till the time a revised remediation scheme is finalised, BPCL to continue to carryout assessment and monitoring of existing SVE system and CMRL works as per earlier recommendations of CPCB/TNPCB.	Till completion of CMRL works
13.	BPCL shall ensure adequate and quality of water supply to affected population in contaminated area.	

The meeting ended with thanks to Chair

MOK

Item Nos. 02 to 11

**BEFORE THE NATIONAL GREEN TRIBUNAL
PRINCIPAL BENCH, NEW DELHI
(Through Video Conferencing)**

Original Application No. 562/2018
(Earlier O. A. No. 176/2013) (SZ)

WITH

Original Application No. 563/2018
(Earlier O. A. No. 34/2014) (SZ)

WITH

Original Application No. 564/2018
(Earlier O. A. No. 35/2014) (SZ)

WITH

Original Application No. 565/2018
(Earlier O. A. No. 36/2014) (SZ)

WITH

Original Application No. 566/2018
(Earlier O. A. No. 37/2014) (SZ)

WITH

Original Application No. 567/2018
(Earlier O. A. No. 38/2014) (SZ)

WITH

Original Application No. 568/2018
(Earlier O. A. No. 39/2014) (SZ)

WITH

Original Application No. 569/2018
(Earlier O. A. No. 40/2014) (SZ)

WITH

Original Application No. 570/2018
(Earlier O. A. No. 41/2014) (SZ)

WITH

Original Application No. 571/2018
(Earlier O. A. No. 42/2014) (SZ)

V. P. Krishnamoorthy

Applicant(s)

Versus

The Union of India & Ors.

Respondent(s)

WITH

K. S. Jayaraman

Applicant(s)

Versus

The Union of India & Ors.

Respondent(s)

WITH

R. Selvi

Applicant(s)

Versus

The Union of India & Ors.

Respondent(s)

WITH

K. Umachandran

Applicant(s)

Versus

The Union of India & Ors.

Respondent(s)

WITH

Smt. S. Shanthi

Applicant(s)

Versus

The Union of India & Ors.

Respondent(s)

WITH

G. Mahesh Kumar

Applicant(s)

Versus

The Union of India & Ors.

Respondent(s)

WITH

Smt. R. Vijaya

Applicant(s)

Versus

The Union of India & Ors.

Respondent(s)

WITH

K. Sampath Kumar

Applicant(s)

Versus

The Union of India & Ors.

Respondent(s)

WITH

K. Kamalakannan

Applicant(s)

Versus

The Union of India & Ors.

Respondent(s)

WITH

G. Purushothaman

Applicant(s)

Versus

The Union of India & Ors.

Respondent(s)

Date of hearing: 08.02.2019

CORAM:

**HON'BLE MR. JUSTICE ADARSH KUMAR GOEL, CHAIRPERSON
HON'BLE MR. JUSTICE S.P. WANGDI, JUDICIAL MEMBER
HON'BLE MR. JUSTICE K. RAMAKRISHNAN, JUDICIAL MEMBER
HON'BLE DR. NAGIN NANDA, EXPERT MEMBER**

For Applicant/Appellant(s):

Mr. Yogeshwaran, Advocate
Mr. E. Maharajan, Advocate

For Respondent (s):

Mr. M. Sumathi, Advocate for
Karthikeyan (ASG) for R.1
Ms. Vidya Lakshmi Vipin and Mr.
Abdul Salem, Advocate for TNPCB
Mr. Kamelsh Kannan, Advocate for
State of Tamil Nadu

Mr. S. Arjun Suresh, Advocate for
 R-5- CPCL
 Mr. Krishna Srinivasan, Advocate for
 R-6-BPCL
 Mr. D. S. Ekamba Ram, Advocate for
 R-12, CPCB
 Mr. M. Vijayan, Advocate for R-8, HPCL
 Mr. Jayesh B. Dolia, Advocate for CMRL

ORDER

- 1 The issue for consideration is to remedy the situation which arose on account of oil leak from the pipelines operated by the oil companies at Chennai on 16.07.2013.
- 2 The applicant, V. P. Krishna Moorthy, moved this Tribunal on 22.07.2013 seeking direction to shift the pipelines and direction for action against the persons responsible for causing the leak, apart from restoration of the area and compensation to the victims. Other applicants seek compensation for loss to wells, depriving them of the drinking water
- 3 Vide order dated 22.09.2015, verification report submitted by the Dr. Indumathi, Professor IIT was considered to ascertain the extent of damage. The said expert was requested to give further details in the form of a status report. Report of the Tamil Nadu Pollution Control Board (TNPCB) was also considered indicating the deficiencies in the remediation work.
- 4 According the applicant, the oil companies were negligent in conducting their operations. Consequence of oil leak was contamination of soil and water in the area.
- 5 The matter has been considered by this Tribunal in the last six years.
- 6 On 17.03.2016, the Tribunal noted the stand of the TNPCB about the cause of contamination. The Tribunal noted the directions issued by the TNPCB dated 16.07.2013 to the Bharat Petroleum Corporation

Limited (BPCL) to clean up contaminated borewells and soil and supply drinking water to the affected people. Directions of the Central Pollution Control Board (CPCB) dated 19.07.2013 requiring BPCL to come out with a credible action plan for remedial measures were also noted. The BPCL admitted that it was taking steps in the matter in the light of expert opinions. It had supplied requisite drinking water and removed contamination under the guidance of experts. The Tribunal directed that the remediation process may be continued and the CPCB may inspect the area and conduct a study.

7 The matter was thereafter reviewed on 23.02.2017 with reference to the location for shifting of Soil Vapour Extraction (SVE) unit, alteration in pipelines network, acquiring another Soil Vapour Extraction unit for remediation process and time bound action plan for disposal of oil contaminated ground water. TNPCB was directed to monitor the progress.

8 Vide order dated 21.04.2017, a sum of Rs. 6 Lakhs by way of interim arrangement was directed to be deposited with the Member Secretary of the TNPCB to meet the claim for compensation of the affected individuals. Finally, on 24.10.2018, the Tribunal reviewed the entire matter and noted the stand of BPCL that the remediation work was to be completed within three years. The work had commenced in May, 2016 but could not be completed on account of interruption.

9 The Tribunal directed the BPCL and the TNPCB to submit status report.

10 Accordingly, status report has been filed by the TNPCB on 06.12.2018 stating that the pipelines of the oil companies are passing through the congested area underground. On receiving information about the incident of leakage, the pipelines were made non-functional after a study by the IIT, Madras. Global tender for environmental

assessment and remediation of the contaminated site was floated and the work was allotted to M/s. Stratus Environmental Inc., California at the cost of Rs. 11.99 Crores. The work commenced in January, 2015 and tender period was 42 months. It was confirmed that fuels were released to the subsurface and 29,952 kg of diesel was found in the soil within 50 feet Below Ground Level (BGL) and approximately 2,845 kg of Gasoline Range Organics (GRC) was present in soil within 50 feet BGL.

- 11 BPCL undertook the remediation process which started in May, 2016. In the process, the BPCL provided 19 number of shallow wells, 8 number of deep bore well, 9 soil vapour extraction well and 9 air sparging wells in and around the TH Road junction and VP. Koil Street of Tondiarpet. One Soil Vapour Extraction system (SVE) has also been installed at the vacant site of M/s. Devi Polymer, No. 231, T.H. Road, Tondiarpet. Twenty-seven groundwater monitoring wells, 18 remediation wells (9-SVE, 9-AS) were installed during May 2015 and September 2015. After hooking up the remediation wells with the SVE, the system started functioning during May-2016 Prior to commencement of the remediation process, the unit bailed out oil contaminated water from 18 bore wells immediately after the incident happened in July 2013 up to January 2015. Around 7.287 KL of oil and rest of 207.395 KL of water was collected and stored in the tank within the Terminal facility at Tondiarpet and then treated in the Effluent Treatment Plant owned by M/s Chennai Petroleum Corporation, Manali.

