Before the Hon'ble National Green Tribunal, New Delhi
(Principal Bench)

M.A no. 103 of 2022
in
O.A no. 169 of 2021

In the matter of ;

H.C. Arora

..... Applicant

Vs.

State of Punjab & Others

..... Respondent

Submission of Status/Joint Committee report by Er. Guneet Sethi, Environmental Engineer, Punjab Pollution Control Board, Regional Office, Sangrur through Chief Secretary, Government of Punjab.

Respectfully showeth:

1) That briefly submitted that MA no. 103 of 2022 filed by Sh. H.C. Arora in OA no. 169 of 2021 was registered and heard by the Hon'ble National Green Tribunal. The grievance raised in the said application was the alleged failure of the State Authorities to take remedial measures against contamination of ground water in village Aloarakh, Block of Bhawanigarh, District Sangrur.

2) That the Hon'ble National Green Tribunal vide order dated 28.05.2024 has disposed of the said M.A no. 103 of 2022 in O.A no. 169 of 2021 and has constituted a Joint Committee to oversee the work of shifting of contaminated soil and restoration of land which was contaminated. The relevant paragraph 7 and 8 of the order dated 28.05.2024 of the Hon'ble Tribunal is reproduced below for kind perusal and reference:

"7. We are also of the view that after shifting of the soil from the area concerned, the restoration of the land is required to be done. Hence, we form a joint Committee comprising of the representative of Member Secretary, CPCB; representative of NEERI and the representative of the PPCB. The representative of the PPCB will act as coordinating agency.

8. The joint Committee will oversee the work of shifting of contaminated soil and also the restoration of the land which was contaminated. The Committee will particularly consider:-

(i) In case of transportation of contaminated soil/ sludge to common TSDF site, stabilization/ processing should be done in accordance with HOWM Rules and SOP laid down by CPCB.

(ii) The Report of compliance should indicate effects of utilization of colored water from wells for irrigation including health of villagers and cattle."

3) That the Joint Committee was also directed vide the said order dated 28.05.2024 to submit an interim report through Chief Secretary, Punjab by 31.08.2024 and subsequent report by 30.11.2024 and if required every month thereafter till the work is over.

4) That it is relevant to mention here that before the submission of the Joint Committee Report and considering the cost of remediation a miscellaneous application (MA) dated 13.08.2024 was filed in MA No. 76 of 2024 in OA No. 169 of 2021 before Hon'ble NGT by the Punjab Pollution Control Board with a prayer seeking directions to the industrial units, namely, M/s. Matharu Chemical Industries (later changed to M/s. Mahalaxmi Orgochem Industries) village Aloarakh, Tehsil Bhawanigarh, District Sangrur, Punjab and its owner Sh. Gurcharan Singh Matharu and Directors Sh. Chander Shekhar Dhawan and Sh. Sunil Ahuja to pay the remediation cost of the contaminated site amounting to ₹105.59 crores.

5) The said MA no. 76 of 2024 filed by the PPCB was disposed of by the Hon'ble NGT vide order dated 21.08.2024, the relevant paras 11, 12, 13 and 14 of which are reproduced below for kind perusal and reference:

11. Thus, the Tribunal has given an option to the State Government to recover the cost from the violators/erring officers.

12. The present MA being MA No. 76/2024 does not reveal

that any erring officer has been identified for the recovery of the cost from him.

13. *In order to avoid any delay in the remediation work, the Tribunal had issued the above directions to the State. The recovery of cost from the violators/erring officers was likely to take some time, therefore, to ensure that the remediation work was not kept pending until such recovery, the above direction was issued. However, if the State is able to recover the amount from the violators/erring officers without delaying the remediation work, then it may utilize the same in the process of remediation but that will not absolve the State of its responsibility of carrying out the remediation work without waiting for the identification of the violators/erring officers and the recovery of the amount from them.*

14. *The MA No. 76/2024 is accordingly disposed of.*

6) That the Punjab Pollution Control Board on the behalf of State of Punjab has requested the Hon'ble NGT vide affidavit dated 02.09.2024 to allow filing of an interim report in the case by 30.11.2024 after examining the order dated 21.08.2024 passed by the Tribunal in MA No. 76 of 2024 in OA No. 169 of 2021.

7) That the Chief Secretary to Govt. of Punjab has authorized the Punjab Pollution Control Board to submit the said report of the Joint Committee before the Hon'ble National Green Tribunal in compliance to the order dated 28.05.2024.

8) That in the given circumstances, as state herein above the Joint Committee has given 2nd interim report in the case by incorporating the facts & other relevant details wherein the first interim report of the Joint Committee is also enclosed. The conclusions and recommendations given by the Joint Committee in its 2nd report are reproduced below for kind perusal:

i. *Since, the Punjab Pollution Control Board has filed an appeal before Hon'ble Supreme Court against Hon'ble NGT order dated 21.08.2024 passed in MA No. 76 of 2024 in OA no. 169 of 2021 with prayer to set at order dated 21.08.2024, therefore the Joint Committee it yet*

to receive plan for execution of remediation at site.

ii. *The values of BOD, COD, and TOC in the tube wells situated downstream of the contaminated site show an increasing trend, indicating that groundwater contamination in rising due to the leaching of pollutants from the site.*

iii. *The fish bioassay test was conducted by both CPCB and CSIR-NEERI However, as mentioned in the Section 2.0 (2.2), the findings of fish bioassay test conducted by CPCB and CSIR-NEERI may have limited relevance to concerns about agricultural and human toxicity related to the contaminated groundwater near the site in question, as the effects of using contaminated ground water, on agriculture and human health are influenced by the long- term processes of bioaccumulation and biomagnification of contaminants. Therefore, further Investigation involving an Agriculture University may be necessary.*

iv. *In view of the above, the Joint Committee will assess the impact of using the colored well water for irrigation, as well as its effects on the health of villagers and cattle, by conducting further studies including Geno-toxicity assay, in association with the local agricultural University as directed by the Hon'ble National Green Tribunal and will submit further report.*

9) The status/Joint Committee report is hereby submitted for kind consideration of the Hon'ble Tribunal.

Date: **26/12/2024**

Place: Sangrur

Submitted by

(Er. Guneet Sethi)
Environmental Engineer
Punjab Pollution Control Board,
Regional Office, Sangrur
(On behalf of State of Punjab)

Subsequent/2nd Report of the Joint Committee constituted in the matter M.A no. 103 of 2022 in O.A no. 169 of 2021 titled as H.C. Arora Vs State of Punjab & Ors, in compliance to the orders of Hon'ble NGT dated 28/05/2024.

1. BACKGROUND:

Briefly Stated,M.A No. 103 of 2022 filed by Sh. H.C. Arora in O.A No. 169 of 2021 was heard by the Hon'ble National Green Tribunal. The grievance raised in the said application was the alleged failure of the State Authorities to take remedial measures against contamination of ground water in Village Aloarakh, Block Bhawanigarh, District Sangrur.

The Hon'ble National Green Tribunal has disposed of the said M.A No. 103 of 2022 in O.A No. 169 of 2021 titled as H.C. Arora Vs State of Punjab & Ors. vide order dated 28.05.2024 by constituting Joint Committee. The directions of the Hon'ble NGT as contained in paragraph 7 & 8 of the order dated 28.05.2024 are reproduced herein below:

"7: We are also of the view that after shifting of the soil from the area concerned, the restoration of the land is required to be done. ***Hence, we form a joint Committee comprising of the representative of Member Secretary, CPCB; representative of NEERI and the representative of the PPCB.*** *The representative of the PPCB will act as coordinating agency.*

8: The joint Committee will ***oversee the work of shifting of contaminated soil and also the restoration of the land which was contaminated.*** *The Committee will particularly consider:-*

(i) In case of transportation of contaminated soil/ sludge to common TSDF site, ***stabilization/ processing should be done in accordance with HOWM Rules and SOP laid down by CPCB.***

(ii) The Report of compliance should ***indicate effects of utilization of colored water from wells for irrigation including health of villagers and cattle."***

The Joint Committee was directed to submit the interim report through Chief Secretary, Punjab and in this regard, paragraph 9 of the order dated 28.05.2024 is reproduced herein below:

"9: ***The joint Committee will submit the interim report through CS by 31.08.2024*** *and the subsequent report by 30.11.2024 and if required, every month thereafter till the work is over, before the Registrar General of this Tribunal by e-mail at judicial-ngt@gov.in preferably in the form of searchable PDF/ OCR Support PDF and not in the form of Image PDF and if found necessary, the matter will be listed before the Bench for consideration after submission of second report."*

A copy of the Hon'ble National Green Tribunal order dated 28.05.2024 is enclosed as **Annexure-A**.

2. COMPLIANCE OF THE ORDERS OF HON'BLE NATIONAL GREEN TRIBUNAL:

2.1. INTERIM REPORT OF THE JOINT COMMITTEE:

In compliance to the directions of Hon'ble NGT issued vide Order, the Joint Committee submitted its first interim report to Chief Secretary through Punjab Pollution Control Board on 14/08/2024, in compliance to the Orders dated 2024. The copy of the Interim Report submitted by the Joint Committee is enclosed as **Annexure-B**.

However, as per submission was made on 02/02/2024 (**Annexure-C**) , by the Member Secretary on the behalf of Chief Secretary. Government of Punjab, before Hon'ble NGT that the Interim Report of the Joint Committee will be filed by 30/11/2024, after examining the order dated 21.08.2024 passed by the Hon'ble Tribunal in M.A No. 76 of 2024 in O.A No. 169 of 2021

2.2. SUBSEQUENT/2ND REPORT OF THE JOINT COMMITTEE:

The Joint Committee was directed by Hon'ble NGT vide order dated 28/05/2024 to file the subsequent report by 30/11/2024.While submitting the Interim Report dated 14/08/2024, it was reported by the Joint Committee that:

"In view of the observations made by the Hon'ble National Green Tribunal on NEERI's Report, the Joint Committee collected samples from four bore-wells for bio-assay and analysis of other parameters, on 04/08/2024. During site visit, 2 Nos. ground water samples were collected from tubewell located in the vicinity and downside of the contaminated site, one No. groundwater sample from just upstream of the contaminated site and one No. sample located at comparatively far reached distance and upstream of contaminated site. The samples for Bio-assay test were sent to CPCB head Office Laboratory, Delhi and NEERI, Nagpur. CPCB Team also collected samples from these borewells for the parameters namely Colour, pH, BOD, COD, TDS and TOC, for reference and future use. The ground water analysis results received from CPCB are tabulated below:

Sr. No.	Sample Code	Water Source	Sample Description	Latitude & Longitude	pH	Colour (in Colour units)	BOD (mg/L)	COD (mg/L)	TDS (mg/L)	TOC (mgC/L)	Bioassy (% survival after 96 hours)
1	AL-01	Tubewell	Sh. Kulwinder Singh S/o Sh. Jang Singh, Alowrkh	30.28254; 76.07793	7.3	897	123	392	2040	150.425	100% survival after 96 hours
2	AL-02	Tubewell	Sh. Amrit Pal Singh S/o Sh. Rajwant singh, Alowrkh	30.28167; 76.0777	7.3	150	12	50	1344	45.905	100% survival after 96 hours
3	AL-03	Tubewell	**upstream-1**	30.28157; 76.08226	8.1	29	1	7	414	13.735	100% survival after 96 hours
4	AL-04	Tubewell	Sh. Mahinder Singh (Pardhan) Village- Majhi **Upstream-2**	30.28703; 76.09358	7.8	10	BDL	BDL	328	13.21	100% survival after 96 hours

The examination of the above analysis results by the Joint Committee reveals that:

i. *The values of BOD, COD, and TOC in the tube wells situated downstream of the contaminated site show an increasing trend, indicating that groundwater contamination is rising due to the leaching of pollutants from the site.This finding is also supported by the CSIR-NEERI report* (**Annexure-D**)*.*

ii. Groundwater samples from bore wells located both upstream and downstream of the contaminated sites were found to meet the standard fish bioassay test conducted in CPCB Laboratory. Further, CSIR-NEERI conducted Fish Bio-assay testbyexposing to different groundwater for the test at 100%, 50 %, 25 %, 12.5 %, and 6.25 %, V/V. Death of 2 fishes (mortality) was observed in02 of the of borewell samples tested at 100% and at 100 % and at 50%. However, this mortality did not cross the LC50 (**Annexure-D**). *However, since the fish bioassay is not an appropriate test for assessing the toxicity of contaminated water in relation to agriculture and human health, the findings of fish bioassay test conducted by CPCB and CSIR-NEERI may have limited relevance to concerns about agricultural and human toxicity related to the contaminated groundwater near the site in question. The impact on agriculture and human health will be influenced by the bioaccumulation and biomagnification of contaminants over time.Therefore, further investigation involving an Agriculture University may be necessary*

2.3. STATUS OF SHIFTING OF THE CONTAMINATED SOIL AND THE RESTORATION OF THE LAND:

The work on shifting of the contaminated soil and the restoration of the land is yet to be started by PPCB, as directed by Hon'ble National Green Tribunal

In this regard, it was informed by the member representing PPCB as under:-

i. A miscellaneous application (MA) dated 13.08.2024 was filed in MA No. 76 of 2024 in OA No. 169 of 2021 before Hon'ble NGT by the Punjab Pollution Control Board with a prayer seeking directions to the industrial units, namely, M/s. Matharu Chemical Industries (later changed to M/s. Mahalaxmi Orgochem Industries) village Aloarakh, Tehsil Bhawanigarh, District Sangrur, Punjab and its owner Sh. Gurcharan Singh Matharu and Directors Sh. Chander Shekhar Dhawan and Sh. Sunil Ahuja to pay the remediation cost of the contaminated site amounting to ₹105.59 crores under Polluter Pay's principle as neither State of Punjab nor Punjab Pollution Control Board is in a position to bear such a huge expenditure for remediation of contaminated site.

ii. The said MA was disposed of by the Hon'ble NGT vide order dated 21.08.2024, the relevant paras 11, 12, 13 and 14 of which are reproduced below for kind perusal and reference:

> *i. Thus, the Tribunal has given an option to the State Government to recover the cost from the violators/erring officers.*
>
> *ii. The present MA being MA No. 76/2024 does not reveal that any erring officer has been identified for the recovery of the cost from him.*
>
> *iii. In order to avoid any delay in the remediation work, the Tribunal had issued the above directions to the State. The recovery of cost from the violators/erring officers was likely to take sometime, therefore, to ensure that the remediation work was not kept pending until such recovery, the above direction was issued. However, if the State is able to recover the amount from the violators/erring officers without delaying the remediation work, then it may utilize the same in the process of remediation but that will not absolve the State of its responsibility of carrying out the remediation work without waiting for the identification of the violators/erring officers and the recovery of the amount from them.*
>
> *iv. TheMANo.76/2024isaccordinglydisposedof.*

iii. Considering the orders passed by Hon'ble NGT dated 21.08.2024, the Punjab Pollution

Control Board has filed an appeal before the Hon'ble Supreme Court of India on 20.11.2024 against Hon'ble NGT order dated 21.08.2024 in MA No. 76 of 2024 in OA no. 169 of 2021 with prayer to set as order dated 21.08.2024 primarily on ground that cost of remediation is to be borne solely by the accused under Polluter Pay's Principle and unjustifiably holding public servants responsible for acts of the contemnors / polluters.

3. CONCLUSION AND RECCOMMENDATIONS:

i. *Since, the Punjab Pollution Control Board has filed an appeal before Honble Supreme Court against Hon'ble NGT order dated 21.08.2024 passed in MA No. 76 of 2024 in OA no. 169 of 2021 with prayer to set as order dated 21.08.2024, therefore the Joint Committee is yet to receive plan for execution of remediation at site.*

ii. *The values of BOD, COD, and TOC in the tube wells situated downstream of the contaminated site show an increasing trend, indicating that groundwater contamination is rising due to the leaching of pollutants from the site.*

iii. *The fish bioassay test was conducted by both CPCB and CSIR-NEERI. However, as mentioned in the Section 2.0 (2.2), the findings of fish bioassay test conducted by CPCB and CSIR-NEERI may have limited relevance to concerns about agricultural and human toxicity related to the contaminated groundwater near the site in question, as the effects of using contaminated ground water, on agriculture and human health are influenced by the long-term processes of bioaccumulation and biomagnification of contaminants.Therefore, further investigation involving an Agriculture University may be necessary.*

iv. *In view of the above, the Joint Committee will assess the impact of using the colored well water for irrigation, as well as its effects on the health of villagers and cattle, by conducting further studies including Geno-toxicity assay, in association with the local agricultural University as directed by the Hon'ble National Green Tribunal and will submit further report.*

16/12/24	16/12/2024	16.12.24
Er. Guneet Sethi Environmental Engineer PPCB,	Dr. Narender Sharma Scientist-F CPCB Regional	Dr. Paras Pujari Senior Principal and In-Charge, Water Resources

Dated: December 16, 2024

Annexure-A
(of joint committee
report dt. 16.12.2024)

Item No. 10 Court No. 1

BEFORE THE NATIONAL GREEN TRIBUNAL
PRINCIPAL BENCH, NEW DELHI

M.A. No. 103/2022
In
Original Application No. 169/2021

H.C. Arora Applicant

Versus

State of Punjab & Ors. Respondent(s)

Date of hearing: 28.05.2024

CORAM: HON'BLE MR. JUSTICE PRAKASH SHRIVASTAVA, CHAIRPERSON
HON'BLE MR. JUSTICE ARUN KUMAR TYAGI, JUDICIAL MEMBER
HON'BLE DR. A. SENTHIL VEL, EXPERT MEMBER

Applicant: Ms. Sunaina, Adv. for Applicant (Through VC)

Respondent: Ms. Richa Kapoor & Ms. Atika Singh, Advs. with Mr. Guneet Sethi, Environmental Engineer, Punjab PCB
Mr. Malay Swapnil, Advs. with Dr. Paras Ranjan Pujari (Through VC), Sr. Principal Scientist, CSIR-NEERI
Mr. Vikrant Pachnanda, Adv. for CPCB (Through VC)
Ms. Babita Kushwaha, Adv.
Mr. Varun Chandiok, Adv. (Through VC) for Bhupinder Pal Singh

ORDER

1. This M.A. has been registered on the basis of the report submitted in pursuance to the order of the Tribunal dated 31.03.2022 passed in O.A. No. 169/2021.

2. In the OA, the grievance was raised against the failure of the State Authorities to take remedial measures against contamination of ground water in village Aloarakh Block of Bhiwanigarh, District Sangrur. The Tribunal by order dated 31.03.2022 had disposed of the OA by directing as under:-

> *"5. Having regard to the composition of the Committee and the material considered in the report and also in absence of any opposition by the State inspite of copy of report having been served on it, we accept the report of the Committee and issue directions in terms thereof. The Chief Secretary, Punjab, in coordination with the concerned authorities may ensure remedial action speedily to effectuate the guaranteed right of the citizens to clean potable water. The Chief Secretary may also take into account the suggestions in the additional report referred to above. The cost of remediation has to be borne by the State in the first instance without prejudice to the recovery of the amount later from the violators/erring officers. Area in question be treated as 'contaminated site' and remediation plan as per the Report of the Joint Committee may be executed within six months. If it becomes necessary, the Plan may be suitably modified in consultation with CPCB and any other Institution. Chief Secretary may constitute a credible executing/ monitoring Committee to get the remediation plan executed and to monitor its timely and proper execution. Status report of compliance as on 31.8.2022 may be forwarded to Registrar General, NGT on or before September 30, 2022 by email. District Magistrate, Sangrur may place the information in public domain and appropriately caution the inhabitants about contaminated water in the interest of public health. PPCB and State GWB may regularly monitor the quality of contaminated water."*

3. The report dated 29.09.2022 filed by the PPCB in compliance of the aforesaid order reflected that the samples from 18 borewells were taken and that contamination had spread significantly. Therefore, the Tribunal found that the problem had become serious which needed consideration and immediate action.

4. The stand was taken by the PPCB that NEERI was engaged to ascertain the level and extent to which ground water and soil contamination had occurred and suggest remedial action. Hence, the Tribunal had on the previous occasion granted time to NEERI to submit report which has now been submitted on 21.05.2024. As per the report, NEERI has executed Environmental Site Assessment and remediation of contaminated ground water and soil and control further contamination. The findings of the report are summarized as under:

> *1) Investigations are based on samples drawn from 35 wells and 11 soil samples. Samples were analyzed for pre and post*

monsoon period. Study is supported by Aquifer Performance Test and Geophysical investigation. The investigated area covered 5 km radius of the industry in question. The apparent findings is also with respect to coloured water of wells under operation.

2) *The sole cause is legacy hazardous waste generated by an industry called Matharu Chemical producing H-Acid. The waste was stored in Solar Evaporation Pond and stored in Hazardous Waste Storage Shed. From these two sites contamination has spread.*

3) *APT conducted indicates transmissibility (95.83 m^2/sec) which is close to High class.*

4) *Ground water shows contamination on account of presence of colour, Total organic carbon (TOC), sulphate, and Chemical oxygen demand (COD). The contamination is in South West directions, assessed based on colour concentration contours. Further, ground water contamination has reached upto 300 feet which has been supported by ground water quality and information provided by well owners. It has been stated that, total volume of estimated contaminated ground water is 2.198 MCM [area contaminated (196211 m) x thickness (70 m) × specific yield (0.16)]*

5) *Geophysical investigation and Ground Penetrating Radar (GPR) scanning indicate likely over flow of effluents and strong reflections at the depth 2-3 m which can be linked with SEP and HWSS*

6) *Soil samples show contamination with elevated concentration of sodium, sulphate and iron and particularly samples collected from SEP and HWSS. Soil samples collected at 3 m depth from SEP further indicated dark color fluid which had high TDS (greater than 100000 mg/l) indicating that effluent is still present in the SEP.*

7) *It is estimated that, contamination has spread over 21266 sq m area.*

8) *Most vulnerable wells in terms of high contamination are 5 wells (MG 3, MG 4, MG 5, MG 6 and MG 8) and with respect to soil contamination, 14 soil samples have been collected and analyzed. Soil analysis results indicate contamination due to Aluminium (12429 mg/kg - MS 12), iron (12767.4 mg/kg - MS 10 C), chromium (151.5 mg/ kg - MS 9B), Manganese (355.9 mg/ kg - 10C), nickle (405.8 mg/kg - MD 11) and copper (41.3 mg/kg - 9B). The study recorded the finding that, contamination up to 3 m depth can be established and ground water contamination is to an extent of 300 feet below ground level. The estimated volume of contaminated soil is 48064 m^3.*

9) *Suggested remediation options include transportation of contaminated soil to common TSDF site at Nimbua and Pump and treatment of contaminated wells."*

5. We find the report of NEERI has been deficient in following aspects and also no alertness has been shown by State of Punjab and PPCB in examining the report of NEERI and coming out with outlines of remediation plan. The main deficiencies in the report are:-

> *"(i) Report does not specifically disclose the concentrations of contaminants which are further required to be stabilized / processed in TSDF in accordance with HOWM Rules.*
>
> *(ii) Report does not give any information which may be based on other resources regarding effects of coloured well water being used for agriculture and any public or cattle health survey.*
>
> *(iii) PPCB or State of Punjab has not opined on remediation steps to be taken like, immediately taking at least one contaminated well and applying applicable method for treatment.*
>
> *(iv) Since the ground water samples after treatment have Sodium Absorption Ratio (SAR) < 10 meeting the criteria for irrigation water and before it can been provided to the farmers, the treated ground water samples must be tested for Fish Bioassay for its suitability to crops"*

6. Learned Counsel appearing for PPCB on instruction from Mr. Guneet Sethi, Environmental Engineer, Regional Office, Sangrur has informed that the work of removal of the contaminated soil and shifting it to the TSDF has been assigned to Nimbua Greenfield (Punjab) Association (NGPA) and the said agency is an authorized agency by PPCB which has taken the samples. She has submitted, on oral instructions, that the entire remediation work will be completed within a period of six months.

7. We are also of the view that after shifting of the soil from the area concerned, the restoration of the land is required to be done. Hence, we form a joint Committee comprising of the representative of Member Secretary, CPCB; representative of NEERI and the representative of the PPCB. The representative of the PPCB will act as coordinating agency.

8. The joint Committee will oversee the work of shifting of contaminated soil and also the restoration of the land which was contaminated. The Committee will particularly consider:-

(i) In case of transportation of contaminated soil/ sludge to common TSDF site, stabilization/ processing should be done in accordance with HOWM Rules and SOP laid down by CPCB.

(ii) The Report of compliance should indicate effects of utilization of colored water from wells for irrigation including health of villagers and cattle."

9. The joint Committee will submit the interim report through CS by 31.08.2024 and the subsequent report by 30.11.2024 and if required, every month thereafter till the work is over, before the Registrar General of this Tribunal by e-mail at judicial-ngt@gov.in preferably in the form of searchable PDF/ OCR Support PDF and not in the form of Image PDF and if found necessary, the matter will be listed before the Bench for consideration after submission of second report.

10. MA is accordingly disposed of.

Prakash Shrivastava, CP

Arun Kumar Tyagi, JM

Dr. A. Senthil Vel, EM

May 28, 2024
M.A. No. 103/2022 In
Original Application No. 169/2021
SN

Annexure-B
(of joint committee
report dt. 16.12.2024)

Interim Report of the Joint Committee constituted in the matter M.A no. 103 of 2022 in O.A no. 169 of 2021 titled as H.C. Arora Vs State of Punjab & Ors.

1. BACKGROUND:

Briefly Stated, M.A No. 103 of 2022 filed by Sh. H.C. Arora in O.A No. 169 of 2021 was heard by the Hon'ble National Green Tribunal. The grievance raised in the said application was the alleged failure of the State Authorities to take remedial measures against contamination of ground water in Village Aloarakh, Block Bhawanigarh, District Sangrur.

The observations of the Hon'ble National Green Tribunal as contained in paragraph 5 & 6 of the order dated 28.05.2024 are reproduced herein below:

"5: *We find the report of NEERI has been deficient in following aspects and also no alertness has been shown by State of Punjab and PPCB in examining the report of NEERI and coming out with outlines of remediation plan. The main deficiencies in the report are:-*

1) *Report does not specifically disclose* ***the concentrations of contaminants which are further required to be stabilized / processed in TSDF in accordance with HOWM Rules****.*

2) *Report does not give any information which may be based on other resources regarding* ***effects of coloured well water being used for agriculture and any public or cattle health survey.***

3) *PPCB or State of Punjab has not opined* ***on remediation steps to be taken like, immediately taking at least one contaminated well and applying applicable method for treatment.***

4) *Since the ground water samples after treatment have* ***Sodium Absorption Ratio (SAR) < 10 meeting the criteria for irrigation water and before it can be provided to the farmers, the treated ground water samples must be tested for Fish Bioassay for its suitability to crops"***

6*: Learned Counsel appearing for PPCB on instruction from Mr. Guneet Sethi, Environmental Engineer, Regional Office, Sangrur has informed that the work of removal of the contaminated soil and shifting it to the TSDF has been assigned to Nimbua Greenfield (Punjab) Association (NGPA) and the said agency is an authorized agency by PPCB which has taken the samples****. She has submitted, on oral instructions, that the entire remediation work will be completed within a period of six months."***

The Hon'ble National Green Tribunal has disposed off the said M.A No. 103 of 2022 in O.A No. 169 of 2021 titled as H.C. Arora Vs State of Punjab & Ors. vide order dated 28.05.2024

by constituting Joint Committee. The directions of the Hon'ble NGT as contained in paragraph 7 & 8 of the order dated 28.05.2024 are reproduced herein below:

*"**7**: We are also of the view that after shifting of the soil from the area concerned, the restoration of the land is required to be done.* ***Hence, we form a joint Committee comprising of the representative of Member Secretary, CPCB; representative of NEERI and the representative of the PPCB.*** *The representative of the PPCB will act as coordinating agency.*

8**: The joint Committee will* ***oversee the work of shifting of contaminated soil and also the restoration of the land which was contaminated. *The Committee will particularly consider:-*

(i) In case of transportation of contaminated soil/ sludge to common TSDF site, ***stabilization/ processing should be done in accordance with HOWM Rules and SOP laid down by CPCB****.*

(ii) The Report of compliance should ***indicate effects of utilization of colored water from wells for irrigation including health of villagers and cattle."***

The Joint Committee was directed to submit the interim report through Chief Secretary, Punjab and in this regard, paragraph 9 of the order dated 28.05.2024 is reproduced herein below:

*"**9**:* ***The joint Committee will submit the interim report through CS by 31.08.2024*** *and the subsequent report by 30.11.2024 and if required, every month thereafter till the work is over, before the Registrar General of this Tribunal by e-mail at judicial-ngt@gov.in preferably in the form of searchable PDF/ OCR Support PDF and not in the form of Image PDF and if found necessary, the matter will be listed before the Bench for consideration after submission of second report."*

A copy of the Hon'ble National Green Tribunal order dated 28.05.2024 is enclosed as **Annexure-A**.

2. COMPLIANCE OF THE ORDERS OF HON'BLE NATIONAL GREEN TRIBUNAL:

2.1. CONSTITUTION OF JOINT COMMITTEE:

In compliance to Hon'ble NGT order dated 28.05.2024, the Punjab Pollution Control Board appointed the Environmental Engineer, Punjab Pollution Control Board, Regional Office, Sangrur as Nodal officer in the case on behalf of PPCB and vide letter no. 15432-33 dated 21.06.2024 and has requested the CPCB and NEERI, Nagpur to appoint their respective

nodal officers in the Joint Committee. A copy of PPCB letter no. 15432-33 dated 21.06.2024 is enclosed as **Annexure-B.**

In pursuance to the communication of the PPCB, CPCB vide its email dated 04.07.2024 has nominated Dr. Narender Sharma, Scientist-F, from Regional Directorate, Chandigarh as a member in the Joint Committee representing Member Secretary, Central Pollution Control Board. A copy of CPCB mail dated 04.07.2024 is enclosed as **Annexure-C.**

NEERI, Nagpur vide its email dated 01.07.2024 has nominated Dr. Paras Pujari, Scientist In-charge to represent their institute in the Joint Committee. A copy of NEERI mail dated 01.07.2024 is enclosed as **Annexure-D**.

2.1.2: PROGRESS MADE BY THE JOINT COMMITTEE:

A. The Joint Committee was directed by Hon'ble National Green Tribunal to ***oversee the work of shifting of contaminated soil and also the restoration of the land which was contaminated.***

   (i) *In case of transportation of contaminated soil/ sludge to common TSDF site,* ***stabilization/ processing should be done in accordance with HOWM Rules and SOP laid down by CPCB****.*

   (ii) *The Report of compliance should* ***indicate effects of utilization of colored water from wells for irrigation including health of villagers and cattle.***

B. PPCB was requested by the CPCB member vide email dated July 11, 2024 to share the ***schedule for lifting the contaminated soil with the Members of the Joint Committee. Additionally, it was also requested that site visits may also be planned accordingly (Annexure-E).***

C. It was informed by PPCB member and PPCB vide Email dated July 16, 2024 (**Annexure-F**) that:

   i. M/s Re Sustainability Ltd. (sole operator of TSDF facility in the State located at Village Nimbua, Tehsil Dera Bassi, Distt. SAS Nagar) has already been requested by the Board vide Letter no. 15437 dated 21.06.2024 to send detailed proposal including expenditure to be incurred in excavating, lifting, transporting and disposal of soil in compliance to HWM Rules, 2016 and SoP laid by CPCB in the matter.

   ii. The said agency visited the site on 25.05.2024 and collected few random samples for preliminary quality screening.

iii. The said agency had thereafter visited the site on 27.06.2024 in order to collect samples for carrying out lab testing and to identify disposal pathway. However, due to rain and water logging at site, soil sampling could not be carried out. It had again attempted to collect the soil samples on 02.07.2024 but rain started after the team reached at site.

iv. M/s Re Sustainability Limited finally visited the site on 05.07.2024 and soil samples were collected in the presence of PPCB officers, from contaminated zones as identified by NEERI vide its detailed Environment Assessment Report submitted on 21.05.2024.

v. The proposal from M/s Re Sustainability Limited regarding lifting of contaminated soil from the subject cited site is awaited and is expected by 20.07.2024 as indicated verbally by its team. Accordingly, the schedule for lifting of contaminated soil will be shared on submission and acceptance of proposal to be submitted by M/s Re Sustainability Ltd., Village Nimbua, Tehsil Dera Bassi, Distt. SAS Nagar.

D. PPCB was requested vide email dated July 17, 2024 to plan a site visit for taking samples of coloured ground water for conducting fish bio-assay in view of the directions of the Hon'ble Tribunal to the Joint Committee for not only supervision of lifting of contaminated soil but also that ***"The Report of compliance should indicate effects of utilization of colored water from wells for irrigation including health of villagers and cattle."***

E. A meeting in this regard has been scheduled under the Chairmanship of the Secretary to Government of Punjab, Department of Science, Technology and Environment, Punjab on 17.07.2024**,** wherein after deliberations, it was decided (**Annexure-G**) as under:

i. *M/s Re-Sustainability Ltd, Tehsil DeraBassi, SAS Nagar shall submit short term remedial Action Plan for shifting of contaminated soil including cost to be incurred in implementing the same, by 21.07.2024.*

ii. *The officers of the Board alongwith representatives of M/s Re-Sustainability Ltd, Tehsil DeraBassi, SAS Nagar shall attend the O/o SSTE on 22.07.2024 (2.00 pm) alongwith Action Plan to be submitted by the Agency as detailed at Sr. no. 1, for taking further action in the matter."*

iii. NEERI, Nagpur shall submit details of expenditure to be incurred in implementing long term remedial measures and other details as already sought by the Board, by 20.08.2024 (considering request made by the institute)

iv. A meeting be fixed on 22.08.2024 (12:45 PM) through VC with all concerned stakeholders to discuss details to be submitted by NEERI as mentioned at sr. no.3 regarding implementation of long term remedial measures.

F. PPCB was requested vide email dated 25.07.2024 to provide the schedule of lifting the contaminated soil, if prepared, with reference to the decisions taken in the meeting held

on 17.07.2024 and also to plan site visit for sampling of contaminated wells for bioassay test (**Annexure-H**).

G. The site visit was conducted by the Joint Committee on 04.08.2024 to carry out ground water sampling including analysis of Bio-Assay to check its suitability for irrigation. During site visit, 2 Nos. ground water samples were collected from tubewell located in the vicinity and downside of the contaminated site, one No. groundwater sample from just upstream of the contaminated site and one No. sample located at comparatively far reached distance and upstream of contaminated site. The samples for Bio-assay test were sent to CPCB head Office Laboratory, Delhi and NEERI, Nagpur. CPCB Team also collected samples from these borewells for the parameters namely Colour, pH, BOD, COD, TDS and TOC, for reference and future use. The results of analysis are awaited.

H. It was informed by the member representing PPCB that various actions have been taken by PPCB for commencement of remediation at site and the same are as under:

i. Earlier the Hon'ble NGT vide order dated 23.09.2015 passed in Original Application no. 35 of 2013 and Original Application no. 386 of 2018 titled as Parminder Singh and Ors Vs PPCB and Ors has directed the respondents to pay atleast an amount of Rs. 2 crores under the 'polluter pays' principle, to be used for providing safe drinking water and better solid waste management facilities to the people of the petitioner's village. Accordingly, PPCB has written letter for recovery of amount of penalty to the Deputy Commissioner, Sangrur, Ludhiana, Kota & Noida (Gautam Budh Nagar) and followed the case physically with the said offices. The office of Deputy Commissioner, Sangrur, Ludhiana, Kota & Ludhiana vide separate letters had informed that no property is registered in the name of respondents. The photocopies of correspondence is attached as **Annexure-I.**

ii. The Punjab Pollution Control Board alongwith representatives of the District Administration has installed display board in English as well as Punjabi language at the site indicating "Water Not Fit for Drinking" at five number tubewells, which have been found contaminated by earlier Joint Committee report dated 29.03.2022. The information in this regard has also been uploaded on the official website of the District Administration, Sangrur and Munadi (Public announcement) was also conducted in the nearby villages to make the public aware about the contamination of ground water of tubewells as conveyed by District Administration vide letter no. 3055 dated 07.06.2022. A copy of letter no. 3055 dated 07.06.2022 is enclosed as **Annexure-J.**

iii. The Punjab Pollution Control Board has launched a FIR no. 0181 dated 07.08.2024 against abovementioned accused with Police Authorities at Tehsil Bhawanigarh, District Sangrur under following sections of IPC 1860:

a. 268 i.e for causing public nuisance
b. 269 i.e negligent act likely to spread infection of disease dangerous to life
c. 270 i.e. malignant act likely to spread infection of disease dangerous.

A copy of FIR bearing no. 0181 dated 07.08.2024 is attached as **Annexure-K.**

iv. Total cost of carrying out remediation has been projected to be Rs. 105.59 Crores as per cost estimates provided by M/s Re-Sustainability and NEERI. It is pertinent to mention here that NEERI has also informed that since ground water remediation is a new evolving field therefore it is further exploring plausible options to implement long term remedial measures at site. Accordingly, the Board vide order no. 351 dated 08.08.2024 **(Annexure-L)** has directed accused (as mentioned therein) to deposit an amount of Rs. 105.59 crore with the office of the Punjab Pollution Control Board at Patiala or Sangrur, within 15-days from the date of receipt of PPCB orders, as the cost of remediation of the contaminated site under Polluter Pay's Principle in lieu of causing huge damage to the environment resultant which the tubwells in the area are spewing colored polluted water which is harmful to health of people of the area as well as to vegetation. The said orders were conveyed to the accused vide Board's letter no. 1949-51 dated 08.08.2024 **(Annexure-M)** through addresses mentioned by them in the Judicial proceedings before the Hon'ble Supreme Court of India.

v. The Punjab Pollution Control Board has filed Misc. Application (in dispose of cases) dated 13.08.2024 bearing filing no. 0701114017232024 in Hon'ble NGT for acceptance and issuing necessary directions to persons responsible for contamination at site for depositing cost of remediation of contaminated soil and groundwater under Polluter Pay's principle as neither State of Punjab nor Punjab Pollution Control Board is in a position to bear such a huge expenditure for remediation of contaminated site. A copy of the application is enclosed as **Annexure- N.**

vi. The Punjab Pollution Control Board is pursuing applications filed in Hon'ble Punjab & Haryana High Court and District Court for expeditious conclusion of complaints filed against accused for violation of provisions of Water (Prevention & Control of Pollution) Act, 1974 and for recovering the cost of remediation to be incurred at site.

vii. The Punjab Pollution Control Board is providing potable water through tankers in affected villages on it's own expenditure through the Department of Water Supply and Sanitation. Till date, the Board has incurred an expenditure of

appox. Rs. 24 Lakhs for providing safe drinking water to villagers.

viii. The Punjab Pollution Control Board has incurred an expenditure above Rs. 1 Crore in carrying out detailed environment assessment at site through institutes, providing potable drinking water, ground water collection and analysis etc.

The Joint Committee was also apprised by PPCB Member that considering the circumstances above, it has been decided by competent authority of the Board that further action with regard to commencement of remediation at site shall be taken after recovery of cost from the accused persons who had caused contamination at the site, as neither State of Punjab nor the Punjab Pollution Control Board is in a position to bear such a huge remediation cost.

3. **CONCLUSION**:

i. ***The Joint Committee has not yet received schedule for carrying out remediation from the PPCB for the contaminated site in question, hence it could not be assessed whether the plan aligns with the CPCB's SOP. According to the PPCB Member, Competent Authority of PPCB has decided that further action with regard to commencement of remediation at site shall be taken after recovery of cost from the accused persons who had caused contamination at the site, as neither State of Punjab nor the Punjab Pollution Control Board is in a position to bear such a huge remediation cost.***

ii. In view of the observations made by the Hon'ble National Green Tribunal on NEERI's Report, the *Joint Committee has collected samples from four bore-wells for bio-assay and analysis of other parameters. The results of these analyses are currently awaited*. Based on the analysis results, along with information from other sources and further studies, *the Joint Committee will assess the impact of using the colored well water for irrigation, as well as its effects on the health of villagers and cattle, as directed by the Hon'ble National Green Tribunal.*

14/8/2024

Er. Guneet Sethi
Environmental Engineer
PPCB,
Regional Office, Sangrur

14/08/2024

Dr. Narendra Sharma
Scientist-F
Regional Directorate,
CPCB, Chandigarh

14.8.24

Dr. Paras Pujari
Senior Principal and In-Charge, Water Resources Group, CSIR-NEERI, Nagpur

Item No. 10 Court No. 1

BEFORE THE NATIONAL GREEN TRIBUNAL
PRINCIPAL BENCH, NEW DELHI

M.A. No. 103/2022
In
Original Application No. 169/2021

H.C. Arora Applicant

Versus

State of Punjab & Ors. Respondent(s)

Date of hearing: 28.05.2024

CORAM: HON'BLE MR. JUSTICE PRAKASH SHRIVASTAVA, CHAIRPERSON
HON'BLE MR. JUSTICE ARUN KUMAR TYAGI, JUDICIAL MEMBER
HON'BLE DR. A. SENTHIL VEL, EXPERT MEMBER

Applicant: Ms. Sunaina, Adv. for Applicant (Through VC)

Respondent: Ms. Richa Kapoor & Ms. Atika Singh, Advs. with Mr. Guneet Sethi, Environmental Engineer, Punjab PCB
Mr. Malay Swapnil, Advs. with Dr. Paras Ranjan Pujari (Through VC), Sr. Principal Scientist, CSIR-NEERI
Mr. Vikrant Pachnanda, Adv. for CPCB (Through VC)
Ms. Babita Kushwaha, Adv.
Mr. Varun Chandiok, Adv. (Through VC) for Bhupinder Pal Singh

ORDER

1. This M.A. has been registered on the basis of the report submitted in pursuance to the order of the Tribunal dated 31.03.2022 passed in O.A. No. 169/2021.