- 12 It is submitted that the remedial process was interrupted by the alignment project of the Chennai Metro Rail passing from the remediation site which resulted in disconnection of transmission pipeline network from the Soil Vapour Extraction wells, Air Sparging

Wells and monitoring wells laid already for the purpose for carrying out remediation.

- 13 With the directions of the Tribunal and the TNPCB, the work was resumed. However one segment of the pipe line connecting the Soil Vapour Extraction wells, Air Sparging wells, monitoring wells with the Soil Vapour Extraction system within the premises of M/s Devi Polymers, have not been disconnected since that the area was left out by CMRL execution of land acquisition and now under the custody of M/s. Devi Polymers. Consequently, the Soil Vapour Extraction system was operated only with the two Soil Vapour Extraction wells SVE-8 and SVE-9, and one Monitoring well MW-16A. Consequent to the execution of excavation of these segment of CMRL project, it has resulted in abandonment of three Soil Vapour Extraction wells, namely, SCV-2, SCV-3 & SCV-10, four Air Sparging wells namely AS-1, AS-3, AS-8 & AS-10, six shallow monitoring wells namely MW-6A, MW-8A, MW-9A, MW-12A, MW-17A, MW-19A and one Deeper Monitoring well MW-178. After shifting and relaying of the transmission pipelines, the soil vapor extraction wells SVE-8 & SVE-9, and one Monitoring well MW-16A were hooked up again with the SVE system and restarted again on 27th October 2018. BPCL has reported that 12556 kg of Petroleum hydrocarbon has been removed through the SEV out of the estimated quantity of 32799 kg. Nearly about 70 litres of oil has also been collected through the absorbent socks which have been installed in seven wells. Currently, due to the prevailing work under taken by CMPL, adequate space is not available for the installation of wells. Once the Metro Rail work is completed viable locations for additional wells will be identified. BPCL and their contractors M/s. Stratus Environment incorporated are looking for alternate viable locations for installation these wells with the guidance of TNPCB. As per expenditure statement given by BPCL,

total estimated remediation cost was 11.99 Crores as on 08.12.2014 and the same was revised and the revised value is 13.45 Crores (with tax Rs. 15.874 Crores) as on 25.10.2018. The total expenditure for the implementation of remediation incurred so far is Rs. 5.52 Crores. Further, BPCL has reported that "due to the activities of CMRL and space available only for operating one SVE system, it will take two more years to complete the remediation activities. However, this period may be significantly reduced if space is made available to them for installation of second SVE system after the completion of the construction activities of CMRL". However the unit is yet to furnish further proposals for providing new wells in place of the abandoned wells and additional SVE system. It is respectfully submitted that regarding the issue of assessment of liabilities and sharing of cost for the remediation is concerned, the TNPCB has already issued direction, to BPCL on 11.09.20013 stating that BPCL is solely responsible for the contamination and shall bear the entire cost of investigation and remediation.

14 In view of the above, the process of remediation is required to be completed at the earliest by the BPCL. The Chennai Metro Corporation has to fully cooperate and remove every obstruction. Coordination of BPCL and TNPCB is also necessary. The supervisory authority in the matter can be the Chairman, CPCB.

15 Accordingly, we direct that a joint meeting be held at the highest level with the participation of the Chairman, CPCB, Chairman, TNPCB, CMD, Chennai Metro Corporation and the CMD, BPCL within one month from today to take stock of the situation and to finalise further action plan in the matter. It may be considered whether the period for completion of work can be minimum and remediation work is completed at the earliest possible since almost six years have gone.

- 16 Apart from a sum of Rs. 6 Lakhs deposited under the interim order, we direct the BPCL to deposit a further sum of Rs. 3 Lakhs with the TNPCB within one month. The said amount may be paid to nine applicants before this Tribunal by TNPCB which will be treated as an *ex-gratia* payment. If some amount has already been withdrawn, the same will be adjusted.
- 17 We take on record the statement that the affected inhabitants were provided free potable water by the BPCL and other authorities.
- 18 The CPCB may furnish status report in the matter after six month by e-mail at ngt.filing@gmail.com.

A copy of this order be sent to the CPCB by e-mail for coordination and compliance.

All the applications will stand disposed of.

The report received from the CPCB may be put up for consideration on 18.09.2019.

Adarsh Kumar Goel, CP

S.P. Wangdi, JM

K. Ramakrishnan, JM

Dr. Nagin Nanda, EM

February 8, 2019
 Original Application No. 563/2018
 (Earlier O. A. No. 34/2014) (SZ) and other connected matters
 DV and JG

BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL
PRINCIPAL BENCH, NEW DELHI
O.A. No. 562 OF 2018
(EARLIER O.A No. 176/2013 (SZ))

IN THE MATTER OF:**V.P. KRISHNAMOORTHY****...APPLICANT****VERSUS****UNION OF INDIA & ORS.****...RESPONDENTS****INDEX**

SI NO.	PARTICULAR	PAGE NO.
1.	COMPLIANCE STATUS ON FURTHER ACTION PLAN FOR REMEDIATION OF BPCL OIL CONTAMINATED SITE AT TONDIARPET, CHENNAI, TAMIL NADU OF HON'BLE NGT ORDER DATED 08.02.2019.	
2.	ANNEXURE -- I REVIEW OF ON-GOING REMEDIATION WORKS AND FURTHER ACTION PLAN FOR REMEDIATION OF BPCL OIL CONTAMINATED SITE AT TONDIARPAT, CHENNAI, TAMIL NADU.	
3.	ANNEXURE-II INDICATIVE REMEDIATION STANDARDS FOR CONTAMINATED SOIL.	
4.	ANNEXURE -III HON'BLE TRIBUNAL ORDER DATED 08.02.2019	



(G. RAMBABU)
SCIENTIST 'D'

CENTRAL POLLUTION CONTROL BOARD
PARIVESH BHAWAN
EAST ARJUN NAGAR DELHI- 110032

DATED: 16.09.2019**PLACE: DELHI**

Compliance Status Report on further Action Plan for Remediation of BPCL Oil Contaminated Site at Tondiarpet, Chennai, Tamil Nadu on behalf of Central Pollution Control Board in compliance of the Hon'ble NGT Order dated 08.02.2019, in the matter of O. A. No. 562/2018 (Earlier O. A. No. 176/2013 (SZ)); V. P. Krishnamoorthy Vs. Union of India &Ors

Hon'ble National Green Tribunal (NGT) in the matter of O. A. No. 562/2018 (Earlier O. A. No. 176/2013 (SZ)); V. P. Krishnamoorthy Vs. Union of India & Ors., has passed an Order dated 08.02.2019, directing that a joint meeting at the highest level be held under supervision of Chairman, CPCB, along with Chairman, TNPCB; CMD, Chennai Metro Rail Corporation Ltd (CMRL) and CMD, Bharat Petroleum Corporation Ltd (BPCL) to take stock of the situation on present remediation of BPCL oil contaminated site at Tondiarpet, Chennai and to finalize further Action Plan on Remediation.

In compliance to above order of Hon'ble NGT, a meeting was held under the chairmanship of Chairman, CPCB at Chennai on March 01, 2019 to review ongoing remediation work and suggest further action plan for remediation of BPCL oil contaminated site at Tondiarpet. Prior to meeting, Chairman CPCB along with officials from CMRL, BPCL, TNPCB inspected the contaminated site and Soil Vapor Extraction (SVE) system installed for remediation of contaminated soil and groundwater. During the visit, remediation system was functioning partially due to ongoing excavation and construction works of Chennai Metro Rail Corporation (CMRL).