2. In the OA, the grievance was raised against the failure of the State Authorities to take remedial measures against contamination of ground water in village Aloarakh Block of Bhiwanigarh, District Sangrur. The Tribunal by order dated 31.03.2022 had disposed of the OA by directing as under:-

> *"5. Having regard to the composition of the Committee and the material considered in the report and also in absence of any opposition by the State inspite of copy of report having been served on it, we accept the report of the Committee and issue directions in terms thereof. The Chief Secretary, Punjab, in coordination with the concerned authorities may ensure remedial action speedily to effectuate the guaranteed right of the citizens to clean potable water. The Chief Secretary may also take into account the suggestions in the additional report referred to above. The cost of remediation has to be borne by the State in the first instance without prejudice to the recovery of the amount later from the violators/erring officers. Area in question be treated as 'contaminated site' and remediation plan as per the Report of the Joint Committee may be executed within six months. If it becomes necessary, the Plan may be suitably modified in consultation with CPCB and any other Institution. Chief Secretary may constitute a credible executing/ monitoring Committee to get the remediation plan executed and to monitor its timely and proper execution. Status report of compliance as on 31.8.2022 may be forwarded to Registrar General, NGT on or before September 30, 2022 by email. District Magistrate, Sangrur may place the information in public domain and appropriately caution the inhabitants about contaminated water in the interest of public health. PPCB and State GWB may regularly monitor the quality of contaminated water."*

3. The report dated 29.09.2022 filed by the PPCB in compliance of the aforesaid order reflected that the samples from 18 borewells were taken and that contamination had spread significantly. Therefore, the Tribunal found that the problem had become serious which needed consideration and immediate action.

4. The stand was taken by the PPCB that NEERI was engaged to ascertain the level and extent to which ground water and soil contamination had occurred and suggest remedial action. Hence, the Tribunal had on the previous occasion granted time to NEERI to submit report which has now been submitted on 21.05.2024. As per the report, NEERI has executed Environmental Site Assessment and remediation of contaminated ground water and soil and control further contamination. The findings of the report are summarized as under:

> *1) Investigations are based on samples drawn from 35 wells and 11 soil samples. Samples were analyzed for pre and post*

monsoon period. Study is supported by Aquifer Performance Test and Geophysical investigation. The investigated area covered 5 km radius of the industry in question. The apparent findings is also with respect to coloured water of wells under operation.

2) *The sole cause is legacy hazardous waste generated by an industry called Matharu Chemical producing H-Acid. The waste was stored in Solar Evaporation Pond and stored in Hazardous Waste Storage Shed. From these two sites contamination has spread.*

3) *APT conducted indicates transmissibility (95.83 m^2/sec) which is close to High class.*

4) *Ground water shows contamination on account of presence of colour, Total organic carbon (TOC), sulphate, and Chemical oxygen demand (COD). The contamination is in South West directions, assessed based on colour concentration contours. Further, ground water contamination has reached upto 300 feet which has been supported by ground water quality and information provided by well owners. It has been stated that, total volume of estimated contaminated ground water is 2.198 MCM [area contaminated (196211 m) x thickness (70 m) × specific yield (0.16)]*

5) *Geophysical investigation and Ground Penetrating Radar (GPR) scanning indicate likely over flow of effluents and strong reflections at the depth 2-3 m which can be linked with SEP and HWSS*

6) *Soil samples show contamination with elevated concentration of sodium, sulphate and iron and particularly samples collected from SEP and HWSS. Soil samples collected at 3 m depth from SEP further indicated dark color fluid which had high TDS (greater than 100000 mg/l) indicating that effluent is still present in the SEP.*

7) *It is estimated that, contamination has spread over 21266 sq m area.*

8) *Most vulnerable wells in terms of high contamination are 5 wells (MG 3, MG 4, MG 5, MG 6 and MG 8) and with respect to soil contamination, 14 soil samples have been collected and analyzed. Soil analysis results indicate contamination due to Aluminium (12429 mg/kg - MS 12), iron (12767.4 mg/kg - MS 10 C), chromium (151.5 mg/ kg - MS 9B), Manganese (355.9 mg/ kg - 10C), nickle (405.8 mg/kg - MD 11) and copper (41.3 mg/kg - 9B). The study recorded the finding that, contamination up to 3 m depth can be established and ground water contamination is to an extent of 300 feet below ground level. The estimated volume of contaminated soil is 48064 m^3.*

9) *Suggested remediation options include transportation of contaminated soil to common TSDF site at Nimbua and Pump and treatment of contaminated wells."*

5. We find the report of NEERI has been deficient in following aspects and also no alertness has been shown by State of Punjab and PPCB in examining the report of NEERI and coming out with outlines of remediation plan. The main deficiencies in the report are:-

> *"(i) Report does not specifically disclose the concentrations of contaminants which are further required to be stabilized / processed in TSDF in accordance with HOWM Rules.*
>
> *(ii) Report does not give any information which may be based on other resources regarding effects of coloured well water being used for agriculture and any public or cattle health survey.*
>
> *(iii) PPCB or State of Punjab has not opined on remediation steps to be taken like, immediately taking at least one contaminated well and applying applicable method for treatment.*
>
> *(iv) Since the ground water samples after treatment have Sodium Absorption Ratio (SAR) < 10 meeting the criteria for irrigation water and before it can been provided to the farmers, the treated ground water samples must be tested for Fish Bioassay for its suitability to crops"*

6. Learned Counsel appearing for PPCB on instruction from Mr. Guneet Sethi, Environmental Engineer, Regional Office, Sangrur has informed that the work of removal of the contaminated soil and shifting it to the TSDF has been assigned to Nimbua Greenfield (Punjab) Association (NGPA) and the said agency is an authorized agency by PPCB which has taken the samples. She has submitted, on oral instructions, that the entire remediation work will be completed within a period of six months.

7. We are also of the view that after shifting of the soil from the area concerned, the restoration of the land is required to be done. Hence, we form a joint Committee comprising of the representative of Member Secretary, CPCB; representative of NEERI and the representative of the PPCB. The representative of the PPCB will act as coordinating agency.

8. The joint Committee will oversee the work of shifting of contaminated soil and also the restoration of the land which was contaminated. The Committee will particularly consider:-

(i) In case of transportation of contaminated soil/ sludge to common TSDF site, stabilization/ processing should be done in accordance with HOWM Rules and SOP laid down by CPCB.

(ii) The Report of compliance should indicate effects of utilization of colored water from wells for irrigation including health of villagers and cattle."

9. The joint Committee will submit the interim report through CS by 31.08.2024 and the subsequent report by 30.11.2024 and if required, every month thereafter till the work is over, before the Registrar General of this Tribunal by e-mail at judicial-ngt@gov.in preferably in the form of searchable PDF/ OCR Support PDF and not in the form of Image PDF and if found necessary, the matter will be listed before the Bench for consideration after submission of second report.

10. MA is accordingly disposed of.

Prakash Shrivastava, CP

Arun Kumar Tyagi, JM

Dr. A. Senthil Vel, EM

May 28, 2024
M.A. No. 103/2022 In
Original Application No. 169/2021
SN

Annexure-B
(of joint committee report dt. 14.08.2024)

PUNJAB

ਪੰਜਾਬ ਪ੍ਰਦੂਸ਼ਣ ਕੰਟਰੋਲ ਬੋਰਡ
PUNJAB POLLUTION CONTROL BOARD

No. 15432-33 Dated. 21-06-2024

To

1. Member Secretary,
   Central Pollution Control Board,
   Parivesh Bhawan, East Arjun Nagar,
   Delhi-110032.

2. Dr. Atul Naryan Vaidya (Director),
   National Environmental Engineering Research Institute,
   Nehru Marg, Nagpur-440020 Maharashta.

Subject: - **Hon'ble NGT order dated 28.05.24 in M.A. No. 103/2022 of Original Application No. 169/2021- H.C Arora vs State of Punjab (M/s Matharu Chemical Industries, Vill. Aloarakh, Tehsil Bhawanigarh, District Sangrur).**

Reference: - **Hon'ble NGT order dated 28.05.2024.**

It is intimated that Hon'ble NGT vide it's order dated 28.05.24 (copy enclosed) in the subject cited matter has formed a joint Committee comprising of the representative of Member Secretary, CPCB; representative of NEERI and the representative of the PPCB for restoration of land is required to be done after shifting of soil from the area concerned.

The Joint Committee has been directed to oversee the work of shifting of contaminated soil and also restoration of land which was contaminated. The Committee will particularly consider the following:

(i) In case of transportation of contaminated soil/ sludge to common TSDF site, stabilization/ processing should be done in accordance with HOWM Rules and SOP laid down by CPCB.

(ii) The Report of compliance should indicate effects of utilization of colored water from wells for irrigation including health of villagers and cattle."

ਵਾਤਾਵਰਣ ਭਵਨ, ਨਾਭਾ ਰੋਡ, ਪਟਿਆਲਾ-147001
Vatavaran Bhawan, Nabha Road, Patiala -147001
Phone : Chairman. : 0175-2215793, Member Secretary : 0175-2215802 (O)
Website : www.ppcb.gov.in | E-Mail : chairmanppcb@yahoo.in | msppcb@gmail.com |

The Joint Committee has been directed to submit interim report in the matter through Hon'ble Chief Secretary, Punjab by 31.08.2024 and subsequently by 30.11.2024 and if required every month till work is completed.

In compliance to directions issued by Hon'ble NGT, Environmental Engineer, Regional Office, Sangrur has been appointed as nodal officer on the behalf of the Board.

It is therefore requested to appoint nodal officer in the Joint Committee to co-ordinate with other members of the Committee in order to ensure compliance of above directions by Hon'ble NGT in stipulated time period.

In case any issue related to the above, please feel free to put forward such query to PPCB

Member Secretary

Endst. no. 15434-36 **Dated.** 21-06-2024

A copy of the above is forwarded to the following for information & necessary action-

1. The Chief Environmental Engineer (B), Punjab Pollution Control Board, Patiala.
2. The Senior Environmental Engineer, Punjab Pollution Control Board, Zonal Office-II, Patiala.
3. The Environmental Engineer, Punjab Pollution Control Board, Regional Office, Sangrur.

Member Secretary

Annexure-C
(of joint committee
report dt. 14.08.2024)

Gmail

Environmental Engineer <eerosangrur@gmail.com>

Fwd: Nomination in compliance of Hon'ble NGT order dated 28.05.2024 in MA No. 103/2022 in OA No. 169/2021; H.C. Arora Applicant Vs. State of Punjab & Ors. - reg

Amrik Singh <sloppcbpta@gmail.com> Fri, Jul 5, 2024 at 9:07 AM
To: SEE-PPCB <ppcbzop2@ymail.com>, Environmental Engineer <eerosangrur@gmail.com>

R/s
Kindly download the attachment for information and necessary action please.
Regards

---------- Forwarded message ---------
From: **Member Secretary PPCB** <msppcb@punjab.gov.in>
Date: Thu, Jul 4, 2024 at 8:10 PM
Subject: Fwd: Nomination in compliance of Hon'ble NGT order dated 28.05.2024 in MA No. 103/2022 in OA No. 169/2021; H.C. Arora Applicant Vs. State of Punjab & Ors. - reg
To: sloppcbpta <sloppcbpta@gmail.com>

From: "Contaminated Sites" <remediation.cpcb@gov.in>
To: "Member Secretary PPCB" <msppcb@punjab.gov.in>
Cc: "Narender Sharma" <narendersharma.cpcb@gov.in>, "Vijay yadav" <vpyadav.cpcb@nic.in>, "Rambabu G" <grbabu.cpcb@nic.in>
Sent: Thursday, July 4, 2024 3:22:43 PM
Subject: Nomination in compliance of Hon'ble NGT order dated 28.05.2024 in MA No. 103/2022 in OA No. 169/2021; H.C. Arora Applicant Vs. State of Punjab & Ors. - reg

Hon'ble NGT matter

Sir,

This has reference to the Hon'ble NGT order dated 28.05.2024 in MA No. 103/2022 in OA No. 169/2021; H.C. Arora Applicant Vs. State of Punjab & Ors. regarding action taken on remediation of contaminated site at "M/s Mahaluxmi Organo Chemical Industries, Nabha Road, Bhawanigarh, Sangrur". The Competent Authority, CPCB has nominated Dr. Narendra Sharma, Scientist-F, from Regional Directorate, Chandigarh, as a member of the Joint Committee representing Member Secretary, CPCB. Contact details of Dr. Narendra Sharma is given below:

Dr. Narendra Sharma
E-mail: narendersharma.cpcb@gov.in
Mobile No.: 09814004377

With regards,

V. P. Yadav
(Scientist-F)
Director & Head
Waste Management Division-I
Central Pollution Control Board,
(M/o Environment, Forest & Climate Change, GoI),
Parivesh Bhawan, East Arjun Nagar,

Delhi - 110032
Ph.: +91-11-43102324 (O)

CPCB letter dated 04-07-24 reg Nomination in compliance of Hon’ble NGT order dated 28.05.2024.pdf
493K

Annexure-D
(of joint committee
report dt. 14.08.2024)

Gmail

Environmental Engineer <eerosangrur@gmail.com>

Fwd: Hon'ble NGT order dated 28.05.24 in M.A. No. 103/2022 of Original Application No. 169/2021- H.C Arora vs State of Punjab (M/s Matharu Chemical Industries, Vill. Aloarakh, Tehsil Bhawanigarh, District Sangrur)

ppcb Zop <ppcbzop2@ymail.com> Mon, Jul 1, 2024 at 1:09 PM
Reply-To: ppcb Zop <ppcbzop2@ymail.com>
To: Environmental Engineer <eerosangrur@gmail.com>

Kindly download the attachment.

Senior Environmental Engineer,
Zonal Office-II,Punjab Pollution Control Board, Patiala
0175-2306222

----- Forwarded Message -----
From: DIRECTOR NEERI <director@neeri.res.in>
To: "msppcb@gmail.com" <msppcb@gmail.com>
Cc: MS, CPCB <mscb.cpcb@nic.in>; Paras Pujari <pr_pujari@neeri.res.in>; "ceebtippcb@gmail.com" <ceebtippcb@gmail.com>; CEE Bathinda <ceebti.ppcb@punjab.gov.in>; "ppcbrosangrur@gmail.com" <ppcbrosangrur@gmail.com>; "ppcbzop2@ymail.com" <ppcbzop2@ymail.com>
Sent: Monday, July 1, 2024 at 10:26:26 AM GMT+5:30
Subject: Re: Hon'ble NGT order dated 28.05.24 in M.A. No. 103/2022 of Original Application No. 169/2021- H.C Arora vs State of Punjab (M/s Matharu Chemical Industries, Vill. Aloarakh, Tehsil Bhawanigarh, District Sangrur)

Dear Sir,

I am directed to inform that Director, CSIR-NEERI has nominated Dr. Paras Pujari to be the Nodal Officer from CSIR-NEERI in the Joint Committee formed by the Hon'ble NGT vide its order dated 28/05/2024. He will co-ordinate with other members of the Committee in the matter.
Regards,

PPS to Director

O/o Director
CSIR-National Environmental Engineering Research Institute (CSIR-NEERI)
Nehru Marg, Nagpur - 440 020
Ph:0712-2249999
Email: director@neeri.res.in

From: msppcb@gmail.com
To: "MS, CPCB" <mscb.cpcb@nic.in>, "Atul Vaidya" <an_vaidya@neeri.res.in>
Cc: "DIRECTOR NEERI" <director@neeri.res.in>, "Paras Pujari" <pr_pujari@neeri.res.in>, ceebtippcb@gmail.com, "CEE Bathinda" <ceebti.ppcb@punjab.gov.in>, ppcbrosangrur@gmail.com, ppcbzop2@ymail.com
Sent: Friday, June 21, 2024 6:14:45 PM
Subject: Hon'ble NGT order dated 28.05.24 in M.A. No. 103/2022 of Original Application No. 169/2021- H.C Arora vs State of Punjab (M/s Matharu Chemical Industries, Vill. Aloarakh, Tehsil Bhawanigarh, District Sangrur)
[Quoted text hidden]

Gmail

Environmental Engineer <eerosangrur@gmail.com>

Fwd: Nomination in compliance of Hon'ble NGT order dated 28.05.2024 in MA No. 103/2022 in OA No. 169/2021; H.C. Arora Applicant Vs. State of Punjab & Ors. - reg

MS- PPCB <msppcb@gmail.com> Thu, Jul 11, 2024 at 1:38 PM
To: ceebtippcb@gmail.com, SEE-PPCB <ppcbzop2@ymail.com>, Environmental Engineer <eerosangrur@gmail.com>, sloppcbpta@gmail.com

MOST IMPORTANT

Dear Officers

Please find herewith the attached trailing mail for further necessary action at your end.

With Regards

Member Secretary
Punjab Pollution Control Board,
Vatavaran Bhawan, Nabha Road,
Patiala-147001

---------- Forwarded message ---------
From: **Narender Sharma** <narendersharma.cpcb@gov.in>
Date: Thu, Jul 11, 2024 at 12:52 PM
Subject: Re: Nomination in compliance of Hon'ble NGT order dated 28.05.2024 in MA No. 103/2022 in OA No. 169/2021; H.C. Arora Applicant Vs. State of Punjab & Ors. - reg
To: Member Secretary PPCB <msppcb@punjab.gov.in>, msppcb <msppcb@gmail.com>
Cc: Vijay yadav <vpyadav.cpcb@nic.in>, Rambabu G <grbabu.cpcb@nic.in>, Contaminated Sites <remediation.cpcb@gov.in>

URGENT-NGT Matter

Sir,

This has reference to the trailing email from CPCB Head Office, communicating nomination of Member as a representative of Member Secretary, CPCB.

In this regard, it may kindly be noted that Hon'ble NGT vide Order dated 28/5/2024 in the above matter has directed as under:

"7. We are also of the view that after shifting of the soil from the area concerned, the restoration of the land is required to be done. Hence, we form a joint Committee comprising of the representative of Member Secretary, CPCB; representative of NEERI and the representative of the PPCB. The representative of the PPCB will act as coordinating agency.
8. The joint Committee will oversee the work of shifting of contaminated soil and also the restoration of the land which was contaminated. The Committee will particularly consider:-
(i) In case of transportation of contaminated soil/ sludge to common TSDF site, stabilization/ processing should be done in accordance with HOWM Rules and SOP laid down by CPCB.
(ii) The Report of compliance should indicate effects of utilization of colored water from wells for irrigation including health of villagers and cattle."
9. The joint Committee will submit the interim report through CS by 31.08.2024 and the subsequent report by 30.11.2024 and if required, every month thereafter till the work is over, before the Registrar General of this Tribunal"

In light of the Hon'ble NGT's directions for the Joint Committee to oversee the shifting of contaminated soil and subsequent land restoration, it is requested that the schedule for lifting the

contaminated soil be shared with the Members of the Joint Committee. Additionally, site visits may also be planned accordingly.

The first report of the Joint Committee is due by August 31, 2024.

As this is a time-bound NGT matter, it may kindly be treated as Urgent.

Regards,

Narender
Scientist 'F', CPCB RD, Chandigarh
[Quoted text hidden]

Gmail

Environmental Engineer <eerosangrur@gmail.com>

Fwd: Nomination in compliance of Hon'ble NGT order dated 28.05.2024 in MA No. 103/2022 in OA No. 169/2021; H.C. Arora Applicant Vs. State of Punjab & Ors. - reg

Environmental Engineer <eerosangrur@gmail.com> Tue, Jul 16, 2024 at 1:40 PM
To: Narender Sharma <narendersharma.cpcb@gov.in>, Narender Sharma <narendersharma.cpcb@nic.in>
Cc: Chairman-PPCB <chairmanppcb@yahoo.co.in>, msppcb <msppcb@gmail.com>, Chief Bathinda PPCB <ceebtippcb@gmail.com>, SEE - ZP-2 <ppcbzop2@ymail.com>, Atul Vaidya <an_vaidya@neeri.res.in>, DIRECTOR NEERI <director@neeri.res.in>, Paras Pujari <pr_pujari@neeri.res.in>, Amrik Singh <amrik64singh@rediffmail.com>

Respected Sir,

It is intimated that M/s Re Sustainability Ltd., Village Nimbua, Tehsil Dera Bassi, Distt. SAS Nagar has already been requested by the Board vide Letter no. 15437 dated 21.06.2024 (copy enclosed) to send detailed proposal including expenditure to be incurred in excavating, lifting, transporting and disposal of soil in compliance to HWM Rules, 2016 and SoP laid by CPCB in the matter.

The said agency had earlier visited the site on 27.06.2024 in order to collect samples for carrying out lab testing and to identify disposal pathway. However, due to rain and water logging at site, soil sampling could not be carried out. It had again attempted to collect the soil samples on 02.07.2024 but rain started after the team reached at site. Therefore, the samples could not be collected on that particular date also. M/s Re Sustainability Limited finally visited the site on 05.07.2024 and soil samples were collected in the presence of PPCB officers, from contaminated zones as identified by NEERI vide its detailed Environment Assessment Report submitted on 21.05.2024. The proposal from M/s Re Sustainability Limited regarding lifting of contaminated soil from the subject cited site is awaited and is expected by 20.07.2024 as indicated verbally by its team. Accordingly, the schedule for lifting of contaminated soil will be shared on submission and acceptance of proposal to be submitted by M/s Re Sustainability Ltd., Village Nimbua, Tehsil Dera Bassi, Distt. SAS Nagar.

It is pertinent to mention here that a meeting through VC has also been scheduled before Hon'ble Secretary, Department of Science, Technology & Environment, Punjab on 17.07.2024 (1:30 P.M.) to review the matter. Meeting notice of the same is being shared separately.

Regards
Environmental Engineer, Regional Office, Sangrur
Cum Nodal Officer, PPCB

[Quoted text hidden]

--
With regards,
Environmental Engineer,
Punjab Pollution Control Board,
Regional Office, Sangrur

Remediation of contamined site - Matharu Chemicals_0001..pdf
11008K

Annexure-G
(of joint committee report dt. 14.08.2024)

PUNJAB

ਪੰਜਾਬ ਪ੍ਰਦੂਸ਼ਣ ਰੋਕਥਾਮ ਬੋਰਡ
PUNJAB POLLUTION CONTROL BOARD

No 3689-3691 Dated 25-07-2024

To

1. Dr. Narender Sharma,
   Scientist 'F', CPCB RD, Chandigarh
2. Dr. Paras Ranjan Pujari,
   Scientist In-charge,
   NEERI, Nagpur, Maharashtra
3. M/s Re Sustainability Ltd.,
   Village Nimbua, Tehsil Dera Bassi, Distt. SAS Nagar

Subject: **Minutes of meeting held under the chairmanship of SSTE to review compliance of Hon'ble NGT order dated 28.05.2024 in MA No. 103/20222 in OA No. 169/2021 titled as H.C. Arora vs State of Punjab & Ors.**

Please find enclosed minutes of meeting held in the subject cited matter on 17.07.2024 (01:30 PM) under the chairmanship of Hon'ble Secretary, Department of Science, Technology and Environment, Punjab for information in the matter.

DA/as above

Environmental Engineer
cum-Nodal Officer, PPCB

Endst. No. 3692-3697 Dated 25-07-2024

A copy of the above is forwarded for information, please:

1. The Deputy Commissioner, Sangrur
2. The Chairman, Punjab Pollution Control Board, Head Office, Patiala
3. The Member Secretary, Punjab Pollution Control Board, Head Office, Patiala
4. The Chief Environmental Engineer (B), Punjab Pollution Control Board, Patiala
5. The Senior Environmental Engineer, Punjab Pollution Control Board, Zonal Office-II, Patiala.
6. The Senior Law Officer, Head Office, Patiala.

Environmental Engineer
cum-Nodal Officer, PPCB

Endst. No. 3698 Dated 25-07-2024

A copy of the above is forwarded to Hon'ble Secretary, Department of Science, Technology and Environment, Punjab for information, please

Environmental Engineer
cum-Nodal Officer, PPCB

ਖੇਤਰੀ ਦਫ਼ਤਰ, ਇੰਡਸਟਰੀਅਲ ਫੋਕਲ ਪੁਆਇੰਟ, ਸੰਗਰੂਰ
REGIONAL OFFICE, INDUSTRIAL FOCAL POINT, SANGRUR
Email: eerosangrur@gmail.com; Web: www.ppcb.gov.in Ph./Fax No. 01672-233475

Gmail

Environmental Engineer <eerosangrur@gmail.com>

Minutes of meeting held under the chairmanship of SSTE to review compliance of Hon'ble NGT order dated 28.05.2024 in MA No. 103/20222 in OA No. 169/2021 titled as H.C. Arora vs State of Punjab & Ors

Narender Sharma <narendersharma.cpcb@gov.in> Thu, Jul 25, 2024 at 1:06 PM
To: eerosangrur@gmail.com
Cc: Paras Pujari <pr_pujari@neeri.res.in>, kapil kumar <kapil.kumar@resustainability.com>, Jitendra Jorwal <dc.sgr@punjab.gov.in>, chairmanppcb@yahoo.co.in, msppcb@gmail.com, ceebtippcb@gmail.com, ppcbzop2@ymail.com, sloppcbpta@gmail.com, amrik64singh@rediffmail.com, sste 612 <sste_612@yahoo.com>, Vijay yadav <vpyadav.cpcb@nic.in>, Rambabu G <grbabu.cpcb@nic.in>

Sir,

Thanks for sharing the minutes of meeting (MoM). In view of the fact that Joint Committee has to file the first report before 31st August, 2024, it is requested to provide the following information to the members:

1. Schedule of lifting of the contaminated soil, prepared if any, with reference to the following decisions reported in the MoM:

"1. M/s Re-Sustainability Ltd, Tehsil DeraBassi, SAS Nagar shall submit short term remedial Action Plan for shifting of contaminated soil including cost to be incurred in implementing the same, by 21.07.2024.
2. The officers of the Board alongwith representatives of M/s Re-Sustainability Ltd, Tehsil DeraBassi, SAS Nagar shall attend the O/o SSTE on 22.07.2024 (2.00 pm) alongwith Action Plan to be submitted by the Agency as detailed at Sr. no. 1, for taking further action in the matter."

In this regard, the Para 6 of the last NGT Order dated 28/05/2024 may be referred, which mentions that *" Learned Counsel appearing for PPCB on instruction from Mr. Guneet Sethi, Environmental Engineer, Regional Office, Sangrur has informed that the work of removal of the contaminated soil and shifting it to the TSDF has been assigned to Nimbua Greenfield (Punjab) Association (NGPA) and the said agency is an authorized agency by PPCB which has taken the samples.* ***She has submitted, on oral instructions, that the entire remediation work will be completed within a period of six months"***

Hon'ble NGT is very particular about compliance of such commitments made before the tribunal, for seeking time.

2. As highlighted earlier, it may also be noted that apart from lifting of the contaminated soil and restoration, the Joint Committee has also been directed by Hon'ble NGT that ***"The Report of compliance should indicate effects of utilization of colored water from wells for irrigation including health of villagers and cattle."*** *As suggested earlier, sample from the contaminated wells may be taken by Joint Committee as observed by Hon'ble NGT in its last Order. It may also be noted that lab is required to be informed in advance of 7-10 days for bio-assay test and lab may take another 03 weeks's time to report the results.*

While the action at Point No1 is the responsibility of PPCB (JC has to oversee the lifting of contaminated soil, if executed), the compliance of the directions mentioned at Point No2 above is the responsibility of Joint Committee. So, an appropriate decision may be taken in this regard, to avoid any adverse observation of NGT on the working of Joint Committee.

My apologies for typo errors, if any.

Regards,

Narender
Sc 'F', CPCB

From: eerosangrur@gmail.com
To: "Narender Sharma" <narendersharma.cpcb@gov.in>, "Paras Pujari" <pr_pujari@neeri.res.in>, "kapil kumar" <kapil.kumar@resustainability.com>
Cc: "Jitendra Jorwal" <dc.sgr@punjab.gov.in>, chairmanppcb@yahoo.co.in, msppcb@gmail.com, ceebtippcb@gmail.com, ppcbzop2@ymail.com, sloppcbpta@gmail.com, amrik64singh@rediffmail.com, "sste 612" <sste_612@yahoo.com>
Sent: Thursday, July 25, 2024 12:12:42 PM
Subject: Minutes of meeting held under the chairmanship of SSTE to review compliance of Hon'ble NGT order dated 28.05.2024 in MA No. 103/20222 in OA No. 169/2021 titled as H.C. Arora vs State of Punjab & Ors
[Quoted text hidden]

Annexure - I
(of Joint Committe
Report 14.08.24)

1098

OFFICE OF COLLECTOR DISTRICT SANGRUR

[D.R.A.(T) Branch]

To

The Chief Environmental Engineer,
Punjab Pollution Control Board,
Zonal Office-II, Vatavaran Bhawan, Nabha Road,
Patiala.

No. 538/ D.R.A.(T) **Dated:- 06/09/2019**

Subject:- **Hon'ble National Green Tribunal orders dated 25-09-2018 passed in Original Application no. 35 of 2013 and Original Application no. 386 of 2018 titled as Parminder Singh & Others V/s PPCB & Others.**

Reference:- **Your office letter no. 92 dated 10/01/2019.**

In reference to above referred letter, a report was received from Tehsildar Sangrur and same is sent for your information and further necessary action.

Sd/-

for **Collector**
District Sangrur.

1099

NOTARY PUBLIC S.K. KOTIA Barnala (Pb.) Regd. No. 673 GOVT. OF INDIA

From

Tehsildar,
Bhawanigarh

To

Hon'ble Deputy Commissioner
Sangrur

No. **493 / Rec. Dated 26-08-2019**

Sub. Hon'ble National Green Tribunal Orders dated 25-09-2018 passed in the original application No. 35 of 2013 and original application No. 386 of 2018 titled as Parminder Singh and others

Ref. With regards to the your office letter No., 257-258 / DRA (T) Dated 10-06-2019

With reference to your letter mentioned above, a report is called from the Filed Staff. As per report of Field Staff M/s Matharu Steel Private Limited, Kota Rajasthan, village Turi is the owner in village Turi vide mutation No. 560 dated 11-5-1989 deed No. 94 dated 27-04-1989 measuring 25 Bigha 0- Biswas; mutation No. 561 dated 11-05-1989 deed No. 93 dated 27-04-1989 measuring 16 Bigha 13 Biswas; mutation No. 592 dated 28-04-1993 deed no. 1678 dated 04-03-1993 measuring 6 Bigha 16 Biswas; mutation No. 615 dated 23-11-1995 deed No. 1064 dated 24-08-1995 measuring 6 Bigha 6 Biswas; mutation No. 634 dated 08-06-1994 deed No. 64 dated 10-04-1997 measuring1 Bigha 0 Biswas; mutation No. 635 dated 08-06-1997 deed No. 65 dated 10-04-1997 measuring 6 Bigha 15 Biswas, mutation No. 636 dated 08-06-1997 deed No. 85 dated 10-04-1997 measuring 5 Bigha 15 Biswas; total area 68 Bigha 4 Biswas is purchased in the name of M/s Matharu Steels Private Limited, Kota, Rajasthan. And vide sale mutation No. 668 dated 30-3-2001 under deed No. 3084 dated 26-02-2001 sold measuring 7 Bigha 2 Biswas, mutation No. 669 dated 30-03-2001 under deed No. 3108 dated 01-03-2001 sold measuring 7 Bigha 2 Biswas; mutation No.700 dated 23-5-2003 under deed No. 2992 dated 20-3-2003 sold measuring 4 Bigha 0 Biswas, mutation No. 701 dated 23-05-2003 under deed No. 2992 dated 20-03-2003 sold measuring 1 Bigha 5 Biswas; mutation No. 703 dated 23-05-2003 under deed No. 2993 dated 20-3-2003 sold measuring 4 Bigha 0 Biswas; mutation No. 707 dated 14-6-2003 under deed No. 953 dated 05-06-2003 sold measuring 3 Bigha 3 Biswas, mutation No. 919 dated 08-09-2004 under deed No. 3069 dated 27-03-2003 sold measuring 2 Bigha 0 Biswas; mutation No. 740 dated 09-04-2007 under deed No. 3046 dated 12-3-2007 sold measuring 39 Bigha 12 Biswas total area 68 Bigha 4 Biswas (Entire) is sold out. Vide latest Jamabandi for the year 2015-2016 no land stands in the name of M/s Matharu Steel Private Limited, Kota, Rajasthan Ramdhan Report is submitted for necessary further proceedings.

Sd/-
Tehsildar
Bhawanigarh

Memo No. __/Rec. dated 26-08-2019 is sent to Hon'ble Sub Divisional Magistrate, Bhawanigarh for information

Sd/-
Tehsildar
Bhawanigarh

NOTARY PUBLIC GOVT. OF INDIA

TRUE TRANSLATION FROM Punjabi, Hindi, Urdu to English

NOTARY PUBLIC
BARNALA (Pb.) India

17 SEP 2020

कार्यालय तहसीलदार (भू0 अभि0) तहसील लाडपुरा जिला कोटा

क्रमांकः भू0अ0/2023/ 7653 दिनांक 1/12/23

Hon'ble member secretary
Punjab Pollution control board

विषय :– Hon'ble national green tribunal orders dated 25.09.2018 passed in original application no. 35 of 2013 and original application 386 of 2018 titled as Parminder singh v/s PPCB & others

प्रसंग :– Hon'ble member secretary Punjab Pollution control board letter no. 17446 date 28-07-2023 व श्रीमान जिला कलक्टर महोदय के पत्रांक 2752 दि0 24.11.2023 की पालना मे ।

महोदय,

उपरोक्त विषयांकित प्रासंगिक पत्र के संबंध में पटवारी रामचन्द्रपुरा द्वारा प्रस्तुत रिपोर्ट के अनुसार श्री गुरूचरण सिंह मथारू Director of m/s mahalaxmi orchem industries # 435 राजीव गांधीनगर कोटा व श्री चन्द्रशेखर धवन Director of m/s mahalaxmi orchem industries c/o m/s matharu steels pvt limited की सम्पत्ति की जांच की गई उक्त दोनों व्यक्तियों के नाम पर वर्तमान राजस्व रेकार्ड अनुसार खातेदारी हक से कोई कृषि भूमि दर्ज नही है। सूचना सादर प्रेषित है ।

संलग्नः– पटवारी रिपोर्ट

तहसीलदार (भू–अभि.)
तहसील लाड़पुरा
लाड़पुरा कोटा

कमांक :–भू0अ0/2023/ दिनांक

प्रतिलिपि निम्न को सूचनार्थ :–

1. श्रीमान जिला कलक्टर महोदय, कोटा ।

तहसीलदार (भू–अभि.)
तहसील लाड़पुरा
लाड़पुरा कोटा

1101

रिपोर्ट पटवारी रामचन्द्रपुरा।

सेवा में,

श्रीमान तहसीलदार साहब
लाडपुरा (कोटा)
राजस्थान

विषय:- चल- अचल सम्पति की सूचना बाबत्।

महोदय जी,

उपरोक्त विषयान्तर्गत निवेदन है की सीमान के माडेरा क्रमांक/अ-सक्षं/7574 दिं 24/11/2023 की पालना में श्री गुरुस्वरूप सिंह मचारू Director of M/S mahalaxmi orgochem Industries #435 शास्त्री नगर कोटा व श्री चन्द्रशेखर धवन Director of M/S mahalaxmi orgochem industries c/o M/S mathara steels PVT Limited) की सम्पति की जांच की उक्त दोनो व्यक्तियो के नाम पर वर्तमान राजस्व रेकार्ड अनुसार खातेदारी हक से कोई अचि दर्ज नही है।

रिपोर्ट आदर प्रस्तुत है।

LR
30/11/23

पटवार रामचन्द्रपुरा
30/11/2023

कार्यालय जिला कलक्टर एवं जिला मजिस्ट्रेट, कोटा

www.kota.rajasthan.gov.in

आज़ादी का अमृत महोत्सव

क्रमांक : विकास/2023/2752 दिनांक : 24.11.2023

प्रेषिति :

तहसीलदार
लाडपुरा

विषय : Hon'ble national green tribunal orders dated 25/09/2018 passed in original application no. 35 of 2013 and original application no. 386 of 2018 titled as parminder singh v/s PPCB & others.

प्रसंग : Member secretary punjab pollution control board letter no. 17446 date 28-07-2023

उपर्युक्त विषयान्तर्गत प्रासंगिक पत्र की छाया प्रति प्रेषित कर लेख है, कि Hon'ble national green tribunal orders dated 25/09/2018 passed in original application no. 35 of 2013 and original application no. 386 of 2018 titled as parminder singh v/s PPCB & others के संबंध पत्र में अंकित निर्देशों की पालना में अपेक्षित कार्यवाही करते हुये सूचना भिजवाया जाना सुनिश्चित करें।

संलग्न–उपरोक्तानुसार।

LR
24/11/23

प्रभारी अधिकारी
विकास अनुभाग, कलेक्ट्रेट कोटा

कार्या. तहसीलदार लाडपुरा
क्रमांक/7574 दि. 24/11/23
मूल ही भू. आर. निरीक्षक/पटवारी/वृत.
को भेज कर लेख है कि उपरोक्त की एवं दस्तावेज
की संलग्न कर दिनांक तक पेश करें। स्थगन
के प्रार्थना नहीं करें
रिपोर्ट
तहसीलदार लाडपुरा, कोटा

☎0744-2451200(O)2451100(R)0744-2323883(Fax) e-mail : dm-kot-rj@nic.in, rajkot@nic.in

1103

ਦਫਤਰ ਡਿਪਟੀ ਕਮਿਸ਼ਨਰ-ਕਮ-ਜਿਲ੍ਹਾ ਕੁਲੈਕਟਰ , ਲੁਧਿਆਣਾ
(ਸਦਰ ਕਾਨੂੰਗੋ ਸ਼ਾਖਾ)

ਵੱਲ,

ਵਾਤਾਵਰਨ ਇੰਜੀਨੀਅਰ,
ਪੰਜਾਬ ਪ੍ਰਦੂਸ਼ਣ ਕੰਟਰੋਲ ਬੋਰਡ, ਸੰਗਰੂਰ।

ਨੰਬਰ 12208 ਸਕ/ਨਸਕ-2 ਮਿਤੀ 13/12/2023

ਵਿਸ਼ਾ HON'BLE NATIONAL GREEN TRIBUNAL ORDERS DATED 25/09/2018 PASSED IN THE ORIGINAL APPLICATION NO 35 OF 2013 AND ORIGINAL APPLICATION NO 386 OF 2018 TITLED AS PARMINDER SINGH V/S PPCB & OTHERS.