In the said review meeting, actions taken so far by M/s BPCL, TNPCB and CPCB was reviewed and further action plan for remediation of BPCL oil contaminated site at Tondiarpet, has been prepared. The same has been filed before Hon'ble Tribunal by CPCB on 08/03/2019 (given at Annexure-I).

Compliance status on further Action Plan for Remediation of BPCL Oil Contaminated Site at Tondiarpet is given as below:

S. No.	Further Action Point	Time Frame & Agency	Compliance status
1.	BPCL to connect remaining 7 wells to existing SVE system to increase current rate of extraction. They shall work out right way to install pipelines in consultation with TNPCB. Statutory permissions shall be taken.	1 Month	Complied. BPCL has installed 02 new wells (SVE-2a & SVE-3a) at TH Road adjacent to the CMRL site. The pipeline relaying works were completed and reconnected the 02 new wells (SVE-2a, SVE-3a) with existing 07 wells (SVE-1, SVE-4, SVE-5, SVE-7, SVE-8, SVE-9 and SVE-16A).
2.	After obtaining statutory permission from concerned departments, the pipelines to be	30 days after obtaining	Complied. Pipelines are connected.

S. No.	Further Action Point	Time Frame & Agency	Compliance status
	connected within 30 working days	local permission	
3.	BPCL to find alternate place to install new SVE system in consultation with TNPCB to speed up the remediation activity.	1 Month	<p>Complied. BPCL has identified a site at Varatharajaperumal Koil Street, Tondiarpet and executed agreement with the Landlord on 01.06.2019.</p> <p>New SVE system has been imported and installed on 31.08.2019.</p> <p>Yet to obtain permission from Greater Chennai Corporation to carry out Road cutting works to lay new pipelines for connecting the 2nd SVE system, the same is anticipated by 30.09.2019.</p> <p>Further, BPCL has also applied to Tamil Nadu Electric Board for getting permission of power connection and same is expected on or before 30.09.2019.</p>
4.	Local authority shall provide a space of 20 x 20 sq. ft. government land temporarily for relocating SVE system from current location.	BPCL to submit proposal immediately.	Complied. SVE system is already installed on private land at Varatharaja perumal Koil Street, Therefore, additional space may not be required.
5.	Upon completion of structure, if required, CMRL shall provide temporary space of 20ft x 20ft on roof top of its structure.	CMRL	<p>Complied. CMRL agreed to provide space upon completion of works.</p> <p>However, additional space at CMRL may not be required for installation of new SVE system since private land has been acquired.</p>
6.	A qualitative health impact study on the population in affected area be conducted by obtaining information from local government hospitals, primary health centres etc.. TNPCB may engage any expert or an agency who can conduct such studies. The study to be funded by BPCL	TNPCB 3 months	<p>TNPCB requested Indian Council of Medical Research (ICMR) to carry out qualitative health impact assessment study.</p> <p>National Institute of Epidemiology (NIE) of ICMR communicated to TNPCB that their team visited the Communicable Diseases Hospital (CDH) and adjoining Urban Primary Health Centre (UPHC) in Tondiarpet for understanding the nature of available records. They</p>

S. No.	Further Action Point	Time Frame & Agency	Compliance status
			<p>have observed that available case records do not capture exposure to oil contamination and hence it may not be able to assess the health impact of oil spill and elicit causality of the health events.</p> <p>However, NIE suggested a quantitative study in collaboration of ICMR-NIREH, Bhopal and ICMR-NIOH, Ahmedabad with support from TNPCB and IIT, Chennai can be carried out in time period of 18 months. There is a need to assess the requirement of such study including scope of work.</p>
7.	BPCL to install Soil Gas Probes to monitor VOCs in vadose zone of sub-soil at 3 locations in affected area, which shall become part of revised remediation scheme post completion of CMRL works.	2 Months	BPCL agreed that action will be initiated on completion of CMRL works.
8.	Identify applicable standards in monitoring or assessing remediation works in similar contamination matrices.	CPCB	Complied. CPCB made qualitative assessment of risk at BPCL, Oil contaminated site at Tondiarpet and studied remediation standards applied to similar oil contaminated incidents in other countries. Based on which, indicative standards suggested for remediation of contaminated soil, intrusive sub-soil vapor (VOCs) for indoors as given at Annexure- II
9.	Upon completion of soil excavation works, a revised remediation scheme to be implemented. BPCL to submit a Detailed Project Report (DPR) for revised remediation scheme based re-assessment of site along with site specific target levels	3 weeks	<p>CMRL works not yet completed.</p> <p>BPCL agreed to implement revised remediation scheme on completion of soil excavation and associated works by CMRL.</p> <p>BPCL has reported that the scope of work for DPR has been incorporated in their ongoing tender. However, the same needs</p>

S. No.	Further Action Point	Time Frame & Agency	Compliance status
	<p>(SSTLs) for remediation based on human health risk assessment. It shall specify committed duration to complete the remediation.</p> <p>A scope of work for DPR be submitted to TNPCB within 3 weeks.</p>		to be revised and submitted to TNPCB.
10.	<p>To ensure adequate storage capacity to store the extracted water from CMRL site till finalization of treatment plan.</p> <p>TNPCB/CPCB to identify parameters as per international standards for disposal of treated water without harming environment.</p>	3 Months	<p>About 5450 KL of extracted water is stored in tank at BPCL Oil Depot. near Tondiarpet, Chennai.</p> <p>TNPCB collected extracted water samples and the analysis results reveal that the parameters are Below Detection Level. It was reported that excavation related seepage water is not generated at present.</p> <p>BPCL³ informed that they have sought permission from TNPCB for disposal/utilization of collected water (meeting standards) within the plant for gardening and firefighting use.</p> <p>BPCL indicated that scope of treatment system has been included in their tender, and can take up treatment and disposal, if required.</p>
11.	<p>BPCL to submit proposal to TNPCB for disposal of 7,287 litre of oil and 2,07,395 litre of oil contaminated water presently stored in a tank within BPCL Storage Depot.</p>	2 Weeks	<p>Complied. BPCL reported that extracted oil and contaminated water has been disposed through the ETP of Chennai Petrochemical Corporation Ltd., Manali, Chennai.</p>
12.	<p>Till the time a revised remediation scheme is finalised, BPCL to continue to carryout assessment and monitoring of existing SVE system and CMRL works as per earlier</p>	Till completion of CMRL works	<p>Complied. BPCL is continuing remediation work by operating existing SVE system and also a new SVE system has been installed.</p>

S. No.	Further Action Point	Time Frame & Agency	Compliance status
	recommendations of CPCB/TNPCB.		
13.	BPCL shall ensure adequate and quality of water supply to affected population in contaminated area.		Complied. BPCL has reported that 18 KL of Chennai Metro Water is being supplied through tankers on daily basis.

It is most respectfully submitted the following before the Hon'ble Tribunal:

- i) Remediation activity at BPCL-Oil contaminated site at Tondiarpet is a long-term process and may take over a five (05) years or more. Therefore, BPCL shall continue to carry out remediation activities till achieving indicative remediation standards proposed by CPCB.
- ii) BPCL may compensate health damages if any, caused to people impacted due to oil contamination in the vicinity of Tondiarpet, as may ascertained through quantitative health studies to be conducted by TNPCB.

BEFORE THE NATIONAL GREEN TRIBUNAL
 PRINCIPAL BENCH, NEW DELHI
 O.A. NO. 562/2018
 (Earlier O. A. No. 176/2013 (SZ))

IN THE MATTER OF:

V.P. KRISHNAMOORTHY

APPLICANT

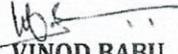
VERSUS

UNION OF INDIA & ORS

RESPONDENTS

INDEX

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2.	ANNEXURE- I LIST OF OFFICIALS PARTICIPATED IN AFORESAID MEETING.	
3.	ANNEXURE- II HON'BLE TRIBUNAL ORDER DATED:- 08.02.2019	


B. VINOD BABU
 ADDITIONAL DIRECTOR
 CENTRAL POLLUTION CONTROL BOARD
 PARIVESH BHAWAN, EAST ARJUN NAGAR
 DELHI- 110032

DATED: - 08.03.2019

PLACE: - DELHI

Minutes of the Meeting on Further Action Plan for Remediation of BPCL Oil Contaminated site at Tondiarpet held on 01/03/2019 at Chennai – Hon'ble NGT in the matter of O. A. No. 562/2018 (earlier O. A. No. 176/2013 (SZ))

While disposing the Original Application No. 562/ 2018 (earlier O. A. No. 176/2013 (SZ)); V.P. Krishnamoorthy Vs Union of India & Ors on 08/02/2019, Hon'ble NGT directed that a joint meeting at the highest level be held under supervision of Chairman, CPCB, along with Chairman, TNPCB; CMD, Chennai Metro Rail Corporation Ltd (CMRL) and CMD, Bharat Petroleum Corporation Ltd (BPCL) to take stock of the situation on present remediation of BPCL oil contaminated site at Tondiarpet, Chennai and to finalize further Action Plan on Remediation. The said meeting was held under the chairmanship of Chairman, CPCB at Chennai on March 01, 2019.

Prior to meeting, Chairman CPCB, along with officials from CPCB, TNPCB, CMRL and BPCL visited the contaminated area and the Soil Vapour Extraction (SVE) System, which has been functioning partially since commencement of CMRL works. The team also visualised on-going construction work of CMRL and how the CMRL works have hampered original SVE installations. Space limitations for connecting existing SVE system to remaining remediation wells was also shown and explained to inspecting team. Subsequently, meeting was held at nearby BPCL Terminal at Tondiarpet. List of officials participated in aforesaid meeting is given at **Annexure -I**.

1. Chairman, CPCB welcomed all participants and asked for background information and details of remediation activities carried out so far.
2. Representative of BPCL along with a consultant provided following information;
 - i. Leakage of Motor Spirit and High Speed Diesel occurred from underground 16-inch diameter product pipe lines laid between Chennai port to BPCL terminal. These pipelines were decommissioned subsequent to reports of leakage at Varadaraja Perumal Street, at Tondiarpet.
 - ii. A public complaint was received from public of Tondiarpet regarding contamination of groundwater with petroleum products and the complaint was investigated by TNPCB on 13/07/2013. Inspection revealed presence of petroleum products in groundwater.
 - iii. A PIL petition was filed in Hon'ble NGT, South Bench, Chennai by Mr. V.P. Krishnamoorthy and 8 other residents against 11 respondents, which was admitted as Application no. 176 of 2013 in August 2013.
 - iv. As per the directions issued by Central Pollution Control Board, BPCL has stopped use of the oil pipelines from 20/07/2013 onwards. BPCL removed 10m segment of the unused pipelines, pipelines were dummied by closing the open end with welded flange and abandoned the pipeline.



- v. BPCL started supplying drinking water to the affected residents and started cleaning of affected Bore well from 15/07/2013.
- vi. BPCL bailed out around 7,287 litre of oil and 2,07,395 litre of oil contaminated water from 18 bore wells between July, 2013 – January, 2015. The oil contaminated products were collected and stored in the tank within terminal facility of BPCL. These contaminated water was treated in the ETP owned by M/s Chennai Petroleum Corporation, Manali.
- vii. As per instruction of TNPCB, BPCL utilised expert services of Indian Institute of Technology, Madras (IITM) to carryout initial investigation regarding extent of a petroleum release to the subsurface. Subsequent to preliminary investigation by IITM, BPCL called tenders to engage a remediation contractor M/s Stratus Environment INC. in December, 2014.
- viii. Sorbent material was placed in existing wells to remove free phase petroleum.
- ix. Consultant took 17 months to complete survey, preparation of work plan, concurrence from IITM, permission from different agencies to install bore wells/ 27-ground monitoring wells, 13-Soil Vapour Extraction wells & 10-Air Sparge wells.
- x. Remediation work was monitored by IIT-M till March, 2016, thereafter NGT in its order dated 17/03/2016 directed CPCB to take up the supervision of remediation process, accordingly, CPCB monitored the remediation work and submitted outcome report to Hon'ble NGT.
- xi. In consultation of IITM, M/s Stratus environmental, INC. opted Soil Vapour Extraction system as remedial option and the same was commissioned on 20/05/2016 by connecting Air Sparging wells and SVE wells.
- xii. Underground piping network of SVE system got disconnected due to commencement of excavation work for underground CMRL Metro Station. This has resulted into stoppage of SVE system with effect from 16/09/2018 and relocation to another space within the Plot of M/s Devi Polymers and re-commissioning of the system from 24/10/2018 with connection to only 3 wells.
- xiii. As per the instructions of CPCB, excavated soil was tested for Total Petroleum Hydrocarbon (TPH) concentration and after confirming the concentration to less than 5000 mg/kg, the soil was disposed of.
- xiv. Extracted oil contaminated water of 5,450 kL was collected in course of soil excavation by CMRL and the same being stored in one of the storage tanks (T-22) in Oil Depot.

- xv. As per monitoring carried out by M/s Stratus environmental, INC., around 12,556 kg of TPH out of estimated quantity of 32,797 kg (29,952 kg of DRO + 2,845 kg of GRO) was removed from contaminated soil. About 70 litre of petroleum products also recovered by using 104 absorbent socks. No freer flow oil observed since December, 2018.
- xvi. At present SVE system is operated with 3 wells. However, there is scope for connecting 7 more wells (3 SVE wells and 4 Air Sparge wells) located in highly affected area once the CMRL / Local authorities provides access.
3. After hearing details of activities carried out for remediation, Chairman, CPCB discussed the following points with concerned officials of TNPCB, BPCL, CMRL and Consultant;
- Validity of method adopted for assessing quantity of petroleum product leaked into sub soil vis-à-vis quantity of oil substances recovered and total quantum of contaminated soil/groundwater.
 - Time required for complete remediation.
 - Standard Operating Procedure adopted to achieve remediation level.
 - Details of health studies, if any conducted in affected population.
 - Scope and time required for connecting additional wells to existing SVE system.
 - Adequacy of existing SVE system to speed up remediation activity.
 - Status of water supply and its quantity being provided to residents residing in the area.
 - The status of monitoring of water extracted during excavation and its treatment and disposal
4. After detailed deliberations with representatives of BPCL, CMRL and TNPCB and considering prevailing field difficulties and statutory requirements, further action plan for remediation of BPCL Oil Contaminated Site is outlined below;

Further Action Plan for Remediation of BPCL Oil Contaminated Site

S. No.	Further Action Point	Time Frame & Agency
1.	BPCL to connect remaining 7 wells to existing SVE system to increase current rate of extraction. They shall work out right way to install pipelines of about 70m length in consultation with TNPCB. Statutory permissions shall be taken.	1 Month
2.	After obtaining statutory permission from concerned departments, the pipelines to be connected within 30 working days	30 days after obtaining local permission
3.	BPCL to find alternate place to install new SVE system in consultation with TNPCB to speed up the remediation activity.	1 Month