ਹਵਾਲਾ ਆਪ ਦੇ ਦਫਤਰ ਦੇ ਪੱਤਰ ਨੰਬਰ 17443 ਮਿਤੀ 28/07/2023 ਦੇ ਸਬੰਧ ਵਿੱਚ।

ਉਪਰੋਕਤ ਵਿਸ਼ੇ ਅਤੇ ਹਵਾਲਾ ਅਧੀਨ ਆਪ ਵਲੋ ਮੰਗੀ ਸੂਚਨਾ ਸਬੰਧੀ ਰਿਪੋਰਟ ਮੰਗਵਾਉਣ ਲਈ ਤਹਿਸੀਲਦਾਰ ਲੁਧਿਆਣਾ(ਪੱਛਮੀ) ਨੂੰ ਲਿਖਿਆ ਗਿਆ। ਜਿਸ ਸਬੰਧੀ ਤਹਿਸੀਲਦਾਰ ਲੁਧਿਆਣਾ(ਪੱਛਮੀ) ਵਲੋ ਪ੍ਰਾਪਤ ਹੋਈ ਰਿਪੋਰਟ ਮਿਤੀ 01/12/2023 ਇਸ ਪੱਤਰ ਨਾਲ ਨੱਥੀ ਕਰਕੇ ਆਪ ਨੂੰ ਅਗਲੇਰੀ ਕਾਰਵਾਈ ਹਿੱਤ ਭੇਜੀ ਜਾਦੀ ਹੈ।

ਨੱਥੀ ਉਕਤ ਅਨੁਸਾਰ।

ਜਿਲ੍ਹਾ ਮਾਲ ਅਫਸਰ,
ਵਾ ਡਿਪਟੀ ਕਮਿਸ਼ਨਰ,
ਲੁਧਿਆਣਾ।

ਦਫਤਰ ਤਹਿਸੀਲਦਾਰ ਲੁਧਿਆਣਾ (ਪੱਛਮੀ)

ਸੇਵਾ ਵਿਖੇ,

ਮਾਨਯੋਗ ਜਿਲਾ ਮਾਲ ਅਫਸਰ
ਲੁਧਿਆਣਾ (ਸਦਰ ਕਾਨੂੰਗੋ ਸ਼ਾਖਾ)

ਨੰਬਰ 2276 /ਰੀਡਰ ਮਿਤੀ 1/12/2023

ਵਿਸ਼ਾ: Hon'ble National Green Tribunal Orders Dated 25/9/2018 Passed in the Original Application No 35 of 2013 and Original Application No.386 of 2018 Titled as Parminder Singh V/s PPCB & Others

ਹਵਾਲਾ: ਆਪ ਜੀ ਦੇ ਦਫਤਰ ਦੇ ਪੱਤਰ ਨੰਬਰ 11345/ਸਕ/ਨਸਕ-2 ਮਿਤੀ 21-11-2023 ਦੇ ਸਬੰਧ ਵਿੱਚ।

ਉਪਰੋਕਤ ਵਿਸ਼ੇ ਤੇ ਹਵਾਲਾ ਅਧੀਨ ਪੱਤਰ ਦੇ ਸਬੰਧ ਵਿੱਚ ਆਪ ਜੀ ਨੂੰ ਬੇਨਤੀ ਕੀਤੀ ਜਾਂਦੀ ਹੈ ਕਿ ਵਿਸ਼ੇ ਸਬੰਧੀ ਫੀਲਡ ਸਟਾਫ ਪਾਸੋਂ ਰਿਪੋਰਟ ਪ੍ਰਾਪਤ ਕੀਤੀ ਗਈ। ਫੀਲਡ ਸਟਾਫ ਦੀ ਰਿਪੋਰਟ ਅਨੁਸਾਰ ਮਾਲ ਰਿਕਾਰਡ ਪਿੰਡ ਤਰਫ ਕਾਰਾਬਾਰਾ ਵਾਚਿਆ ਗਿਆ। ਰਿਕਾਰਡ ਮੈਨੂਅਲ ਹੋਣ ਕਾਰਣ ਨਿਰੰਤਰ ਰਿਕਾਰਡ ਦੀ ਘੋਖ ਕੀਤੀ ਗਈ। ਪਰੰਤੂ ਪ੍ਰਾਰਥੀ ਦਾ ਵੇਰਵਾ ਨਹੀਂ ਮਿਲਿਆ। ਕਿਰਪਾ ਕਰਕੇ ਪ੍ਰਾਰਥੀ ਦੀ ਖੇਵਟ/ਖਸਰਾ ਨੰਬਰ ਦੱਸਿਆ ਜਾਵੇ ਤਾਂ ਜੋ ਯੋਗ ਕਾਰਵਾਈ ਕੀਤੀ ਜਾ ਸਕੇ। ਰਿਪੋਰਟ ਫੀਲਡ ਸਟਾਫ ਪੇਸ਼ ਹੈ ਜੀ।

ASingh
ਤਹਿਸੀਲਦਾਰ
ਲੁਧਿਆਣਾ (ਪੱਛਮੀ)

1105

महोदय,

कृपया पंजाब नेशनल कोऑपरेटिव बैंक के पत्र सं. 3001 दिनांक 24-8-23 का संज्ञान ग्रहण करने का कष्ट करें। जिसमें सुनील अहूजा डायरेक्टर मै० महालक्ष्मी ओरगेनिक इन्फ्रास्ट्रक्चर (प्रो० मै० गाधुर स्टील प्रा० लि०) E-14 सैक्टर-14 नोएडा उत्तर प्रदेश की सम्पत्ति जाँच के संबंध में है। जिस की जाँच कर आख्या चाही गयी है।

उक्त पत्र के सन्दर्भ में अवगत कराना है कि सैक्टर-14 नोएडा राजस्व ग्राम नया बांस तहसील दादरी जिला-गौतमबुद्धनगर की अभि अधिसूचना कर नोएडा विकास प्राधिकरण द्वारा विकसित किया गया है राजस्व ग्राम नया बांस की रजिस्ट्रीकृत खतौनी सर्च कराने पर सुनील अहूजा के नाम कोई सम्पत्ति होना नहीं पाया गया। जाँच आख्या सादर सेवा में प्रस्तुत है।

लोकेन्द्र [illegible]
लेखपाल क्षेत्र .....
तहसील दादरी
जिला- गौतमबुद्धनगर

प्रस्तुत
लेखपाल आख्या प्रेषित।
29/11/2023
R I (B)

अधो, [illegible]

29/11/23

तहसीलदार
दादरी

Office of the

Deputy Commissioner, Sangrur

Telephone: +911672-234004 Email: dc.sgr@punjab.gov.in

ਦਫਤਰ

ਡਿਪਟੀ ਕਮਿਸ਼ਨਰ, ਸੰਗਰੂਰ

ਟੈਲੀਫੋਨ: +911672-234004 ਈਮੇਲ: dc.sgr@punjab.gov.in

ਨਵੀਂ ਡਾਕ

ਪ੍ਰਬੰਧਕੀ ਅਫ਼ਸਰ
CEE(BTI)
SEE-ZP-2

ਨਵੀਂ ਡਾਕ

ਸੀਨੀਅਰ ਵਾਤਾਵਰਣ ਇੰਜੀਨੀਅਰ(ਹੈ)

ਦਫ਼ਤਰ ਮੁੱਖ ਇੰਜੀਨੀਅਰ/ਸੀਨੀ: ਸਹਾ:/ਸਟੈਨੋ

ਜੋਨਲ ਦਫਤਰ-II, ਪਟਿਆਲਾ ।

ਪੰਜਾਬ ਪ੍ਰਦੂਸ਼ਣ ਰੋਕਥਾਮ ਬੋਰਡ
ਜ਼ੋਨਲ ਦਫਤਰ-II ਪਟਿਆਲਾ
ਡਾਇਰੀ ਨੰ: 807
ਮਿਤੀ 9-6-2022

The Member Secretary,
Punjab Pollution Control Board,
Vatawaran Bhawan, Nabha Road, Patiala

No. 3055 / Date: 07-06-2022

Subject: **Minutes of the meeting held on May 05, 2022 under the Chairmanship of Secretary, Department of Science Technology & Environment,Chandigarh in the matter of OA No. 169 / 2021 titled as H.C. Arora Vs State of Punjab & Ors.**

Reference: **Board's letter no. 1504-05 dated 24.05.2022**

It is intimated that the point wise compliance of decisions of meeting pertaining to District Administration, Sangrur is as under:

a) With regard to decision no. 1, the displayboards have been provided by the team consisting of AEE of PPCB& Naib Tehsildar, Bhawanigarh in English as well as in Punjabi indicating that ***"Water not fit for drinking"*** at five no. tube -wells, which have been found contaminated by the Joint Committee, so that the said water shall not be used for drinking purposes. Photographs have also been taken by the team during installation of said boards, copy of which is attached herewith as **Annexure-I**.

b) With regard to decision no. 4, the information has already been placed on the official website of District Administration, Sangrur and Munadi (Public Hearing) in the nearby villages to make the public aware with regard to contamination of ground water of 5 no. tube-wells had also been carried out. The screenshot of website showing information in public domain and proof of report in Rojnamcha regarding Munadi is attached herewith **Annexure-II & Annexure-III** respectively.

This is for your information and further necessary action.

DA/As above

Deputy Commissioner
Sangrur

Annexure-K
(of joint committee
report dt. 14.08.2024)

N.C.R.B (ਐਨ.ਸੀ.ਆਰ.ਬੀ)
I.I.F.-I (ਆਕ੍ਰਿਤੀ ਜਾਂਚ ਫਾਰਮ -

FIRST INFORMATION REPORT

(Under Section 173 B.N.S.S)

ਪਹਿਲੀ ਸੂਚਨਾ ਰਿਪੋਰਟ
(ਧਾਰਾ 173 ਬੀ.ਐਨ.ਐਸ.ਐਸ)

1. District (ਜ਼ਿਲ੍ਹਾ): SANGRUR P.S. (ਥਾਨਾ): BHAWANIGARH Year (ਸਾਲ): 2024

FIR No. (FIR ਨੰ): 0181 Date and Time of FIR (ਪ੍ਰ.ਸੂ.ਰਿ. ਦੀ ਮਿਤੀ ਅਤੇ ਸਮਾਂ): 07/08/2024 18:46 hrs

2.

S.No. (ਲੜੀ ਨੰ.)	Acts (ਐਕਟ)	Sections (ਸੈਕਸ਼ਨ))
1	IPC 1860	268
2	IPC 1860	269
3	IPC 1860	270

3. (a) Occurrence of offence (ਅਪਰਾਧ ਦੀ ਘਟਨਾ):

1. Day (ਦਿਨ): Intervening Day Date From (ਤੋਂ ਮਿਤੀ): 23/11/2006 Date To (ਮਿਤੀ ਤੱਕ): 30/11/2006

Time Period (ਸਮਾਂ ਮਿਆਦ): Time From (ਤੋਂ ਸਮਾਂ): 10:30 hrs Time To (ਸਮਾਂ ਤੱਕ): 10:50 hrs

(b) Information received at P.S. (ਸੂਚਨਾ ਮਿਲਦੇ ਹੀ ਪੀ.ਐਸ.): Date (ਤਾਰੀਖ): 07/08/2024 Time (ਸਮਾਂ): 17:32 hrs

(c) General Diary Reference (ਰੋਜ਼ਾਨਾਨਾਮ ਦਾ Entry No. (ਐਂਟਰੀ ਨੰ.): 037 Date & Time (ਮਿਤੀ ਅਤੇ ਸਮਾਂ): 07/08/2024 17:32 hrs

4. Type of Information (ਜਾਣਕਾਰੀ ਦੀ ਕਿਸਮ): Written

5. Place of Occurrence (ਘਟਨਾ ਦਾ ਸਥਾਨ):

1. (a) Direction and distance from P.S.(P.S ਤੋਂ ਦਿਸ਼ਾ ਅਤੇ ਦੂਰੀ): SOUTH-EAST, 10 Km(s) Beat No. (ਬੀਟ ਨੰ.):

(b) Address (ਪਤਾ): ਵਾ ਹੱਦ ਪਿੰਡ ਤੁਰੀ

(c) In case, outside the limit of this Police Station, then (ਜੇਕਰ ਇਸ ਥਾਣੇ ਦੀ ਹੱਦ ਤੋਂ ਬਾਹਰ ਹੈ, ਤਾਂ):
Name of P.S.(ਥਾਨਾ ਦਾ ਨਾਮ): District(State) (ਜ਼ਿਲ੍ਹਾ (ਰਾਜ)):

6. Complainant / Informant (ਸ਼ਿਕਾਇਤਕਰਤਾ/ਸੂਚਨਾਕਰਤਾ):

(a) Name (ਨਾਮ): ਮੈਂਬਰ ਸੈਕਟਰੀ ਪੰਜਾਬ ਪ੍ਰਦੂਸਣ ਕੰਟਰੋਲ ਬੋਰਡ

(b) Father's/Husband's Name(ਪਿਤਾ / ਪਤੀ ਦਾ ਨਾਮ) :

(c) Date/Year of Birth (ਜਨਮ ਮਿਤੀ / ਸਾਲ): 1974 (d) Nationality (ਰਾਸ਼ਟਰੀਤਾ): INDIA

(e) UID No. (ਯੂਆਈਡੀ ਸੰ):

(f) Passport No.(ਪਾਸਪੋਰਟ ਸੰ): Date of Issue (ਜਾਰੀ ਕੱਖਣ ਦੀ ਮਿਤੀ):

Place of Issue (ਜਾਰੀ ਕੱਖਣ ਦਾ ਸਥਾਨ):

(g) Id details (Ration Card,Voter ID Card,Passport,UID No.,Driving License,

S.No.(ਲੜੀ ਨੰ.)	Id Type (ਆਈਡੀ ਦੀ ਕਿਸਮ)	Id Number (ID ਨੰਬਰ)
1		

(h) Address (ਪਤਾ):

S.No.(ਲੜੀ ਨੰ.)	Address Type (ਪਤਾ ਕਿਸਮ)	Address (ਪਤਾ)
1	Present Address	ਵਾਤਾਵਰਨ ਭਵਨ ਨਾਭਾ ਰੋਡ ਪਟਿਆਲਾ,Bhawanigarh,BHAWANIGARH,SANGRUR,PUNJAB,INDIA
2	Permanent Address	ਵਾਤਾਵਰਨ ਭਵਨ ਨਾਭਾ ਰੋਡ ਪਟਿਆਲਾ,Bhawanigarh,BHAWANIGARH,SANGRUR,PUNJAB,INDIA

(i) Occupation (ਕਿੱਤਾ):

(j) Phone number (ਫੋਨ ਨੰਬਰ.): Mobile (ਮੋਬਾਈਲ ਸੰ.):

7. Details of known/suspected/unknown accused with full particulars (ਪੂਰੇ ਵੇਰਵਿਆਂ ਦੇ ਨਾਲ ਜਾਣੇ-ਪਛਾਣੇ/ਸ਼ੱਕੀ/ਅਣਜਾਣ ਦੋਸ਼ੀਆਂ ਦੇ ਵੇਰਵੇ):

Accused More Than (ਤੋਂ ਵੱਧ ਦਾ ਦੋਸ਼ ਲਾਇਆ):

S.No. (ਲੜੀ ਨੰ.)	Name (ਨਾਮ)	Alias (ਉਪਨਾਮ)	Relative's Name (ਰਿਸ਼ਤੇਦਾਰ ਦਾ ਨਾਮ)	Permanent Address (ਪੱਕਾ ਪਤਾ)	Present Address (ਮੌਜੂਦਾ ਪਤਾ)
1	ਗੁਰਚਰਨ ਸਿੰਘ			435,ਰਾਜੀਵ ਗਾਂਧੀ ਨਗਰ ,ਕੋਟਾ,RLY COLONY,KOTA CITY, RAJASTHAN,INDIA	1. 435,ਰਾਜੀਵ ਗਾਂਧੀ ਨਗਰ ,ਕੋਟਾ,RLY COLONY, KOTA CITY,RAJASTHAN,INDIA
2	ਚੰਦਰ ਸ਼ੇਖਰ			110A,ਸ਼ਰਾਬਾ ਨਗਰ,UNKNOWN, SARABHA NAGAR,POLICE COMMISSIONERATE LUDHIANA,PUNJAB,INDIA	1. 110A,ਸ਼ਰਾਬਾ ਨਗਰ,UNKNOWN,SARABHA NAGAR,POLICE COMMISSIONERATE LUDHIANA,PUNJAB,INDIA
3	ਸੁਨੀਲ ਅਹੂਜਾ			NOIDA,ਨੋਇਡਾ,NAWABGANJ, BAREILLY,UTTAR PRADESH,INDIA	1. NOIDA,ਨੋਇਡਾ,NAWABGANJ,BAREILLY, UTTAR PRADESH,INDIA

8. Reasons for delay in reporting by the complainant/informant (ਸ਼ਿਕਾਇਤਕਰਤਾ/ਸੂਚਨਾਕਰਤਾ ਦੁਆਰਾ ਰਿਪੋਰਟ ਕਰਨ ਵਿੱਚ ਦੇਰੀ ਦੇ ਕਾਰਨ):

9. Particulars of properties of interest (ਵਿਆਜ ਦੀਆਂ ਵਿਸ਼ੇਸ਼ਤਾਵਾਂ ਦਾ ਵੇਰਵਾ):

S.No. (ਲੜੀ ਨੰ)	Property Category (ਸੰਪੱਤੀ ਸ਼੍ਰੇਣੀ)	Property Type (ਸੰਪਤੀ ਦੀ ਕਿਸਮ)	Nature of Property (ਜਾਇਦਾਦ ਦੀ ਪ੍ਰਕਿਰਤੀ)	Description (ਵਰਣਨ)	Value(In Rs/-) (ਮੁੱਲ (ਰੁ ਵਿੱਚ))

10. Total value of property (In Rs/-)-ਜਾਇਦਾਦ ਦਾ ਕੁਲ ਮੁੱਲ (ਰੁ ਵਿੱਚ):

11. Inquest Report / U.D. case No., if any (ਮੌਤ ਸਮੀਖਿਆ ਰਿਪੋਰਟ / ਯੂ°° ਪ੍ਰਕਰਣ ਸੰ., ਜੇਕਰ ਕੋਈ ਹੋ):

S.No. (ਲੜੀ ਨੰ)	UIDB Number (ਯੂ ਆਈ ਡੀ ਬੀ ਪ੍ਰਕਰਣ ਸੰ.)

12. First Information contents (ਪਹਿਲੀ ਸੂਚਨਾ ਤੱਥ):

☐ਇਸ ਵਕਤ ਦਰਜ ਹੈ ਕਿ ਦਰਖਾਸਤ ਨੰਬਰ PGD ID 404986, PGD ID 404619 ਵੱਲੋ ਮਾਨਯੋਗ SSP ਸਾਹਿਬ ਸੰਗਰੂਰ ਦ/ਕਰਤਾ ਪੰਜਾਬ ਪ੍ਰਦੂਸਣ ਕੰਟਰੋਲ ਬੋਰਡ ਬਰਾਏ ਦਾਇਰੀ ਮੁਕੱਦਮਾ ਬ/ਖ ਗੁਰਚਰਨ ਸਿੰਘ ਮਠਾੜੂ ਵਾਸੀ #435 ਰਾਜੀਵ ਗਾਂਧੀ ਨਗਰ ਕੋਟਾ ਰਾਜਸਥਾਨ, ਚੰਦਰ ਸ਼ੇਖਰ ਧਵਨ ਵਾਸੀ #110 A ਸਰਾਭਾ ਨਗਰ ਲੁਧਿਆਣਾ , ਸੁਨੀਲ ਅਹੂਜਾ ਵਾਸੀ #ਓ-14 ਸੈਕਟਰ 14 ਨੋਇਡਾ (ਉਤਰ ਪ੍ਰਦੇਸ਼) ਬਰਾਏ ਦਾਇਰੀ ਮੁਕੱਦਮਾ ਵਾ ਜੁਰਮ ਅ/ਧ 268,269,270 IPC ਰਾਹੀ ਡਾਕ ਮੌਸੂਲ ਹੋਈ ਜਿਸ ਦਾ ਮਜਬੂਨ ਜੈਲ ਹੈ:- To,The Deputy Commissioner Sangrur.Subject: Registration of a Criminal Case under the provisions of the Indian Penal Code (now substituted with Bharatiya Nagari Suraksha Sanhita) against the owners and partners of M/s Matharu Chemical Private Limited, Bhawanigarh, Tehsil and District Sangrur, Please refer to the subject cited above. 2) It is brought to your kind notice that Punjab Pollution Control Board has NOC from pollution angle vide letter no. 16708 dated 12.07.1990 for the manufacture of H Acid 600 K/day in the name of M/s Matharu Chemical Industries (Prop. M/s Matharu Steel Pvt. Ltd), Bhawanigarh, District Sangrur. The unit was owned by Sh. Gurcharan Singh Matharu. Later on Sh. Gurcharan Singh Matharu has sold the unit and the name of the industry was changed to M/s MahaluxmiOrgoChem Industries (Proprietor M/s Matharu Steel Pvt. Ltd.) by Sh. ChanderShekhar Dhawan and Sh. Sunil Ahuja, Directors of the Industry. The industry operated upto the year 2005 and thereafter, the Directors above named had sold the property to one Sh. Tara Singh, agriculturist who in turn has further sold the property and at present the said piece of land is in the name of one Bhupinder Pal Singh, who is carrying out agricultural activities at the said piece of land. 3) The ground water samples from the bore wells around the storage of hazardous waste of the industry were collected on 23.11.2006 by the Board officers and the analysis report revealed that the ground water had been contaminated. 4) The residents of nearby villages namely Baladkalan, Toori, Baladkothi and Bhawanigarh had approached the Hon'ble Punjab and Haryana High Court by way of filing a Civil Writ Petition no. 3481 of 2007 titled as Parminder Singh and Others v/s Punjab Pollution Control Board and Others against M/s Matharu Steel Pvt. Ltd. and M/s Maha Luxmi Orgo Chem Industries and its Directors Sh. Chander Shekhar Dhawan and Sh. Sunil Ahuja. 5) On the basis of the monitoring carried out by the Punjab Pollution Control Board it emerged that the industry had dumped hazardous waste at the site which had led to the contamination of the ground water. 6) The case pending before the Hon'ble Punjab and Haryana High Court was transferred to Hon'ble National Green Tribunal at New Delhi wherein the case was registered in Original Application No. 35 of 2013. The Hon'ble National Green Tribunal on the basis of four study reports conducted of the site held that the industry and its directors had polluted the ground water ever since the date of their industrial activities year 1991 till 2005 and even continuously thereafter. The Hon'ble National Green Tribunal has disposed of Original Application no. 35 of 2023 vide judgement dated 23.09.2015. It was held by the Hon'ble National Green Tribunal that respondent no.4 M/S Matharu Steel Pvt. Limited having its Registered Office at Plot No. 4, Near Airport, Jhalanpur Road, Kota Rajasthan through its Director Shri. Chander Shekhar Dhawan and respondent no.5 M/S Mahalaxmi Orgochem Industries, c/o Matharu Steels Pvt. Limited, Nabha Road, Tehsil Bhavanigarh, District Sangrur, through Shri. Chander Shekhar Dhawan represented by respondent no.6. Chander Shekhar Dhawan, Director, M/S Matharu Steels Pvt. Limited, resident of 110-A, Sarabha Nagar, Ludhiana, respondent no.7 Sunil Ahuja, Director of M/S Matharu Steels Pvt. Limited, Resident of E-14, Sector-14, Noida, U.P. and respondent no.9. Gurcharan Singh Matharu s/o Surjit Singh Matharu Director, Matharu Chemicals Industries Nabha Road, Bhawangarh Tehsil Sangrur District by their industrial activities have polluted the air, land and water including the groundwater and produced and stored hazardous waste unauthorizedly and without any proper disposal. The Hon'ble National Green Tribunal had directed the said respondents to effect remediation of water contamination in the premises of the unit and all the surrounding areas polluted by the activities of the unit at their cost. The Hon'ble National Green Tribunal vide the said judgernent dated 23.09.2015 had imposed penalty of Rs. 2.00 Crore upon the said respondents under the Polluter Pay's Principle. In this regard, the relevant extract of paragraph 86 (6) of the Judgement dated 23.09.2015 is reproduced herein below: "That apart, the Respondents 4 and 5 along with their Directors Respondent no. 6 and 7 and 9 shall pay an amount of Rs. Two crores under the principles of 'Polluter Pays' in the following proportion i.e. Respondent no. 4 along with all its Directors including Respondent no. 6 and 7 to the extent of 40% jointly, Respondent no. 5 and all its Directors to the extent of 30% jointly and the remaining 30% by the 9th Respondent. The said amount shall be deposited within 8 weeks from today with the Principal

Secretary, Ministry Environment, State of Punjab, who shall keep the said amount in a separate account and spend for providing safe drinking water and better solid waste management facilities to the people of Village Toori, Balad Kalan and Balad Kooti, Tehsil Bhawanigarh, District Sangrur with prior approval of the N.G.T." A copy of Judgment dated 23.09.2015 passed by the Hon'ble National Green Tribunal in O.A No. 35 of 2013 is enclosed as Annexure-A for kind perusal. 7) It is pertinent mention here that the status report filed by the Punjab Pollution Control Board in compliance of order dated 23.09.2015 passed in O.A No. 35 of 2013, was treated as Original Application no. 386 of 2018. The Hon'ble National Green Tribunal by passing of an order dated 25.09.2018 in O.A No. 386 of 2018 and held that in case respondent no.4 to 7 and 9 failed to make the payment of the penalty amount within a period of one month, the District Collector, Sangrur was directed to proceed to recover the amount to the party concerned as land revenue. The copy of order dated 25.09.2018 was sent by Hon'ble National Green Tribunal to District Collector, Sangrur and accordingly Original Application No. 386 of 2018 was disposed of. 8) In compliance to the orders dated 25.09.2018 of the Hon'ble National Green Tribunal passed in O.A No. 386 of 2018, the Punjab Pollution Control Board has written letter to Deputy Commissioner, Sangrur to initiate the process of recovery of the amount of penalty from the parties concerned. Apart from the above letter, the Board has also written letters for the recovery of the amount of penalty to the Deputy Commissioners of Ludhiana, Kota and Noida (Gautam Budh Nagar) and followed the case physically with the said offices. The offices of Deputy Commissioner, Sangrur, Ludhiana, Kota and Noida vide separate letters had informed that no property is registered in the name of respondents. The photocopies of the correspondence are enclosed as Annexure-B. 9) However, the respondents aforementioned have failed to deposit the amount of penalty as well as the cost of remediation with the office of the Punjab Pollution Control Board. The Punjab Pollution Control Board has filed Execution Application no. 23 of 2020 before the Hon'ble National Green Tribunal seeking the execution of Judgment of the Tribunal dated 23.09.2015 in O.A. No. 35/2013, whereby the above-mentioned unit and its directors were held liable to pay Rs. 2 Crores on 'Polluter Pays' principle to the State PCB for restoration of the environment, apart from cost of the proceedings assessed at Rs. 50,000/- and amount of Rs. 25,000/- to be paid to the Amicus. The Hon'ble National Green Tribunal treated the penalty as decree u/s 25 of the National Green Tribunal Act, 2010 and disposed of the Execution Application No. 23 of 2020 in O.A No. 386 of 2018 vide order dated 03.11.2020, thereby remitting the case to District Judge, Sangrur for further proceedings of Execution as per Law. The Execution case in this regard is pending before the Court of Additional District Judge, Sangrur. 10) It is pertinent to mention here that Sh. Gurcharan Singh Matharu, Sh. Chander Shekhar Dhawan and Sh. Sunil Ahuja have also approached the Hon'ble Supreme Court of India by way of filing Special Leave Petition against the amount of penalty imposed by the Hon'ble National Green Tribunal, but the Hon'ble Supreme Court of India has not given any stay in the matter. The address of these persons as mentioned in the Judicial proceedings are given herein below: i) Sh. Gurcharan Singh Matharu, # 435, Rajiv Gandhi Nagar, Kota, Rajasthan, ii) Sh. Chander Shekhar Dhawan, # 110-A, Sarabha Nagar, Ludhiana, iii) Sh. Sunil Ahuja, # E-14, Sector-14, Noida, Uttar Pradesh 11) That it is pertinent to mention here that Sh. H.C Arora, Advocate has filed OA No. 169 of 2021 before the Hon'ble National Green Tribunal in reference of media report dated 08.07.2021 published in the Hindustan Times under the caption Sangrur Tube-well spell out polluted water, PPCB blames dismantled factory. The said Original Application was disposed of by the Hon'ble National Green Tribunal vide order dated 31.03.2022 with directions to the Chief Secretary, Punjab to ensure remedial action and to constitute an Executing/Monitoring Committee to get the remediation plan executed and to monitor its timely and proper execution. In compliance the Chief Secretary, Punjab has constituted a committee comprising of the Secretary, Science, Technology and Environment, Chairman and Member Secretary, Punjab Pollution Control Board, the Deputy Commissioner, Sangrur, Secretary, PWRDA. 12) Sh. H.C Arora has further filed a Miscellaneous Application No.103 of 2022 in Original Application No. 169 of 2021 before the Hon'ble National Green Tribunal alleging the failure of the State Government and its authority to execute the orders of the Hon'ble National Green Tribunal. 13) That the Punjab Pollution Control Board has also file a Criminal complaint u/s 24, 25, 26 of the Water (Prevention and Control of Pollution) Act, 1974 against the industry M/s Maha Luxmi Orgo Chem Industries and its directors Sh. Chander Shekhar Dhawan and Sh. Sunil Ahuja in the competent court of law at Sangrur, but the case is not moving further as the accused directors had approached the Hon'ble Punjab and Haryana High Court by way of filing Criminal Miscellaneous Petitions for quashing of the complaint. The Board has filed application before the Hon'ble Punjab and Haryana High Court for issuing direction for early conclusion of the matter. 14) In-spite of the proceedings going on in different Courts, the owners and directors of M/s Maha Luxmi Orgo Chem Industries and M/s Matharu Chemical Private Limited are not paying the amount of penalty as well as the cost of remediation and also not presenting themselves before the authorities. The tube-wells in the area (where M/s Maha Luxmi Orgo Chem Industries was situated at Bhawanigarh) are spewing polluted colored water which is hazardous to the living organisms and vegetation. The Hon'ble National Green Tribunal has also levied an environmental compensation of Rs. 2.0 crores against the owners and directors of the industry with further direction to also bear the cost of remediation but the accused persons are not cooperating with the authorities and had not deposited the said amount with the Punjab Pollution Control Board. The remediation of the contaminated site is required to be carried out by the authorities at the expenses of the accused persons, wherein crores of rupees are involved. The scientific study of the area has confirmed the contamination of the groundwater. The accused persons have committed an offence which has damaged the natural environment and has also caused danger to the life of the people of the area as such the accused are required to be brought to justice. 15)In the opinion of the Board, a Criminal case is required to be registered against M/s Matharu Chemical Private Limited, M/s Maha Luxmi Orgo Chem Industries, Gurcharan Singh Matharu, Sh. Chander Shekhar Dhawan and Sh. Sunil Ahuja under the following provisions/sections of the Indian Penal Code. Section 268. Public nuisance A person is guilty of a public nuisance who does any act or is guilty of an illegal omission which causes any common injury, danger or annoyance to the public or to the people in general who dwell or occupy property in the vicinity, or which must necessarily cause injury, obstruction, danger or annoyance to persons who may have occasion to use any public right. A common nuisance is not excused on the ground that it causes some convenience or advantage. Section 269. Negligent act likely to spread infection of disease dangerous to life Whoever unlawfully or negligently does any act which is, and which he knows or has reason to believe to be, likely to spread the infection of any disease dangerous to life, shall be punished with imprisonment of either description for a term which may extend to six months, or with fine, or with both. Section 270. Malignant act likely to spread infection of disease dangerous to life Whoever malignantly does any act which is, and which he knows or has reason the believe to be, likely to spread the infection

of any disease dangerous to life, shall be punished with imprisonment of either description for a term which may extend to two years, or with fine, or with both." 15) In view of the above recorded facts, it is requested that FIR against the accused above named may please be lodged by the District Administration by referring the case to the Police Authorities. The Police Authorities may also consider the case for further inclusion of any other section of the Indian Penal Code against the accused person which according to their opinion is relevant to be included. The officers of the Board posted at Sangrur wili extend with technical assistance in the case, if required.sd- Member Secretary. Endst. No. 19429 Dated 5/8/2024. A copy VA copy of the above is forwarded to the Senior Superintendent of Police, Sangrur for information and taking necessary action in the matter, please.sd- Member Secretary.A copy of the above is forwarded to the following for information and necessary action for extending co-operation and technical assistance to the authorities concerned. 1) The Chief Environmental Engineer, Punjab Pollution Control Board, Bathinda. 2) The Senior Environmental Engineer, Punjab Pollution Control Board, Zonal Office-2,Patiala. 3) The Environmental Engineer, Punjab Pollution Control Board, Regional Office, Sangrur.-sd- Member Secretary, Endst, No. Dated A copy of the above is forwarded to the Secretary to Government of Punjab, Department of Science, Technology and Environment, Mini Secretariat, Punjab, Chandigarh for information please.sd- Member Secretary I ਦਰਖਾਸਤ ਨੰਬਰੀ ਉਕਤ ਮੌਸੂਲ ਹੋਣ ਪਰ ਮਾਨਯੋਗ SSP ਸਾਹਿਬ ਸੰਗਰੂਰ ਜੀ ਨੇ ਲਿਖਿਆ SHO/PS Bhawanigarh for N/A as per law .Sd/- Senior Suprdt. Of Police SANGRUR Dt 07.08.2024 .ਦਰਖਾਸਤ (ਹੁਕਮ) ਮੌਸੂਲ ਹੋਣ ਪਰ ਮੁਕੱਦਮਾ ਨੰਬਰ ਉਕਤ ਬਾ ਜੁਰਮ ਉਕਤ ਬਰਖਿਲਾਫ ਉਕਤਾਨ ਵਿਅਕਤੀਆਨ ਦੇ ਦਰਜ ਰਜਿਸਟਰ ਕੀਤਾ ਜਾ ਕਰ ਤਕਮੀਲ ਪੜਤ ਹਾਇ ਕੀ ਗਈ ।ਇੰਦਰਾਜ ਰਿਕਾਰਡ ਕਰਾਇਆ ਗਿਆ ।ਇੰਚਾਰਜ ਕੰਟਰੋਲ ਰੂਮ ਸੰਗਰੂਰ ਨੂੰ ਰਾਹੀ ਈ-ਮੇਲ ਇਤਲਾਹ ਦਿੱਤੀ ਜਾ ਰਹੀ ਹੈ ।ਮਿਸਲ ਮੁਕੱਦਮਾ ਸਮੇਤ ਨਕਲ FIR ਹਵਾਲੇ SI ਹਰਿੰਦਰ ਸਿੰਘ 159/ਪਟਿ: ਇੰਚਾਰਜ ਚੌਕੀ ਕਾਲਾਝਾੜ ਦੇ ਕੀਤਾ ਗਿਆ।

13. Action taken: Since the above information reveals commission of offence(s) u/s as mentioned at Item No. 2.
(ਕੀ ਘੋਸ਼ਣਾ ਕਾਰਵਾਈ : ਚੁੰਕੀ ਉਪਰੋਕਤ ਜਾਣਕਾਰੀ ਤੋਂ ਪਤਾ ਲੱਗਦਾ ਹੈ ਕਿ ਅਪਰਾਧ ਕਰਨ ਦਾ ਤਰੀਕਾ ਮਦ ਸੰ। 2 ਵਿੱਚ ਧਾਰਾ ਦਾ ਜ਼ਿਕਰ ਹੈ|)

(1) Registered the case and took up the investigation: (ਕੇਸ ਦਰਜ ਕੀਤਾ ਗਿਆ ਅਤੇ ਜਾਂਚ ਲਈ ਗਈ): or (ਜਾਂ)

(2) Directed (Name of I.O.) (ਜਾਂਚ ਅਧਿਕਾਰੀ ਦਾ ਨਾਮ): Amandeep Singh Rank (ਰੈਂਕ): ASI (Assistant Sub-Inspector)
No.(ਸੰ.): 555/SGR to take up the Investigation (ਜਾਂਚ ਕਰਨ ਲਈ) or (ਜਾਂ)

(3) Refused investigation due to (ਕਾਰਨ ਜਾਂਚ ਤੋਂ ਇਨਕਾਰ ਕਰ ਦਿੱਤਾ):

or (ਦੇ ਕਾਰਨ ਇੰਕਾਰ ਕੀਤੇ ਗਏ)

(4) Transferred to P.S.(ਥਾਣਾ): District (ਜ਼ਿਲ੍ਹਾ):

on point of jurisdiction (ਨੂੰ ਖੇਤਰ ਅਧਿਕਾਰ ਦਾ ਕਾਰਨ ਹਸਤਾਖਰਿਤ) .

F.I.R. read over to the complainant / informant,admitted to be correctly recorded and a copy given to the complainant / informant free of cost. (ਸ਼ਿਕਾਇਤਕਰਤਾ / ਸ਼ਿਕਾਇਤਕਰਤਾ ਨੂੰ ਪਹਿਲਾਂ ਪੜ੍ਹਨਾ ਕਰਾਈ ਗਾਈ, ਸਹੀ ਦਰਜ ਕਰਨਾ ਮਾਨਾ ਅਤੇ ਇੱਕ ਸ਼ਿਕਾਇਤ ਨਿਸ਼ਚਤ ਸੂਚਨਾ ਸੁਨਿਸ਼ਚਿਤਕਰਤਾ ਨੂੰ ਡੀ.|)

R.O.A.C.(ਆਰ. ਓ .ਏ .ਸੀ.)

14. Signature/Thumb impression of the complainant / informant.
(ਸ਼ਿਕਾਇਤਕਰਤਾ/ਸੂਚਨਾਕਰਤਾ ਦੇ ਦਸਤਖਤ/ਅੰਗੂਠੇ ਦਾ ਨਿਸ਼ਾਨ):

15. Date and time of dispatch to the court (ਅਦਾਲਤ ਨੂੰ ਭੇਜਣ ਦੀ ਮਿਤੀ ਅਤੇ ਸਮਾਂ):

Signature of Officer in charge, Police Station
(ਥਾਣਾ ਇੰਚਾਰਜ ਦੇ ਦਸਤਖਤ)

Name (ਨਾਮ): Surjit Singh
Rank(ਰੈਂਕ): ASI (Assistant Sub-Inspector)
No.(ਨੰ.): 1739/sgr

Attachment to item 7 of First Information Report (ਪਹਿਲੀ ਸੂਚਨਾ ਰਿਪੋਰਟ ਦੀ ਆਈਟਮ 7 ਨਾਲ ਨੱਥੀ):

Physical features, deformities and other details of the suspect/accused: (If known / seen)

(ਸੰਦਿਗ / ਅਭਿਯੁਕਤ ਦੀ ਸਰੀਰਕ ਵਿਸ਼ੇਸ਼ਤਾਵਾਂ, ਵਿਕ੍ਰਿਤੀਆਂ ਅਤੇ ਹੋਰ ਵੇਰਵੇ : (ਯਦਿਗ ਜਾਣਿਆ / ਦੇਖਿਆ ਗਿਆ))

S.No.(ਲੜ੍ਹੀ ਨੰ.)	Sex (ਸੈਕਸ)	Date/Year of Birth (ਜਨਮ ਮਿਤੀ/ਸਾਲ)	Build (ਬਣਾਓ)	Height(cms.) (ਉਚਾਈ (ਸੈ.ਮੀ.)	Complexion (ਰੰਗਤ)	Identification Mark(s) (ਪਛਾਣ ਚਿੰਨ੍ਹ)
1	2	3	4	5	6	7
1	Male					Poxpitted: NO
2	Male					Poxpitted: NO
3	Male					Poxpitted: NO

Deformities/ Peculiarities (ਵਿਕਾਰ/ਵਿਸ਼ੇਸ਼ਤਾਵਾਂ)	Teeth (ਦੰਦ)	Hair (ਵਾਲ)	Eyes (ਅੱਖਾਂ)	Habit(s) (ਆਦਤਾਂ)	Dress Habit(s) (ਪਹਿਰਾਵੇ ਦੀਆਂ ਆਦਤਾਂ)
8	9	10	11	12	13

Language /Dialect (ਭਾਸ਼ਾ/ਬੋਲੀ)	Place Of (ਦਾ ਸਥਾਨ)					Others (ਹੋਰ)
	Burn Mark (ਬਰਨ ਮਾਰਕ)	Leucoderma (ਲਿਊਕੋਡਰਮਾ))	Mole (ਮੋਲ)	Scar (ਦਾਗ਼)	Tattoo (ਟੈਟੂ)	
14	15	16	17	18	19	20

These fields will be entered only if complainant/informant gives any one or more particulars about the suspect/accused.
(ਇਹ ਖੇਤਰ ਤਾਂ ਹੀ ਦਰਜ ਕੀਤੇ ਜਾਣਗੇ ਜੇਕਰ ਸ਼ਿਕਾਇਤਕਰਤਾ/ਸੂਚਨਾਕਰਤਾ ਸ਼ੱਕੀ/ਦੋਸ਼ੀ ਬਾਰੇ ਕੋਈ ਇੱਕ ਜਾਂ ਵੱਧ ਵੇਰਵੇ ਦਿੰਦਾ ਹੈ))

ਪੰਜਾਬ ਪ੍ਰਦੂਸ਼ਣ ਕੰਟਰੋਲ ਬੋਰਡ
PUNJAB POLLUTION CONTROL BOARD

No. 351

Dated. 08/08/2024

Subject- **Imposition of cost for effecting remediation of contamination of soil and ground water in and around the site of M/s Matharu Chemical. Industries (later changed to M/s Mahalaxmi Orgochem industries), village Aloarakh, Tehsil Bhawanigarh, District Sangrur.**

ORDER

In order to protect and improve the environment and for prevention of hazards to human beings, other living creatures, plants and property and maintaining or resorting the wholesomeness of water and to preserve the quality of air, the Parliament of India had enacted the Water (Prevention and Control of Pollution) Act, 1974, the Air (Prevention and Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986 and certain rules under the provisions of the Environment (Protection) Act, 1986 and all these Laws are collectively and severally being referred to as the Environmental Laws. The Board being the prescribed authority is implementing the provisions of the Environmental Laws i.e. the Water (Prevention and Control of Pollution) Act, 1974, the Air (Prevention and Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986 and the Rules made thereunder, in the State of Punjab.

2) The Punjab Pollution Control Board has granted NOC from pollution angle vide letter no. 16708 dated 12.07.1990 for the manufacture of H Acid @ 600 K/day in the name of M/s Matharu Chemical Industries (Prop. M/s Matharu Steel Pvt. Ltd), Bhawanigarh, District Sangrur. The unit was owned by Sh. Gurcharan Singh Matharu. Later on Sh. Gurcharan Singh Matharu has sold the unit and the name of the industry was changed to M/s MahaLuxmiOrgo Chem Industries (Proprietor M/s Matharu Steel Pvt. Ltd.) by Sh. Chander Shekhar Dhawan and Sh. Sunil Ahuja, Directors of the Industry. The industry operated upto the year 2005 and thereafter, the Directors above named had sold the property to one Sh. Tara Singh, agriculturist who in turn has further sold the property and at present the said piece of land is in the name of one Bhupinder Pal Singh, who is carrying out agricultural activities at the said piece of land.

ਵਾਤਾਵਰਣ ਭਵਨ, ਨਾਭਾ ਰੋਡ, ਪਟਿਆਲਾ-147001
Vatavaran Bhawan, Nabha Road, Patiala -147001
Phone : Chairman. : 0175-2215793, Member Secretary : 0175-2215802 (O)
Website : www.ppcb.gov.in | E-Mail : chairmanppcb@yahoo.in | msppcb@gmail.com |

3) The ground water samples from the bore-wells around the storage of hazardous waste of the industry were collected on 23.11.2006 by the Board officers and the analysis report revealed that the ground water had been contaminated.

4) It is relevant to mention here that the residents of nearby villages namely Baladkalan, Toori, Baladkothi and Bhawanigarh had approached the Hon'ble Punjab and Haryana High Court by way of filing a Civil Writ Petition no. 3481 of 2007 titled as Parminder Singh and Others v/s Punjab Pollution Control Board and Others against M/s Matharu Steel Pvt. Ltd. and M/s MahaLuxmiOrgo Chem Industries and its Directors Sh.Chander Shekhar Dhawan and Sh. Sunil Ahuja.

5) On the basis of the monitoring carried out by the Punjab Pollution Control Board it emerged that the industry had dumped hazardous waste at the site which had led to the contamination of the ground water.

6) The case pending before the Hon'ble Punjab and Haryana High Court was transferred to Hon'ble National Green Tribunal at New Delhi wherein the case was registered in Original Application No. 35 of 2013. The Hon'ble National Green Tribunal on the basis of four study reports conducted of the site held that the industry and its directors had polluted the ground water ever since the date of their industrial activities year 1991 till 2005 and even continuously thereafter.