S. No.	Further Action Point	Time Frame & Agency
4.	Local authority shall provide a space of 20 x 20 sq. ft. government land temporarily for relocating SVE system from current location.	BPCL to submit proposal immediately.
5.	Upon completion of structure, if required, CMRL shall provide temporary space of 20ft x 20ft on roof top of its structure.	CMRL
6.	A qualitative health impact study on the population in affected area be conducted by obtaining information from local government hospitals, primary health centres etc.. TNPCB may engage any expert or an agency who can conduct such studies. The study to be funded by BPCL	TNPCB 3 months
7.	BPCL to install Soil Gas Probes to monitor VOCs in vadose zone of sub-soil at 3 locations in affected area, which shall become part of revised remediation scheme post completion of CMRL works.	2 Months
8.	Identify applicable standards in monitoring or assessing remediation works in similar contamination matrices.	CPCB
9.	Upon completion of soil excavation works, a revised remediation scheme to be implemented. BPCL to submit a Detailed Project Report (DPR) for revised remediation scheme based re-assessment of site along with site specific target levels (SSTLs) for remediation based on human health risk assessment. It shall specify committed duration to complete the remediation. A scope of work for DPR be submitted to TNPCB within 3 weeks.	3 weeks
10.	To ensure adequate storage capacity to store the extracted water from CMRL site till finalisation of treatment plan. TNPCB/CPCB to identify parameters as per international standards for disposal of treated water without harming environment.	3 Months
11.	BPCL to submit proposal to TNPCB for disposal of 7,287 litre of oil and 2,07,395 litre of oil contaminated water presently stored in a tank within BPCL Storage Depot.	2 Weeks

K.S.

S. No.	Further Action Point	Time Frame & Agency
12.	Till the time a revised remediation scheme is finalised, BPCL to continue to carryout assessment and monitoring of existing SVE system and CMRL works as per earlier recommendations of CPCB/TNPCB.	Till completion of CMRL works
13.	BPCL shall ensure adequate and quality of water supply to affected population in contaminated area.	

The meeting ended with thanks to Chair

HOL

TNPCB / CPCB / CMRL / BPCL				
Meeting at BPCL, Tondiarpet Installation				
on 01.03.2019				
S.no	Name	Designation	Mobile No	Signature
1.	V. VETAVEL	DGM (No) / BPC	9445242233	VV
2.	H.D. VARALAXMI	Secy / AD, CPID	09449004165	H.D.
3.	S. SURESH	Regional Director	9980672128	S
4.	B. Vinod Babu	AD, CPCB	9810061592	B
5.	V.K. Singh	DGM (Ops) CMRL	8754509710	V.K.
6.	NARASIM PRASAD	Director (Synthesis & Change)	9445868296	N.P.
7.	M.S. PATKE	Executive Director	9819501733	M.S.
8.	SHAMBHU KAMLIKAR	CHAIRMAN. TNPCB	8012111111	SK Kamlikar
9.	S.P. KARLIKAR	CPCB	9820100012	S.P.
10.	D. SANKAR	Member Secretary TNPCB	875442582	D.S.
11.	R. Saravani	DEE / TNPCB / Chemi	8056042464	R. Saravani 01/3/19
12.	Indrajit Singh	Head Retail South	9895092524	I.S. 1/3/19
13.	V. Nagarajan	SH (TNDP)	9444057078	V.N. 1/3/19
14.	Rajesh L. Kumbhare	DGM (Ops) / South	9116054878	R.K. 1/3/19
15.	R. Sundarath	Head COG Retail	9820597381	R.S. 1/3/19
16.	Gajraj Sankar	TM (Retail), Chemi	9463820309	G.S.
17.	N.S. Ramani Babu	IM - Tondiarpet	9884120815	N.S.

Annexure-II

The objective of setting quantitative limits for remediation of oil contaminated site at Tondiarpet, Chennai is to prescribe the degree of remediation works as well as to protect human health and the environment in oil contaminated area in sustainable manner.

Evaluation of site conditions indicates that the area of petroleum oil spill is in a residential area, with a high density of population. It was also observed that most residents had either open wells or bore wells and the water extracted from these wells was being used for bathing, washing and cleaning purposes. Most residents are using city supplied metro water or a privately installed water treatment devices for drinking and cooking purposes.

Given the use of the water that is currently contaminated, BIS drinking water acceptable limit / WHO Drinking-water Quality Guidelines shall follow as Indicative standards.

The soil at the site is not readily accessible as most of the surface area is either covered by asphalt for roads or concrete for residential and commercial structures. Soil underneath the site is encountered only when commercial workers trench to install utilities. Most trenches are shallow.

Indicative remediation standards for Contaminated Soil;

Constituent	Residential Remediation standard for soil (mg/kg)
Benzene	50
Ethylbenzene	50
Toluene	100
Xylenes (total)	500
Total Petroleum Hydrocarbons	500
Mineral Oil	1000
Gasoline range organics (TPH-G/GRO)	250
Diesel Range organics (TPH-D/DRO)	250

Concentrations were set based on the fluctuations in groundwater table at the site, that fluctuates between 10 to 40 feet making the soil a secondary source of contamination.

Further, it is observed over the last 4 years of groundwater monitoring that vapors are volatilizing to the atmosphere away from the site source area, and it is also observed that a large smear zone has been created by the fluctuations in the water table. Therefore, soil vapor intrusion via the subsurface into residential building (indoor air contamination) through poorly construction foundations is of a concern. Based on these concerns the following standards for sub-surface vapor intrusion have been proposed to protect human health.

Indicative indoor standards sub-surface vapour

Constituent	Vapour intrusion standard for indoor air (mg/m ³)
Benzene	1.0
Ethylbenzene	1.0
Toluene	150
Xylenes (total)	1.0
Total Petroleum Hydrocarbons	50
Mineral Oil	-
Gasoline range organics (TPHG/GRO)	50
Diesel Range organics (TPHD/DRO)	50

Note: Concentrations in soil gas are based on Johnson Ettinger model calculation and is protective of indoor inhalation risks.

Reference:

The quantitative limits identified as indicative remediation standards based on following studies/reports:

- i) California Leaking Underground Fuel Tank (LUFT) Manual for remediation of gasoline contaminated sites,
- ii) California Regional Water Quality Control Board guidance document for remediation of petroleum contaminated sites,
- iii) Handbook for protection of groundwater and cleanup policies by US Environmental Protection Agency Criteria, and
- iv) Background Indoor Air Concentrations of Volatile Organic Compounds in North American Residences (1990 – 2005): A Compilation of Statistics for Assessing Vapor Intrusion, US EPA.

Item Nos. 02 to 11

**BEFORE THE NATIONAL GREEN TRIBUNAL
PRINCIPAL BENCH, NEW DELHI
(Through Video Conferencing)**

Original Application No. 562/2018
(Earlier O. A. No. 176/2013) (SZ)

WITH

Original Application No. 563/2018
(Earlier O. A. No. 34/2014) (SZ)

WITH

Original Application No. 564/2018
(Earlier O. A. No. 35/2014) (SZ)

WITH

Original Application No. 565/2018
(Earlier O. A. No. 36/2014) (SZ)

WITH

Original Application No. 566/2018
(Earlier O. A. No. 37/2014) (SZ)

WITH

Original Application No. 567/2018
(Earlier O. A. No. 38/2014) (SZ)

WITH

Original Application No. 568/2018
(Earlier O. A. No. 39/2014) (SZ)

WITH

Original Application No. 569/2018
(Earlier O. A. No. 40/2014) (SZ)

WITH

Original Application No. 570/2018
(Earlier O. A. No. 41/2014) (SZ)

WITH

Original Application No. 571/2018
(Earlier O. A. No. 42/2014) (SZ)

V. P. Krishnamoorthy

Applicant(s)

Versus

The Union of India & Ors.

Respondent(s)

WITH

K. S. Jayaraman

Applicant(s)

Versus

The Union of India & Ors.

Respondent(s)

WITH

R. Selvi

Applicant(s)

Versus

The Union of India & Ors.

Respondent(s)

WITH

K. Umachandran

Applicant(s)

Versus

The Union of India & Ors.

Respondent(s)

WITH

Smt. S. Shanthi

Applicant(s)

Versus

The Union of India & Ors.

Respondent(s)

WITH

G. Mahesh Kumar

Applicant(s)

Versus

The Union of India & Ors.

Respondent(s)

WITH

Smt. R. Vijaya

Applicant(s)

Versus

The Union of India & Ors.

Respondent(s)

WITH

K. Sampath Kumar

Applicant(s)

Versus

The Union of India & Ors.

Respondent(s)

WITH

K. Kamalakannan

Applicant(s)

Versus

The Union of India & Ors.

Respondent(s)

WITH

G. Purushothaman

Applicant(s)

Versus

The Union of India & Ors.

Respondent(s)

Date of hearing: 08.02.2019

**CORAM: HON'BLE MR. JUSTICE ADARSH KUMAR GOEL, CHAIRPERSON
HON'BLE MR. JUSTICE S.P. WANGDI, JUDICIAL MEMBER
HON'BLE MR. JUSTICE K. RAMAKRISHNAN, JUDICIAL MEMBER
HON'BLE DR. NAGIN NANDA, EXPERT MEMBER**

For Applicant/Appellant(s):

Mr. Yogeshwaran, Advocate
Mr. E. Maharajan, Advocate

For Respondent (s):

Mr. M. Sumathi, Advocate for
Karthikeyan (ASG) for R.1
Ms. Vidya Lakshmi Vipin and Mr.
Abdul Salem, Advocate for TNPCB
Mr. Kamelsh Kannan, Advocate for
State of Tamil Nadu

Mr. S. Arjun Suresh, Advocate for
R-5- CPCL
Mr. Krishna Srinivasan, Advocate for
R-6-BPCL
Mr. D. S. Ekamba Ram, Advocate for
R-12, CPCB
Mr. M. Vijayan, Advocate for R-8, HPCL
Mr. Jayesh B. Dolia, Advocate for CMRL

ORDER

- 1 The issue for consideration is to remedy the situation which arose on account of oil leak from the pipelines operated by the oil companies at Chennai on 16.07.2013.
- 2 The applicant, V. P. Krishna Moorthy, moved this Tribunal on 22.07.2013 seeking direction to shift the pipelines and direction for action against the persons responsible for causing the leak, apart from restoration of the area and compensation to the victims. Other applicants seek compensation for loss to wells, depriving them of the drinking water
- 3 Vide order dated 22.09.2015, verification report submitted by the Dr. Indumathi, Professor IIT was considered to ascertain the extent of damage. The said expert was requested to give further details in the form of a status report. Report of the Tamil Nadu Pollution Control Board (TNPCB) was also considered indicating the deficiencies in the remediation work.
- 4 According to the applicant, the oil companies were negligent in conducting their operations. Consequence of oil leak was contamination of soil and water in the area.
- 5 The matter has been considered by this Tribunal in the last six years.
- 6 On 17.03.2016, the Tribunal noted the stand of the TNPCB about the cause of contamination. The Tribunal noted the directions issued by the TNPCB dated 16.07.2013 to the Bharat Petroleum Corporation

Limited (BPCL) to clean up contaminated borewells and soil and supply drinking water to the affected people. Directions of the Central Pollution Control Board (CPCB) dated 19.07.2013 requiring BPCL to come out with a credible action plan for remedial measures were also noted. The BPCL admitted that it was taking steps in the matter in the light of expert opinions. It had supplied requisite drinking water and removed contamination under the guidance of experts. The Tribunal directed that the remediation process may be continued and the CPCB may inspect the area and conduct a study.

7 The matter was thereafter reviewed on 23.02.2017 with reference to the location for shifting of Soil Vapour Extraction (SVE) unit, alteration in pipelines network, acquiring another Soil Vapour Extraction unit for remediation process and time bound action plan for disposal of oil contaminated ground water. TNPCB was directed to monitor the progress.

8 Vide order dated 21.04.2017, a sum of Rs. 6 Lakhs by way of interim arrangement was directed to be deposited with the Member Secretary of the TNPCB to meet the claim for compensation of the affected individuals. Finally, on 24.10.2018, the Tribunal reviewed the entire matter and noted the stand of BPCL that the remediation work was to be completed within three years. The work had commenced in May, 2016 but could not be completed on account of interruption.

9 The Tribunal directed the BPCL and the TNPCB to submit status report.

10 Accordingly, status report has been filed by the TNPCB on 06.12.2018 stating that the pipelines of the oil companies are passing through the congested area underground. On receiving information about the incident of leakage, the pipelines were made non-functional after a study by the IIT, Madras. Global tender for environmental

assessment and remediation of the contaminated site was floated and the work was allotted to M/s. Stratus Environmental Inc., California at the cost of Rs. 11.99 Crores. The work commenced in January, 2015 and tender period was 42 months. It was confirmed that fuels were released to the subsurface and 29,952 kg of diesel was found in the soil within 50 feet Below Ground Level (BGL) and approximately 2,845 kg of Gasoline Range Organics (GRC) was present in soil within 50 feet BGL.

- 11 BPCL undertook the remediation process which started in May, 2016. In the process, the BPCL provided 19 number of shallow wells, 8 number of deep bore well, 9 soil vapour extraction well and 9 air sparging wells in and around the TH Road junction and VP. Koil Street of Tondiarpet. One Soil Vapour Extraction system (SVE) has also been installed at the vacant site of M/s. Devi Polymer, No. 231, T.H. Road, Tondiarpet. Twenty-seven groundwater monitoring wells, 18 remediation wells (9-SVE, 9-AS) were installed during May 2015 and September 2015. After hooking up the remediation wells with the SVE, the system started functioning during May-2016 Prior to commencement of the remediation process, the unit bailed out oil contaminated water from 18 bore wells immediately after the incident happened in July 2013 up to January 2015. Around 7.287 KL of oil and rest of 207.395 KL of water was collected and stored in the tank within the Terminal facility at Tondiarpet and then treated in the Effluent Treatment Plant owned by M/s Chennai Petroleum Corporation, Manali.
- 12 It is submitted that the remedial process was interrupted by the alignment project of the Chennai Metro Rail passing from the remediation site which resulted in disconnection of transmission pipeline network from the Soil Vapour Extraction wells, Air Sparging

Wells and monitoring wells laid already for the purpose for carrying out remediation.