7) The Hon'ble National Green Tribunal has disposed of Original Application no. 35 of 2013 vide judgement dated 23.09.2015. It was held by the Hon'ble National Green Tribunal that respondent no.4 M/S Matharu Steel Pvt. Limited having its Registered Office at Plot No. 4, Near Airport, Jhalanpur Road, Kota Rajasthan through its Director Shri. Chander Shekhar Dhawan and respondent no.5 M/S Mahalaxmi Orgochem Industries, c/o Matharu Steels Pvt. Limited, Nabha Road, Tehsil Bhawanigarh,Distict Sangrur, through Shri. Chander Shekhar Dhawan represented by respondent no.6. Chander Shekhar Dhawan, Director, M/S Matharu Steels Pvt. Limited, resident of 110-A, Sarabha Nagar, Ludhiana, respondent no.7 Sunil Ahuja, Director of M/S Matharu Steels Pvt. Limited, Resident of E-14, Sector-14, Noida, U.P. and respondent no.9. Gurcharan Singh Matharu s/o Surjit Singh Matharu Director,

Matharu Chemicals Industries Nabha Road, Bhawanigarh Tehsil Sangrur District by their industrial activities have polluted the air, land and water including the groundwater and produced and stored hazardous waste unauthorizedly and without any proper disposal. The Hon'ble National Green Tribunal had directed the said respondents to effect remediation of water contamination in the premises of the unit and all the surrounding areas polluted by the activities of the unit at their cost.

8) In order to investigate the contamination of the site and to effect remediation at the site, the Punjab Pollution Control Board vide letter no. 19199 dated 18.08.2023 has engaged National Environment Engineering Research Institute (NEERI), Nagpur for carrying out detailed Environmental Site Assessment and delineating remedial action plan, within 05 Km radius of subject cited site. The institute has submitted a final environmental assessment report dated 21.05.2024 mentioning details of short and long-term remediation measures which are to be performed at site where M/s Matharu Chemical Industries, M/s Maha Lakshmi Orgochem Ltd (Prop. M/s Matharu Steel Pvt. Ltd.) had operated. M/s Re-Sustainability Ltd. operator of sole TSDF facility in the State of Punjab located at Nimbua, DeraBassi, SAS Nagar has estimated the cost of implementing short term remedial measures i.elifting, transportation, treatment and disposal of contaminated soil from zones identified by NEERI, to be Rs. 50,13,44,573/-. In addition, Rs. 8,506/- per MT (excluding applicable taxes) expense is to be incurred on treatment and disposal of contaminated soil slurry through Monolithic Encapsulation. Further, short term remedial measures also involve cost of restoration of land by local contractor roughly amounting Rs. 1.5 crore. The cost of implementing long term remedial measures as suggested by NEERI i.e pumping and treatment of contaminated ground water aquifer through activated carbon, is projected to be approx. Rs 53.96 crore. In view of these facts of the case as such, remediation measures to be performed at the site involves about Rs. 105.59 crore.

9) It is relevant to mention here that the Hon'ble Supreme Court of India has considered the Principles of Precaution, Sustainable development and Polluter Pay's and decided to strictly implement the same. The decisions so taken by the Hon'ble

Supreme Court of India are summarized herein below:

a) The concept of precautionary principle was considered in M.C Mehta versus Union of India and others and vide judgment dated 11.10.1996 the Hon'ble Supreme Court of India held that the Precautionary Principle has been accepted as a part of the Law of the land.

b) The concept of sustainable development was considered in M.C Mehta versus Union of India and others (1997) 2 SCC 353 and it was decided by the Hon'ble Supreme Court of India that the development is essential for the economy of the country but at the same time the environment and eco systems have to be protected.

c) The Hon'ble Supreme Court of India has also considered the concept of Polluter Pay's Principle in Indian Council for Enviro Legal Action and others v/s Union of India and others (1996) 3 SCC 212 para 16, Vellore Citizens Welfare Forum v/s Union of India (1996) 5 SCC 647 para 12-18 and held that Polluter Pay's Principle is accepted principle and part of environmental law ofthe country without even specific statute.

10) On examination of the entire facts of the case as has been recorded herein above, it is concluded that the activities carried out by M/s Matharu Chemical Industries, M/s Maha Lakshmi Orgochem Ltd (Prop. M/s Matharu Steel Pvt. Ltd.) by its owner Gurcharan Singh Matharu and directorsChandarshekhar Dhawan and Sunil Ahuja have intentionally and deliberately caused huge environmental damage in the area of Block Aloarakh, Tehsil Bhawanigarh, District Sangrur in violation of the provisions of Environmental Laws.

11) It is pertinent to mention here that as per record available with the Board the addresses of Sh. Gurcharan Singh Matharu, Sh. Chander Shekhar Dhawan and Sh. Sunil Ahuja are as under:

i) Sh. Gurcharan Singh Matharu, # 435, Rajiv Gandhi Nagar, Kota, Rajasthan.

ii) Sh. Chander Shekhar Dhawan, # 110-A, Sarabha Nagar, Ludhiana.

iii) Sh. Sunil Ahuja, # E-14, Sector 14, Noida, Uttar Pradesh.

The above named person have also mention the above addresses in the Judicial Proceedings.

12)Thus, M/s Matharu Chemical Industries, M/s Maha Lakshmi Orgochem Ltd (Prop. M/s Matharu Steel Pvt. Ltd.), earlier situated at village Aloarakh, Tehsil Bhawanigarh, District Sangrur and its owner Sh. Gurcharan Singh Matharu and directors Sh. Chander Shekhar Dhawan and Sh. Sunil Ahuja have made themselves liable for the cost of remediation of the site in respect of the violations committed on the basis of the Principle of Precaution, Sustainable development and Polluter Pay's, which is tentatively calculated to be Rs. 105.59 crore.

13)Therefore, M/s Matharu Chemical Industries, M/s Maha Lakshmi Orgochem Ltd (Prop. M/s Matharu Steel Pvt. Ltd.), earlier situated at village Aloarakh, Tehsil Bhawanigarh, District Sangrur and its owner Sh. Gurcharan Singh Matharu and directors Sh. Chander Shekhar Dhawan and Sh. Sunil Ahuja through the above addresses are hereby directed to deposit an amount of Rs. 105.59 crore with the office of the Punjab Pollution Control Board at Patiala or Sangrur as the cost of remediation of the contaminated site at village Aloarakh, Tehsil Bhawanigarh, District Sangrur in lieu of causing huge damage to the environment due to which the tubwells in the area are spewing colored polluted water which is harmful to the health of the people of the area as well as to the vegetation, within 15-days from the date of receipt of this order, failing which necessary action will be initiated for recovery of the amount of environmental compensation by adopting coercive measures.

14)Take notice that no further intimation or reminder will be issued or served by the Board in this regard after lapse of stipulated period of 15-days.

Adarsh Pal Vig

Prof. (Dr.) Adarsh Pal Vig
Chairman

ਪੰਜਾਬ ਪ੍ਰਦੂਸ਼ਣ ਰੋਕਥਾਮ ਬੋਰਡ
PUNJAB POLLUTION CONTROL BOARD
E-mail : ppcbzop2@ymail.com, Web: www.ppcb.gov.in

LiFE Lifestyle for Environment

No. 1949-51 **REGISTERED** **Dated:** 8-8-2024

To

1. Sh. Gurcharan Singh Matharu,
   # 435, Rajiv Gandhi Nagar, Kota,
   Rajasthan.
2. Sh. Chander Shekhar Dhawan,
   # 110-A, Sarabha Nagar,
   Ludhiana.
3. Sh. Sunil Ahuja,
   # E-14, Sector 14,
   Noida, Uttar Pradesh

Subject: **Imposition of cost for effecting remediation of contamination of soil and ground water in and around the site of M/s Matharu Chemical Industries (later changed to M/s Mahalaxmi Orgechem Industries), Vill. Aloarakh, Tehsil Bhawanigarh, District Sangrur.**

Enclosed find herewith order no. 351 dated 08/08/2024 passed by the Chairman, Punjab Pollution Control Board for information & further necessary action.

It is directed to deposit an amount of Rs. 105.59 crore with the office of Punjab Pollution Control Board at Patiala or Sangrur, within 15 days from the date of receipt of this order.

Take notice that no further intimation or reminder will be issued or served by the Board in this regard after lapse of stipulated period of 15 days.

DA/ as above

Environmental Engineer (ZP-II)
On behalf of Punjab Pollution Control Board

Endst. No. 1952 **Dated** 8-8-2024

A copy of the above is forwarded to the Environmental Engineer, Punjab Pollution Control Board, Regional Office, Sangrur for information & further necessary action.

DA/ as above

Environmental Engineer (ZP-II)
On behalf of Punjab Pollution Control Board

Annexure N
(of joint committee
report dt. 10.08.2024)

National Green Tribunal

Case Title	H.C.ARORA Vs. State of Punjab through its Chief Secretary
Case Type	Misc Application in disposed of cases
Filing No.	0701114017352024
Transaction id	0131752024
Payment Date	2024-08-13 00:00:00.0
Amount	1215 Rs.
Status	SUCCESS

BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL, NEW DELHI (PRINCIPAL BENCH)

MA No. 103 of 2022 in OA No. 169 of 2021 raising grievance against the failure of the State Authorities to take remedial measures against contamination of ground water in village Aloarkh Block Bhawanigarh, District Sangrur.

Miscellaneous Application No. of 2024
IN
O.A. No. 169 of 2021

IN THE MATTER OF:

H. C. Arora ...Applicant

VERSUS

State of Punjab & Ors. ...Respondents

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4.	**Annexure- C** Hon'ble NGT order dated 23.09.2015 in OA no. 35 of 2013	36-122
5.	**Annexure- D** Hon'ble NGT order dated 31.03.2022 in OA no. 169 of 2021	123-139
6.	**Annexure-E** Punjab Pollution Control Board order no. 351 dated 08.08.24 for Imposition of cost for effecting remediation of contamination of soil and ground water in and around the site of M/s Matharu Chemical Industries (later changed to M/s Mahalaxmi Orgochem industries), village Aloarakh, Tehsil Bhawanigarh, District Sangrur conveyed to persons responsible vide PPCB letter no. 1949-51 dated 08.08.2024	140-145

Through

Guneet Sethi
Environmental Engineer,
Punjab Pollution Control Board
Regional Office, Sangrur

Place: Moga
Dated: 10.08.2024

1121

BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL, NEW DELHI
(PRINCIPAL BENCH)

(Court No.1)

Miscellaneous Application no._____of 2024

In

O.A no. 169 of 2021

In the matter of

H.C Arora

..... Applicant

V/s

State of Punjab and Others

..... Respondent

Application for issuing directions to the Owner and Directors of M/s Matharu Chemical Industries, M/s Maha Lakshmi Orgochem Ltd (Prop. M/s Matharu Steel Pvt. Ltd.) to pay the amount of remediation of contaminated soil and groundwater.

RESPECTFULLY SHOWETH

1. That briefly submitted that MA no. 103 of 2022 filed by Sh. H.C. Arora in OA no. 169 of 2021 was heard by the Hon'ble National Green Tribunal. The grievance raised in the said application was the alleged failure of the State Authorities to take remedial measures against contamination of ground water in village Aloarakh, Block of Bhawanigarh, District Sangrur.

NOTARY
YOGINDER PAL KANSAL
Advocate
Area Distt. MOGA
Regd. No. 7386
GOVT. OF INDIA

2. That in view of the fact that the issue relating soil and ground water contamination at site in village Aloarakh, Block of Bhawanigarh, District Sangrur is of important nature, the Hon'ble National Green Tribunal has issued directions from time to time in the case and in compliance the Board has filed status reports before the Hon'ble Tribunal.

3. That it is relevant to mention here that the Punjab Pollution Control Board has engaged National Environmental Engineering Research Institute (NEERI), Nagpur for carrying out detailed environmental assessment and delineating the remedial action plan, within 5 km radius of the site. The NEERI was also impleaded as party in the case by the Hon'ble National Green Tribunal.

4. That further it is submitted that M/s Re-Sustainability Ltd. is the operator of sole Common Hazardous Waste Treatment, Storage and Disposal Facility (CHWTSDF) facility in the State located at Village Nimbuan, Tehsil Dera Bassi, District SAS Nagar, with Nimbua Greenfield (Punjab) Association (NGPA) as developer of the said facility. The common facility is engaged in lifting, transportation, treatment and disposal of hazardous waste. Considering the facts and circumstances of the above case prompt action was taken by the Regional Office Sangrur of the Board and the said agency was contacted and preliminary soil samples were collected by the agency on 25.05.2024 from contaminated zones identified by NEERI through its report dated 21.05.2024, in order to frame an action plan for lifting and disposal of contamination soil. The field report in this regard is enclosed as **Annexure- A**. During preliminary discussions, it was indicated by the agency that the entire work with regard to lifting, treatment and disposal of contaminated soil may take a period of approximately 6 months.

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5. That it is further clarified that after the passing of the order 28.05.2024 by the Hon'ble National Green Tribunal, M/s Re-Sustainability Ltd. (sole operator of TSDF) in its report relating to the proposal for excavation lifting and transportation of contamination soil from the site of Matharu Chemical Industry, Village Aloarakh to CHWTSDF dated 21.07.2024 (enclosed as **Annexure-B**) has stated that implementation of short-term remedial measures i.e shifting of contaminated soil to TSDF, shall be completed within 32 weeks (i.e 8 months) after the notice to proceed is issued by the Board.

6. That in order to investigate the contamination of the site and to effect remediation at the site, the Punjab Pollution Control Board vide letter no. 19199 dated 18.08.2023 has engaged National Environment Engineering Research Institute (NEERI), Nagpur for carrying out detailed Environmental Site Assessment and delineating remedial action plan, within 05 Km radius of subject cited site. The institute has submitted a final environmental assessment report dated 21.05.2024 mentioning details of short and long-term remediation measures which are to be performed at site where M/s Matharu Chemical Industries, M/s Maha Lakshmi Orgochem Ltd (Prop. M/s Matharu Steel Pvt. Ltd.) had operated. M/s Re-Sustainability Ltd. operator of sole TSDF facility in the State of Punjab located at Nimbua, DeraBassi, SAS Nagar has estimated the cost of implementing short term remedial measures i.e lifting, transportation, treatment and disposal of contaminated soil from zones identified by NEERI, to be Rs. 50,13,44,573/-. In addition, Rs. 8,506/- per MT (excluding applicable taxes) expense is to be incurred on treatment and disposal of contaminated soil slurry through Monolithic Encapsulation. Further, short term remedial measures also involve cost of restoration of land by local contractor roughly amounting Rs.

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1.5 crore. The cost of implementing long term remedial measures as suggested by NEERI i.e pumping and treatment of contaminated ground water aquifer through activated carbon, is projected to be approx. Rs. 53.96 crore. In view of these facts of the case as such, remediation measures to be performed at the site involves about Rs. 105.59 crores.

7. That it is relevant to mention here that the Hon'ble National Green Tribunal has disposed of Original Application no. 35 of 2013 vide judgement dated 23.09.2015, wherein it was held by the Hon'ble National Green Tribunal that respondent no.4 M/S Matharu Steel Pvt. Limited having its Registered Office at Plot No. 4, Near Airport, Jhalanpur Road, Kota Rajasthan through its Director Shri. Chander Shekhar Dhawan and respondent no.5 M/s Mahalaxmi Orgochem Industries, c/o Matharu Steels Pvt. Limited, Nabha Road, Tehsil Bhawanigarh, Distict Sangrur, through Shri. Chander Shekhar Dhawan represented by respondent no.6. Chander Shekhar Dhawan, Director, M/S Matharu Steels Pvt. Limited, resident of 110-A, Sarabha Nagar, Ludhiana, respondent no.7 Sunil Ahuja, Director of M/S Matharu Steels Pvt. Limited, Resident of E-14, Sector-14, Noida, U.P. and respondent no.9. Gurcharan Singh Matharu s/o Surjit Singh Matharu Director, Matharu Chemicals Industries Nabha Road, Bhawanigarh Tehsil Sangrur District by their industrial activities have polluted the air, land and water including the groundwater and produced and stored hazardous waste unauthorizedly and without any proper disposal. The Hon'ble National Green Tribunal had directed the said respondents to effect remediation of water contamination in the premises of the unit and all the surrounding areas polluted by the activities of the unit at their cost. A copy of order dated 23.09.2015

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passed by the Hon'ble National Green Tribunal in OA no. 35 of 2013 is enclosed herewith as **Annexure-C**.

8. That it is pertinent to mention here that the Hon'ble National Green Tribunal while passing the order dated 31.03.2022 in OA No. 169 of 2021 has issued directions that the cost of remediation has to be born by the State in the first instance without prejudice to the recovery of the amount later from the violators / erring officers. A copy of order dated 31.03.2022 passed by the Hon'ble NGT is enclosed as **Annexure-D**.

9. That further it is submitted that neither the State of Punjab nor the Punjab Pollution Control Board is in a position to bear such a huge expenditure for the remediation of the contaminated site at village Aloarakh, Tehsil Bhawanigarh, District Sangrur. Such remediation cost is required to be borne by the polluters who had polluted the site with industrial activities.

10. That in the facts and circumstances of the case, the Board has passed an order bearing no. 351 dated 08.08.2024 thereby imposing the cost of Rs. 105.59 crore for effecting remediation of the contamination of soil and ground water in and around the site of M/s Matharu Chemical Industries (later changed to M/s Mahalaxmi Orgochem industries), village Aloarakh, Tehsil Bhawanigarh, District Sangrur upon the above name industries and its owners Sh. Gurcharan Singh Matharu and directors Sh. Chander Shekhar Dhawan and Sh. Sunil Ahuja. A copy of the order no. 351 dated 08.08.2024 is enclosed as **Annexure-E.**

11. It is relevant to mention here that the Hon'ble Supreme Court of India has considered the Principles of Precaution, Sustainable development and Polluter

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Pay's and decided to strictly implement the same. The decisions so taken by the Hon'ble Supreme Court of India are summarized herein below:

a) The concept of precautionary principle was considered in M.C Mehta versus Union of India and others and vide judgment dated 11.10.1996 the Hon'ble Supreme Court of India held that the Precautionary Principle has been accepted as a part of the Law of the land.

b) The concept of sustainable development was considered in M.C Mehta versus Union of India and others (1997) 2 SCC 353 and it was decided by the Hon'ble Supreme Court of India that the development is essential for the economy of the country but at the same time the environment and eco systems have to be protected.

c) The Hon'ble Supreme Court of India has also considered the concept of Polluter Pay's Principle in Indian Council for Enviro Legal Action and others v/s Union of India and others (1996) 3 SCC 212 para 16, Vellore Citizens Welfare Forum v/s Union of India (1996) 5 SCC 647 para 12-18 and held that Polluter Pay's Principle is accepted principle and part of environmental law of the country without even specific statute.

12. It is relevant to mention here that the persons responsible for contamination of the site at village Aloarakh, Tehsil Bhawanigarh, District Sangrur and causing huge damage to the environment namely Sh. Gurcharan Singh Matharu, Sh. Chander Shekhar Dhawan and Sh. Sunil Ahuja are neither depositing the amount of penalty of Rs. 2 crores earlier imposed by the Hon'ble Tribunal vide order dated 23.09.2015 passed in OA No. 35 of 2013 or paying the cost of

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remediation to the Board. It is pertinent to mention here that these persons are otherwise presenting their cases through the lawyers in the Hon'ble Supreme Court of India and the Hon'ble National Green Tribunal and their addresses mentioned in the Judicial proceedings are given below:

a) Sh. Gurcharan Singh Matharu, # 435, Rajiv Gandhi Nagar, Kota, Rajasthan.
b) Sh. Chander Shekhar Dhawan, # 110-A, Sarabha Nagar, Ludhiana.
c) Sh. Sunil Ahuja, # E-14, Sector-14, Noida, Uttar Pradesh.

13. In view of the above recorded facts, it is humbly requested that this Hon'ble Tribunal may kindly pleased to issue directions to the industrial units namely M/s Matharu Chemical Industries (later changed to M/s Mahalaxmi Orgochem industries), village Aloarakh, Tehsil Bhawanigarh, District Sangrur and its owner Sh. Gurcharan Singh Matharu and directors Sh. Chander Shekhar Dhawan and Sh. Sunil Ahuja liable for paying the remediation cost of the contaminated site amounting to Rs. 105.59 crores.

It is, therefore, prayed that the application may kindly be accepted and necessary directions be issued to persons responsible for contamination at site for depositing cost of remediation of contaminated soil and groundwater, as prayed for.

Submitted by

Date: 10.08.2024

Place Moga

(Guneet Sethi)
Environmental Engineer
Punjab Pollution Control Board
Regional Office, Sangrur

NOTARY
YOGINDER PAL KANSAL
Advocate
Distt. MOGA
Regd. No. 7386
GOVT. OF INDIA

Certified that the above said affidavit being declared on solemn affirmation before me on this day.....10 AUG 2024 at moga by sh. Guneet Sethi S/o Sh. Environmental Engg who has identified by .....

Further Certified that the affidavit has been read over & explained the deponent Guneet Sethi who understood the same

ATTESTED AS IDENTIFIED

NOTARY PUBLIC
appointed by Govt. of Indian
Distt. Courts, Moga

10 AUG 2024

Sr. No. 2061

Date 10 AUG 2024

7 A

BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL,
PRINCIPAL BENCH, NEW DELHI

Miscellaneous Application No. .....of 2024
IN

O.A. No. 169 of 2021

IN THE MATTER OF:

H. C. Arora ...Applicant

VERSUS

State of Punjab & Ors. ...Respondents

AFFIDAVIT

I, Er. Guneet Sethi, S/o Sh. Jaspal Singh Sethi, aged about 36 years, working as Environmental Engineer of Punjab Pollution Control Board having office at Sangrur, Punjab- 148001, do hereby solemnly affirm and declare as under:-

1. That I am the authorised representative of the Respondent No. (Punjab Pollution Control Board) and have been duly authorised in the present application and am well conversant with the facts and circumstances of the present case and hence, competent to swear this Affidavit.

2. That the contents of accompanying Application are true and correct to the best of my knowledge and have been drafted on my instructions by my counsel and nothing material has been concealed therefrom.

Certified that the Affidavit/SPA/GPA/ Agreement has been read over & explained to the Deponent/Executant who understand the same and the same at the time of making thereof.

NOTARY GOVT. OF INDIA Jitendra Kumar Regd. No. 8283 Chandigarh Expiry Date 15.09.2025

DEPONENT
Guneet Sethi
Environmental Engineer
Punjab Pollution Control Board,
Regional Office, Sangrur

VERIFICATION:

Verified at Sangrur on 12th day of August, 2024 that the contents of my above affidavit are true and correct to my know ledge. No part of it is false and nothing material has been concealed therefrom.

NOTARY PUBLIC Jitendra Kumar 12 AUG 2024 Chandigarh U.T. Regd. No. 8283 GOVT. OF INDIA

4490

ATTESTED AS IDENTIFIED NOTARY CHANDIGARH

12 AUG 2024

DEPONENT
Guneet Sethi
Environmental Engineer
Punjab Pollution Control Board,
Regional Office, Sangrur

Gmail

Environmental Engineer <eerosangrur@gmail.com>

Reg- Field Work Report Matharu chemical contaminated site

Kapil Kumar <kapil.kumar@resustainability.com> Wed, Jul 24, 2024 at 4:53 PM
To: eerosangrur@gmail.com
Cc: Sunil Agarwal <sunilaggarwal@resustainability.com>, SANJEEV KUMAR SHARMA <sanjeevkumar.s@resustainability.com>

Dear Sir,

PFA , field work report of Matharu chemicals contaminated site.

Regards,

Kapil Kumar

Site Head –PWMP

Sustainability

Re Sustainability Limited (Formerly Known as Ramky Enviro Engineers Limited)

| TSDF, Village- Nimbuan | Tehsil- Derabassi | District- Mohali || Punjab- 140507 | India |

T: +91-1762-350226 | M: +919855299880 | resustainability.com

Matharu contaminated soil sampling field work report by PWMP 6Jul24 r1.docx
4404K

Re Sustainability Limited
Punjab Waste Management Project
Matharu Chemical Industries Contaminated Soil Sampling
Field Work Report

PPCB Ref.: Letter no. 15437, 21-Jun-24, with 'Subject: Remediation of contaminated site previously belongs to M/s Matharu Chemical Industries, Vill. Aloarakh, Tehsil Bhawaingarh, District Sangrur.'

ReSL Ref.: Letter no. RSL/TSDF/NIMBUA/24-25/PPCB/014, 25-Jun-24, with 'Subject: Lab sampling of contaminated soil to identify the disposal pathway …'.

Previous Report Reference: 'Detailed Environmental Site Assessment and Remediation of Contaminated Groundwater and Soil and Control the further Spread of the Contamination - M/s. Matharu Chemical Industries, Village Aloarakh, Tehsil Bhawanigarh, District Sangrur, Punjab', prepared by the National Environmental Engineering Research Institute (NEERI). The report was provided by the PPCB to PWMP along with the PPCB letter mentioned above.

The zones mentioned below, viz. Zone I, Zone II and Zone III were mentioned in the above report.

Sampling Plan:

- Random samples were to be taken from various locations of the zones for the comprehensive analysis of contaminated soil.
- Total three (3) composite samples were to be prepared from the random samples for the comprehensive analysis of contaminated soil.
- Two (2) composite samples were to be prepared for Zone I. Each individual composite sample was to be prepared from the five (5) random samples collected from the various locations and depths in Zone I.
- One (1) combined composite sample were to be prepared for Zone II and Zone III, from the individual ten (10) random samples. Out of the individual random samples, five (5) were to be collected from the various locations and depths in Zone II and five (5) were to be collected from the various locations and depths of in Zone III.
- Five (5) core cutter sample were collected, three (2) from Zone I and one (1) each of Zone II and Zone III; for the field (in-situ) density of contaminated soil**.**

Sampling Date: 5 July 2024.

Sampling Duration: 12:48 PM to 4:00 PM.

ReSL Team: Sanjeev Sharma, Sachin Kumar, Tarlochan Singh, Jaspal and Ravinder Singh.

PPCB Official: Guneet Sethi (EE), Loverpreet Singh (JE) and Sangrur regional office.

Sampling Details:

For test of field (in-situ) density of contaminated soil (undisturbed core cutter sample)

Sl. No.	Zone	Sample ID	Coordinate		Depth, m	Observation
			Latitude	Longitude		
1	Zone I	Core I	30.282047^{O}	76.081094^{O}	> 0.5	Contaminated soil
		Core II	30.282162^{O}	76.081083^{O}	> 0.5	Contaminated soil
		Core III	30.282137^{O}	76.080973^{O}	> 0.5	Contaminated fluffy material
2	Zone II	Core I	30.282048^{O}	76.081113^{O}	> 0.5	Contaminated soil
3	Zone III	Core II	30.282833^{O}	76.080905^{O}	> 0.5	Contaminated soil

For comprehensive analysis of contaminated soil (disturbed random sample)

Sl. No.	Zone	Sample ID	Coordinate		Depth, m	Organoleptic Observation
			Latitude	Longitude		
1	Zone I	SCS-CA-01	30.282047^{O}	76.081094^{O}	1.7	Contaminated black stained soil with obnoxious odor and in contact with colored water
		SCS-CA-02	30.282162^{O}	76.081083^{O}	1.8	Contaminated black stained soil with obnoxious odor

Sl. No.	Zone	Sample ID	Coordinate		Depth, m	Organoleptic Observation
			Latitude	Longitude		
		SCS-CA-03	30.282137^{O}	76.080973^{O}	1.6	Contaminated black stained soil with obnoxious odor
		SCS-CA-04	30.282189^{O}	76.081095^{O}	1.8	Contaminated black stained soil with obnoxious odor
		SCS-CA-05	30.282083^{O}	76.080712^{O}	2.2	Contaminated black stained soil with obnoxious odor
2	Zone I	SCS-CA-06	30.282125^{O}	76.080948^{O}	1.6	Contaminated black stained soil with obnoxious odor
		SCS-CA-07	30.282119^{O}	76.081029^{O}	1.5	Contaminated black stained soil with obnoxious odor
		SCS-CA-08	30.282104^{O}	76.080955^{O}	1.3	Contaminated black stained soil with obnoxious odor and in contact with colored water
		SCS-CA-09	30.282048^{O}	76.081113^{O}	1.6	Contaminated black stained soil with obnoxious odor
		SCS-CA-10	30.282078^{O}	76.08069^{O}	1.8	Contaminated black stained soil with obnoxious odor
3	Zone II	SCS-CA-01	30.281996^{O}	76.081269^{O}	1.7	Contaminated black stained soil with obnoxious odor
		SCS-CA-02	30.282896^{O}	76.080712^{O}	1.8	Contaminated black stained soil with obnoxious odor
		SCS-CA-03	30.282115^{O}	76.080805^{O}	2.2	Contaminated black stained soil with obnoxious odor
		SCS-CA-04	30.282125^{O}	76.080948^{O}	1.8	Contaminated black stained soil with obnoxious odor
		SCS-CA-05	30.282048^{O}	76.081113^{O}	1.9	Contaminated black stained soil with obnoxious odor
4	Zone III	SCS-CA-01	30.282833^{O}	76.080905^{O}	2.2	Contaminated slightly brown stained soil with obnoxious odor
		SCS-CA-02	30.282991^{O}	76.080778^{O}	1.8	Contaminated brick red stained soil with obnoxious odor
		SCS-CA-03	30.281532^{O}	76.082258^{O}	1.9	Contaminated brick red stained soil with obnoxious odor
		SCS-CA-04	30.282896^{O}	76.080712^{O}	1.7	Contaminated brick red stained soil with obnoxious odor
		SCS-CA-05	30.282965^{O}	76.080876^{O}	2.1	Contaminated brick red stained soil with obnoxious odor

Note:

- The sampling was attempted on 27-Jun-24. But, due to rain and water logging at the site, the sampling couldn't be done and the team returned from the site. After the cessation of the rain spell, the sampling was attempted on 2-Jul-24, but again couldn't be done due to rain after reaching the site. Finally, the sampling was done on 5-Jul-24.
- Prior to the receipt of the PPCB 21-Jun-24 letter by ReSL along with the NEERI report, a preliminary site reconnaissance was undertaken by ReSL on 25-May-24 per the discussion with PPCB. A few random near surface (~ 15 cm depth) soil samples were collected only for the preliminary quality screening.

Photo-documentation

ReSL Sampling Team and PPCB Official

Zone I SCS-CA-01 Sampling Location

Zone I SCS-CA-03 Sample Location

Zone I Core Cutting

Zone I SCS-CA-05 Sample Location

Zone I SCS-CA-08 Sampling Location

Zone II SCS-CA-01 Sample Loctaion

Zone II SCS-CA-04 Sampling Loctaion

Zone II SCS-CA-05 Sampling Loctaion

Zone III Core Cutting

Zone III SCS-CA-01 Sampling Loctaion

Zone III SCS-CA-02 Sampling Location

Gmail

Environmental Engineer <eerosangrur@gmail.com>

Matharo Chemicals sangrur -Draft Proposal

Sunil Agarwal <sunilaggarwal@resustainability.com> Sun, Jul 21, 2024 at 7:09 PM
To: msppcb@gmail.com
Cc: eerosangrur@gmail.com

Dear Sir ,

Pl find attached tentative proposal regarding short term remediation of contaminated site at Sangrur (Matharu Chemicals) for your kind reference please .

Regards

Sunil.

Matharu contaminated soil dig and dump proposal final 20Jul24.docx
1105K

Proposal for Excavation, Lifting and Transportation of Contaminated Soil from Site Previously Belonging to Matharu Chemical Industries, Aloarakh Village, and Treatment and Disposal at Punjab Waste Management Project CHWTSDF

Submitted by

Re Sustainability Limited

1. INTRODUCTION

Matharu Chemical Industries (later known as the Mahalaxmi Organochem Industries and hereinafter also called as the 'Site') situated at Nabha Road, Bhawanigarh, District Sangrur, Punjab was established in the year 1991 and had been manufacturing H-Acid till it was closed in the year 2005. The H-Acid production capacity of the plant was 580 kg/batch, with a total production of 35 batches/month.

The major process wastes, viz. iron and gypsum sludges followed by mother liquor incineration ash, were all stored on-site in the Hazardous Waste Storage Shed (HWSS). The process wastewater was stored on-site in the Solar Evaporation Ponds (SEPs).

The unscientific on-site storage and disposal of the wastes and wastewater had collectively led to soil and groundwater contamination in and around the site.

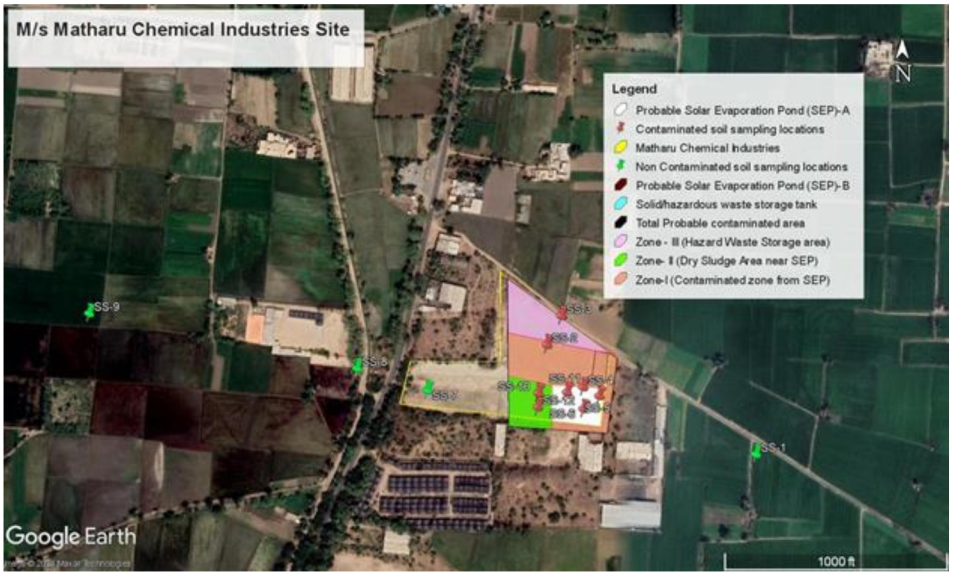
In view of the identified contamination, a number of directives were issued to undertake a structured soil and groundwater contamination study to assess the extent of its impact on the environment. The study was undertaken by the National Environmental Engineering Research Institute (NEERI), Nagpur during the period Aug-23-May-24. The study established the occurrence of elevated concentrations of colour, Chemical Oxygen Demand (COD), Total Organic Carbon (TOC), sodium, iron, sulfate, phenol, etc. in the environmental matrices, as reported in the 'Detailed Environmental Site Assessment and Remediation of Contaminated Groundwater and Soil and Control the further Spread of the Contamination - M/s. Matharu Chemical Industries, Village Aloarakh, Tehsil Bhawanigarh, District Sangrur, Punjab.' (hereinafter also called as the 'NEERI Report').

It was inferred in the NEERI report that –

- Based on the electrical resistivity tomography and the soil analysis results, from the SEPs, HWSS and the targeted soil sampling up to 3.0 m depth at the site, it was evident that the sources of contamination such as the 'black fluid' (total dissolve solid > 70000 mg/L) and the remnants of iron sludge are still present.
- The contamination had spread beyond the SEPs and HWSS and its presence up to 3.0 m depth was evidently established.
- Contamination below 3.0 m depth is not ruled out.
- As the contaminated source was at the site for an extended period since the plant was in operation, the gradual infiltration of the leachate and also triggered by the natural recharge during monsoon added to the contamination of the unsaturated zone as well as the aquifer.
- The estimated contaminated groundwater is 2.198 million cum spreading up to 60 m depth. The aquifer needs to be decontaminated by using the pump and treat method.

As the initial/ short-term remediation measure (primary contamination source removal), NEERI recommended to excavate and remove ~ 48064 cum of on-site contaminated soil, followed by groundwater remediation as the long-term remediation measure. The footprint of the recommended contaminated soil excavation areas is ~ 21266 sqm. as shown in **Figure 1** and **Figure 2**.

Figure 1 - Recommended Contaminated Soil Excavation Areas Imagery



Source – NERRI report 'Figure 3.55: Delineation of soil contaminated area inside and close to M/s Matharu Chemical Industries'.

Figure 2 - Recommended Contaminated Soil Excavation Areas Zoning

Table 3.20: Details of the different soil contaminated zones

Zone	Zone corner coordinate		Area (Sq.m)	Thickness in meters	Volume in cubic meter
	Latitude	Longitude			
Zone-I (Contaminated zone from SEP). Extends vertically from 0.5m to 3m	A. 30°16'54.44"N B. 30°16'56.34"N C. 30°16'56.76"N D. 30°16'58.65"N E. 30°16'57.55"N F. 30°16'54.27"N	76° 4'50.85"E 76° 4'50.92"E 76° 4'48.66"E 76° 4'48.65"E 76° 4'54.21"E 76° 4'53.70"E	12570	2.5	31425
Zone- II (Dry Sludge Area near SEP). Extends vertically from 0.5m to 3m	A. 30°16'54.59"N B. 30°16'56.76"N C. 30°16'56.34"N D. 30°16'54.44"N	76° 4'48.72"E 76° 4'48.66"E 76° 4'50.92"E 76° 4'50.85"E	3595	2.5	8987.5
Zone - III (Hazard Waste Storage area). Extends vertically from 0.5m to 2m	A. 30°16'58.65"N B. 30°17'1.03"N C. 30°16'57.55"N	76° 4'48.65"E 76° 4'48.60"E 76° 4'54.21"E	5101	1.5	7651.5
Total volume					48064

Source - *NERRI report* 'Table 3.20: Details of the different soil contaminated zones'.

In view of the above, the Punjab Pollution Control Board (PPCB), vide the letter (No. 15437, 21-06-2024) asked Re Sustainability Ltd. (ReSL) to send a detailed proposal for the excavation, lifting and transportation of the contaminated soil from the Matharu Chemical Industries followed by treatment and disposal of the same at the Punjab Waste Management (PWMP) Common Hazardous Waste Treatment Storage and Disposal Facility (CHWTSDF) in compliance to the Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016 (hereinafter also called as the 'HW Rules, 2016') and the SOPs laid by the Central Pollution Control Board (CPCB) in this matter (hereinafter also called as the 'CPCB Guidelines'). The said NEERI report was provided by the PPCB to ReSL along with the letter.

The detailed proposal is elaborated in the following sections.

It is proposed by ReSL to execute the project in four (4) steps as described below. The details of the activities undertaken or to be undertaken in each of the steps are described below.

1. Step 1 - Contaminated soil characterization, assigning disposal pathway and test of field (in-situ) density

1.1. Contaminated soil characterization

The contaminated soil characterization and subsequently assigning the disposal pathway in line with the CPCB guideline and aligned to the CHWTSDF operation, were not specified in the NEERI report. Hence, it was necessary to undertake the comprehensive analysis of the contaminated soil to assign its disposal pathway.

The activity includes –

- Comprehensive analysis of the contaminated soil in line with the CPCB 'Guidelines for Proper Functioning and Upkeep of Disposal Sites', HAZWAMS/32/2005–2006, Annexure I (comprehensive analysis requirements for hazardous wastes – generator/ TSDF operator).
- Test of field (in-situ) density of contaminated soil, by undisturbed core cutting method, to convert the volume (cum) to mass (MT).

The zones viz. 'Zone I', 'Zone II' and 'Zone III' per the NEERI report Table 3.20, delineating the extent of the soil contamination, were selected for the sampling per the plan as given in **Table 1**.

Table 1: Matharu Chemical Industries Contaminated Soil Sampling Plan for Comprehensive Analysis and Field Density Test

Sl. No.	Zone	Area, sqm.	No. of Sample	Depth, m
Comprehensive analysis (disturbed random sample)				
1	Zone I	12570	Two (2) composite samples, each prepared from the five (5) random samples	Variable
2	Zone II	3595	One (1) combined composite sample, prepared from five (5) random samples in Zone II and five (5) random samples in Zone III.	Variable
3	Zone III	5101		
Field (in-situ) density (undisturbed core cutting sample)				
1	Zone I	12570	Three (3)	> 0.5 m

Sl. No.	Zone	Area, sqm.	No. of Sample	Depth, m
2	Zone II	3595	One (1)	> 0.5 m
3	Zone III	5101	One (1)	> 0.5 m

For all the samplings, the top 0.0-0.5 m depth existing soil layer was excavated and discarded since, per the NEERI report Table 3.20, the same appeared to be uncontaminated and was recommended to be used to fill up the voids (generated after the excavation of the contaminated soil) along with the virgin soil.

A letter (Ref.: RSL/TSDF/NIMBUA/24-25/PPCB/014, 25-Jun-24, with 'Subject: Lab sampling of contaminated soil to identify the disposal pathway …'.) was submitted to the PPCB by the PWMP on 25-Jun-24 requesting the contaminated soil sampling at the site in presence of PPCB official followed by the laboratory analysis.

The contaminated soil sampling at the site was undertaken on 5-Jul-24 in presence of the PPCB officials. The photo-documentation field work report was submitted to the PPCB on 8-Jul-24. The report also described the reason for the delay of the actual sampling as compared to the PWMP request letter submitted on 25-Jun-24.

The contaminated soil sampling photo-documentation is given in **Appendix 1**.

The contaminated soil comprehensive analysis reports are given in **Appendix 2A** and the field (in-situ) density test reports are given in **Appendix 2B**.

It is contextual to mention that based on the field (in-situ) density test results [average of five (5) samples is 1.62 gm/cc], the given ~ 48064 cum contaminated soil mass works out to be ~ 77864 MT.

1.2. Contaminated soil disposal pathway assignment

The activity includes –

- Assigning the disposal pathway of the contaminated soil (e.g., direct disposal into hazardous waste landfill or treatment before landfill) in line with the CPCB 'Guidelines for Proper Functioning and Upkeep of Disposal Sites', HAZWAMS/32/2005–2006, Annexure III (concentration limits/ criteria for acceptance of hazardous wastes for direct disposal into hazardous waste landfill).

It is evident from the contaminated soil comprehensive analysis report of that the Loss on Ignition (LoI) value [average of three (3) samples is 26.94 % (w/w)] is above

the '20 % (w/w, non-biodegradable)' CPCB limit assigned for the acceptance for the direct disposal of into the hazardous waste landfill.

2. Step 2 - Preparatory works

2.1. Condition survey

The activity shall include –

- Visual assessment of the existing physical condition of the site prior to the execution to understand the site setting and access.
- Getting on-site areas for temporary stockpiling of uncontaminated soil.

2.2. Temporary site access

It is assumed that a 'notice to proceed' shall be issued by the PPCB, enabling ReSL to obtain temporary physical access of the site for the execution.

The activity shall include –

- Temporary barricading of the site.
- Clearing and grubbing of the required areas.
- Preparing the laydown area for the mobilization and placement of temporary site infrastructure, e.g., porta cabin office, equipment and machineries, sanitary facilities, lighting, generator set, electrical connections, first aid service, personnel logistics, etc.
- Making arrangements for the excavation and removal of the first ~ 500 cum of uncontaminated soil to expose about the first ~ 1000 sqm. of contaminated soil to start its excavation.
- Traffic management planning.

2.3. Topographical survey

The activity shall include –

- Differential Global Positioning System (DGPS) and/ or Total Station (TS) topographical survey of the excavation areas.
- Obtaining the standard topographical survey drawing.
- Superimposing the 'Zone I', 'Zone II' and 'Zone III', delineating the horizontal extent of soil contamination, on the topographical survey drawing.
- Contaminated soil excavation areas line set out and recording the initial ground levels.

It is proposed by ReSL, that the recorded initial levels to serve as the reference points to maintain the recommended depths of excavation for both uncontaminated soil (0.0-0.5 m depth) and contaminated soil (0.5-3.0 m depth).

2.4. **Utility identification, disconnection, diversion and/ or protection**

The activity shall include –

- Identification, disconnection, diversion and/ or protection of the overhead and/ or underground utilities such as power, water, communication and gas supply lines, sanitary/ sewer lines, etc. to avoid the possibility of their damage during excavation.

The underground utility clearances shall be implemented by using the Digital Cable Avoidance Tool (DigiCAT) and/ or Ground Penetrating Radar (GPR) to identify and mark out utilities.

The topographical survey drawing obtained from the activity '2.3.' above shall be updated with the utility mark outs for any disconnection, diversion and/ or protection planning.

All disconnection, diversion and/ or protection of the fouling utilities shall be done in due consultation with and approval of PPCB, by the relevant local authority.

2.5. **Other activities**

- Preparing the on-site health and safety management plan for execution.
- Preparing the on-site emergency management plan inclusive of information on availing off-site services in case of emergency.
- Arranging appropriate Personal Protective Equipment (PPE) such as, but not limited to high visibility jacket, safety shoe, helmet, goggle, ear plug, glove, etc.
- Mobilization of ReSL site team consisting of the persons as proposed in **Section 4 - Execution Team**.
- Mobilization of the on-site security agency.
- Mobilization of the excavation contractor including equipment and machineries.
- Preparing access control measures for the excavation areas and co-activity areas including traffic route planning and installation of safety signages.
- Mobilization of dedicated hazardous waste transportation vehicles in line with the requirements of the HW Rules, 2016 and CPCB transportation guideline.

- Imparting general, job-specific and health and safety training to all the deployed persons.

3. Step 3 - Uncontaminated soil handling

3.1. Uncontaminated soil excavation

The activity shall include –

- Excavation of the initial ~ 500 cum of uncontaminated soil (0.0-0.5 m depth) to expose approximately the first ~ 1000 sqm. of contaminated soil for excavation.

It is proposed by ReSL to use the existing on-site uncontaminated land at the southwest corner, which spans ~ 8100 sqm. area for the temporary/ interim stockpiling of the excavated uncontaminated soil.

3.2. Uncontaminated soil excavation measurement

Pre- and post-level DGPS and/ or TS topographical surveys shall be used as the method of measurement for the uncontaminated soil excavation up to the required depth.

4. Step 4 - Contaminated soil handling

4.1. Contaminated soil excavation and vehicle loading

The activity shall include -

- Preparing the ramp and grade for the safe plying of equipment, machineries and vehicles within the excavation areas.
- Preparing stable slopes at the edge of the excavation to prevent the soil collapse for deep excavations, say up to 3.0 m.
- DGPS and/ or TS topographical surveys for the contaminated soil excavation to record its progression and termination at the final depths.
- Loading of vehicles near the excavation location.

It is proposed by ReSL to weigh the contaminated soil loaded vehicles, immediately after the departure from the site, in the nearest available local weighbridge to have an initial record of the quantity of material being transported from the site to the PWMP CHWTSDF. The identification and selection of such weighbridge shall be done in consultation and approval of the PPCB.

4.2. Validation sampling within the excavated void

It is pertinent to reiterate from the NEERI report that the contamination below 3.0 m depth is not ruled out. Hence, ReSL proposes to undertake the contamination source removal validation sampling on the floor and the walls of the excavated void. The typical analytical suite for such validation sampling consists of the parameters viz. color elution (Pt-Co or Hazen), iron (Fe^{2+} and Fe^{3+}) speciation, cations-anions, toxic elements, TOC, volatile and semi-volatile organic compounds quantitative scan including unknowns. It is proposed to undertake the validation with one (1) sample per 2500 sqm of the excavated soil surface area. The analysis shall be done by engaging the National Accreditation Board for Testing and Calibration Laboratories (NABL), Ministry of Environment, Forest and Climate Change (MOEF&CC) and/ or other internationally accredited laboratory.

4.3. Contaminated soil transportation

The activity shall include -

- Transportation of excavated contaminated soil, by using dedicated hazardous waste transportation vehicles.
- Maintaining the hazardous waste transportation records per the HW Rules, 2016 and CPCB transportation guideline.

4.4. Contaminated soil acceptance (fingerprint analysis) and receipt at CHWTSDF

The activity shall include –

- Fingerprint analysis of excavated contaminated soil in line with the CPCB 'Guidelines for Proper Functioning and Upkeep of Disposal Sites', HAZWAMS/32/2005–2006, Annexure II (fingerprint analysis requirements for hazardous wastes - TSD facilities).
- Confirming the acceptance criteria of the contaminated soil at the PWMP CHWTSDF per the CPCB requirement.
- Final weighing of the contaminated soil at the PWMP CHWTSDF weighbridge.

4.5. Contaminated soil treatment before landfill disposal

The activity shall include –

- Treatment of the contaminated soil, per the assigned disposal pathway.
- Post-treatment confirmation to ensure the achievement of reducing the LoI below the specified CPCB limit for disposal into the hazardous waste landfill.

4.6. Contaminated soil landfill disposal

The activity shall include –

- Disposal of the treated contaminated soil at the deigned area of the landfill.
- Spreading of the material in thin layers and proper compaction.
- Profiling of the fill area per the fil area development plan.

4.7. Contaminated soil excavation and final quantity measurements

Pre- and post-level DGPS and/ or TS topographical surveys shall be used as the method of measurement for the contaminated soil excavation up to the required depths.

Weighing at the PWMP CHWTSDF weighbridge (duly stamped by the legal metrology department) shall be used as the final method of measurement for the contaminated soil receipt.

4.8. Management of excavated void

Any backfilling or further management of excavated void can only be undertaken once the validation sampling results are reviewed and the long-term remediation plans are finalised and implemented.

It is pertinent to reiterate from the NEERI report that –

- Contamination below 3.0 m depth is not ruled out.
- As the contaminated source was at the site for an extended period since the plant was in operation, the gradual infiltration of the leachate and also triggered by the natural recharge during monsoon added to the contamination of the unsaturated zone as well as the aquifer.

Hence, providing a temporary impervious lining system of the entire excavated void is technically required since the rainwater accumulation in the void will aggravate the contaminant dissolution from the unsaturated zone under a water head, further reaching the aquifer.

In view of the above, it is proposed by ReSL to provide impervious lining of the excavated void with 1.0 mm thickness, only flat cast type, landfill grade High Density PolyEthylene (HDPE) liner [per GRI - GM13 Standard Specification, Standard Specification for “Test Methods, Test Properties and Testing Frequency for High Density Polyethylene (HDPE) Smooth and Textured Geomembranes, Revision 17, 17-

Jul-23], to protect the void from accelerated infiltration of rainwater and any potential flushing effect.

The HDPE liner use and installation in the void shall be undertaken following the standard methods of -

- Geomembrane quality testing (as material).
- Geomembrane installation conformance comprising of laying; welding (seaming); adequate anchoring at the ground level; and seam integrity and strength checking by non-destructive and destructive tests respectively.
- Preparation of quality assurance and quality control plan for the above in consultation and approval of the PPCB and implementation of the same.
- 3rd party inspection and witness of quality assurance and quality control plan implementation.

4.9. Contaminated soil slurry management

Per the NEERI report, the contaminated soils in 'Zone I', 'Zone II' and 'Zone III', ranging 0.5-3.0 m depths from the ground level are considered as the 'active source' of contamination. The zone was characterized by the occurrence of 'dark red fluid' encountered during NEERI's soil sampling. The same was also mentioned in the NEERI report as the 'sources of contamination such as the 'black fluid' (total dissolve solid > 70000 mg/L)'.

It is understood by ReSL that the said 'fluid' is potentially composed of the unreacted raw materials used in the H-acid manufacturing process and the various intermediates formed during the unit operations such as sulfonation, nitration, neutralization, iron-based reduction, etc. followed by the filtration. The residual presence of the such chemicals including those generated *in-situ* (e.g., phenol) impart the characteristics of the 'fluid' manifested by color, TDS, TOC, phenol, etc.

Per the CPCB 'Guidelines for Proper Functioning and Upkeep of Disposal Sites', HAZWAMS/32/2005–2006, placing bulk, containerized, or non-containerized liquid hazardous wastes containing free liquids (whether or not absorbents have been added), liquids that have been absorbed in biodegradable materials and liquids that have been stabilized by sorbents but will release liquids when compressed under normal pressure that might occur during and after land-filling) in any landfill is prohibited regardless of the length of time, presence of liners or leachate collection system.

Hence, for the contaminated soil slurry management, having free flowing fluid (liquid), it is proposed by ReSL to apply monolithic encapsulation to completely arrest the fluid (liquid) phase prior to the disposal into the landfill. The monolithic encapsulation would be done by using the water absorbent-cum-binder materials such as fly ash, lime and cement.

The collection and transportation of the contaminated soil slurry shall be done by using Intermediate Bulk Container (IBC). The record of collection, transportation, treatment and disposal of such material shall be separately maintained.

The present physical form and consistency, special extent and quantity of the contaminated soil slurry are unknown. Hence, in the project cost estimate, only the unit cost (Rs./MT) of the monolithic encapsulation of the contaminated soil slurry is given. If such material is actually encountered during the execution; only the treatment and disposal of the same shall be done at the extra unit cost (Rs./MT) given herein.

4.10. Housekeeping and excavation area barricading

The activity shall include –

- The trash and debris generated and accumulated during the execution shall be collected and transported, along with the excavated contaminated soil, to the PWMP CHWTSDF as being the materials originating from the contaminated site.
- The barricading shall be densely encircled by safety caution tape to draw the alertness attention.

3. EXECUTION TIMELINES

It is assumed that the date of 'notice to proceed' issued by the PPCB to ReSL shall be the zero (0) day of execution to start at the site.

The proposed execution timelines are based on two hundred fifty (250) cum of contaminated soil excavation and transportation per day from the site to the PWMP CHWTSDF in 'non-stop' mode of work in non-monsoon time.

Activity	Week No.		
	1-2	3	4-32
• Kick-off meeting • Preparatory works			
• Uncontaminated soil first 500 cum excavation			
• Contaminated soil handling • Impervious lining of excavated void			

* Weekend days are also considered as working days.

4. EXECUTION TEAM

The execution team to manage the project at the site and PWMP CHWTDF is given below.

Sl. No.	Name	Designation	Function
1	Masood Mallick	Project Director	Overall project management
2	Sunil Agarwal	Project Leader	Project stakeholder management
3	Kapil Kumar	Project Manager	Operation management at site and PWMP CHWTSDF
4	Ankit Singh	Site Operation Manager	Operation, logistics and administration management at site
5	Shiv Narayan Kaushik	Site Civil Manager	Excavation management at site
6	Mohit Kumar	Site Safety Manager	Safety management at site
7	Amit Mishra	CHWTSDF Operation Manager	Operation management at PWMP
8	Sanjeev Sharma	Laboratory Manager	All sampling and analysis management
9	Durjoy Mallick	Technical Manager	Overall technical management of the project

5. PROJECT COMMERCIAL ESTIMATE

The project commercial estimate including the terms and conditions of the service are given below.

Commercial Estimate - 1				
Sl. No.	**Description**	**Qty.**	**UoM**	**Total Cost, Rs.**
1	Preparatory work (preparing the laydown area for the mobilization and placement of temporary site infrastructure, e.g., porta cabin office, equipment and machineries, sanitary facilities, power supply, electrical installations, personnel logistics, etc.	1 lot	sqm	40,36,103
2	Contaminated soil transportation from site to PWMP CHWTSDF	77864	MT	9,53,83,008
3	Contaminated soil handling (excavation 0.5-3.0 m, loading-unloading, treatment and disposal)	77864	MT	33,17,96,843
4	HDPE liner material and installation	28818	sqm	78,37,675
5	NGPA development charge	77864	MT	6,22,90,944
Total				**50,13,44,573**

Total cost in words - Rupees fifty crore thirteen lakh forty-four thousand five hundred seventy-three only.

Commercial Estimate - 2				
Contaminated Soil Slurry				
Sl. No.	**Description**	**Qty.**	**UoM**	**Unit Cost, Rs./MT**
1	Contaminated soil slurry treatment and disposal by monolithic encapsulation	-	MT	8,506

Unit cost in words – Rupees eight thousand five hundred and six only per metric ton.

Terms and Conditions

1. Price validity – Thirty (30) days.
2. Applicable taxes and levies shall have to be paid as extra.
3. Payment – Forty percent (40%) advance along with the firm work order and monthly running bill upon presentation of disposal quantity confirmation.
4. ReSL shall exercise all reasonable skill, care and diligence in the performance of the services in accordance with the provision of the proposal.
5. ReSL intends to employ the methods, procedures, techniques, personnel and sources of information set out in the proposal but reserve the right to vary these at its discretion as may be required per the actual work condition.

6. Any delay or disruption in project execution including any variation in the estimated quantity and execution methodology due to forced idleness due to weather; or any other factor, including but not limited to directives from any competent court or statutory body; NGO or community or media activity, and any activism associated with the same; failure to provide access to the site; non-availability of labour, materials or services; acts of God or the public enemy; pandemic; riot or civil commotion or war; strikes or labour disputes or industrial action; act or regulations of any governmental or other agency; or PPCB's incidental requirements will result in a variation in project cost.
7. In respect to some services, it may be difficult to specify the precise nature of the activities required to perform the services prior to the commencement of the work. In the event that ReSL considers during the provision of the services that a material change or addition will be required in order to perform the contract, ReSL shall notify PPCB of such change and enter into negotiations with PPCB in good faith concerning any changes to the terms of the proposal.
8. The proposed works are exclusively for PPCB and ReSL will accept no liability of whatsoever nature for claims from any third parties in relation to the said works.
9. Save as otherwise expressly agreed in writing signed by a Director of ReSL, the conditions shall be deemed to be incorporated in the contract and shall apply to the total exclusion of any terms and conditions of the PPCB.
10. In the event of any conflict between the conditions and any special conditions referred to in the proposal, the terms of the proposal shall apply.
11. The contract to be entered into and these conditions shall be governed by Indian laws and PPCB consents to the exclusive jurisdiction of Hyderabad courts in all matters regarding the contract or the conditions.
12. In the event that the conditions are not expressly accepted by PPCB they shall be deemed to have been accepted by PPCB upon the making of any application to ReSL for the provision of services.
13. Unless otherwise directed in writing by the PPCB, ReSL retains the right to include references to the said works in its promotional material. Such references shall not include confidential material.
14. Liability: In the event that any of the works/ services are materially deficient as a result of ReSL failing to provide the same in accordance with an express assurance, the extent of ReSL liability shall be limited to the re-performance of the services at its own cost up to the amount paid by the PPCB under the contract.

    Same as provided otherwise in these conditions, ReSL shall not be liable for any loss (including indirect and consequential loss), damage, delay, loss of market, costs or expenses of whatsoever nature or kind and howsoever sustained or occasioned.

ReSL's liability to PPCB under contract shall cease upon the expiry of one year from the completion of the contract save in respect of any claims notified in detail to ReSL in writing prior to the expiry of such period.

15. Termination: The contract may be terminated in whole or in part in writing by ReSL or PPCB in the event of substantial or material failure by the other party to fulfil its obligations under the contract providing that no such termination may be effective unless the other party is given not less than 30 calendar days' written notice of intention to terminate.

    A final invoice will be calculated on the 1st of the month following the expiry of the notice to terminate (the effective date of termination). Where termination of contract occurs before the planned date (as previously agreed between ReSL and PPCB, an additional charge will be levied on the final invoice. This additional charge is designed as compensation to ReSL for the recovery of costs for the demobilization and re-assignment of personnel and equipment on short notice.

For Re Sustainability Limited

Name

Designation

Date:

Annexure-C
of application filed by PPCB
dt. 10.08.2024 in Hon'ble NGT
(of application filed by PPCB dt. 10.08.2024 in Hon'ble NGT honourable NGT)

BEFORE THE NATIONAL GREEN TRIBUNAL,
PRINCIPAL BENCH, NEW DELHI
ORIGINAL APPLICATION NO. 35/2013 (THC)

In the matter of:

1. Parminder Singh, s/o Pritam Singh
   Balad Kalan Village, Bhawanigarh Tehsil,
   Sangrur District.

2. Hoshiar Singh, s/o Harbhajan Singh
   Toori Village, Bhawanigarh Tehsil,
   Sangrur District.

3. Narindre Singh, s/o Inder Singh
   Balad Kalan Village, Bhavanigarh Village,
   Sangrur District.

4. Surjit Singh, s/o Harnek Singh
   Bhavangarh, Sangur District.

5. Ranjit Singh, s/o Satpal Singh
   Balad Kooti Village, Bhavangarh Tehsil,
   Sangur District.

6. Angrej Singh, s/o Surjir Singh
   Toori Village, Bhavanigarh Tehsil,
   Sangrur District.

7. Harnek Singh, s/oGujjar Singh
   Sarpanch, Gram Panchayat Toori,
   Toori Village, Bhavanigarh Tehsil,
   Sangrur District.

8. Jagnahar Singh, s/o Nikka Singh
   Toori Village, Bhavanigarh Tehsil,
   Singrur District.

9. Paramjit Singh, s/oSharan Singh
   Toori Village, Bhavanigarh Tehsil,
   Singrur District.

10. Sukhwinder Singh, s/oMohinder Singh
    Toori Village, Bhavangarh Tehsil,
    Singrur District.

---- Applicants

Versus

1. Punjab Pollution Control Board through its
   Chairman, Vatavaran Bhawan,Nabha Road, Patila.

2. Environmental Engineer, Punjab Pollution Control Board, Thruogh its Regional Office, Sanrur District, Sangrur.

3. Assistant Environmental Engineer, Punjab Pollution Control Board, through its Regional Office, Sangrur District, Sangrur.

4. M/S Matharu Steel Pvt. Limited having its Registered Office at Plot No. 4, Near Airport, Jhalanpur Road, Kota Rajasthan thru. Its Director Shri. Chander Shekhar Dhawan.

5. M/S Mahalaxmi Orgochem Industries, c/o Matharu Steels Pvt. Limited, Nabha Road, Tehsil Bhavanigarh,Distict Sangrur, Through Shri. Chander Shekhar Dhawan.

6. Chander Shekhar Dhawan, Director, M/S Matharu Steels Pvt. Limited, resident of 110-A, Sarabha Nagar, Ludhiana.

7. Sunil Ahuja, Director of M/S Matharu Steels Pvt. Limited, Resident of E-14, Sector-14, Noida, U.P.

8. Tara Singh, S/o Swaran Singh. Village Nauhra, Nabha, Patiala Distict.

9. Gurcharan Singh Matharu s/o Surjit Singh Matharu Director, Matharu Chemicals Industries Nabha Road, Bhawangarh Tehsil Sangrur District.

10. Central Pollution Control Board represented by The Member- Secretary, New Delhi.

--- Respondents

Counsel for Applicants:

Mr. Ritwick Dutta, Amicus Curie

Counsel for the Respondents:

Counsel for Respondent 1, 2 &3: Mr. A.R Takkar, Ms. Gurinderjit, Mr. Ankur Sharma, Advocates Ms. Garima Huda and Mr. Rajkumar, Advocate
Counsel for Respondent 4 to 6: Mr. Jeevesh Nagrath, Mr. Nitheesh Kr. Sharma and Mr.V. Kashvap Advocate
Counsel for Respondent 7: Mr. Rajat Navet and Mr.Ritwick Navet, Advocates
Counsel for Respondent 9: Mr. Sunil Gupta, Advocate
Counsel for Respondent 10: Mr. Rajkumar, Advocate with Mr. S.L.Gundli, S.L.O, C.P.C.B.

Present:

HON'BLE MR. JUSTICE DR. P. JYOTHIMANI (JUDICIAL MEMBER)

HON'BLE MR. JUSTICE U. D. SALVI (JUDICIAL MEMBER)

HON'BLE PROF. A. R. YOUSUF (EXPERT MEMBER)

HON'BLE MR. BIKRAM SINGH SAJWAN (EXPERT MEMBER)

O R D E R

Reserved on: 27th February, 2015
Pronounced on: 23rd September,2015

1.) Whether the Judgment is allowed to be published on the net?
2.) Whether the Judgment is allowed to be published in the NGT reporter?

Prof. A. R. Yousuf (EM)

1. The applicants have filed Civil Writ Petition no. 3481/ 2007 on the file of the High Court of Punjab & Haryana, alleging that Respondents 4 to 7 were polluting the environment by not complying with the provisions of Hazardous Wastes (Management and Handling) Rules 1989, affecting their Fundamental Rights guaranteed under article 14 and 21 of the Constitution of India. All the ten petitioners are residents of different villages in Tehsil Bhawanigarh, Dist. Sangrur (PB), which are in the proximity of 1-2 kilometres from the area where the industrial unit "M/S Matharu Chemical Industries" (later on renamed as M/S Mahalaxmi Orgochem Industries) of respondents No. 4 and 5 was situated.

2. According to the petitioners the said unit was manufacturing H-acid, i.e. Sodium Salt, which is highly toxic in nature and the waste material, from the process of manufacturing is highly hazardous to the environment. The petitioners are

aggrieved from the fact that the said respondents did not dispose of the waste material from the manufacturing process, including by-products, all of which is hazardous in nature in accordance with the provisions of 'the Environment (Protection) Act, 1986', 'Hazardous Wastes (Management and Handling) Rules, 1989' as amended in May 2003, The Water (Prevention and Control of Pollution) Act, 1974 and 'The Air(Prevention and Control of Pollution) Act, 1981 and dumped the same at the site in violation of the said rules.

3. According to petitioners Respondent No. 4, viz., M/S Matharu Steel Pvt. Ltd., having its registered office in Rajasthan, set up the Industrial unit by the name "M/s Matharu Chemical Industries" in a piece of land measuring 41 bighas 13 biswas in Village Toori, Tehsil Bhawanigarh, District Sangrur and started manufacturing H-acid (Sodium Salt) in 1997. Later on, name of the unit was changed to M/s Mahalaxmi Orgochem Industries i.e. Respondent No. 5. As per the petitioners, Respondent No. 6 and 7 are the directors and occupiers of respondent No. 4 and 5 respectively and were therefore, responsible for the safe custody, storage, handling etc. of the hazardous waste material lying at the premises of respondent No. 5. As per the complaint these respondents continued manufacturing H-Acid till March, 2005, after which the unit was closed. According to the petitioners following raw material inputs are used for the manufacturing process of H-acid.

1.	Naphthalene	600 kg
2.	Sulphuric Acid	3039 kg
3.	Oleum	1790 kg
4.	Nitric Acid	372 kg
5.	Calcium hydroxide (Calcium Carbonate)	1637 kg
6.	Hydrochloric Acid	751 kg
7.	Soda Ash	900 kg
8.	Caustic Soda	860 kg
9.	Iron powder	650 kg
10.	Common Salt	2700 kg

4. According to them the above mentioned quantity of the raw materials (listed as items 1-10 in Para 3 supra) was used to produce 580 kg of Sodium Salt of H-acid and during the manufacturing process following 06 by-products, besides waste material, were also produced.

1.	Gypsum	3503 kg
2.	Iron Oxide	852 kg
3.	Sodium Bisulphite	550 kg
4.	Sodium Nitrite and Nitrate	110 kg
5.	Common Salt	3005 kg
6.	Glaubers Salt	1636 kg

5. The contention of the petitioners was that the waste material from the above said manufacturing process, which remained unused, was highly toxic and contained acid content, is harmful to the life of the inhabitants of the surrounding areas. The said waste material also caused wide spread pollution of ground water, air, etc. According to them it was the duty and responsibility of these respondents to keep such hazardous

waste under safe custody till it was not disposed of as per the provisions contained in Environmental rules.

6. The petitioners alleged that the said H-Acid manufacturing unit was closed on 01.03.2005 and the respondents dismantled the over ground portion including the roof of the hazardous waste storage facility and the hazardous wastes were lying in the open in violation of the concerned environmental rules. According to them, as the waste material was lying in open area it had started showing its impact on the environment and the ground water of the nearby area got polluted and had already turned dark red in colour which is unfit to be used by human being. The seepage of rain water through this highly hazardous waste material had also been polluting the ground water thus rendering the same unfit for human consumption. Further, the soil of the nearby area had turned dark brown in colour and the cultivation in the surrounding areas, if consumed by the human being would cause risk to their life and liberty.

7. In this backdrop the petitioners prayed that:

   i) Directions be issued to the respondents to store, dispose of the hazardous waste material lying in the premises of respondent No. 5 in an environmentally safe manner.

   ii) That the provisions of the Environment (Protection) Act 1986, Hazardous Wastes (Management and Handling) Rules, 1989 as amended in May 2003, The Water

(Prevention and Control of Pollution) Act, 1974 and the Air (Prevention and Control of Pollution) act, 1981 be complied with so as to protect the health of the petitioners and the inhabitants of the nearby areas.

iii) Respondents 1 – 3 be directed to take water samples of the nearby area.

8. The above writ petition was being heard by the Hon'ble High Court of Punjab & Haryana at Chandigarh till 2013, when it was transferred to the NGT vide HC order dated 29.01.2013 and was registered in NGT as Application No. 35/2013 (THC).

9. After hearing the parties, the Hon'ble High Court on 2nd April, 2009 directed the Punjab Pollution Control Board to inspect the site and analyse the samples taken from there and submit the status report to it.

> *"In the circumstances, therefore, we direct that the Punjab Pollution Control Board shall depute a team for inspection of the site and for taking samples and also for examining whether any dump of hazardous waste material is lying concealed under the surface. The team shall visit the site on 26.04.2009 at 10:00 a.m. One of the petitioners and respondent no. 6 shall remain personally present at the spot on the date and the time given above. Respondent nos. 4 to 6 shall also deposit with the Punjab Pollution Control Board a sum of Rs. 2 lacs towards testing charges. The Punjab Pollution Control Board shall file a status report along with test reports received in the meantime, on or before the next date of hearing."*

10. As per Status Report-Affidavit submitted by Sh. A.K. Kalsi, Environmental Engineer, Punjab Pollution Control Board, Regional Office, Sangrur dated 15.07.2009, in compliance to the Hon'ble Punjab & Haryana High Court orders dated

2/4/2009, the Punjab Pollution Control Board constituted a team comprising of following officers for inspection of the site and for taking samples and also for examining whether any dump of hazardous waste material was lying concealed under the surface.

i) Er. A. K. Kalsi, Environmental Engineer, Regional Office, Sangrur.

ii) Er. S. S. Matharu, Asstt. Environmental Engineer, Zonal Office-II, Patiala.

iii) Er. Om Parkash, Asstt. Environmental Engineer, Regional Office, Sangrur.

iv) Dr. Sat Pal Verma, Asstt. Scientific Officer, Head Office Laboratory, Patiala.

The team inspected the site in question on 26/4/2009 at 10.00a.m. onwards along with Sh. Narinder Singh S/o Sh. Bhinder Singh resident of Village Baladkalan (Petitioner) and Sh. C. S. Dhawan, Director of M/s Mahalaxmi Orgochem Industries, Nabha Road, Bhawanigarh. Soon after starting the inspection, Sh. Tara Singh, present owner of the land in question came there. The team made the following observations:

i. It was observed by the team that the site of the industry had been levelled mechanically by the present owner of the land S. Tara Singh. Sh. Narinder Singh S/o Sh. Bhinder Singh resident of Village Baladkalan (Petitioner) showed three sites (S-1, S-2 & S-3) within the premises of the

previous industrial unit, where he apprehended that the waste generated by the industry has been dumped. After digging out about 2-3 feet at site S-1, red coloured waste was found dumped. At site 2, after digging out about 2-3 feet, black coloured waste was found dumped.

ii. When the digging at site S-3 started, the soil cover on this site was observed in loose state up to 4-5 feet, this may probably be due to recent levelling of the said land area. After digging out about 4-5 feet of this spot, black coloured waste was found dumped**.** A sample of this waste was collected in the presence of petitioner as well as the then occupier of the industry, which was sealed after packing into polythene bag. The petitioner claimed that the industry has dumped waste in huge quantity beyond 10' from the top level of the area at this site and he emphasized that JCB is required to dig out up to the aforesaid required depth for taking samples of waste. However, the present owner of the land S. Tara Singh raised the objection that he has made heavy expenditure to level the site and he restrained the team to dig out at spot S-3 with the help of any mechanical excavator (JCB) to take the sample of waste as apprehended by the petitioner. He suggested that the samples of waste may be taken with the help of any kind of boring machine, but the petitioner denied to do so.

iii. The petitioner also showed a site outside the premises of the previous industry, where he apprehended that the waste has been dumped. This site has been marked as S-4 in the site plan, when this site started digging out, light brown coloured waste was found dumped at this site after removing soil cover 5-6". A sample of this waste was collected in the presence of petitioner as well as the then occupier of the industry, which was sealed after packing into a polythene bag.

iv. All the aforesaid samples collected from the site in question, were sent to M/s Shri Ram Institute for Industrial Research, Delhi for analysis, the analysis results of which have been received from the said laboratory on 21.5.2009. The waste constituents such as nitrates and nitrites belong to class 'C' of the Schedule-II appended to the Hazardous Waste (Management, Handling & Trans-boundary Movement) Rules, 2008, but the concentration of these parameters in all the four samples i.e. S-1, S-2, S-3 & S-4 is much less than the prescribed concentration of class 'C'. However, as per analysis results of waste sample marked as S-3, this sample is not free from acute toxicity, as such the said waste is covered under class 'E' of Schedule-II appended to the said Rules. Thus, the waste dumped at site S-3 is hazardous in nature and is required to be disposed off in an environmentally sound manner.

v. During the said visit and inspection of the site on 26/4/2009, seven ground water samples from various tube wells/bore wells, marked as G-1 to G-7 on the site plan, were also collected from the surrounding vicinity of the industry.

   a. The results of above parameters show that ground water sample G-1 & G-2 are affected with reference to the parameters viz Colour, TDS, Chloride & Sulphate.

vi. In the affidavit the said PPCB officer also informed the Hon'ble High Court that the Board has already engaged Thapar University vide letter no. 11604 dated 1.4.2009 to carry out a detailed investigation regarding the length, breadth and depth of ground water contamination as well as hazardous waste. The study is likely to be completed within 3 months.

11. On 17.8.2009 the Hon'ble High Court, after perusing the proposal of Thapar Centre for Industrial Research & Development for preparation of a comprehensive report on the pollution related angle of the said industrial unit and remedial measures thereof, allowed the PPCB to go ahead with the proposed 3 month long study. Further, Mr. Tara Singh S/O Mr. Swaran Singh R/O Nauhra (Nabha), the present owner of the said industrial unit site, was impleaded as a party respondent No, 8.

12. Respondent No. 9 submitted, through reply affidavit dated 19.11.2013, that he was associated with the said industrial

unit as one of the directors of the unit only up to March, 2003 and during this period (1991 – 2003) he was meticulous to ensure that all the relevant approvals and consents relating to the various environmental laws, particularly under the Water (Prevention & Control of Pollution) Act, 1974 ("Water Act"), the Air (Prevention and Control of Pollution) Act, 1981 ("Air Act") and the Hazardous Waste (Management & Handling) Rules 1989 ("HW Rules") were valid at all times and were renewed from time to time after official inspections of all the concerned Departments. It is submitted that all compliances were made and, amongst others the following valid approvals/ consents were obtained and got renewed to ensure that the said company was in compliance with all applicable environmental legislation/ requirements to the satisfaction of the Punjab Pollution Control Board, the Regulatory Authority.

Legislation	Approval/NOC No.	Date of Approval/ NOC	Period of validity of Approval/ NOC
Water Act	1.)SGR/WPC/ETP/1993-94/F-91	7.10.1993	30.09.1994
	2.)SGR/ETA/95-10/F-173	18.10.1995	17.10.2010
Air Act	1.)SGR/APC/ECD/93-94/R-75	02.02.1994	30.06.1994
	2.)SGR/APC/97-09/R-157	08.10.1997	30.06.2009
HW Rules	Letter No. 4580 renewed periodically last by Letter No. 16987 DT. 09.08.2004	06.05.1997	18.03.1999
		23.04.2002	22.04.2004
		05.08.2004	04.08.2005

13. It was pointed out by Respondent No. 9 that he was involved in the affairs of the company only till 28.03.2003 and at the time of transfer of the said Company all the records including the licences/NOCs under the relevant environmental laws were handed over to the new owners/ Management of the said manufacturing unit for the smooth running of their unit and for necessary action including renewals thereof by the persons who had taken over the said Company and who are impleaded as Respondent Nos. 6 and 7 in the Writ Petition.

14. In his letter to the Member Secretary, PPCB vide No. 593 dated 4.3.2002 in respect of the application of **M/s Matharu Chemical Industries, Nabha Road, Bhawanigarh, Distt, Sangrur** for renewal of **authorisation under the Hazardous wastes (Management & Handling) Rules 1989 as amended in 1/2000, t**he concerned Environmental Engineer has commented thus "The Industry generates gypsum @1500TPA from filtration ii) and iron oxide @400TPA from reduction process. These both are by-products of the industry and are sold in the market. As per hazardous Waste (Management & Handling) amended Rules, 2000 both these bye-products are not hazardous in nature. The industry generates mother liquor from filtration iii) which is incinerated in the incinerator and thereby generating ash @50kg/day. This ash is hazardous in nature and is covered under waste stream no. 41.1 of Schedule I appended with said rules. The

industry is maintaining the record of ash generated from incineration of Gypsum & Iron Oxide. As per record, the industry has stored 76.63Tonnes ash inside the storage pit after packing into H.D.P.E bags. The industry was visited by AEE on 22.2.2002 and during visit it was observed that the industry has constructed an impervious pit made of (R.C.C) having size 20mX12mX5m for the storage of incinerator ash. Thus the total volume of storage pit is 1200m^3 and hence 1200 Tonnes of ash can be stored in the pit. The industry is producing 15 T of ash in a year and hence the balance capacity of storage pit is sufficient more than five years. The industry has constructed 2 no pits having size 20mx12mx5m in addition of above to store Gypsum & Iron oxide before selling it outside. The industry has fixed danger sign outside the pit & fenced the pit with fencing wire."

15. The Industrial Unit in question was issued a show cause notice on 5th April, 2004 by Environmental Engineer, PPCB, for Violation of the provision of Water (Prevention & Control of Pollution) Act, 1974 and Air (Prevention & Control of Pollution) Act, 1981. The deficiencies /violations observed included particularly:

    i. The effluent from the lab section is discharged on to land for stagnation without any treatment.

    ii. The cooling water from the fusion process and the boiler blow down was also being discharged onto land for stagnation.

iii. The scrubber water from scrubbers attached to boiler furnace & thermopac was not being completely re-circulated and a part of that was being discharged onto land for stagnation. The scrubber water from the scrubbers attached to control SOx & NOx emissions is discharged onto land for stagnation.

iv. The house-keeping of the industry was very poor and there is no proper system for drainage of waste water from different sections. Although the quantity of waste water generated from different sections is small, but it is going for stagnation from most of the section. The Industry has not provided any facility for measurement of its effluent.

v. The gypsum sludge and the iron sludge generated from the process was lying in the open in the form of heaps and it was not stored under the shed.

vi. The industry has added the fusion process without obtaining any NOC from the Board. The representative of the industry told that this process has been added only about 3 months back and with the help of this process, they can use lesser quantity or raw material for producing a particular quantity of their product.

vii. The industry has not provided the sampling facilities for collection of NOx & SOx emission samples.

viii. The industry was using rice husk as fuel in its non-fluidized bed boiler furnace & thermopac furnace.

ix. The main stack of the boiler and thermopac was found broken along with the ladder.

x. The duct connecting the exhaust from thermopac furnace to the stack was found broken.

xi. The industry has not provided proper stack height on its two no. D.G. sets of 125 KVA each.

16. The said industry was visited by the officials of the PPCB on 24.5.2004 in connection with the renewal of authorisation under the H.W. (M& H) Rules. During the visit "It has been observed that the H.W. is being stored in the H.W pit after packing in gunny bags. The bags are being replaced with fresh bags and much of the work remains to be done. The H.W pit is covered with AC sheets from top & two sides, third side of this pit is a storage shed where gypsum was stored. The fourth side is not covered with AC sheets. The fencing around the H.W. pit has not been done. The incinerator is not operational. As per representative of the industry it is not required to be used as sodium sulphate is extracted from the mother liquor by the cold process and reused in the process, the remaining mother liquor is re-used in process. As per the industry, the concentrated mother liquor requires to be incinerated after 2-3 months. However as per record of the H.W maintained by the industry, no H.W has been shown as generated after 27.12.2003. The final record on 27.12.2003 shows 1973 bags containing 98.650 MT of H.W. As per the representative of the industry the manufacturing process has

been changed from earlier but detailed changed process yet to be submitted."

17. As is apparent from the letter No. HMC/2005/SGR/2235 Dt. 16.2.06 issued by Member Secretary, Punjab Pollution Control Board to M/S Maha Laxmi Orgochem Industries (Prop. Matharu Steel (P) Ltd.), formerly known as M/s Matharu Chemical Industries, Nabha Road, Distt. Sangrur, the over ground parts of the Industrial unit were dismantled right during 2005. This is clearly evident from the contents of this notice.

"And whereas the industry was visited by officer of the Board on 10.1.2006 and observed that the industry has dismantled the over ground portion including the roof of the hazardous waste storage facility and hazardous waste was lying in the open.

And whereas the industry has violated the provisions of the rule 5 of the Hazardous Waste (Management & Handling) Rules, 1989 as amended in May, 2003.

Now, therefore, the Chairman, Punjab Pollution Control Board in exercise of the power conferred upon the Board u/s 5 of the Environment (Protection) Act, 1986, after going through the details of the case, has decided to direct as follows:-

The industry will not dispose of its hazardous waste lying in the premises and will store the same in environmentally

sound manner till the same is disposed in common treatment, storage and disposal facility.

In case you fail to comply with the above said directions, the industry and its Managing Director/Directors and officer concerned/responsible to comply with the provisions of the Hazardous Waste (Management & Handling) Rules, 1989 as amended in May 2003 shall be liable for action under Section 15 & 16 of the Environment (Protection) Act, 1986."

18. As per No. HMC/SGR/2004-2005/R-2060 Sh. C.L. Dhawan of M/s Mahalaxmi Orgochem Industries (Prop. Matharu Chemical Steel Pvt. Ltd.) previously known as M/s Matharu Chemical Industries was granted an authorization by the PPCB under Rule 5 of the Hazardous Wastes (Management & Handling) Amendment Rules, 1989 as amended in 2003 of Environment (Protection) Act, 1986 to operate a facility for collection and storage of hazardous waste on the premises situated at Nabha Road, Bhawanigarh, Distt. Sangrur for a period of one year from 05.08.2004, the date of issue of the authorization. The Terms and Conditions of Authorization included, besides many other things, in particular the following conditions.

    i. The person authorised shall not rent, lend, sell, dispose, transfer or otherwise transport the hazardous waste without obtaining prior permission of the Board.

    ii. Any unauthorized change is personnel, equipment and working conditions as mentioned in the application by

the person authorized shall constitute a breach of his authorization.

iii. It is the duty of the authorized person to take prior permission of the state Pollution Control Board to close down the facility.

iv. The occupier generating hazardous waste/operate of a facility for collection and storage of hazardous waste shall maintain records of such operations in Form-3.

v. An occupier who is generating hazardous waste shall store his waste category wise on site in environmentally sound manner.

vi. An occupier/generator shall not store hazardous wastes in open ground. It must be stored in an isolated site away from plant operational area.

vii. The storage tank/container of the hazardous waste should be in good condition and made of (or lined with) an appropriate material which does not react with the waste contained in it and can withstand the physical and environmental conditions during storage and handling.

viii. The occupier generating hazardous waste shall mark each container holding hazardous waste with the marking "HAZARDOUS WASTE" both in English and Punjabi.

ix. The storage area should be fenced properly and a sign Board indicating "DANGER" and "HAZARDOUS

WASTE" sign & nature of the waste shall be placed at storage site.

x. The industry shall store the hazardous waste in environmentally sound manner and pack the hazardous waste sludge in impervious bags/containers strong enough to sustain rigour of handling, storage, transportation and weather conditions. The storage facility must be covered from upper side.

xi. The occupier and operator of a facility shall also be liable to reinstate or restore damaged or destroyed elements of the environment at his cost, failing which the occupier or the operator of a facility, as the case may be, shall be liable to pay the entire cost of remediation or restoration and pay in advance an amount equal to the cost estimated by the State Pollution Control Board.