- 13 With the directions of the Tribunal and the TNPCB, the work was resumed. However one segment of the pipe line connecting the Soil Vapour Extraction wells, Air Sparging wells, monitoring wells with the Soil Vapour Extraction system within the premises of M/s Devi Polymers, have not been disconnected since that the area was left out by CMRL execution of land acquisition and now under the custody of M/s. Devi Polymers. Consequently, the Soil Vapour Extraction system was operated only with the two Soil Vapour Extraction wells SVE-8 and SVE-9, and one Monitoring well MW-16A. Consequent to the execution of excavation of these segment of CMRL project, it has resulted in abandonment of three Soil Vapour Extraction wells, namely, SCV-2, SCV-3 & SCV-10, four Air Sparging wells namely AS-1 AS-3, AS-8 & AS-10, six shallow monitoring wells namely MW-6A, MW-8A, MW-9A, MW-12A, MW-17A, MW-19A and one Deeper Monitoring well MW-178. After shifting and relaying of the transmission pipelines, the soil vapor extraction wells SVE-8 & SVE-9, and one Monitoring well MW-16A were hooked up again with the SVE system and restarted again on 27th October 2018. BPCL has reported that 12556 kg of Petroleum hydrocarbon has been removed through the SEV out of the estimated quantity of 32799 kg. Nearly about 70 litres of oil has also been collected through the absorbent socks which have been installed in seven wells. Currently, due to the prevailing work under taken by CMPL, adequate space is not available for the installation of wells. Once the Metro Rail work is completed viable locations for additional wells will be identified. BPCL and their contractors M/s. Stratus Environment incorporated are looking for alternate viable locations for installation these wells with the guidance of TNPCB. As per expenditure statement given by BPCL,

total estimated remediation cost was 11.99 Crores as on 08.12.2014 and the same was revised and the revised value is 13.45 Crores (with tax Rs. 15.874 Crores) as on 25.10.2018. The total expenditure for the implementation of remediation incurred so far is Rs. 5.52 Crores. Further, BPCL has reported that "due to the activities of CMRL and space available only for operating one SVE system, it will take two more years to complete the remediation activities. However, this period may be significantly reduced if space is made available to them for installation of second SVE system after the completion of the construction activities of CMRL". However the unit is yet to furnish further proposals for providing new wells in place of the abandoned wells and additional SVE system. It is respectfully submitted that regarding the issue of assessment of liabilities and sharing of cost for the remediation is concerned, the TNPCB has already issued direction, to BPCL on 11.09.20013 stating that BPCL is solely responsible for the contamination and shall bear the entire cost of investigation and remediation.

- 14 In view of the above, the process of remediation is required to be completed at the earliest by the BPCL. The Chennai Metro Corporation has to fully cooperate and remove every obstruction. Coordination of BPCL and TNPCB is also necessary. The supervisory authority in the matter can be the Chairman, CPCB.
- 15 Accordingly, we direct that a joint meeting be held at the highest level with the participation of the Chairman, CPCB, Chairman, TNPCB, CMD, Chennai Metro Corporation and the CMD, BPCL within one month from today to take stock of the situation and to finalise further action plan in the matter. It may be considered whether the period for completion of work can be minimum and remediation work is completed at the earliest possible since almost six years have gone.

- 16 Apart from a sum of Rs. 6 Lakhs deposited under the interim order, we direct the BPCL to deposit a further sum of Rs. 3 Lakhs with the TNPCB within one month. The said amount may be paid to nine applicants before this Tribunal by TNPCB which will be treated as an *ex-gratia* payment. If some amount has already been withdrawn, the same will be adjusted.
- 17 We take on record the statement that the affected inhabitants were provided free potable water by the BPCL and other authorities.
- 18 The CPCB may furnish status report in the matter after six month by e-mail at ngt.filing@gmail.com.

A copy of this order be sent to the CPCB by e-mail for coordination and compliance.

All the applications will stand disposed of.

The report received from the CPCB may be put up for consideration on 18.09.2019.

Adarsh Kumar Goel, CP

S.P. Wangdi, JM

K. Ramakrishnan, JM

Dr. Nagin Nanda, EM

February 8, 2019
Original Application No. 563/2018
(Earlier O. A. No. 34/2014) (SZ) and other connected matters
DV and JG



केन्द्रीय प्रदूषण नियंत्रण बोर्ड
CENTRAL POLLUTION CONTROL BOARD

पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय, भारत सरकार
MINISTRY OF ENVIRONMENT, FOREST & CLIMATE GOVT. OF INDIA

February 28, 2020

Annexure IV

F.No.Tech-/39/legal (NGT)/TN/RDS/2019-20/

To

The Member Secretary
Tamil Nadu Pollution Control Board
No. 76, Mount Salai, Guindy
Chennai - 600032

Sub: Hon'ble National Green Tribunal, (Principal Bench), New Delhi orders dated September 18, 2019 in the matter of OA No. 562/2019 (SZ) (Earlier O. A. No. 176 of 2013) V.P. Krishnamoorthy Vs The Union of India & Ors. In the matter of remediation of oil contaminated site at Tondiarpet, Chennai

Sir,

This has reference to meeting convened on 19.11.2020 at TNPCB, HO, Chennai in compliance to above order, wherein it was concluded (**copy of the minutes at Annexure I**) that Indian Council of Medical Research (ICMR) may undertake field visit to understand the ground reality of Oil contaminated site at Tondairpet and to submit detailed proposal including scope of study, methodology, procedure for quantification including cost and time frame to complete the study on health hazards in the oil contaminated site at Tondairpet. As agreed in the meeting, ICMR submitted the detailed proposal including cost estimates to carry out the study. Copy of mail dated 28.02.2020 received from ICMR is enclosed for ready reference (**Annexure 2 & 3**).

In view of the above and in order to comply with NGT directions, it is requested that TNPCB may quickly coordinate with BPCL to award the project to ICMR and to complete the study at the earliest possible. It is also requested to kindly provide update on status of action taken by 05/03/2020 so that the same can be filed before Hon'ble NGT prior to upcoming hearing on March 18, 2020.

Yours faithfully

(Dr. M. Madhusudanan)
Regional Director

Copy to:

Mr. K. B. Reddy
Chief Installation Manager
Bharat Petroleum Corporation Ltd., 35, Vaidynathan
Street, Tondairpet
Chennai - 600081

: For necessary action PI

The District Environmental Engineer
Tamilnadu Pollution Control Board
1st floor, 6/1, Sri Jothi Complex
Murugesan Street, Bala Vinayagar Nagar
Arumbakkam, Chennai - 600106

: For follow up pl.

Divisional Head, WM -1,
CPCB, Delhi - 32

: For Kind Information Please

(Dr. M. Madhusudanan)
Regional Director

क्षेत्रीय निदेशालय (दक्षिण) : निसर्ग भवन, ए-ब्लॉक, प्रथम एवं द्वितीय तल, तिममय्या रोड, 7-डी मैन, शिवनगर, बंगलूरु - ५६० ०७९.
Regional Directorate (South) : " Nisarga Bhawan ", A-Block, 1st & 2nd Floors, Thimmaiah Road, 7th D - Main, Shivanagar, Bengaluru - 560 079.

दूरभाष / Telephone : 080-23233739, 23233827, 23233996, 23233600, 23232559, 23226002, 23222539, Fax : 080-23234059

ई-मेल / E-mail : cpcbszo@yahoo.com, zobangalore.cpcb@nic.in

प्रधान कार्यालय : परिवेश भवन, पूर्वी अर्जुन नगर, दिल्ली- ११० ०३२.

Head Office : Parivesh Bhawan, East Arjun Nagar, Delhi - 110 032.

दूरभाष / Telephone : 011-43102030, Fax : 22345793, 22307078, 22307079, 22301932, 22304948

ई-मेल / E-mail : cpcb@nic.in वेबसाइट / Website : www.cpcb.nic.in



केन्द्रीय प्रदूषण नियंत्रण बोर्ड
CENTRAL POLLUTION CONTROL BOARD

57

पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय, भारत सरकार
MINISTRY OF ENVIRONMENT, FOREST & CLIMATE CHANGE, GOVT. OF INDIA
NGT Matter (Time Bound)

F. No. Tech-/39/legal (NGT)/TN/RDS/2020-21

August 17, 2020

To

✓ Mr. K. B. Reddy
Chief Installation Manager
Bharat Petroleum Corporation Ltd.
35, Vaidynathan Street, Tondairpet
Chennai – 600081

Annexure V

Sub: Hon'ble National Green Tribunal, Principal Bench, New Delhi orders dated June 09, 2020 and July 08, 2020 in the matter of OA No. 176 of 2013 (SZ) (Earlier O. A. No. 562/2019) V. P. Krishnamoorthy Vs. The Union of India & Ors. on remediation of oil contaminated site at Tondiarpet, Chennai - regarding

Sir,

This has reference to Hon'ble NGT order dated July 08, 2020 in the matter of O.A. No. 176 of 2013 (SZ) V.P. Krishnamoorthy Vs. The Union of India & Ors is enclosed for ready reference. The Hon'ble NGT directed that as reproduce below:

"Central Pollution Control Board to consider the objections filed by BPCI. in respect of their report regarding the deficiencies in the present method of remediation if any. or any other direction is to be given in that regard and after conducting scientific study such direction can be given by them. BPCI. is directed to complete the tender process for entrusting to Indian Council of Medical Research to conduct the health study at the earliest so that the Indian Council of Medical Research can proceed with the study and submit the report to CPCB who can forward the same to this Tribunal along with their status report regarding the progress of remediation that is going on along with further direction if any given by them after considering the objection filed by BPCI. in respect of the deficiencies noted by them in the present remediation process of remedying the soil contamination.