19. It may be pointed out that Respondent 3 (Assistant Environmental Engineer, PPCB, Regional Office, Sangrur, has stated in his reply affidavit dated 7th August, 2007 on behalf of Respondent 1 – 3, that "the respondent industry no. 5 vide letter dated 18.3.2005 informed the answering respondents that due to adverse market condition they have stopped production temporarily and also added that as and when the production will start they will inform the Board. The fact was verified by the answering respondents when the

industrial unit was found closed during visit by the officers of respondents on 21.3.2005..... The Industrial unit was again visited by the officers of the answering respondents on 2.1.2006 and it was found that the industry has dismantled the plant up to plinth level. But the hazardous waste was lying in bags in the storage pit."

20. Respondent 1 – 3 in the aforementioned affidavit also state that the premises of the respondent 5 (Industrial unit site) were visited by respondent no. 3 on 26.2.2007 on the directions of the Hon'ble Court of Sh. Harash Mehta, PCS, Addl. Civil Judge (Senior Division), Sangrur in a civil case ..... During inspection, no chemical/raw material/product of the industry was found lying within the premises and the hazardous waste was found stored in storage pit in safe manner by the visiting officers." However, they are silent about the manner of storing of the iron oxide and gypsum on the site.

21. During its pendency in the Honble HC, the PPCB asked the Thapar Centre for Industrial Research & Development (TCIRD), Thapar University, Patiala (Pb) to have a detailed investigation into the length, breadth and depth of the ground water contamination problem of the concerned unit. The said centre completed the job during the course of one year, November, 2009 – November, 2010. The final report was submitted and taken on the record by the Hon'ble High Court on 10.01.2011.

22. The TCIRD Report spread over 44 pages and titled "Assessment of the Length, Breadth and Depth of groundwater Contamination by Matharu Chemical Industries, Bhawanigarh" indicated that M/S Matharu Chemical Industries (later on Mahalakshmi Organochem Industries), Nabha Road, Bhawantigarh, Sangrur, Dist., Punjab was established in 1991. The industrial unit is located on the Bhawanigarh-Nabha Road at 4 km distance from Bhawanigarh on the right side. Except for the two rice shellers, one pipe factory, one punsup godown, one petrol pump and one very small human settlement, the industrial unit is surrounded by agricultural fields. As per the TCIRD Report 41 Bhiga and 13 Biswa of land was under the industrial site. It was manufacturing H-acid and its design capacity was 580 kg H-acid per batch and 35 batches per month. The production of H-Acid was commissioned at the site in July 1991 and continued till the end of February 2005.

23. The TCIRD Report has provided details about the process employed by the concerned industrial unit for the manufacturing of H-acid from Naphthalene. The details have been (as mentioned in the report) based on the information submitted by the proponents of the said industrial unit to the Punjab Pollution Control Board for the purposes of obtaining of No Objection Certificate (NOC), Consent to Operate and

authorization to handle hazardous, supplemented by review of literature on the manufacturing of H-acid.

24. According to the report the H-acid is 1-amino, 8-napthol, 3, 6-disulfonic acid with empirical formula $C_{10}H_8NO_7S_2Na_2$. It is used in the manufacturing of dyes. It is usually manufactured as a sodium salt. It is grey powder soluble in water, alcohol and ether. Its manufacturing involves the following steps:

    i. Sulfonation of naphthalene ($C_{10}H_8$) with 65% oleum ($H_2S_2O_7$) and sulphuric acid (H_2SO_4). It might have emitted sulphur oxide fumes.

    ii. Nitration with 60% nitric acid (HNO_3). It might have emitted nitrogen oxide fumes.

    iii. Neutralization of the resultant mixture of acids and the sulfonation and nitration product with lime slurry (10%). It might have consumed water for the lime slurry preparation.

    iv. Filtration of the neutralized mixer in nutch filters for separating the gypsum ($CaSO_4$) sludge (neutralization product at 70% consistency!) formed. Gypsum sludge (solid waste) is generated.

    v. Reduction of the filtrate by Iron. Involves addition of iron powder, hydrochloric acid (HCl), soda ash (Na_2CO_3) and acetic acid (CH_3COOH).

    vi. Filtration of the mixer, of the reduced product, the residual chemicals and the by-products formed, in a

filter press for separating the iron oxide (Fe_2O_3) sludge (at 30% consistency). Iron oxide sludge (solid waste) is generated.

vii. Concentration of the filtrate. Was it in a multiple effect evaporator and did it generate foul condensate? If a multiple effect evaporator was used then it might have demanded significant quantities of circulating cooling water.

viii. Cooling the concentrated solution (circulating cooling water system might have been used), mixing with HCl and NaCl and filtering in nutch filters to obtain Koch cake. It must be generating wastewater (mother liquor) rich in naphthalene based compounds, sodium and chloride.

ix. Charging the Koch cake with caustic lye/caustic flakes (NaOH) and then fusing (in an autoclave!).

x. Diluting the fused mass with water, treating with sulphuric acid and boiling off to remove sulphur dioxide. Must be emitting sulphur dioxide fumes.

xi. Cooling the boiled off mass and filtering through nutch filters to get the cake of sodium salt of H-acid. It must be generating wastewater (discarded liquor) rich in phenolic compounds and residual H-acid.

xii. Washing the H-acid cake in water, centrifugal dewatering of the cake, drying and milling the cake to obtain powder of sodium salt of H-acid. It must be

generating the wastewater (product wash water) containing H-acid and phenolic compounds.

25. H-acid was manufactured in batches (35 batches per month) from naphthalene (600 kg/batch). Each batch of manufacturing produced 580 kg of sodium salt of H-acid. Raw material inputs of the manufacturing were as shown in Table 1. The by-products and wastes generated from the manufacturing were as indicated by the industry as presented in Table 2.

Table 1: Material inputs of H-acid manufacturing

S. No.	Input material	Quantity (kg/batch)	Quantity (ton/year)*	Consumption for 1994-95 tons/year)
1.	Naphthalene	600	252	345
2.	Sulphuric acid	3039	1276	1703
3.	Oleum (65%)	1790	752	1000
4.	Nitric Acid	372	156	518
5.	Lime stone	1637	689	1464
6.	Hydrochloric acid (100% purity)	72	30.2	120
7.	Soda ash(sodium carbonate)	900	378	554
8.	Sodium hydroxide	860	361	560
9.	Iron powder	650	273	291
10.	Common salt	2700	1134	??
11.	Acetic acid	10.4	4.383	6

* 35 batches of H-acid manufacturing per month for 12 months a year is assumed.

Table 2: By-products/wastes generated from the H-acid manufacturing

S. No.	Product/by-product/waste	Quantity (kg/batch)	Quantity (ton/year)@
--	Sodium salt of H-acid (product)	580 (681)*	243.6(286)*
1.	Gypsum on dry weight basis	3082	1294
2.	Iron oxide on dry weight basis	1109	466
3.	Sodium bisulphate lost in wastewater	----	---
4.	Sodium nitrite and nitrate lost in wastewater	----	---
5.	Common salt lost in wastewater	~ 2750	~1155
6.	Glauber salt lost in wastewater	----	---
7.	**Naphthalene lost in the wastewater**	**396 (360.5)***	**166 (151)***

@ 35 batches of H-acid manufacturing per month for 12 months a year is assumed

* values given in the parentheses are for the 681 kg product recovery per batch.

26. The industrial unit was consuming water for the following purposes:

i. Preparation of the lime slurry used in step-3 for neutralization.

ii. Washing of nutch filters and filter presses used in the filtration in steps 4, 6 and 11.

iii. Dilution of fused mass in step 10.

iv. Washing of H-acid cake in step 12.

v. In addition to this, water was also used as boiler feed water in the 1 ton/hr capacity boiler and as makeup water in the cooling tower and circulating cooling water system. PPCB records indicate consumption of about 34 m^3/day of water.

27. The H-acid manufacturing process might have generated the flowing wastes:

i. **Gypsum (calcium sulphate) sludge:** Removed from the reaction mixer through filtering in step-4 of the manufacturing process.

ii. **Iron oxide sludge:** Removed from the reaction mixer through filtering in step-6 of the manufacturing process.

iii. **Foul condensate:** Generated (if concentrated in multiple effect evaporator) at the multiple effect evaporator in step-7 of the manufacturing process. It might have been the least polluted wastewater stream.

iv. **Mother liquor:** Discarded after the filtration removal of Koch cake in step-8 of the manufacturing process. It is high strength waste and was apparently disposed off in the solar evaporation ponds (and then incinerated).

v. **Discarded liquor:** Discarded after the filtration removal of the H-acid in step-11 of the manufacturing process (high strength wastewater).

vi. **Product washwater**: Generated from the washing of the H-acid cake in step-12 of the manufacturing process (moderate strength waste and can be reused for dissolving the fused mass in step-10).

28. Material balance calculations by the TCIRD/Thapar University team (TCIRD Report) indicate that only <40% of the naphthalene used in manufacturing process became integral part of the product (H-acid) and the rest >60% was lost mostly in the waste water (generated at step-8, step-11 and step-12) may be as naphthalene based compounds, sulfonated phenolic compounds and condensation products of fusion. The report points out that "because of limited water solubility and higher sludge consistencies, gypsum and iron oxide sludges might have very little of these organic substances". At the same time it also notes that "because of the higher boiling point, very little of the organic matter might have been actually lost into the atmosphere as organic vapours.'

29. This report further observes that "the by-products, sodium sulphate, sodium bisulfite, sodium chloride, sodium nitrite and the added sodium chloride, because of their high solubility, might have been mostly present in the wastewaters generated. Very little of these might have been lost in the gypsum and iron oxide sludges (may depend on the sludge consistency). It also notes that "it is not clear whether and how much of the sodium sulphate was actually recovered from the wastewater (mother liquor) during

treatment (neutralization, filtration, concentration and filtration) and reused in the H-acid manufacturing process (in place of soda ash!)."

30. By quantifying the raw material used and the products and by-products obtained from the manufacturing process, the TCIRD team concluded that the total input of the unit was 12,640 kg/batch. There was a total production of 681 kg/batch of H-acid, besides Iron oxide and gypsum sludge generated was 4,191kg/batch. According to them rest of the material, i.e., 7,768 kg/batch might have been mostly lost into the wastewater generated and a small portion of it might have been lost into the atmosphere as sulphur oxides and nitrogen oxides.

31. According to the TCIRD team the Wastewater generation might have been around 20 m^3/batch of H-acid processed or 23-24 m^3/day. Generation rates of different wastewaters per batch have been assessed as follows:

    i. Mother liquor (assessed at about 3-4 m^3/batch)

    ii. Foul condensate (assessed at about 5-6 m^3/batch)

    iii. Nutch filters' and filter presses' washwater (about 1 m^3/batch)

    iv. Discarded liquor (assessed at about 5 m^3/ batch)

    v. H-acid washwater (assessed at about 5 m^3/batch)

32. In addition to these process wastewaters, the industrial unit might also have generated the following wastewaters:

i. Steam condensate that could not be recovered and allowed to flow into the drain

ii. Cooling tower blow down water

iii. Regeneration wastewater from the boiler feed water plant (soft water plant!)

33. The industrial unit used an incinerator since late 1996 for the disposal of the mother liquor. Waste water discharge by the industrial unit beyond its premises was zero. The industrial unit, as per the records, used lined shallow solar evaporation ponds of 200 m^2 area each (20 m x 10 m) for the disposal of the wastewater. For enhancing the evaporation rates, the industrial unit, according to records, used forced spray evaporation. Information furnished by the PPCB also indicates use of 4 evaporation ponds, each of 24 m x 24 m x 1.5 m, and one tank of 50 m x 26 m x 2m.

i. Crystallization and subsequent problems associated with the pumping for the forced spray evaporation might have forced the industrial unit to continually expand the evaporation ponds and shift to newer ponds.

ii. Once usage of an evaporation pond was stopped, the residual low density crystalline organic material (the residual organic matter) present in the pond content might have formed a thick hard crust layer on the top of the pond contents.

iii. Soil core sampling by the TCIRD team in the evaporation pond area showed presence of a hard but water soluble

layer of 3 to 5cm and even more thickness over the concentrated liquid. It is pointed out that this crystalline layer might have almost stopped further evaporation from the concentrated liquid of the abandoned pond. As a consequence the industrial unit might not have been in a position to dispose off all the wastewater in the solar evaporation ponds.

iv. As per the information available in the PPCB records, the industrial unit had installed an incinerator in 1996 for the disposal of the mother liquor generated in step-8.

v. Further, the records say that 100 kg/day (at certain other places indicated as 50 kg/day) of ash was generated from the incineration of the mother liquor. 100 kg/day ash is grossly understated. Almost all the chloride used in the manufacturing process, both as NaCl and HCl, is expected to get into the mother liquor and then become part of the incineration ash. The assessment is that the mother liquor might have been almost a saturated salt solution.

34. The solid and hazardous waste generated by the said industrial unit has been stated to include:

i. **Gypsum sludge:** 3,082 kg/batch on dry weight basis. About 1850 tons per year (dry weight basis) of gypsum sludge was generated. It was assumed to contain 30% moisture.

ii. **Iron oxide sludge:** 1,109 kg/batch on dry weight basis. About 466 tons per year (dry weight basis) of iron oxide sludge was generated. It was assumed to contain 70% moisture.

iii. **Incineration ash:** 100 kg/batch or 30 tons per year. This is grossly understated and may be possible if glauber salt can be used in place of common salt, and if the used glauber salt can be recovered from the wastewater and reused. Sodium chloride use might have generated about 2.7 tons/batch of incineration ash.

35. Three sludge tanks/pits, each of 20 m x 12 m x 2 m dimensions (480 m^3 volume), were apparently used for the storage of the generated gypsum sludge, iron oxide sludge and incineration ash. Apparently some of the organic sludge accumulated in the solar evaporation ponds was also collected and stored in the tank meant for the incineration ash storage.

36. The unit was storing all the wastes, generated by it, on-site except for selling of some iron oxide and gypsum sludge to outside parties. The unit installed an incinerator in 1996 for incinerating of the organic waste. The unit disposed the waste water it generated in solar evaporation ponds within premises and disposed no wastewater beyond its boundaries.

37. According the TCIRD report the profile of the salt level (sum of iron, sodium, sulphate, nitrate and chloride) in the

groundwater indicates that the groundwater has been contaminated by the following two sources.

i. Percolation and leaching of contaminants from the onsite solid/hazardous waste storage and disposal and from the solar evaporation ponds.

ii. Direct injection of wastewater into the groundwater at 150ft depth (liquor discarded in the H-acid manufacturing step 11 after filtration recovery of the sodium salt of H-acid appears to be the wastewater discharged into the groundwater through direct injection).

38. It is stated that as of now contribution made by the percolation/leaching from the solid /hazardous waste storage tanks and from the solar evaporation ponds is relatively lesser and the ground water pollution is mainly from the direct injection of wastewater into the groundwater (which was apparently discontinued by 2005). Total salt level in the top layer of the groundwater (1435mg/L at 105ft depth) is higher than that at 120ft depth (1133mg/L). This could be because of the contributions through percolation and leaching from the overburden soil, the solar evaporation ponds and from the solid/hazardous waste storage. Beyond 120ft depth, the total salt levels are increasing up to 140ft depth (to 3178mg/L) and then decreasing (2012mg/L at 160ft). The latter might be from the direct injection of the wastewater might be at 140 – 150ft depth.

39. The TCIRD team reported the presence of the Sulfonated Phenolic compounds in two groundwater samples collected from two sampling stations located just outside the premises of the industrial unit. According to them the phenolic compounds however, could not be measured by routine Colorimetric method for phenols given in 21st Edition of APHA. As these samples were reddish brown in colour in spite of the absence of iron in them, presence of higher order phenolic compounds in these samples was suspected. The evaporative concentration, methanol extraction and chromatography of all the groundwater samples collected by the team with 1:1 methanol and chloroform and with methanol resulted in the isolation of two sulfonated phenolic compounds in samples from st.1 and st.2 (see Table No. 5 and 6 of TCIRD Report reproduced below). Analysis of the isolated sulfonated compounds on FTIR indicated the presence of functional groups N–H, O–H and S=O in both the compounds. Analysis of all the other 7 groundwater samples indicated that these have the methanol extractables below detectable levels.

Table No. 5: Sulfonated phenolic compounds in the samples from Stn. 1 and stn. 2

Compound	Sample 1	Sample 2
Methanol extractables (mg/L)	149	173

Compound A (mg/L)	60	75
Compound B (mg/L)	48	32

Table 6: Characterization of Ground Water Samples for presence of Sulfonated Phenolic Compounds by FTIR

Sample	**IR bands observed**	**Remarks@**
Compound A	3430, 1635, 1384, 1047 and 669 cm^{-1}	IR bands at 3430, 1635 and 1384 cm^{-1} confirms the presence of functional groups N-H or O-H. IR bands at 1047 and 669 cm^{-1} confirms the presence of sulphony1 group.
Compound B	3416, 1089 and 630 cm^{-1}	IR bands at 3416 cm^{-1} confirms the presence of functional groups N-H or O-H. IR bands at 1089 and 630 cm^{-1} confirms the presence of sulphony1 group.

40. TCIRD report maintained that the presence of sulfonated phenolic compounds in the ground water together with other circumstantial evidences (like water solubility) indicated that the ground water in question was contaminated with the industrial wastes, specially those generated beyond the Koch cake fusion step (step-9 of the manufacturing process). ”

41. In response to the TCIRD Report, the Respondents 4 – 7 presented before the Hon’ble High Court the comments offered

on this Report (on their request) by Prof. Barun Kumar Guha (Retired) Chemical Engineering Department, Environmental Engineering Group Indian Institute of Technology, Delhi dated September, 2012, which is on the record at pages 445 – 461. Prof. Guha's review is titled "*Comments on the Report on Assessment of Ground Water Contamination at the Plant Site of M/S Mahalaxmi Organochem Industries Thapar Center for Industrial Research and Development*". In the said review Prof. Guha has commented not only on the Report prepared by TCIRD but also on the Analysis of water samples done by M/S Eco-Laboratories & Consultants Pvt. Ltd.

42. In case of solid wastes he states "The solid wastes generated within the plant mostly from process steps and they included, gypsum sludge, iron sludge and incinerator ash". According to Prof. Guha "the first two types of sludge (gypsum sludge and iron sludge), from the manufacturing process for H – Acid, were produced directly from the process steps involving filtration and were quite wet. These were dewatered and then further dried by exposing to sun. All these sludge are classified as hazardous in nature because of the contamination of toxic organic compounds." He further states about gypsum sludge that "the product after drying was not of pure white colour and free of these matters, as is desired by these users. Hence it was difficult to sell it to such users. He talks about the use of iron sludge in brick kilns as well as agriculture lands. He also states that the gypsum was taken by brick kiln owners free of

cost and even transportation charges were borne by M/s Mahalaxmi Organochem Industries. In case of solar evaporation ponds, the said expert notes that these were lined and "whatever small amount that might have percolated was due to the drift loss occurring from the spraying of the liquid within the pond to enhance the evaporation rate. The drift loss gets deposited on the surrounding areas and subsequent rainfall or irrigation for the crop cultivation has resulted in its percolation to the soil." A perusal of Prof. Guha's review, however, indicates that he has not questioned any details given by the TCIRD about the manufacturing process, including the quantity of raw material used, quantities of by-products (gypsum and iron sludge) and waste material (mother liquor) generated and the quantum of the final commercial product (H-Acid) produced. Therefore the reliance placed by respondent 4 to 6, on the comments made by Prof. Guha is of no help to them in dispelling the strong view expressed by the TCIRD in its report.

43. According to the learned counsel appearing for the said respondents, there are number of inconsistencies with regard to soil and ground water analysis in TCIRD study. There is no balance between the anion (SO4 and Cl) and cation (Na) concentration in soil. The soil samples collected from the solid waste dumping area show no sign of any contamination with the level of sulphate, nitrate, chloride, sodium and others

which show that they are within the limits which are normal for many of the soils.

44. Prof. Guha questions the necessity of testing the water samples for the methanol extract value. According to him "it is quite strange that the soluble components needed the methanol extraction. Particularly the COD values should have been the indicator of the presence of organic components. However, there is no clear relationship between the methanol extract and COD values".

45. In Civil Misc. No. 14527 of 2012 in CWP No. 3481 of 2007, Mr. Om Parkash, Environmental Engineer, PPCB, filed a counter affidavit on behalf of R1 – 3 on the comments of Prof. B. Guha as submitted by R 4 – 6 . The main contention of R 1 – 3 was that Prof. Guha never visited the site in question and his comments were based only on the perusal of the TCIRD report.

46. In the said affidavit of Mr. Om Parkash, rebuttal of Dr. Akepati S. Reddy, author of the TCIRD Report on Prof. Guha's comments was also reflected as under. "Ground water pollution, by polycyclic aromatic organic compounds of naphthalene origin, under the industrial site and presence of highly concentrated effluents in the then evaporation ponds (presently covered by about 6 feet thick layer of soil), as reported in the TCIRD report, are the ground realities and proven beyond any doubt. And these ground realities cannot be doubted either by the respondents 4 – 6 or by the report of

Prof. B. K. Guha." Dr. Reddy reiterates the stand that the "ground water pollution in the concerned area is most likely due to intentional injection of the effluent in to the ground water. The ground water pollution problem and the concentrated effluent in the solar evaporation ponds should be treated as two unrelated problems."

47. The comments given by Dr. Reddy were negated by Mr. C. S. Dhawan, R6 on behalf of R 4 – 6 vide Reply Affidavit file in Civil Misc. No. 17279 of 2012. In this affidavit even the expertise of TCIRD with respect to the study conducted was challenged on the premise that the main scope of working of TCIRD relates to Paper Industry and that the said Center stands derecognized by the PCB itself in the year 2009, inferring there from that they are not competent to submit the report.

48. On 4th July, 2013 the NGT Bench directed the CPCB to depute an expert or a team of experts to examine the locations of the sites and to give a report on the following points:

a. Whether the water is contaminated/ polluted at the place shown in the Application?

b. Whether the characteristics of the soil are affected due to the dumping of the chemical wastes at the place in question?

c. Whether the ground water is polluted due to the effluent discharge or the discharge in to the bore wells?

d. Whether the crops or orchards in the proximity of the sites have been damaged due to the pollution allegedly caused due to the effluent discharged.

e. The expert team of CPCB may suggest the methodology for restoration/ reclamation of the contaminated environment.

49. In compliance to the directions of NGT, the CPCB team collected samples of groundwater and soil in the affected area (near M/S Mahalakshmi Organochem Industry, Nabha Road) in Sangrur during 24 – 26 July, 2013. The Final report of the survey was submitted by the CPCB in September, 2013. A perusal of the said report reveals that in respect of the groundwater the CPCB focused its attention on the parameters:

> pH, conductivity, TDS, Ca, Mg, K, total Hardness, Na, F, Cl, SO4, Nitrate, total alkalinity, COD, BOD, heavy metals, TC and FC,

While in case of soil the parameters analysed included:

> pH, conductivity, organic carbon, organic matter, Na, K, Mg, CEC, Cl, Heavy metals.

50. The team mentioned in the report that production of H-acid commenced at the site in July 1991 and continued till end of February 2005. Presently there was no industrial activity at the site as the plant has been dismantled and cultivation is

being done at the site by the purchaser Sh. Tara Singh S/o Sh. Subaran Singh R/s Village Nauhra (Nabha), District Patiala.

51. As per the CPCB report, during the field survey, it was observed that the colour of surface soil was red at many places within the premises of the closed industrial unit. Soil of black colour was found at 4 feet depth near the so called solar evaporation pond. **The report further observed that coloured water was pumped out of the tube well installed in the premises of the unit (Depth of the tube well 280 feet) even after continuous flow for 105 minutes.** The report inferred that the groundwater quality exceeds the desirable limits of drinking water with respect to TDS, total alkalinity, total hardness, colour, calcium and iron. It further reported that black liquor was found at the depth of 5 feet near the site of solar evaporation pond which depicts that leftover industrial process waste is still lying. On the basis of the above findings, the CPCB suggested that:

    i. the leftover industrial process waste lying at the depth of 4 feet should be removed and disposed to approved Treatment, Storage and Disposal Facility.
    ii. The voids be filled with clayey soil.
    iii. Use of land for any other purposes including cultivation should be avoided till remediation is completed.
    iv. Access to the site be restricted with the help of fencing.

v. The leaching from site may be minimized by laying a compacted clay layer of 30-60cm depth with proper slope.

52. Prof. B. K. Guha (Retired), IIT, New Delhi, engaged by Respondent Industry, gave his "Comments on the Report on Assessment of Groundwater Contamination at the Plant site of M/S Mahalakshmi Organochem Industries by Central Pollution Control Board, Delhi" on 25.09.2013. His main objection to the report is regarding the non-existence of background water quality. Further, he points out the absence of details about agricultural activities being carried out on the land in question. In reference to "the soils samples were black at depth of 6 inches to 4 feet. At the site of solar evaporation pond is not very clear. As there was no quantification to indicate whether the colour intensity was increasing or decreasing with depth."

53. Respondent 9 through his counter affidavit dated 31.7,2013, besides other facts, inter alia submitted that

> "8. that the annual report also gives the details of the by-products lying at the site as on 31st March, 2003 and as per the said report only the following quantities appear in the same :-
>
> Gypsum: 26023 kg
> Iron sludge: 21242 kg. ____ Rs. 47,264.00
>
> Both these commodities constitute only about 2 truck loads each and these figures confirm the fact that the by-products generated till March, 2003 were being regularly disposed off".

It may be noted that the quantity reflected above by the said respondent are actually wrongly reported as is evident from the details presented in the Balance Sheet at page 628. The

figures reflected above in kilograms are actually amount in Rupees, the total amount on account of Industrial wastes being Rs. 47,264.00 with the break up:

3. Industrial Wastes

(a) Gypsum		Rs. 26,023.00
(b) Iron Sludge	Rs. 21,241.00	Rs. 47,264.00

54. On 8th May, 2014, while pleading on behalf of the Punjab Pollution Control Board (PPCB), Mr. A.R. Takkar, learned Counsel pointed out that earlier a report was submitted before the Hon'ble Punjab and Haryana High Court by Thapar Center for Industrial Research & Development (TCIRD) and the said report showed that between July 1991 and February 2005 the industrial unit manufactured over 3000 tons of H-acid and generated over 17,000 tons of gypsum sludge, over 6,000 tons of iron oxide sludge and over 40,000 tons of inorganic salts, together with wastewater containing over 2,000 tons of naphthalene based organic compounds. Except for selling out a small fraction, the industrial unit retained all the gypsum sludge and the iron oxide sludge within the premises.

55. The TCIRD report prepared by Dr. A. S. Reddy further inferred as under "it appears that the industrial unit segregated the filtrate (discarded liquor) of the H-acid manufacturing step-11 (and even the H-acid wash-water of the H-acid manufacturing step-12, if not reused) and

disposed off through injecting into the groundwater at about 140-150 feet depth. Over the 14 years period the industrial unit might have injected about 28,000 m^3 of wastewater into the groundwater. This has heavily polluted the local groundwater." In support of this inference it was pointed out that "the groundwater samples from at least two sampling stations (Stn. 1 and Stn. 2) have been found contaminated with the industrial waste. This is evident from the high sulphate, chloride, COD and TDS levels observed and from the indication of presence of phenolic compounds. Contamination of the ground water appears to be limited in extent and apparently not spreading. Discontinuity of groundwater contamination (since 2004) and continual pumping out of ground water for irrigation at the sampling stations have apparently arrested the speed of the groundwater contamination."

56. The samples from station 1 and 2 (which were located in the plot of land adjacent to the Unit on its eastern side) showed the concentration of Methanol extractables as 149 mg/L and 173 mg/L respectively. The report indicates that "the phenolic compounds however could not be measured by the routinely used standard method. The groundwater samples from these two sampling stations (1 & 2) were reddish brown in colour and both the samples were not having any iron in them (iron can also impart reddish-brown colour to water). This led to the suspicion of presence of higher order phenolic

compounds in the water samples and imparting the colour, and to the further investigation of the samples in the direction of extraction, isolation and characterisation of the substances imparting colour to the water. Evaporative concentration, methanol extraction and column chromatography (of the samples), both with 1:1 methanol and chloroform and with methanol resulted in the isolation of two sulphonated phenolic compounds... Analysis of the isolated compounds on FTIR indicated presence of functional groups N-H, O-H and S-O, in both the compounds."

57. From these findings it was inferred by Dr. Reddy that "Identification of sulphonated phenolic compounds in the ground water and other circumstantial evidences (like water solubility) indicate that the ground water in question is contaminated with the industrial wastes, especially those generated beyond the Koch cake fusion step (step 9 of the manufacturing process)."

58. It was further pointed out by the Learned Counsel that the Central Pollution Control Board (CPCB) did not conduct any test to identify the presence of sulfonated phenolic compounds and as such the CPCB Report is incomplete. In view of this deficiency the CPCB was directed vide NGT order dated 8th May, 2014 to conduct test for identifying the presence of sulfonated phenolic compounds in the groundwater and for assessment and also to suggest

methodology for restitution/remediation of the contaminated water.

59. In response to this direction, the CPCB filed a report titled "Report on Assessment of groundwater Contamination (near erstwhile M/S Mahalaxmi Organochem Industry, Nabha Road) District Sangrur, Punjab" dated June, 2014. The report reveals that the CPCB team visited the site on 24.06.2014 and collected ground water samples from 8 locations, which were analyzed for following parameters.

> "pH, conductivity, TDS, Ca, Mg, K, Total Hardness, Na, K, F, Cl, SO4, Total alkalinity, Total Phenols, COD, Heavy metals (As, Cd, Cr, Cu, Fe, Mn, Ni, Pb and Zn)"

60. The said CPCB report reveals that "phenolic compounds were analyzed based on 5530-D, direct photometric method (after distillation) of Standard Method for Examination of Water and wastewater" 22nd edition published by American public health Association (APHA) and is adopted by National Accreditation Board for Laboratories (NABL)". Based on analytical results it was observed that samples are found within prescribed limits of BIS drinking water standards IS 10500:2012 (desirable limit) with respect to phenolic compounds, pH, Total Dissolved Solids, Calcium, Sulphate, cadmium, Copper, Nickel and total Chromium. Iron concentration was found exceeding the prescribed limits in

tube well installed in industrial premises. Groundwater quality exceeds the desirable limits of drinking water with respect to total alkalinity and total hardness." Accordingly it was concluded from the study and analytical results that the impact of erstwhile M/S Mahalakshmi Organochem Industries unit was not found in the 8 tube wells of the area.

61. Learned Counsel appearing for the industry disputed the findings in TCIRD report and according to him the report of the CPCB clearly shows that the Sulfonated Phenolic compounds were below the detection limits. However, the Learned Counsel for the PPCB disagreed with this view and submitted that the CPCB carried out analysis by APHA method which is less sensitive than FTIR method and, therefore, if the findings of the CPCB are to be comfortably relied upon then the findings ought to have been arrived by the sensitive FTIR method and not by APHA method alone. He, therefore, suggested carrying out of the fresh sampling and analysis of the ground water from the sources collected from the same sites as those collected by the CPCB at the hands of reputed specialised institution like NEERI (National Environmental Engineering Research Institute) by employing FTIR method for analysis of the ground water to assess the presence of sulfonated phenolic compounds.

62. After hearing the rival contention, the NGT Bench directed the NEERI to undertake the analysis of the ground water at the disputed site. Accordingly it was directed thus:

i. NEERI shall depute a team of Experts to collect the underground water samples from the same locations from where the earlier water samples were collected by CPCB and to analyse those samples for ascertaining the presence of Sulfonated Phenolic compounds by APHA as well as FTIR methods and any other better method that may be available with NEERI. Quantitative analysis of the sulfonated phenolic compounds shall also be undertaken by NEERI.

ii. NEERI shall also give its opinion as regards the possible sources of such Sulfonated Phenolic compounds, if detected in the samples, at the said locations.

iii. NEERI shall also suggest the methodology for remediation of the underground water if found contaminated with Sulfonated Phenolic compounds.

63. NEERI filed its report titled "Assessment of Ground Water Contamination in and Around Mahalaxmi Organochem Industries, Bhawanigarh" in the NGT on 13.11.2014. As per the report the CSIR-NEERI team collected ground water samples on 17th October, 2014 from the same tube wells wherefrom CPCB had collected samples earlier in June, 2014. The NEERI report reveals that "However, during sampling it was observed that the original tube well GW-1 was blocked and a newly drilled tube well was noticed about 100 to 150 ft away from GW-1 located in the same premises.

Hence, water sample was collected from the newly drilled tube well considering it as GW-1."

64. The team analyzed the samples for Iron, Carbonate, Sulphate, Chloride, Nitrate and Phenolic compounds. According to the data collected by the team, concentrations of carbonates, sulphates, chlorides and nitrates were found to be within the acceptable limits of IS:10500 2012. Iron concentrations were observed to be below the detectable limits. The phenolic compounds, however, could not be measured by the routinely used standard APHA method.

65. According to the NEERI team, the presence of reddish brown colour in the two groundwater samples collected by the TCIRD team (in the absence of any iron) had led them to suspect the presence of higher order phenolic compounds in the water samples. However, the water sample collected by NEERI team at GW-1 was observed to be muddy, while all others were colourless and odourless. The team observed that the concentration of sulfonated phenolic compounds in the ground water sources, especially GW-1 and GW-2, where their presence was expected in view of possible contamination, could not be measured by the routine testing method for phenols, i.e. Spectrophotometric method (21st Edn. APHA). Accordingly in view of non-availability of reference standards for sulfonated phenolic compounds, extraction of ground water samples was carried out by the team by chloroform followed by characterisation of the

extract using FTIR for its determination as total sulfonated phenolic compounds, present if any. Analysis of the chloroform extract on FTIR indicated presence of the functional groups N-H, O-H and S=O in samples GW-1 and GW-2 which confirmed presence of sulfonated phenolic compounds (see Table 6 of the NEERI report on page 905; reproduced below). In the remaining 6 samples the level of the functional groups N-H, O-H and S=O in the chloroform extract was insignificant.

Table 6: Characterization of Ground Water Samples for presence of Sulfonated Phenolic Compounds by FTIR (NEERI Report p/13)

Sample	IR bands observed	Remarks *
GW-1	3430, 1635, 1384, 1047 and 669 cm^{-1}	IR bands at 3430, 1635 and 1384 cm^{-1} confirms the presence of functional groups N-H or O-H. IR bands at 1047, 669 cm^{-1} confirms the presence of sulphony1 group.
GW-2	3416, 1635, 1089 and 630 cm^{-1}	IR bands at 3416, 1635 cm^{-1} confirms the presence of functional groups N-H or O-H. IT bands at 1089 and 630 cm^{-1} confirms the presence of sulphony1 group.

66. The NEERI report concluded that "Identification of sulfonated phenolic compounds in the ground water indicate that the

ground water in question is contaminated with the industrial wastes, especially those generated beyond the Koch cake fusion step i.e. step-9 of the manufacturing process." This conclusion drawn by the NEERI Report was objected to by the learned Counsel appearing for the project proponent on the ground that the NEERI has not found in the entire report any fault on the part of project proponent in support of the conclusion drawn. This argument was countered by the learned Counsel for the applicant on the ground that different tests are carried out.

67. On 19.12.2014 a scientist from CPCB was asked by the NGT Bench to explain the basis on which CPCB team had termed the ground water not to be contaminated. The said scientist stated that they had arrived at the conclusion "that the water was not contaminated" on the basis of APHA method. According to him the said APHA method is the most modern one and CPCB does not have any other facility, except APHA method.

68. On the direction of the Bench, three scientists from NEERI, who prepared the NEERI Report of November, 2014, also appeared before the Tribunal on 7th January, 2015 and explained that their study had been able to establish conclusively the presence of sulfonated phenolic compounds in the ground water samples by the FTIR method, although only qualitatively.

69. It may be pointed out that "the analytical procedure **5530 D. Direct Photometric Method** uses the 4-aminoantipyrine colorimetric method that determines phenol, ortho- and meta-substituted phenols, and, under proper pH conditions, those para-substituted phenols in which the substitution is a carboxyl, halogen, methoxyl, or sulfonic acid group. This method, however, does not determine those para-substituted phenols where the substitution is an alkyl, aryl, nitro, benzoyl, nitroso, or aldehyde group. The 4-aminoantipyrine method is given in APHA (1999) in two forms: Method C, for extreme sensitivity, is adaptable for use in water samples containing less than 1 mg phenol/L. It concentrates the color in a non-aqueous solution. Method D retains the color in the aqueous solution. Because the relative amounts of various phenolic compounds in a given sample are unpredictable, it is not possible to provide a universal standard containing a mixture of phenols. For this reason, phenol (C6H5OH) itself has been selected as a standard for colorimetric procedures and any color produced by the reaction of other phenolic compounds is reported as phenol. Because substitution generally reduces response, this value represents the minimum concentration of phenolic compounds.

5530 D. Direct Photometric Method

i. *Principle:* Steam-distillable phenolic compounds react with 4-aminoantipyrine at pH 7.9± 0.1 in the presence of potassium ferricyanide to form a colored antipyrine

dye. This dye is kept in aqueous solution and the absorbance is measured at 500 nm.

ii. *Interference:* Interferences are eliminated or reduced to a minimum by using the distillate from the preliminary distillation procedure.

iii. *Minimum detectable quantity:* This method has less sensitivity than Method C. The minimum detectable quantity is 10 µg phenol when a 5-cm cell and 100 mL distillate are used.

70. The learned counsel for respondents 4 – 6 and Respondent 9 contend that as per BIS, the testing methodology to be applied for analysing phenolic compounds is IS 3025 (Part 43). This testing method also been adopted by National Accreditation Board for Laboratories (NABL). According to them the test conducted by CPCB and its report filed along with the affidavit dated 18.07.2014 is as per this very method and based on this method it was observed that samples are within prescribed limits of BIS drinking water standards IS 10500:2012 (desirable limit) with respect to phenolic compounds. According to these respondents the study has concluded that "the impact of erstwhile M/s Mahalakshmi Orgochem Industries unit was not found in existing 08 tube wells. They further submit that three independent laboratories, namely M/S Skylab Analytical laboratory, M/S ITL Labs Pvt. Ltd. And M/S Shriram Institute of Industrial Research, all approved by the Ministry of

Environment and Forests have confirmed that the test method to be used for quantitative analyses of phenolic compounds in water sample is IS 3025 (part 43) and the minimum detectable limit of the said method is 0.001mg/l.

71. The learned counsel for Respondent No. 4-6 further contend that FTIR method is not the method prescribed by the Bureau of Indian Standards, Furthermore, by applying the FTIR method the quantitative analysis cannot be done. They allege that the report of NEERI is the repetition of the contents of the report by Thapar Institute. In fact the mistakes contained in the report of Thapar Institute are also contained in the report by NEERI. It is contended that in Table 5 of NEERI's report they have wrongly stated that the minimum detection limit for phenols by application of 22nd APHA spectrophotometric method is 0.02mg/l. It is submitted that as is clear from IS 3025 (part 43) by applying 5530D direct photometric method which is based on standard method for examination of water and wastewater 22nd Edition published by APHA and adopted by NABL, the desirable limit of phenolic compound in water is 0.001mg/l is to be tested by applying this method.

72. It is also contended on behalf of the said respondents that the FTIR method is sensitive only for the qualitative assessment. Furthermore, the FTIR method for GW-1 sample mentions the following IR bands

3430, 1635, 1089, 1047 and 669.

And for GW-2 it mentions the following IR bands

3416, 1635, 1089 and 630.

According to them band 3430 and 3416 are for alcohol and phenols. Band 1635 is for amines. Bands 1047 and 1089 are for aliphatic amines. Bands 669 and 630 are for alkyl halides. They submit that FTIR method itself uses methanol, which itself contains alcohol. The conclusion in NEERI's report alleging contamination is only because presence of phenols have been detected by FTIR method. However, NEERI's report does not state that there is any contamination which is beyond the desirable or prescribed limit of drinking water as specified by BIS.

73. In this context we are not impressed by the reasoning forwarded by the respondent Industry. It is true that the CPCB has prescribed 5530D direct photometric method (based on standard method for examination of water and wastewater 22nd Edition published by APHA) for the determination of phenols in the water samples, but in the preamble of the said method it is clearly mentioned that "This method, however, does not determine those para-substituted phenols where the substitution is an alkyl, aryl, nitro, benzoyl, nitroso, or aldehyde group" and the minimum quantity that can be detected through this method is 0.01mg/L, which is far higher than the desirable limit set by the BIS, that is 0.002mg/L. Further, it may be pointed out that the FTIR method used by TCIRD and NEERI has been reported to be far more sensitive

and advanced than the simple "5530D direct photometric method" adopted by BIS.

74. **Fourier Transform infrared spectroscopy** (**FTIR**) is a technique which is used to obtain an infrared spectrum of absorption, emission, photoconductivity or Raman scattering of a solid, liquid or gas. An FTIR spectrometer simultaneously collects high spectral resolution data over a wide spectral range. This confers a significant advantage over a dispersive spectrometer which measures intensity over a narrow range of wavelengths at a time [Griffiths, P. & de Hasseth, J.A. (2007) *Fourier Transform Infrared Spectrometry* (2nd ed.), Wiley-Blackwell]. As per the introductory note published in 2001 by Thermo-Nicolet Corp. (USA), the manufacturers of FT-IR spectrometers, FT-IR stands for Fourier Transform Infra-Red, the preferred method of infrared spectroscopy. In infrared spectroscopy, IR radiation is passed through a sample. Some of the infrared radiation is absorbed by the sample and some of it is passed through (transmitted). The resulting spectrum represents the molecular absorption and transmission, creating a molecular fingerprint of the sample. Like a fingerprint no two unique molecular structures produce the same infrared spectrum. This makes infrared spectroscopy useful for several types of analysis.

- It can identify unknown materials

- It can determine the quality or consistency of a sample
- It can determine the amount of components in a mixture

Why Infrared Spectroscopy? An infrared spectrum represents a fingerprint of a sample with absorption peaks which correspond to the frequencies of vibrations between the bonds of the atoms making up the material. Because each different material is a unique combination of atoms, no two compounds produce the exact same infrared spectrum. Therefore, infrared spectroscopy can result in a positive identification (qualitative analysis) of every different kind of material. In addition, the size of the peaks in the spectrum is a direct indication of the amount of material present. With modern software algorithms, infrared is an excellent tool for quantitative analysis.

75. The objection raised by the Expert engaged by the Respondents that the TCIRD has used methanol, which is an alcohol and as such must have interfered with the results also does not hold the ground. Had this been the case then the FTIR would have shown similar values in all the water samples tested by this (TCIRD) team as the methanol was used as the solvent in all of them. Further, the presence of the sulfonated phenolic substances has also been confirmed by the FTIR test done by the NEERI although they used chloroform in place of methanol. It may also be noted that CPCB have accepted that

the facility available with them is only for "5530D direct photometric method".

76. A perusal of the four study reports, i.e., TCIRD Report of 2011, CPCB Report of 2013, CPCB Report of 2014 and CSIR-NEERI Report of 2014 and submissions made by rival parties at different stages of the case first in the Hon'ble High Court of Punjab & Haryana at Chandigarh and later on before the NGT Principal Bench at New Delhi, would clearly lead to the following facts.

a. The industrial Unit was running for almost fourteen years (to be precise, 13 years and 8 months, i.e., from July 1991 to February 2005) at the site.

b. The unit had obtained the requisite permission for the establishment of the said industrial unit. However, NOCs/Consent to operate were not obtained for the whole period and for some period the unit was run without proper consents.

c. The unit was using naphthalene as the raw material for the production of the H-acid.

d. The unit was storing the iron oxide slurry as well as gypsum slurry on the site itself.

e. The unit had constructed a pond for storing of the final waste material generated in the manufacturing process, i.e., mother liquor.

f. The unit didn't have any incineration process for the first five years of manufacturing and the mother liquor

was simply stored in the pond and passed through the evaporation process only.

g. The solid waste left over after incineration process was stored in a tank covered by tin shed.

h. Except for a small quantity of gypsum, which was sold to some third party, gypsum as well as iron oxide remained dumped on the site. There is no record to show that the gypsum and iron oxide has been disposed off properly or shifted to any other place when the unit was dismantled and the land previously occupied by the unit was put to agriculture.

i. The industrial unit closed in March, 2005 and later on dismantled completely and even the shed covering the hazardous waste was dismantled, leaving the hazardous wastes exposed to the vagaries of the weather at least for four years (March, 2005 – August 9, 2009).

j. The estimate provided by the TCIRD regarding the quantum of raw materials used, product and by-products as well as waste materials produced have not been questioned by any party, including the expert engaged by Respondents 4 - 7.

k. The calculations made by the TCIRD have revealed the utilization of less than 40% of the naphthalene processed for the manufacture of H-acid. This leads to the inference that about 60% of the unutilized naphthalene remained either in the mother liquor

and/or got mixed with the iron oxide and gypsum slurry.

l. The incinerated ash, which was stored in the ash pond got ultimately shifted to TSDF facility at Nimbua during 7th – 9th August, 2008 and as such remained without any cover for the period January, 2006 – August, 2008, as the dismantling of the sheds was first noticed on 2nd January, 2006 by PPCB.

77. Based on the above narration of facts, contentions of the learned counsel on both the side, perusal of the entire records including various reports and on application of mind we frame the following issues and answer them.

a. Did the Respondents 4 - 7 have necessary approvals of competent authorities to establish and operate the said unit as mandated under various Environment related acts?

b. If the unit was having the consent to operate, did it run as per the conditions set in the consent to operate?

c. Was the unit producing any hazardous substances? If so,

was the disposal of such wastes as per the Hazardous Wastes (Management and Handling) Rules, 1989 as amended in 2003?

d. Did the environment get affected by the said acts of the respondents and to what extent? What is the relief ?

78. Issues:

a. Did Respondents 4 - 7 have necessary approvals of competent authorities to establish and operate the said unit as mandated under various Environment related acts?

The answer to this question is given in the reply affidavit filed by Respondent 9 on 19.11.2013. According to him M/S Matharu Chemical Industries was given the No Objection Certificate by the Punjab Pollution Control Board vide letter No. 16708 dated 12.07.1990 for the manufacture of H - Acid @ 600kg per day. This would mean that the respondents had the consent to establish. As per his reply affidavit the following valid approvals/ consents were obtained and got renewed from time to time to ensure that the said company was in compliance with all applicable environmental legislation/requirements to the satisfaction of the Punjab Pollution Control Board, the Regulatory Authority.

Legislation	Approval/NOC No.	Date of Approval/ NOC	Period of validity of Approval/ NOC
Water Act	1.)SGR/WPC/ETP/1993-94/F-91 2.)SGR/ETA/95-10/F-173	7.10.1993 18.10.1995	30.09.1994 17.10.2010
Air Act	1.)SGR/APC/ECD/93-94/R-75	02.02.1994	30.06.1994

	2.)SGR/APC/97-09/R-157	08.10.1997	30.06.2009
HW Rules	Letter No. 4580 renewed periodically last by Letter No. 16987 DT. 09.08.2004	06.05.1997 23.04.2002 05.08.2004	18.03.1999 22.04.2004 04.08.2005

A perusal of the above tabulated list reveals that although the unit had obtained the requisite permissions under the Water and Air Act at different points of time, the unit didn't have NOC/consent to operate for the period from July, 1991 (start of manufacture) to 6.10.1993 and again from 1.10.1994 to 17.10.1995 under Water Act. Similarly it didn't have permission for the period from July, 1991 to 1.2.1994 and again from 1.7.1994 to 7.10.1997 under Air Act. The unit didn't have permission to store the Hazardous wastes for the period from July, 1991 to 5.5.1997, from 19.3.1999 to 22.4.2002, from 23.4.2004 to 4.8.2004 and from 5.8.2005 to 7.8.2008 under Hazardous Wastes Rules. So, it is quite evident that the industrial unit violated the Air Act, Water Act as well as Environment Protection Act during the periods mentioned above. The issue is answered accordingly.

b. If the unit was having the consent to operate, did it run as per the conditions set in the consent to operate?

As is revealed by the details given in the above issue, the unit didn't have Consent to operate for a considerable period of time under both Air Act and Water Act. The unit worked without any consent under Air Act for 05 years and 10 months (July, 1991 to 1.2.1994 and 1.7.1994 to 7.10.1997) and under Water Act for a period of 3years and 3 months (July, 1991 (start of manufacture) to 6.10.1993 and 1.10.1994 to 17.10.1995).

Even when the consents were in place, the Industrial Unit in question violated the conditions of the consent as is amply clear from the following two facts. The Unit was issued a show cause notice on 5th April, 2004 by PPCB for Violation of the provision of Water (Prevention & Control of Pollution) Act, 1974 and Air (Prevention & Control of Pollution) Act, 1981. The deficiencies/violations observed included particularly:

i. The effluent from the lab section is discharged on to land for stagnation without any treatment.
ii. The cooling water from the fusion process and the boiler blow down was also being discharged onto land for stagnation.
iii. The scrubber water from scrubbers attached to boiler furnace & thermopac was not being completely re-circulated and a part of that was being discharged onto land for stagnation. The scrubber water from the scrubbers attached to control SOx &

NOx emissions is discharged onto land for stagnation.

iv. The house-keeping of the industry was very poor and there is no proper system for drainage of waste water from different sections. Although the quantity of waste water generated from different sections is small, but it is going for stagnation from most of the section. The Industry has not provided any facility for measurement of its effluent.

v. The gypsum sludge and the iron sludge generated from the process was lying in the open in the form of heaps and it was not stored under the shed.

vi. The industry has added the fusion process without obtaining any NOC from the Board. The representative of the industry told that this process has been added only about 3 months back and with the help of this process, they can use lesser quantity or raw material for producing a particular quantity of their product.

vii. The industry has not provided the sampling facilities for collection of NOx & SOx emission samples.

viii. The industry was using rice husk as fuel in its non-fluidized bed boiler furnace & thermopac furnace.

ix. The main stack of the boiler and thermopac was found broken along with the ladder.

x. The ducting connecting the exhaust from thermopac furnace to the stack was found broken.

xi. The industry has not provided proper stack height on its two no. D.G. sets of 125 KVA each.

The points raised in this show cause notice bring to fore two important deficiencies, which had remained unattended by the said industrial unit and the unit was violating the norms and was continuously polluting the environment. First, as per the conditions set in the Consent to Operate granted to the Industrial Unit under section 25/26 of Water (Prevention and Control of Pollution) Act, 1974 all trade effluents was mandated to be disposed off through solar incineration only. However, as indicated in (i) and (ii) above the effluent from the lab section as well as the cooling water from the fusion process and the boiler blow down was simply discharged onto land for stagnation. Second, the industry did not provide the sampling facilities for collection of NOx & SOx emission samples and had been polluting the air throughout its existence at the site. These facts amply prove that the project proponent, even during the short period of consent has not complied with the conditions.

c. Was the concerned industrial unit producing any hazardous substances? If so, was the disposal of such wastes as per the Hazardous Waste

(Management and Handling) Rules, 1989 as amended in 2003?

As per the Hazardous Wastes (Management and Handling) Rules, 1989 (as amended in May, 2003) "Hazardous Waste" is defined as any waste which by reason of any of its physical, chemical, reactive, toxic, flammable, explosive or corrosive characteristics causes danger or is likely to cause danger to health or environment, whether alone or when in contact with other wastes or substances, and shall include- (a) wastes listed in cloumn (3) of Schedule-1; (b) wastes having constituents listed in Schedule-2 if their concentration is equal to or more than the limit indicated in the said Schedule; and (c) wastes listed in Lists 'A' and 'B' of Schedule-3 (Part-A) applicable only in case(s) of import or export of hazardous wastes in accordance with rules 12, 13 and 14 if they possess any of the hazardous characteristics listed in Part-B of Schedule-3. Explanation: For the purposes of this clause- (i) all wastes mentioned in column (3) of Schedule-1 are hazardous wastes irrespective of concentration limits given in Schedule-2 except as otherwise indicated and Schedule-2 shall be applicable only for wastes or waste constituents not covered under column (3) of Schedule-1; (ii) Schedule-3 shall be applicable only in case(s) of import or export."

The TCIRD Report points out that the following by-products/waste materials were generated during the production of H-Acid in the said industrial unit.

1.	Gypsum on dry weight basis
2.	Iron oxide on dry weight basis
3.	Sodium bisulphate lost in wastewater
4.	Sodium nitrite and nitrate lost in wastewater
5.	Common salt lost in wastewater
6.	Glauber salt lost in wastewater
7.	***Naphthalene lost in the wastewater***
8.	***Mother liquor***
9.	***Incinerated ash***

Item No. 7, 8 and 9 readily fall under the hazardous waste category and none of the parties in the present dispute question the inclusion of these three items as hazardous wastes.

Although gypsum and iron oxide in their pure form are not treated as hazardous in nature, but in the manufacture of H-acid they are formed as by-products and are not in pure form and contain a significant quantity of naphthalene based intermediate compounds as impurities. This is explained by Venkatesan & Saksena (1995) very clearly. According to them "in order to separate the nitro naphthalene sulphonic acid from sulphuric acid, lime and soda ash were used to precipitate the sulphuric acid as calcium and sodium sulphate respectively. This resulted in

11-12 tonnes of gypsum sludge generation per tonne of H-acid manufactured. **Gypsum sludge contained 0.5-1 per cent nitro naphthalene compounds**." **The nitro naphthalene compounds are toxic in nature.** Their study further indicates that "Iron powder and HCl were used for the reduction of nitro to amino group, resulting in the generation of 3 – 3.5 tonnes of iron sludge (Fe_20, sludge) per tonne of H-acid. **The concentration of amino compound in iron sludge was analysed to be about 4 – 5 per cent. The amino naphthalene compounds are toxic and carcinogenic in nature.**" ***Venkatesan, N & Saksena, A. K. (1995). Pollution prevention strategy at an H-acid manufacturing unit. UNEP Industry and Environment January - March 1995: 51 – 53.].***

The study conducted by Venkesan & Saksena (1995) leaves no doubt in treating the gypsum sludge as well as iron oxide sludge produced as by-product in the manufacture of H - Acid to be hazardous waste as a significant quantity of naphthalene intermediate compounds is present in them. The hazardous nature of these by-products has also been confirmed by Prof. Guha, the expert engaged by respondents 4 to 7. In his comments on the TCIRD Report Prof. Guha states thus "*the first two types of sludge (gypsum sludge and iron sludge), from the manufacturing process for H – Acid, were produced directly from the process steps involving filtration*

and were quite wet. These were dewatered and then further dried by exposing to sun. All these sludge are classified as hazardous in nature because of the contamination of toxic organic compounds." He further states about gypsum sludge that "the product after drying was not of pure white colour and free of these matters (sic organic matters), as is desired by these users. Hence it was difficult to sell it to such users. The intermediate compounds formed during the manufacture of H-Acid include Naphthalene-di,-tri- and tetra sulphonic acids, nitronaphthalene-mono,di and tri-sulphonic acids, naphthylamine-mono and di-sulphonic acids eg. 1-naphthylamine-3,6- and 5,7-disulphonic acid, and dinaphthylsulphone-sulphonic acid and their amino and nitro derivatives. All these by- products are non-biodegradable **[Schossler et al (1979), United States patent US4166826; 1979 for discovery of H Acid manufacturing process**]. Any or all of these intermediate compounds could find its way in to the environment along with the waste products Gypsum (calcium sulphate), Iron oxide and mother liquor.

The simple answer to the consequential question as to whether the project proponent disposed of such waste as per the rules is no. The Industrial Unit didn't follow the norms set for the collection and ultimate disposal of the hazardous wastes although the unit produced a large

quantity of such material. First of all it may be pointed out that the industrial unit did not even apply for the requisite NOC for the handling of hazardous wastes for six long years of H-Acid production, i.e., July, 1991 to May, 1997. And when they did apply and were given the permission to store the hazardous wastes as per the norms, the Industry just dumped the gypsum and iron oxide within the premises in a very casual manner. Only the Incinerator ash was kept in a shed covered on three sides and having a roof of sheets. However, this shed was completely dismantled in 2005 by the respondent industry and the hazardous wastes were left unattended in the open. The respondent 8,later on levelled the said land with the help of mechanized equipment (as has been clearly shown through several photographs by the petitioners. During this process the whole quantity of contaminated gypsum and iron oxide was spread on the concerned land and covered by several feet of soil used for the levelling process. This resulted in the complete exposure of the toxic naphthalene intermediates mixed with these two by-products to the rain and irrigation water as the land was put to agriculture by the respondent 8.

The incinerated ash was left open in the ash pond without any proper rain cover. It may be pointed out here that the incinerated ash could be disposed off from the

site only on 7th – 9th August, 2008. This is revealed by the affidavit of Col. (Er.) Surinder Jit Singh Sandhu (Retd.) D. G. M Ramky Enviro Enginners Ltd. Opp. Vardhman Chemtech Ltd., Vill Nimbua, , Tehsil Dera Bassi Distt, Mohali, dated 29.04.2009 which is placed on record . In his affidavit, Col. Sandhu submits that he is operating the Treatment Storage Disposal Facility (TSDF) Nimbua on behalf of Nimbua Greenfield Punjab Ltd. as operator and that the waste from the site of the Mahaluxmi Orgochemicals Industries was collected by his own transport i.e. Ramky Enviro Engineers Ltd. In all, 7 trips were made for collecting 101.830 M.T. of waste from 7th to 9th August, 2008 as per details given below.

S. No.	Manifest No.	Qty. of Waste lifted & transported to TSDF, Nimbua
i)	2245	10.30 MT
ii)	2246	9.610 MT
iii)	2247	16.065MT
iv)	2248	19.290MT
v)	2249	18.545MT
vi)	2250	15.500MT
vii)	2251	12.520MT
	Total	101.830MT

Accordingly this leads to the conclusion that the said toxic ash was there in the uncovered ash pond for at least two years and seven months [at least, from first week of January, 2006 (PPCB official noticed it on 10.01.2006) to 7th August, 2008]. During this period the ash passed three monsoons and many of the toxic ingredients must have dissolved in rain and got dispersed to the adjoining areas.

As per No. HMC/SGR/2004-2005/R-2060 Sh. C. L. Dhawan of M/s Mahaluxmi Orgochem Industries previously known as M/s Matharu Chemical Industries was granted an authorization by the PPCB under Rule 5 of the Hazardous Wastes (Management & Handling) Amendment Rules, 1989 as amended in 2003 to operate a facility for collection and storage of hazardous waste on the premises on the Terms and Conditions, which inter alia included, the following conditions.

i. ----

ii. .....

iii. The person authorised shall not rent, lend, sell, dispose, transfer or otherwise transport the hazardous waste without obtaining prior permission of the Board.

iv. Any unauthorized change in personnel, equipment and working conditions as mentioned in the

application by the person authorized shall constitute a breach of his authorization.

v. It is the duty of the authorized person to take prior permission of the state Pollution Control Board to close down the facility.

vi. The occupier generating hazardous waste/operate of a facility for collection and storage of hazardous waste shall maintain records of such operations in Form-3.

vii. .....

viii. .....

ix. An occupier who is generating hazardous waste shall store his waste category wise on site in environmentally sound manner.

x. An occupier/generator shall not store hazardous wastes in open ground. It must be stored in an isolated site away from plant operational area.

xi. The storage tank/container of the hazardous waste should be in good condition and made of (or lined with) an appropriate material which does not react with the waste contained in it and can withstand the physical and environmental conditions during storage and handling.

xii. The occupier generating hazardous waste shall mark each container holding hazardous waste with

the marking “HAZARDOUS WASTE” both in English and Punjabi.

xiii. The storage area should be fenced properly and a sign Board indicating “DANGER” and “HAZARDOUS WASTE” sign & nature of the waste shall be placed at storage site.

xiv. ……

xv. …..

xvi. The industry shall store the hazardous waste in environmentally sound manner and pack the hazardous waste sludge in impervious bags/containers strong enough to sustain rigour of handling, storage, transportation and weather conditions. The storage facility must be covered from upper side.

xvii. ……

xviii. …….

xix. The occupier and operator of a facility shall also be liable to reinstate or restore damaged or destroyed elements of the environment at his cost, failing which the occupier or the operator of a facility, as the case may be, shall be liable to pay the entire cost of remediation or restoration and pay in advance an amount equal to the cost estimated by the State Pollution Control Board.

xx. …….

xxi. ……

xxii. …….

xxiii. ……

xxiv. …….

xxv. …….

xxvi. …….

xxvii…….

The Industry in question violated all the above mentioned terms and conditions, more or less for the whole period of its operation at the site. No record was maintained in respect of Gypsum and Iron oxide, which because of the presence of quantities of naphthalene based compounds qualified to be treated as hazardous wastes and neither of these materials was stored properly and laid on the premises in a scattered manner without proper cover. Even the most hazardous incinerated ash was kept in the open for more than two years.

The land on which the industry-produced hazardous wastes were lying was sold without proper permission of the PPCB as was mandated by the terms and conditions governing the consent to store hazardous wastes. The issue is answered accordingly.

d. Did the environment get affected by the said acts of the respondents and to what extent? What is the relief?

According to the TCIRD report the profile of the salt level (sum of iron, sodium, sulphate, nitrate and chloride) in the

groundwater indicates that the groundwater has been contaminated by the following two sources.

i. Percolation and leaching of contaminants from the onsite solid/hazardous waste storage and disposal and from the solar evaporation ponds.

ii. Direct injection of wastewater into the groundwater at 150ft depth (liquor discarded in the H-acid manufacturing step 11 after filtration recovery of the sodium salt of H-acid appears to be the wastewater discharged into the groundwater through direct injection).

TCIRD concluded that the contribution to the ground water pollution by the percolation/leaching from the solid /hazardous waste storage tanks and from the solar evaporation ponds is relatively lesser and the ground water pollution is mainly from the direct injection of wastewater into the groundwater (which was apparently discontinued by 2005). Total salt level in the top layer of the groundwater (1435mg/L at 105ft depth) is higher than that at 120ft depth (1133mg/L). This could be because of the contributions through percolation and leaching from the overburden soil, the solar evaporation ponds and from the solid/hazardous waste storage. Beyond 120ft depth, the total salt levels are increasing up to 140ft depth (to 3178mg/L) and then decreasing (2012mg/L at 160ft). The latter might be from the

direct injection of the wastewater might be at 140 – 150ft depth.

As per the CPCB July 2013 report, during the field survey, it was observed that the colour of surface soil was red at many places within the premises of the closed industrial unit. Soil of black colour was found at 4 feet depth near the so called solar evaporation pond. It was found that black liquor was present at the depth of 5 feet near the site of solar evaporation pond which depicts that leftover industrial process waste is still lying there.

The report further observed that coloured water was pumped out of the tube well installed in the premises of the unit (Depth of the tube well 280 feet) even after continuous flow for 105 minutes. The report inferred that the groundwater quality exceeds the desirable limits of drinking water with respect to TDS, total alkalinity, total hardness, colour, calcium and iron. Therefore it is crystal clear that the environment got affected grossly by the lethargic attitude of the project proponents.

79. As we have concluded that the project proponents have not obtained consent for a considerable number of years and even during the period of consent they have not acted as per the terms contained therein and that there is a clear breach in respect of handling of hazardous waste, we have to decide about the relief which includes remediation process. The first step that requires to be done is the removal of hazardous

waste stored in the form of sludge created during the manufacturing process. Then comes the purification of water in the area surrounding the unit with all precautionary steps to be taken in the meantime.

80. The Central Pollution Control Board, in its report of August 2013, while assessing the ground water contamination near M/S Mahalaxmi Organochem Industry, namely the 5th respondent, arrived at a conclusion that the coloured ground water was observed from the deep tube well within the premises of the unit in the depth of 280 ft and the ground water quality exceeded the desirable limit of drinking water with respect to TDS, total alkalinity, total hardness, colour, calcium and iron, and suggested the following recommendations:

A. Ground water and soil sampling of erstwhile unit were conducted during monsoon season i.e July, 2013. There is need to carry out post monsoon monitoring preferably during November in order to have representative sample.

B. Immediate measures and controls

i. The leftover industrial process waste lying at the depth of 4ft should be removed and disposed to approved Treatment, Storage and Disposal facility.

ii. The voids filled with clayey soil.

iii. Use of land for any other purposes including cultivation should be avoided till remediation is completed.

iv. Access to the site be restricted with the help of fencing.

v. The leaching from site may be minimized by laying a compacted clay layer of 30- 60 cm depth with proper slope.

C. Remediation of contaminated site

The following methodology shall be followed for remediation of contaminated site of M/S Mahalaxmi Organochem Indusries, Nabha Road, Bhawanigarh, Sangrur District Punjab.

i. Preliminary site verification supported with data/ background information of contaminated site and development of conceptual plan with monitoring protocol for detailed site investigation.

ii. Undertaking detailed site investigation by conducting studies which include-

- drilling of sampling borewells in & around the site for assessment of soil &ground water quality
- conducting geo-technical studies comprising hydro- geological investigations

- delineate the boundaries of contaminated site and quantification of contaminated soil.
- Evaluation of the results to identify potential Sources, pathways and receptors

iii. Risk assessment study of the site based on socio- economic and environmental assessment of contaminated area by using appropriate risk assessment model.

iv. Identification of remediation goals/ objectives based on reduction of risk and also the intended future land use and selection of remedial option.

v. Design of remediation plan for the approved remediation option.

vi. Preparation of DPR for selective remediation based on the investigation details.

vii. Execution of actual remediation work.

viii. Assessment and validation of remediation work.

ix. Future monitoring of the remediated work.'

81. The Thapar Center for Industrial Research and Development (TCIRD) in its report dated 04-01-2011, concluded that there was (1) localised contamination of ground water through injection of about 28000 m3 of industrial wastewater at about 140-150 depth, (2) the

presence of about 10000 m3 industrial waste was found concentrated to different levels in the solar evaporation ponds, (3) heavy contamination of about 600 m^2 land with the thick black liquor of the solar evaporation ponds on the northern side (4) presence of iron oxide sludge in the north – eastern corner of the industrial site and buried organic waste on the south- western side of the solar evaporation pond and (5) contamination of top soil within the industrial premises specially with iron oxide and gypsum sludge, has opined that the contaminated water needs treatment atleast to remove the methanol extractable organic compounds. According to the said Center, the treatment can include

- raising pH to > 11 with lime to precipitate the colour imparting

methanol extractable organic matter

- settling/ clarification to remove the precipitated organic matter

- neutralizing the clarified water with sulphuric acid to about 7 pH.

82. It is also observed by the Center that the liquor and other waste present in the solar evaporation ponds may be treated as hazardous waste and lifted and transported as it is or after sufficient treatment like neutralization, concentration and filtration to TSDF for disposal. It is also stated that contamination of top soil within the premises of the unit,

specially with iron oxide and gypsum sludge may be taken care of by steps like:

- Avoid run on of the storm water from the surrounding areas through creating berns/barriers and diverting the storm water specially on the eastern and southern sides.

- Avoid flood irrigation of the land within the industrial unit premises and impose restrictions on the crops to be grown. Fiber and energy plantation crops may be most the appropriate. Food and fodder yielding crops may be avoided.

83. The CERD Instruments and Consultants, Noida, who appears to have been consulted by the PPCB to effect a study regarding the remediation of ground water contamination has submitted a report in the form of an offer in July 2012, stating that a detailed analysis would be carried out and inference would be drawn on the basis of scientific results. While explaining the data required for such study, the said consultant has also stated that the remediation work can be completed in a period of seven months as per the schedule annexed. They have also given the schedule of payments for undertaking the work stating that the expenses may be around Rs.29,89,000/ with Service Tax. Therefore it is clear from the above particulars that remediation is possible and the hazardous waste lying in the form of sludge in the premises of the unit must be removed. Further, the unit which is found to have not only committed breach but also caused

environmental disaster is liable to be penalised under the principle of 'Polluter Pays'.

84. It is to be noted that the 8th respondent, Tara Singh, who is a resident of the village was impleaded in the Hon'ble High Court on 17-08-2009 to assist the court. He is the purchaser of the land of the company, the 4th respondent through the 6th respondent on 28-02-2007. The Hon'ble High Court in the order dated 29-08-2011has directed the 8th respondent to deposit the expenses for restoration of damages. The said 8th respondent filed C.M.P. No.12551/2011for discharging him from the liability, as he was a bonafide purchaser. By an order dated 20-12-2011, the Hon'ble High Court, while discharging the said 8th respondent, directed the 4th to 7th respondents to deposit the said amount. Therefore, it is clear that the High Court has also found him as a bonafide purchaser. Therefore, we hold that the said 8th respondent cannot be made responsible for the pollution caused by the other respondents.

85. The 9th respondent Shri. Gurcharan Singh Matharu who was impleaded subsequently, was a director of Matharu Steel Private Ltd, the 4th respondent, till 2003. He also acted as a director of Matharu Chemical Industries since 1991 till 2003. Even though he takes a stand that he sold his rights in the company to the 6th respondent under an agreement dated 28-03-2003 and therefore the vendee should take up the responsibility, in our view, he cannot disown his obligation by merely transferring his interest in the unit. The respondents

who have polluted the ground water eversince the date of their industrial activities from 1991 till 2005 and even now continuously, as it has been found by the experts that traces of phenolic compounds, carbonate,sulphate and nitrate are found in the lands and water around the 5th respondent unit, are liable to compensate under 'Polluter pays 'principle. Taking note of the fact that the pollution caused has serious implication on the living condition of the people and that the process of remediation will take some more years, we are of the view that they should be directed to pay atleast an amount of Rs. Two crores to be used for providing safe drinking water and better solid waste management facilities to the people of the petitioner's villages.

86. Accordingly, we pass the following order:

1. The Application No. 35/2013 stands allowed.
2. It is declared that the Respondent 4 , 5 units also represented by Respondent 6 & 7 as the directors of the 4th and 5th respondent company and respondent 9, by their industrial activities have polluted the air, land and water including the ground water and produced and stored hazardous waste unauthorisedly and without any proper disposal.
3. The Respondent 4 to 7 and 9 shall remove all hazardous waste still lying in the premises of M/S Mahalaxmi Orgchem Industries under the joint supervision of the Central Pollution Control Board and the Punjab State

Pollution Control Board at their cost and within a period of three months from today. To effect such speedy removal both the Boards shall do all necessary assistance, guidance both expertise and otherwise and shall also be entitled to obtain any further opinion/ opinions at the cost of the 5th respondent and its Directors.

4. The Respondent 4 to 7 and 9 shall effect remediation of water contamination in the premises of the unit and all the surrounding areas polluted by the activities of the unit at their cost. This shall be done under the joint supervision of the CPCB and PPCB, who shall suggest the suitable method through appropriate agency/agencies. The steps shall include prevention of agricultural activities in the surrounding area as suggested by the Boards and all other precautionary methods. The said process shall be completed in a period of eight months from today.
5. The CPCB and PPCB shall file periodical report about the progress in the Registry of the Principal Bench of the NGT, once in a month commencing from 01- 11- 2015.
6. That apart, the Respondents 4 and 5 along with their Directors Respondent no. 6 and 7 and 9 shall pay an amount of Rs. Two crores under the principles of 'Polluter Pays' in the following proportion i.e Respondent no. 4 along with all its Directors including Respondent no. 6

and 7 to the extent of 40% jointly, Respondent no. 5 and all its Directors to the extent of 30% jointly and the remaining 30% by the 9th Respondent. The said amount shall be deposited within 8 weeks from today with the Principal Secretary, Ministry Environment, State of Punjab, who shall keep the said amount in a separate account and spend for providing safe drinking water and better solid waste management facilities to the people of Village Toori, BaladKalan and BaladKooti, Tehsil Bhawanigarh, District Sangrur with prior approval of the N.G.T.

7. The Respondents 4 to 7 and 9 shall be liable to pay cost of Rs. 25000/ to be payable to the learned counsel for the applicant/Amicus and another amount of Rs.50000/ to the applicants as cost.
8. M.A. No. 21 of 2014 does not survive as the main application No. 35/2013 (THC) has been finally disposed of.

Justice Dr. P. Jyothimani
Judicial Member

Justice U. D. Salvi
Judicial Member

Prof. A. R. Yousuf
Expert Member

Mr. Bikram Singh Sajwan
Expert Member

New Delhi
23rd September, 2015

Item No. 06 (Court No. 1)

BEFORE THE NATIONAL GREEN TRIBUNAL
PRINCIPAL BENCH, NEW DELHI

(By Video Conferencing)

Original Application No. 169/2021

H. C. Arora Applicant

Versus

State of Punjab & Ors. Respondent(s)

Date of hearing: 31.03.2022

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

Applicant: Mr. H.C. Arora, Applicant in Person

Respondent: Mr. Vikrant Pachnanda, Advocate for CPCB

ORDER

1. Grievance in this application is against failure of the State authorities to take remedial measures against contamination of ground water in village Aloarakh, Block Bhiwanigarh, District Sangrur. The applicant has referred to the media report dated 08.07.2021 in Hindustan Times titled '**Sangrur tubewell spews out polluted water; PPCB blames dismantled factory'**. It is stated that the ground water is contaminated and colored water is coming out of the tubewells which has potential for damage to the public health. The problem has been existing for more than 10 years. According to the State PCB, a private factory which was closed 15 years ago, is responsible for contamination. It is also reported that this Tribunal had imposed compensation of Rs. 2

Crore on the said factory for restoration of the environment but the amount was not recovered.

2. The matter was earlier considered on 20.07.2020 and having regard to the averments in the application, the Tribunal constituted a five Member joint Committee comprising CPCB, Regional Officer, MoEF&CC, Chandigarh, State PCB, a nominee of Secretary Environment Department, Punjab, and District Magistrate, Sangrur to visit the site, interact with the stake holders, assess the ground situation and recommend the measures required to be taken. The Committee was to ascertain the number of tube wells discharging coloured water, depth of such wells, aquifer status in terms of movement and extent of contamination, characteristics of contaminated water with reference to effluent sludge disposed by the industry in question - dyes and dye intermediate, effect on agricultural crops, bio-magnification in agro products and suggest short and long-term basis considering agronomy and public health, remediation plan, cost of such remediation. A copy of the report forwarded to the Chief Secretary, Punjab for ensuring remedial measures, based on the facts found.

3. Accordingly, a report has been filed by the joint Committee on 30.03.2022 after undertaking visit to the site and studying the impact on agriculture crops and products. The Committee has suggested short term and long term remediation plan. Relevant extracts from the report are quoted below:-

> "***2.2.1. Effect on the Quality of Ground Water w.r.t no. of Tube-wells discharging Coloured Water; Depth, Aquifer Status and Extent of Contamination:***

The site visit by the Joint Committee for determining the affected area was carried out on 01/09/2021. Interaction with the local farmers were also held regarding impact of coloured water on the yield and quality of the produce in their agricultural fields. They were satisfied with the yield of crops, but were not aware of any impact of using the contaminated ground water on the quality of fodder, grains and also on human & animal health. The sampling locations were decided in consultation with CGWB Expert.

The ground water samples were collected jointly by the Officers of CGWB and PPCB in September, 2021 from 22 locations including shallow hand pumps and deep bore-wells, for analysis of water quality parameters and pollution parameters, respectively. The CGWB also carried out a survey of the area to establish the affected area and aquifer.

The Joint Committee got the analysis of ground water samples for 15 major parameters including TOC from CGWB laboratory, for pollution parameters i.e., Chemical Oxygen Demand (COD), Biological Oxygen Demand (BOD), Sodium Absorption Ratio (SAR) & Phenolic Compounds from PPCB laboratory and heavy metals from Punjab Biotechnology Incubator (PBTI), Mohali, since the equipment of CGWB laboratory was out of order.

The important parameters considered by Joint Committee for identification of contamination in the tube-wells & shallow hand pumps included Total Organic Carbon (TOC), Electrical Conductivity, Chemical Oxygen Demand (COD), Biological Oxygen Demand (BOD), Nitrate and Heavy metals. The concentration of all above parameters was compared with the concentration given in the BIS Standards IS 10500:2012 prescribed for drinking water quality. Ground Water collected from five locations out of total 22 locations were found reddish in colour, indicating contamination. All these 5 tubewells were found having high Total Organic Carbon (TOC), thereby, further indicating the ground water contamination with organic compounds/industrial waste water, though there is no limit prescribed for TOC in BIS standards. Two tubewells out of the aforesaid five tubewells, were also found having significant concentration of Chemical Oxygen Demand (COD) and Biochemical Oxygen Demand (BOD), whereas, the rest three tubewells were found having high nitrate concentration, hence, confirming contamination of ground water in these five tube-wells. Six tubewells were also found having high value of Electrical conductivity, thereby, indicating contamination within the vicinity of closed industrial site.

With regard to depth and aquifer affected with the contaminants, hydro-geology and concentration of various contaminants were considered for arriving at conclusion by CGWB Expert. The sampling has been done from the tube-wells varying between shallow (46 m below ground level) to very deep (183 m below ground level). It has been observed that the tube-wells affected by contamination are having depth of about 130 m below ground level in the vicinity of Industry. As the area is having single aquifer system upto a depth of about 200 m with a thin clay layer at around 110 m to 120 m depth bgl. Considering the general depth of the most of the tube-wells and hydro-geological conditions and aquifer disposition, it can be inferred that aquifers upto a depth of

130 m below ground level are contaminated. Considering the average water levels of about 40 m below ground level about 80 to 90 in thick aquifer zones have been contaminated. The detailed report of CGWB expert alongwith characteristics of contaminated/ground water is attached as Annexure-2.

Since, the contamination was found only in five tube-wells in the vicinity of the site under reference, it was decided by the Joint Committee to further investigate the matter, to establish the root cause of contamination in the limited number of tube-wells. Accordingly, the excavation was carried out at 04 random locations at site under study, with JCB upto a depth of about 8 to 10 feet and the layers of blackish red sludge, blackish slurry, HDPE sheets were observed in excavated pits at different levels, clearly indicating unscientific dumping of hazardous waste done by the industry during its operations/dismantling of the unit, which had resulted into leaching of contaminants into the ground water, thereby causing contamination of the aquifer over a period of time. The contamination of limited number of tube-wells in the vicinity of the site under study may be attributed to continuous pumping of ground water from the nearest tubewells, thereby limiting the transfer of contamination to other tube-wells located downstream of the site. Thus, if the pumping of ground water from these nearest tubewells is discontinued, the contamination may further spread to other tube-wells in the area.

2.2.2. Effect on agriculture Crops and Bio-magnification in agro-products:

To determine the accumulation of contaminants in the soil of the agricultural fields which are being irrigated with reddish colored water, soil samples from the six locations of the study area were drawn by the Joint Committee and got analysed for various parameters from the Punjab Biotechnology Incubator Laboratory, Mohali. The results of analysis of soil samples are summarized in Table 1.

Table 1: Analysis report w.r.t Samples of Soils irrigated with contaminated ground water

S. No.	*Parameters*	*Results of Analysis*						*Target Value of Soil, mg/Kg, WHO*
		Sh. Kulwinder Singh S/o Sh. Jang Singh, Village Aloarkh (In front of M/s Matharu Chemical)	Village Aloarkh (Dept of Tubewell)- Sh. Amrit• Pal Singh S/o Sh. Rajwant Singh	Village Aloarkh (Sh. Amrit Pal Singh S/o Sh, Rajwant Singh)	Village Aloarkh (Tubewell of Farmer Sh. Kulwinder Singh S/o Balvir Singh)	Kulwinder Singh S/o Gurnam Singh, Village Majhi, Bhawanigarh	Village Aloarkh (From Tubewell of Sh, Dilbagh Singh S/o Jagar Singh)	
		30.28238, 76.07803	3028166 , 78 07773	30.2806, 76 flP')	30_2834, 78075	30 28341, 76 0798	30 2791, 76 07623	
1	pH	6.86	704	734	7.23	7 18	7.24	
2	Total Organic Carbon (TOC), %	055	037	049	0.71	044	0.48	
3	Total Kjeldahi Nitrogen (TKN),	813	925	1065	897	841	1149	

	mg/Kg							
4	Phosphorus, mg/Kg	8 3	92	134	118	148	136	
5	Cation Exchange Capacity, Meg/100 g	214	6.3	6.3	9.8	3.9	7 6	
6	Exchangable Sodium, mg/Kg	115	19	115	16	19	18	
7	Exchangable Potassium, mg/Kg	51	35	108	437	204	128	
8	Exchangable Calcium, mg/Kg	561	701	1101	1522	420	1161	
9	Exchangable Magnesium, mg/Kg	461	274	109	349	250	160	
10	Cyanide (as CN), mg/Kg	BDL (MDL20)	BOL (MDL20)	BDL (MDL20)	BDL (MDL20)	BDL (MDL20)	BDL (MDL20)	
11	Phenolic Compounds, ma/Ka	BDL (MDL20)	BDL (MDL20)	BDL (MDL20)	BDL (MDL20)	BDL (MDL20)	BDL (MDL20)	
12	Potassium (K20), mg/Kg	109	60	172	509	245	178	
13	Magnesium (as Mg), mg/Kg	510	291	146	388	291	170	
14	Znc (as Zn), mg/Kg	534	376	393	743	387	46	50
15	Manganese (as Mn), mg/Kg	966	161	236	311	110	247	
16	Iron (as Fe), %	1 2	0 97	1 25	1.7	1 07	1.3	
17	Copper (as Cu), mg/Kg	10,9	7 9	12	16.2	7	9 5	36
18	Molybdenum (as Mo), mg/Kg	BDL (MDL 0,5)	BDL (MDL 0,5)	BDL (MDL0,5)	BDL (MDL 0,5)	BDL (MDL 0,5)	BDL (MDL 0,5)	
19	Cadmium (as Cd), mg/Kg	BDL (MDL 0 5)	BDL (MDL 0.5)	BDL (MDL0,5)	BDL (MDL 0,5)	BDL (MDL 0, 5)	BDL (MDL 0,5)	0.8
20	Chromium (as Cr), mg/Kg	6	42	6.6	134	34	81	100
21	Nickel (Ni),	124	99	13,5	20.7	9.5	14	35
22	Lead (Pb), mg/Kg	5	3 7	5 2	7 1	3.5	5	85
23	Mercury (as Hg), mg/Kg	BDL (MDL 0.5)	BDL (MDL 0 5)	BDL (MDL 05)	8DL (MDL 05)	BDL (MDL 05)	BDL (MDL 0,5)	
24	Arsenic (As), DuilKa	2 8	2 6	3 5	4.3	1 9	3 3	
25	Selenium (as Se), mg/Kg	BDL (MDL 0,5)	BDL (MDL 0 5)	BDL (MDL0,5)	BDL (MDL 0.5)	BDL (MDL 0 5)	BDL (MDL 0.5)	

The analysis of soil samples drawn from the two agricultural fields irrigated with reddish coloured ground water indicates that the concentration of zinc is on much higher side i.e. 53.4 mg/Kg and 74.3 mg/Kg, respectively, in comparison to the target values in soil i.e. 50 mg/Kg specified by WHO. It was informed by the PPCB Member that Zinc is added as supplement in the fields by the farmers for paddy crop, which might be the reason for its higher concentration in the soil despite having lower concentration in the ground water. In view of this, a detailed mass balance calculations for Zn was done by the Joint Committee, which indicated that total load of Zn in the soil is much higher than the total amount of Zn added in the soil as supplement, indicating that the source of higher concentration of Zn is other than supplementary addition of Zn. ***The upward capillary mass transfer of contaminants from the unscientifically dumped hazardous waste and untreated industrial waste water injected upto a depth of 150-160 ft may be the probable reason for the presence of higher concentration.*** *The concentration of other parameters i.e. copper, chromium, cadmium, nickel & lead is within the target values in soil i.e. 36, 100, 0.8, 35 & 85 mg/kg, respectively.*

The samples of paddy plant and seed grown on the soils were also collected by the Joint Committee for analysis of various parameters to study effect on agriculture crops and the bio-magnification of contaminants in agro-products. The results of analysis are presented in ***Table 2, Table 3 and Table 4.*** *Out of various parameters tested*

in the Crop (Paddy) and Grain (Edible Part), Zinc was found to be in much higher concentration both in crop and grain (edible part). Zinc was found to be varying between 3.9 to 14.9 mg/Kg in Crop (Non edible part) against the WHO target value of 0.6 mg/kg. Similarly, it was found to be varying between 12.5 to 19.1 mg/Kg in the grain (edible part) against WHO target value of 0.6 mg/Kg. To summarize, Zinc was observed to be varying between 16.4 to 33.9 mg/Kg in the whole plant against the target value of 0.6 mg/Kg. In general, heavy metal contamination is the first level indicator of food safety and quality. High level of TOC observed in the ground water might be resulting in an increase in low molecular weight organic complexing molecules, which as per literature, may serve the carriers of heavy metals, resulting in increased uptake of heavy metals. Zn is an essential nutrient for human health, but at the same time, it can be toxic in higher concentrations leading to various health complications including reduction in immune function and levels of high density lipo-proteins besides affecting the absorption of copper and iron.