Considering the circumstances, we feel it appropriate to grant six months time to both parties to comply with the direction and also file the future progress report along with the health report to be submitted by the agency viz., Indian Council of Medical Research."

In view of the above and in order to comply with NGT directions. M/s BPCI. is hereby directed to complete the following tasks and submit the ATR to CPCB. so as to review status of compliance to Orders of Hon'ble NGT:

- As per the action plan decided in joint meeting at the highest level held under the chairmanship of Chairman, CPCB at Chennai on March 01, 2019, upon completion of CMRI, soil excavation works. M/s BPCI. to submit a Detailed Project Report (DPR) for revised remediation scheme based on re-assessment of site along with site specific target levels (SSTLs) for remediation based on human health risk assessment.. Timelines for complying to said action plan be submitted within a week.

क्षेत्रीय निदेशालय (दक्षिण) : निसर्ग भवन, ए-ब्लॉक, प्रथम एवं द्वितीय तल, तिम्मय्या रोड, 7-डी मैन, शिवनगर, बेंगलूरु - ५६० ०७९.

Regional Directorate (South) : " Nisarga Bhawan ", A-Block, 1st & 2nd Floors, Thimmaiah Road, 7th D - Main, Shivanagar, Bengaluru - 560 079.

दूरभाष / Telephone : 080-23233739, 23233827, 23233996, 23233600, 23232559, 23226002, 23222539, Fax : 080-23234059

ई-मेल / E-mail : cpcbszo@yahoo.com, zobangalore.cpcb@nic.in

प्रधान कार्यालय : परिवेश भवन, पूर्वी अर्जुन नगर, दिल्ली- ११० ०३२.

Head Office : Parivesh Bhawan, East Arjun Nagar, Delhi - 110 032.

दूरभाष / Telephone : 011-43102030, Fax : 22305793, 22307078, 22307079, 22301932, 22304948

ई-मेल / E-mail : cpcb@nic.in वेबसाइट / Website : www.cpcb.nic.in

- ii. Install Soil Gas Probes to Monitor VOCs in Vadose zone of Subsoil at 3 locations in affected area, which shall become part of revised remediation scheme.
- iii. To augment SVE system by connecting all available wells to both SVE system and to operate both SVE system continuously to optimise soil vapour extraction.
- iv. To take immediate steps to entrust the health impact study to ICMR, so as to complete the said study before November 30, 2020 and submit the study report to TNPCB/CPCB.

Status of progress made be submitted to TNPCB/CPCB within a week and fortnightly thereafter, so as to review the remedial measures in compliance of NGT direction.

Yours faithfully

S. Suresh
(S. Suresh) 17/8/2020

Regional Director

Encl.: As above

Copy to,

- (i) The Member Secretary : For kind information and with request
Tamil Nadu Pollution Control Board follow up & necessary action, pls
No. 76, Mount Salai, Guindy
Chennai - 600032
- (ii) The District Environmental Engineer : For kind information and with request
Tamil Nadu Pollution Control Board follow up & necessary action, pls
1st floor, 6/1, Sri Jothi Complex
Murugesan Street, Bala Vinayagar Nagar
Arumbakkam, Chennai - 600106
- (iii) Divisional Head, WM -1, : For kind Information, pls
CPCB, Delhi - 32

S. Suresh
(S. Suresh)
Regional Director



B-29016/(NGT-5)/18/WM-I/

October 22, 2020

To

The Member Secretary
Tamil Nadu Pollution Control Board
No. 76, Mount Salai, Guindy
Chennai - 600032

Annexure VI

Sub: Hon'ble NGT, Principal Bench, New Delhi order dated 08.07.2020 in the matter of O.A. No. 562/ 2013 (SZ), V.P. Krishnamoorthy Vs Union of India & Ors. - reg

Ref: M/s BPCL letter dated 21.09.2020

Sir,

This has reference to Hon'ble NGT order dated 08.07.2020 in the matter of O.A. No. 562 of 2013 (SZ), regarding remediation of BPCL oil contaminated site at Tondiarpet, Chennai. In compliance to said orders, CPCB, Regional Directorate (South) vide its letter dated 17.08.2020 asked M/s BPCL Chennai to submit Action Taken Report. In response, M/s BPCL has submitted a work plan for post CMRL assessment works vide its letter dated 21.09.2020 (copy enclosed for ready reference). CPCB has examined the said proposal and observed that it may meet the requirements for reassessment. Point point-wise observations are enclosed.

In view of the above, it is requested that TNPCB may review the proposal with additional inputs, if any, and the same may be communicated to M/s BPCL for initiating post CMRL construction site assessment.

Yours faithfully,


(B. Vinod Babu)

Addl. Director & Head,
Waste Management Division-I

Encl.: As above

Copy to:

1. The Regional Director : For kind information and necessary
Regional Directorate, South-Chennai follow-up, please
Central Pollution Control Board,
1st& 2nd, Nisarga Bhavan, A-Block,
Thimmaiah Road, 7th D Cross, Shivanagar,
Opp. Pushpanjali Theatre, Bangalore
2. The Chief Installation Manager : For kind information and necessary
M/s Bharat Petroleum Corporation Ltd, action, please
Tondiarpet Installation, No. 35,
Vaidhyanatha Street, Post Box No. 1152,
Tondiarpet, Chennai - 600081, Tamil Nadu


(B. Vinod Babu)



B-29016/(NGT-5)/18/WM-I/

October 22, 2020

To

The Member Secretary
Tamil Nadu Pollution Control Board
No. 76, Mount Salai, Guindy
Chennai - 600032

Sub: Hon'ble NGT, Principal Bench, New Delhi order dated 08.07.2020 in the matter of O.A. No. 562/ 2013 (SZ), V.P. Krishnamoorthy Vs Union of India & Ors. - reg

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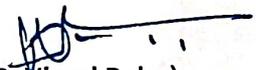
(B. Vinod Babu)

Addl. Director & Head,
Waste Management Division-I

Encl.: As above

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Thimmaiah Road, 7th D Cross, Shivanagar,
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M/s Bharat Petroleum Corporation Ltd,
Tondiarpet Installation, No. 35,
Vaidhyanatha Street, Post Box No. 1152,
Tondiarpet, Chennai - 600081, Tamil Nadu


(B. Vinod Babu)



केन्द्रीय प्रदूषण नियंत्रण बोर्ड
CENTRAL POLLUTION CONTROL BOARD
पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय भारत सरकार
MINISTRY OF ENVIRONMENT, FOREST & CLIMATE CHANGE GOVT. OF INDIA
Most Urgent
NGT Matter

October 22, 2020

B-29016/(NGT-5)/18/WM-I/

To

The Member Secretary
Tamil Nadu Pollution Control Board
No. 76, Mount Salai, Guindy
Chennai - 600032

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