Table 2: Analysis Report w.r.t Samples of Crop (Paddy) produced in the fields irrigated with contaminated water.

S. No.	*Parameters*	*Results of Analysis*						*Target Value of Plant, mg/Kg, WHO*
		Sh Kulwinder Singh, S/o Sh. Jang Singh, Village Aloarkh (in front of M/s. Matharu Chemical)	Village Aloarkh (Dept of Tubewell)- Sh. Amrit Pal Singh S/o Sh Rajwant Singh	Village Aloarkh (Sh. Amrit Pal Singh S/o Sh. Rajwant Singh)	Village Aloarkh (Tubewell of Farmer Sh Kulwin der Singh Edo Balvir Singh)	Kulwinder Singh S/o Gurnam Singh, Village Majhi, Bhawanigarh	Village Aloarkh (From Tubewell of Sh Dilbagh Singh S/o Jagar Singh)	
		30.28238. 76.07603	30 28166. 78.07773	30.2806, 76.0772	30.2834, 76.075	3020341, 78.0796	30 2781, 76,07623	
1	Cyanide (as C)4), mg/Kg	BDL (MDL: 0.1)	BDL (MDL: 0.1)	BDL (MDL: 0.1)	BDL (MDL: 0 1)	BDL (MDL: 0.1)	BDL (MDL: 0.1)	
2	Magnesium (as Mg), mg/Kg	0.11	1072	727	897	408	1130	
3	Zinc (as Zn), mg/Kg	3,9	3 9	7 5	7 8	6.7	14.9	0.6
4	Manganese (as Mn), ma/Ks	36 5	29 4	42,5	35	8.1	52 7	
5	Iron (as Fe), %	1341	99	31,7	14.97	109	29.17	
6	Copper (as Cu), mg/Kg	0,3	0.2	0 5	0.5	1 4	1.4	10
7	Molybdenum (as Mo), Ma/KR	BDL (MDL: 0.2)	BDL (MDL: 0.2)	BDL (MDL: 0 2)	BDL (MDL: 0.2)	BDL (MDL: 0 2)	BDL (MDL: 0.2)	
8	Cadmium (as Cd), mg/Kg	BDL (MDL: 0.2)	BDL (MDL: 0.2)	BDL (MDL: 0 2)	BDL (MDL: 0.2)	BDL (MDL: 0.2)	BDL (MDL: 0.2)	0 02
9	Chromium (as Cr), mg/Kg	BDL (MDL: 0.2)	BDL (MDL: 0 2)	BDL (MDL: 0 2)	BDL (MDL: 0 2)	BDL (MDL: 0 2)	BDL (MDL: 0 2)	1.3
10	Nickel (Ni), mg/Kg	BDL (MDL: 0.2)	BDL (MDL: 0.2)	BDL (MDL: 0 2)	BDL (MDL: 0.2)	BDL (MDL: 0 2)	BDL (MDL: 0 2)	10
11	Lead (Pb), mg/Kg	BDL (MDL: 0.2)	BDL (MDL: 0.2)	BDL (MDL: 0.2)	BDL (MDL: 0 2)	BDL (MDL: 0.2)	BDL (MDL: 0 2)	2
12	Mercury (as Hg), mg/Kg	BDL (MDL: 0 2)	BDL (MDL: 0 2)	BDL (MDL: 0.2)	BDL (MDL: 0.2)	BDL (MDL: 0.2)	BDL (MDL: 0.2)	
13	Arsenic (As), mg/Kg	BDL (MDL: 0.2)	BDL (MDL: 0 2)	BDL (MDL: 0 2)	BDL (MDL: 0.2)	BDL (MDL: 0 2)	BDL (MDL: 0 2)	
14	Selenium (aa Se), mg/Kg	BDL (MDL: 0.2)	BDL (MDL: 0.2)	BDL (MDL: 0 2)	BDL (MDL: 0.2)	BDL (MDL: 0 2)	BDL (MDL: 0 2)	

Table 3: Analysis Report w.r.t Samples of Grain (Edible Part) produced in the fields irrigated with contaminated water.

S. No.	*Parameters*	*Results of Analysis*						*Target Value of Plant, mg/Kg, WHO*
		Sh Kulwinder Singh, S/o Sh. Jang Singh, Village Aloarkh (in front of M/s. Matharu Chemical)	Village Aloarkh (Dept of Tubewell)- Sh. Amrit Pal Singh S/o Sh Rajwant Singh	Village Aloarkh (Sh. Amrit Pal Singh S/o Sh. Rajwant Singh)	Village Aloarkh (Tubewell of Farmer Sh Kulwin der Singh Edo Balvir Singh)	Kulwinder Singh S/o Gurnam Singh, Village Majhi, Bhawanigarh	Village Aloarkh (From Tubewell of Sh Dilbagh Singh S/o Jagar Singh)	
		30 28238, 76.07803	3028166, 78.07773	30 2806, 76.0772	30,2834, 76.075	30 28341, 76.0798	30.2791, 76.07623	
1	Cyanide (as CN), mg/Kg	BDL (MDL: 0.1)	BDL (MDL: 0.1)	BDL (MDL: 0.1)	BDL (MDL: 0.1)	BDL (MDL: 0.1)	BDL (MDL: 0.1)	
2	Magnesium (as Mg), mg/Kg	873	732	781	782	735	855	
3	lint (as Zn), mg/Kg	12.5	19.1	17.9	16.4	15.6	19	0.6
4	Manganese (as Mn), rn g/Kg	13.8	26.3	23.2	22.6	17.4	30.6	
5	Iron (as Fe), %	26.3	29.6	24.5	23.9	511	28.2	
6	Copper (as Cu), mg/Kg	3.3	4.2	3.8	3.5	4.7	6.7	10
7	Molybdenum (as Mo), mg/Kg	BDL (MDL: 0.1)	BDL (MDL: 0.1)	BDL (MDL: 0.1)	BDL (MDL: 0.1)	BDL (MDL: 0.1)	BDL (MDL: 0.1)	
8	Cadmium (as Cd), mg/Kg	BDL (MDL: 0.1)	BDL (MDL: 0.1)	BDL (MDL: 0.1)	BDL (MDL: 0.1)	BDL (MDL: 0.1)	BDL (MDL: 0.1)	0.02
9	Chromium (as Cr), m g/Kg	0.5	0.5	0.4	04	0.9	0.3	1.3
10	Nickel (Ni), mg/Kg	BDL (MDL: 0.1)	BDL (MDL: 0.1)	BDL (MDL: 0.1)	BDL (MDL: 0.1)	BDL (MDL: 0.1)	BDL (MDL: 0.1)	10
11	Lead (Pb), mg/Kg	BDL (MDL: 0.1)	BDL (MDL: 0.1)	BDL (MDL: 0.1)	BDL (MDL: 0.1)	BDL (MDL: 0.1)	BDL (MDL: 0.1)	2
12	Mercury (as Hg), mg/Kg	BDL (MDL: 0.1)	BDL (MDL: 0.1)	BDL (MDL: 0.1)	BDL (MDL: 0.1)	BDL (MDL: 0.1)	BDL (MDL: 0.1)	
13	Arsenic (As), mg/Kg	BDL (MDL: 0.1)	BDL (MDL: 0 1)	BDL (MDL: 0.1)	BDL (MDL: 0.1)	BDL (MDL: 0.1)	BDL (MDL: 0.1)	
14	Selenium (as Se), M g/Kg	BDL (MDL: 0.1)	BDL (MDL: 0.1)	BDL (MDL: 0.1)	BDL (MDL: 0.1)	BDL (MDL: 0.1)	BDL (MDL: 0.1)	

Table 4: Analysis Report w.r.t Samples of Crop and Edible Part (Combined) produced in the fields irrigated with contaminated water.

S. No.	*Parameters*	*Results of Analysis*																		*Target Value of Plant, mg/Kg, WHO*
		Sh Kulwinder Singh, S/o Sh. Jang Singh, Village Aloarkh (in front of M/s. Matharu Chemical)			*Village Aloarkh (Dept of Tubewell)- Sh. Amrit Pal Singh S/o Sh Rajwant Singh*			*Village Aloarkh (Sh. Amrit Pal Singh S/o Sh. Rajwant Singh)*			*Village Aloarkh (Tubewell of Farmer Sh Kulwin der Singh Edo Balvir Singh)*			*Kulwinder Singh S/o Gurnam Singh, Village Majhi, Bhawanigarh*			*Village Aloarkh (From Tubewell of Sh Dilbagh Singh S/o Jagar Singh)*			
		Crop	*Grain*	*Whole Plant*	*Crop*	*Grain*	*Whole Plant*	*Crop*	*Grain*	*Whole Plant*	*Crop*	*Grain*	*Whole Plant*	*Crop*	*Grain*	*Whole Plant*	*Crop*	*Grain*	*Whole Plant*	
1	Cyanide (as CN), mg/Kg	BDL (MDL: 0.1)	BDL (MDL: 0.1)		BDL (MDL: 0 1)	BDL (MDL: 0 1)		BDL (MDL: 0.1)	IBDL (MDL: 0 1)		BDL (MDL: 0 1)	BDL (MDL: 0.1)		BDL (MDL: 0 1)	BDL (MDL: 0 1)		BDL (MDL: 0.1)	BDL (MDL: 0.1)		
2	Magnesium (as Mg), mg/Kg	0.11	873	873 11	1072	732	1804	727	781	1508	897	782	1679	408	735	1143	1130	855	1985	
3	lint (as Zn), mg/Kg	39	12.5	16.4	3.9	19 1	23	75	17 9	254	78	16 4	242	87	15.6	24,3	14 9	19	33.9	0.6
4	Manganese (as Mn), rn g/Kg	36 5	13 8	50 3	29.4	26 3	55 7	42 5	23 2	65 7	35	22 6	57 6	8 1	17 4	25.5	52 7	30 6	83.3	
5	Iron (as Fe), %	13 41	26.3	39.71	29 6	39 5	31 7	24 5	56 2	14 97	23 9	38 87	10 9	511	521 9	29 17	28 2	57.37		
6	Copper (as Cu), mg/Kg	0.3	3.3	3.6	0.2	4 2	4.4	0.5	3 8	4.3	0 5	3 5	4	1 4	4 7	6 1	1 4	6,7	8.1	10
7	Molybdenum (as Mo), mg/Kg	BDL (MDL: 0 2)	BDL (MDL: 0 1)		BDL (MDL: 0 2)	BDL (MDL: 0 1)		BDL (MDL: 0 2)	BDL (MDL: 0 I)		BDL (MDL:0.2)	BDL (MDL: 0 1)		BDL (MDL:0.2)	BDL (MDL: 0 I)		BDL (MDL:0.2)	13DL (MDL: 0.1)		
8	Cadmium (as Cd), mg/Kg	BDL (MDL: 0 2)	BDL (MDL: 0.1)		BDL (MDL: 0.2)	;BDL (MDL: 0 1)		BDL (MDL: 0.2)	BDL (MDL: 0.1)		BDL (MDL: 0 2)	BDL (MDL: 0.1)		BDL (MDL: 0.2)	BDL (MDL: 0 1)		BDL (MDL: 0.2)	BDL (MDL: 0.1)		0.02
9	Chromium (as Cr), m g/Kg	BDL (MDL: 0.2)	'0.5		BDL (MDL: 0.2)	0 5		BDL (MDL: 0 2)	0.4		BDL (MDL: 0.2)	0.4		BDL (MDL: 0.2)	0 9		BDL (MDL: 0.2)	0 3		1.3
10	Nickel (Ni), mg/Kg	BDL (MDL: 0 2)	BDL (MDL: 0 1)		BDL (MDL: 0 2)	BDL (MDL: 0 1)		BDL (MDL: 0 2)	BDL (MDL: 0.1)		BDL (MDL: 0 2)	BDL (MDL: 0_1)		BDL (MDL: 0 2)	BDL (MDL: 0 1)		BDL (MDL:0.2)	BDL (MDL: 0 1)		10
11	Lead (Pb), mg/Kg	BDL (MDL: 0.2)	BDL (MDL: 0.1)		BDL (MDL: 0 2)	BDL (MDL: 0.1)		BDL (MDL:02)	BDL (MDL: 0.1)		BDL (MDL: 0 2)	BDL (MDL: 0 1)		BDL (MDL:02)	BDL (MDL: 0.1)		BDL (MDL:0.2)	BDL (MDL: 0.1)		2
12	Mercury (as Hg), mg/Kg	BDL (MDL: 0.2)	BDL (MDL: 0 1)		BDL (MDL: 0.2)	BDL (MDL: 0 1)		BDL (MDL: 0.2)	BDL (MDL: 0 1)		BDL (MDL: 0.2)	BDL (MDL: 0.1)		BDL (MDL: 0 2)	BDL (MDL: 0,1)		8DL (MDL: 0.2)	BDL (MDL: 0 1)		
13	Arsenic (As), mg/Kg	BDL (MDL: 0 2)	BDL (MDL: 0.1)		BDL (MDL: 0.2)	BDL (MDL: 0.1)		BDL (MDL: 0.2)	13DL (MDL: 0 1)		BDL (MDL: 0.2)	BDL (MDL: 03)		BDL (MDL: 0.2)	BDL (MDL: 0,1)		BDL (MDL: 0.2)	BDL (MDL: 0.1)		
14	Selenium (as Se), M g/Kg	BDL (MDL: 0 2)	BDL (MDL: 0.1))	BDL (MDL: 0 2)	BDL MDL:0.1		BDL (MDL:02)	BDL (MDL: 0 1)		BDL (M)L: 0,2)	BDL (MDL:01)		SOL (MDL: 0 2)	BDL (MDL:0.l)		BDL (MDL:02)	BDL (MDL: 0.1)			

The health risks posed by contaminated ground water were assessed by Joint Committee using different approaches viz. Transfer Factor (TF), Daily Intake of Metal (DIM) and Health Risk Index (HRI) w.r.t heavy metals viz. Zinc (Zn), Manganese (Mn), Copper ***(Cu)*** *and Chromium* ***(Cr).*** *The results are presented in* ***Table 5:***

Table 5: Results of Analysis w.r.t Transfer Factor, Daily Intake of metals and Health Risk Index w.r.t heavy metals viz. Zinc, Manganese, Copper and Chromium observed in Soil.

S. No.	*Parameters*	*Results of Analysis*						*Target Value of Plant, mg/Kg, WHO*
		Sh Kulwinder Singh, S/o Sh. Jang Singh, Village Aloarkh (in front of M/s. Matharu Chemical)	Village Aloarkh (Dept of Tubewell)- Sh. Amrit Pal Singh S/o Sh Rajwant Singh	Village Aloarkh (Sh. Amrit Pal Singh S/o Sh. Rajwant Singh)	Village Aloarkh (Tubewell of Farmer Sh Kulwin der Singh Edo Balvir Singh)	Kulwinder Singh S/o Gurnam Singh, Village Majhi, Bhawanigarh	Village Aloarkh (From Tubewell of Sh Dilbagh Singh S/o Jagar Singh)	
		30 28238, 76.07803	3028166, 78.07773	30 2806, 76.0772	30,2834, 76.075	30 28341, 76.0798	30.2791, 76.07623	
A	**Soil**							
	Zinc (as Zn), mg/Kg	53.4	37 6	39.3	74.3	38.7	46	50
	Manganese (as Mn), mg/Kg	966	161	236	311	110	247	
	Copper (as Cu), mg/Kg	10 9	7.9	12	16 2	7	9.5	36
	Chromium (as Cr), mg/Kg	6	4.2	6.6	13 4	3.4	8.1	100
B	**Grain**							
	Zinc (as Zn), mg/Kg	12.5	19.1	17.9	16.4	15.6	19	0.6
	Manganese (as Mn), mg/Kg	13.8	26.3	23.2	22.6	17.4	30.6	
	Iron (as Fe), %	26.3	298	24.5	23.9	511	28.2	
	Copper (as Cu), mg/Kg	3.3	4.2	3.8	3.5	4.7	6.7	10
	Chromium (as Cr), mg/Kg	0.5	0.5	0.4	0.4	0.9	0.3	1.3
C	**Transfer Factor (TF: C plant/C soil)**							
	Zinc (as Zn)	0.23	0.51	0.46	0.22	0.40	0.41	
	Manganese (as Mn)	0.01	0.16	0.10	0.07	0.16	0.12	
	Copper (as Cu)	0.30	0.53	0.32	0.22	0.67	071	
	Chromium (as Cr)	0.08	0.12	0.06	003	0.26	0.04	
	DIM							
	Zinc (as Zn)	0.11	0,16	0.15	0.14	0.13	0.16	
	Manganese (as Mn)	0.12	0.22	0.20	0,19	0.15	0.26	
	Copper (as Cu)	0.30	0.53	0.03	0.22	0.67	0.71	
	Chromium as Cr)	0.004	0.004	0.003	0.003	0.008	0.003	
	Health Risk Index (HRI); HRI: DIM/RFD							
	Zinc (as Zn)	0.35	0.54	0.50	0.46	0.44	0.54	
	Manganese (as Mn)	0.83	1.59	140	1.37	1.05	1.85	
	Copper (as Cu)	0.70	0.89	0 80	0.74	0.99	1.42	
	Chromium (as Cr)	1.41	141	1.13	1.13	0.54	0.85	

The results of analysis w.r.t bio-accumulation of Zn, Mn, Cu and Cr from soil to crop i.e. Transfer factor varies between 0.23-0.51,0.01-0.16, 0.20-0.71 and 0.003-0.008 respectively, in the samples collected from 06 locations, clearly indicating the higher transfer of heavy metals at some locations in comparison to others. The Joint Committee determined transfer factor for only one crop i.e. paddy, which was found to be grown during the study period (September-November 2021) and it may vary for other crops and vegetable if grown in the same area irrigated with contaminated ground water, depending on the seasonal variation w.r.t temperature., humidity and absorbing capacity of a particular crop.

Health Risk Index was also determined by Joint Committee, considering the daily intake of grains as 410g/person/day and vegetables & fruits @ 450 g/person/day. A factor of 0.085 was used to convert the fresh weight of vegetable/fruits to dry weight. Average body weight was considered as 53 Kg, for determining the Health Risk Index (HRI). The Oral Reference Dose of Zn, Mn, Cu and Cr was taken as 0.30 mg/kg/day, 0.14 mg/kg/day, 0.04 mg/kg/day and 0.003 mg/kg/day (Ref: FAO/WHO; Codex Alimentarious Commission, 2013; IRIS). The Health Risk Index (HRI) was found to be varying from 0.35 - 0.54, 0.83 - 1.85, 0.70 - 1.42 and 0.85 - 2.54 for Zn, Mn, Cu and Cr respectively, in the samples drawn by the Joint Committee from 06 locations. The values of HRI less than 1 (< 1) is considered safe for intake of food/vegetables. However, the values in the present case were found to be > 1 for Mn (04 Locations), Cu (01 Location) and Cr (05 Locations) in the area under reference, this may pose health risk over a passage of time, if the remediation is not done w.r.t ground water contamination caused due to direct injection of the untreated industrial effluent and the hazardous waste dumped unscientifically at the industrial site.

2.2.3 Findings of TCIRD Report and visit of Joint Committee

The findings w.r.t. contamination of groundwater made by TCIRD in its report are reproduced

as under:

a) Percolation and leaching of contaminants from the onsite solid/hazardous waste storage and disposal and from the solar evaporation ponds. Solar Evaporation ponds of 3600 m^2 spread in about 4400 m^2 area were used for disposal of waste waters by the industry. Some portion of these ponds (800 m^2) was apparently used for burying the disposal of solid waste (gypsum sludge, iron oxide sludge and incineration ash) packed in gunny bags. The Solar Evaporation Ponds are still holding the disposed waste water in form of thick black liquor from about 6 ft depth to 15 ft depth. This liquor layer is confined at the top by a hard, water-soluble crust layer and a HDPE membrane, and by a concrete lining at the bottom. Volume of this liquid amounts to 10,000 m3 and is percolating both vertically ***and*** *laterally into the ground* ***polluting the aquifer.***

b) Direct injection of wastewater into the groundwater at 150ft depth (liquor discarded in the H-acid manufacturing step 11

after filtration recovery of the sodium salt of H-acid appears to be the wastewater discharged into the groundwater through direct injection).

TCIRD concluded that the contribution to the ground water pollution by the percolation/leaching from the solid /hazardous waste storage tanks and from the solar evaporation ponds is relatively lesser and the ground water pollution is mainly from the direct injection of wastewater into the groundwater (which was apparently discontinued in 2005). Total salt level in the top layer of the groundwater (1435mg /L at 105ft depth) is higher than that at 120ft depth (1 I 33mg/L). This could be because of the contributions through percolation and leaching from the overburden soil, the solar evaporation ponds and from the solid/hazardous waste storage. Beyond 120ft depth, the total salt levels are increasing up to 140ft depth (to 3178mg/L) and then decreasing (2012mg/L at 160ft). The latter might be from the direct injection of the wastewater might be at 140 — 150ft depth.

On the basis of the findings of TICRD in its report and the observations made by the Joint Committee of the site under consideration, a site visit was again carried out on 30.11.2021 and 4 locations were selected based on the information obtained from local residents. At the said locations, excavation was carried out with JCB upto a depth of about 8 to 10 feet. During excavation, a layer of blackish sludge, slurry, HDPE sheets, pits containing blackish slurry were observed at different levels in the excavated site, clearly indicating unscientific dumping of hazardous waste, which is resulting into leachting of contaminants and thus causing contamination of the aquifier. However, in order to ascertain the exact area including depth upto which hazardous waste had been dumped by the industry into ground illegally during its operations / dismantling of the unit, a detailed study from expert agency is required to carried out. On the basis of the outcome of the study, a volume of hazardous waste/ contaminated soil lying in the ground will be calculated and thereafter remedial plan will be prepared accordingly.

The photographs showing dumping of hazardous waste dumped unscientifically as observed by Joint Committee during site visit and excavation are as follows:

2.2.4. Remediation Plan:

In this regard, the Joint Committee was directed by Hon'ble NGT as follows:

"It may suggest short term and long-term basis considering agronomy and public health, remediation plan, cost of such remediation, cost of such remediation. A copy of the report be forwarded to the Chief Secretary, Punjab for ensuring remedial measures, based on the facts found"

The Joint Committee considered the following conclusions of the study carried out in this matter, while preparing the remediation action plan:

- *Five tube-wells were found to be contaminated in the study conducted by Joint Committee and yielding coloured water. The water from these tube-wells is not fit for drinking purpose.*

- *The five tube-wells affected by contamination are having depth of about 130 m below ground level in the vicinity of Industry. As per survey carried out by CGWB Expert, "The area is having single aquifer system upto a depth of about 200 m with a thin clay layer at around 110 m to 120 m depth. Considering the general depth of the most of the tube-wells and hydro-geological conditions and aquifer disposition, it can be inferred that aquifers upto a depth of 130 m below ground level are contaminated. Considering the average water levels of about 40 m below ground level about 80 to 90 m thick aquifer zones have been contaminated."*
- *Unscientific dumping of hazardous waste was observed by the Joint Committee during excavation from 04 random locations at site, which is resulting into leachinG of hazardous waste and thus causing contamination of the aquifer. However, in order to ascertain the exact area including depth upto which hazardous waste had been dumped by the industry into ground illegally during its operations / dismantling, of the unit, a detailed study from expert agency is required to be carried out. On the basis of the outcome of the study by an agency, a volume of hazardous waste dumped / contaminated soil lying at site bgl will be calculated and thereafter, the remediation can be planned accordingly.*
- *The analysis of soil samples drawn from the two agricultural fields irrigated with reddish coloured ground water indicated that the concentration of zinc is on much higher side i.e. 53.4 mg/Kg and 74.3 mg/Kg in comparison to the target values in soil i.e. 50 mg/Kg specified by WHO.* ***Zinc was found to be in much higher concentration both in crop and grain (edible part) as well i.e. 16.4 to 33.9 mg/Kg in the whole plant against the target value of 0.6 mg/Kg.*** *Zn is an essential nutrient for human health, but at the same time, it can be toxic in higher concentrations leading to various health complications including reduction in immune function and levels of high density lipo-proteins besides affecting the* ***absorption of*** *copper* ***and iron.***
- *The results of analysis w.r.t bio-accumulation of Zn, Mn, Cu and Cr from soil to crop i.e. Transfer factor was found to be varied between 0.23-0.51,0.01-0.16, 0.200.71 and 0.003-0.008 respectively, in the samples collected from 06 locations,* ***clearly indicating the higher transfer of heavy metals at some locations in*** *comparison to others. Health Risk Index was also determined by Joint Committee for heavy metals viz. Zn, Mn, Cu and Cr.* ***The Health Risk Index (HRI) was found to be varying from 0.35 - 0.54, 0.83 -1.85, 0.70 -1.42 and 0.85 - 2.54 for Zn, Mn, Cu and Cr respectively,*** *in the samples drawn by the Joint Committee from 06 locations.* ***The values of HRI less than 1 (< 1) is considered safe for intake of food/vegetables. However, the values in the present case were found to be > 1 for Mn (04 Locations), Cu (01 Location) and Cr (05 Locations) in the area under reference,*** *which may pose health risk over a passage of time,* ***if the remediation is not done w.r.t ground water contamination caused due to direct injection of the untreated industrial effluent and the***

hazardous waste dumped unscientifically at the industry site.

Keeping in view of the above, the Joint Committee has prepared the short term and the long term ***remediation plan as follows:***

2.2.4.1. Short Term Remediation Plan:

a) Marking the contaminated tube-wells as "Water not fit for Drinking:

Since, the water from the five tube-wells was found to be contaminated, these are required to be marked as ***"Water not fit for drinking",*** *so that this water is not used for drinking purpose by District Administration. All these five tube-wells are primarily being used for agriculture purpose and are not source of drinking water supply to any residential area.*

b) Declaration of the Site as "Contaminated Site":

Based on the earlier studies conducted by TCIRD, Patiala, CPCB, Delhi, NEERI, Nagpur and present study carried out by Joint Committee in this matter, it has been emerged that the hazardous waste had been dumped unscientifically at the site under reference and the leaching of contaminants had caused the contamination of the aquifer upto 130 m depth bgl. Therefore, the site under reference may be declared as ***"Contaminated Site" as per the Guidelines on Implementing Liabilities for Environmental Damages due to Handling & Disposal of Hazardous Waste and Penalty" published by CPCB in 2016.***

c) Remediation of the "Contaminated Site" under reference:

Since, it has been established that ground water has been contaminated in the vicinity of the contaminated site due to leaching of contaminants into the aquifer, the remediation of this contaminated site is important w.r.t risks to public health and environmental quality. Further, the pumping of ground water from these tube-wells may not be discontinued, as there is continuous risk of spread of contamination to other tube-wells laterally. Thus, two solutions are being proposed for remediation of the contaminated site:

✓ ***Off-site Solution***

This can be carried out by excavating the hazardous waste unscientifically dumped at site and transferring the same to TSDF, by involving the agency having expertise in handling the hazardous waste. The remediation of this contaminated site may not only result in restoration of ground water quality of the five tube-wells, which are yielding coloured water but at the same time, will prevent further movement of contaminants to other tube-wells laterally, besides improvement in soil ***quality as well as*** *avoid* ***the transfer of contaminants from soil to*** *Crops/agro-products.*

✓ ***On-site Solution***

An alternative solution is on-site remediation, which reduces the production of leachate and lessens the chance of groundwater contamination. On-site remediation may include temporary removal of the hazardous waste/contaminated soil already dumped during

operation / dismantling of the unit, construction of a secure landfill on the same site i.e., full containment containment of the waste. This can be done through expert agency which will make trenches by removing the already dumped hazardous waste / contaminated soil at the site in scientific manner up to the depth of contamination, placing an impermeable cover in the horizontal as well as in vertical direction in the trenches and thereafter, re-fill the excavated hazardous waste/contaminated soil into the trenches. Further, before refilling, the said excavated waste can be mixed with some binding material for solidification of the waste which will not only reduce the volume of hazardous waste but also rule out the future leaching and the same will act as impermeable barrier. In order to implement this technique, an expert agency is required to be engaged to submit its proposal w.r.t. cost and timelines.

Remediation cost.

The tentative remediation cost as estimated by the Joint Committee is as follows:

The excavation was carried out at 04 random locations at site under study, with JCB upto about 8 to 10 feet and the layers of blackish red sludge, blackish slurry, HDPE sheets were observed in excavated pits at different levels, clearly indicating unscientific dumping of hazardous waste done by the industry during its operations / dismantling of the unit, which has slowly resulted into leaching of contaminants into the ground water, thereby causing contamination of the aquifer over a period of time. However, based on the previous reports/ studies conducted by TCIRD, CPCB, PPCB and present study conducted by the Joint Committee, remedial cost plan for an area of 4047 m^2 (1.0 Acre) of land with depth of 6 m has been calculated in case of off-site solution. Further, this is a tentative cost which excludes treatment, contingency, other Misc cost & may increase depending upon the market dynamics at the time of implementation of this remediation plan viz a viz the volume of hazardous waste / contaminated soil excavated.

Sr. No.	***Particulars***	***Details***
1.	*Tentative Area tobe remediated based on TCIRD Stud excavation/study conducted by Joint Committee*	*4,047 m^2 (Approx. 1 Acres)*
2	*Tentative depthof Contamination, to be remediated.*	*6 mtr (may vary once actual remediation process starts)*
3.	*Total Volume/Wt of Soil /Sludge to excavated and disposed off to TSDF.*	*4,047 x 6 = 24,282 m^3* *Specify gravity of Sandy Clay Soil: 1.4* *24,282 x 1.4* *=33,994.8 Ton*
4	*Estimated Cost of Direct land fill disposal Charges at TSDF (Assuming that no further treatment at TSDF is required)*	*Rs. 3,600/- per ton* *33994.8 x 3600/- = Rs. 1,22,381,280/-* *(Rs. 12.24 Crores)*
5	*Estimated Excavation Cost @Rs. 99/m^3 (as per common schedule of Rates of Pb. PWD*	*24,282 x 99 = Rs. 24,03,918/- (Rs.*

	(B&R)	*24.00 lac)*
6.	*Estimated Refilling Cost @ Rs. 500/m³ soil*	*24,282 x 500 = Rs. 1,21,41,000 (Rs. 1.21 Crores)*
	*Total **Initial Tentative Estimated Cost** (Excluding Contingency and Misc. Costs)*	*Rs. (12.23 cr + 0.240 or + 1.21) cr = Rs. 13.68 Crore*

In order to ascertain the exact area including depth upto which hazardous waste had been dumped by the industry into ground illegally during its operations / dismantling of the unit, a detailed study from an expert agency is required to be carried out. On the basis of the outcome of the said study, exact volume of hazardous waste dumped / contaminated soil lying at site below ground level (bgl) will be calculated and thereafter, the remediation plan will be implemented as per the options available

2.2.4.2. Long Term Remediation Plan for Ground Water, if required.

The need for implementation of any long-term remediation plan is not expected, if the short-term remediation plan, as proposed above is religiously implemented. However, if required, the long-term remediation of Ground Water based on "Pump Out and Pump In" or Pump Out, Treat and Pump In" approach may be implemented, after evaluating the outcome of the Short-term plan. The Estimated cost of long-term plan may require Rs. 200/- per m3 to more than Rs. 5000/-per m3 depending on the approach followed.

3. Submissions:

a) The minimum tentative Cost for initial remediation of one-acre area (upto depth of 6 m) of the contaminated site in case of short-term remediation plan estimated by the Joint Committee is Rs. 13.68 Cr, which may vary based on outcome of the actual remediation, once started.

b) The Joint Committee has deliberated the matter with regard to availability of funds to carry out the remediation work at the site and who will bear the remediation cost. After examination of the matter, it is stated that the Hon'ble NGT was pleased to dispose of a connected matter in OA No. 35 of 2013 vide order dated 23.09.2015, wherein Rs. 2.0 crore penalty was imposed upon M/s Matharu Chemical & its responsible persons on the basis of Polluter Pay Principle for restoration of Environment. Execution Application no. 23 of 2020 was disposed of vide order dated 03.11.2020 and the matter was referred to the District and Session Judge, Sangrur. However, the Judgment debtors have not paid any amount to the State Pollution Control Board and the matter is being adjourned from one date to another without any concrete action. Directions are required to Issue to the Court of District and Session Judge. Sangrur for early decision in the Execution so that the amount of penalty recovered from the judgment debtor shall be utilized for initial remediation cost. The owners and directors of M/s Manard Chemical who were party in OA No. 35 of 2013 and Execution Application no. 23/2020 be strictly directed by the Hon'ble NGT to bear the entire cost of remediation of the site

c) A detailed study from an expert agency is required to be carried out in order to ascertain the exact area of contamination including depth upto which hazardous waste had been dumped by the industry into the ground illegally during its operation.

d) On the basis of the outcome of the said detailed study, exact volume of hazardous waste dumped/contamination of soil lying beneath the land will be calculated for the purpose of implementing the remediation plan as per the best options available.

The above report of the Joint Committed is being submitted for the consideration of Hon'ble National Green Tribunal. Further, ***a copy of the above report including remediation plan and annexures, is also being forwarded to Chief Secretary, Government of Punjab, through Nodal Agency (PPCB)/Principal Secretary, Department of Science, Technology and Environment as directed by Hon'ble NGT, for taking further remedial action, in compliance of the Hon'ble NGT Order dated 20/7/2021*** *The Joint Committee will abide by further directions of Hon'ble NGT, in this matter."*

4. We note that additional comments/information has been given by the CPCB Member on the subject of ground water contamination and also certain other issues. There are additional suggestions with regard to short, medium and long term remediation plan and other measure required to be adopted. The same is part of the report as Annexure–3.

5. Having regard to the composition of the Committee and the material considered in the report and also in absence of any opposition by the State inspite of copy of report having been served on it, we accept the report of the Committee and issue directions in terms thereof. The Chief Secretary, Punjab, in coordination with the concerned authorities may ensure remedial action speedily to effectuate the guaranteed right of the citizens to clean potable water. The Chief Secretary may also take into account the suggestions in the additional report referred to above. The cost of remediation has to be borne by the State in the first instance without prejudice to the recovery of the amount later from the violators/erring officers. Area in question be treated as 'contaminated site' and remediation plan as per the Report of the Joint Committee may

be executed within six months. If it becomes necessary, the Plan may be suitably modified in consultation with CPCB and any other Institution. Chief Secretary may constitute a credible executing/ monitoring Committee to get the remediation plan executed and to monitor its timely and proper execution. Status report of compliance as on 31.8.2022 may be forwarded to Registrar General, NGT on or before September 30, 2022 by email. District Magistrate, Sangrur may place the information in public domain and appropriately caution the inhabitants about contaminated water in the interest of public health. PPCB and State GWB may regularly monitor the quality of contaminated water.

The application is disposed of.

A copy of this order be forwarded to the Chief Secretary, Punjab and District Magistrate, Sangrur, State PCB and State GWB by e-mail for compliance.

Adarsh Kumar Goel, CP

Sudhir Agarwal, JM

Pushpa Sathyanarayana, JM

Prof. A. Senthil Vel, EM

Dr. Vijay Kulkarni, EM

March 31, 2022
Original Application No. 169/2021
A

Annexure-E
(of application filed by PPCB dt. 10/08/2024 in hon'ble NGT)

ਪੰਜਾਬ ਪ੍ਰਦੂਸ਼ਣ ਰੋਕਥਾਮ ਬੋਰਡ
PUNJAB POLLUTION CONTROL BOARD
E-mail : ppcbzop2@ymail.com, Web: www.ppcb.gov.in

LiFE Lifestyle for Environment

No. 1949-51 **REGISTERED** **Dated:** 8-8-2024

To

1. Sh. Gurcharan Singh Matharu,
   # 435, Rajiv Gandhi Nagar, Kota,
   Rajasthan.
2. Sh. Chander Shekhar Dhawan,
   # 110-A, Sarabha Nagar,
   Ludhiana.
3. Sh. Sunil Ahuja,
   # E-14, Sector 14,
   Noida, Uttar Pradesh

Subject: **Imposition of cost for effecting remediation of contamination of soil and ground water in and around the site of M/s Matharu Chemical Industries (later changed to M/s Mahalaxmi Orgechem Industries), Vill. Aloarakh, Tehsil Bhawanigarh, District Sangrur.**

Enclosed find herewith order no. 351 dated 08/08/2024 passed by the Chairman, Punjab Pollution Control Board for information & further necessary action.

It is directed to deposit an amount of Rs. 105.59 crore with the office of Punjab Pollution Control Board at Patiala or Sangrur, within 15 days from the date of receipt of this order.

Take notice that no further intimation or reminder will be issued or served by the Board in this regard after lapse of stipulated period of 15 days.

DA/ as above

Environmental Engineer (ZP-II)
On behalf of Punjab Pollution Control Board

Endst. No. 1952 **Dated** 8-8-2024

A copy of the above is forwarded to the Environmental Engineer, Punjab Pollution Control Board, Regional Office, Sangrur for information & further necessary action.

DA/ as above

Environmental Engineer (ZP-II)
On behalf of Punjab Pollution Control Board

ਪੰਜਾਬ ਪ੍ਰਦੂਸ਼ਣ ਕੰਟਰੋਲ ਬੋਰਡ
PUNJAB POLLUTION CONTROL BOARD

No. 351

Dated. 08/08/2024

Subject- Imposition of cost for effecting remediation of contamination of soil and ground water in and around the site of M/s Matharu Chemical. Industries (later changed to M/s Mahalaxmi Orgochem industries), village Aloarakh, Tehsil Bhawanigarh, District Sangrur.

ORDER

In order to protect and improve the environment and for prevention of hazards to human beings, other living creatures, plants and property and maintaining or resorting the wholesomeness of water and to preserve the quality of air, the Parliament of India had enacted the Water (Prevention and Control of Pollution) Act, 1974, the Air (Prevention and Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986 and certain rules under the provisions of the Environment (Protection) Act, 1986 and all these Laws are collectively and severally being referred to as the Environmental Laws. The Board being the prescribed authority is implementing the provisions of the Environmental Laws i.e. the Water (Prevention and Control of Pollution) Act, 1974, the Air (Prevention and Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986 and the Rules made thereunder, in the State of Punjab.

2) The Punjab Pollution Control Board has granted NOC from pollution angle vide letter no. 16708 dated 12.07.1990 for the manufacture of H Acid @ 600 K/day in the name of M/s Matharu Chemical Industries (Prop. M/s Matharu Steel Pvt. Ltd), Bhawanigarh, District Sangrur. The unit was owned by Sh. Gurcharan Singh Matharu. Later on Sh. Gurcharan Singh Matharu has sold the unit and the name of the industry was changed to M/s MahaLuxmiOrgo Chem Industries (Proprietor M/s Matharu Steel Pvt. Ltd.) by Sh. Chander Shekhar Dhawan and Sh. Sunil Ahuja, Directors of the Industry. The industry operated upto the year 2005 and thereafter, the Directors above named had sold the property to one Sh. Tara Singh, agriculturist who in turn has further sold the property and at present the said piece of land is in the name of one Bhupinder Pal Singh, who is carrying out agricultural activities at the said piece of land.

ਵਾਤਾਵਰਣ ਭਵਨ, ਨਾਭਾ ਰੋਡ, ਪਟਿਆਲਾ-147001
Vatavaran Bhawan, Nabha Road, Patiala -147001
Phone : Chairman. : 0175-2215793, Member Secretary : 0175-2215802 (O)
Website : www.ppcb.gov.in | E-Mail : chairmanppcb@yahoo.in | msppcb@gmail.com |

3) The ground water samples from the bore-wells around the storage of hazardous waste of the industry were collected on 23.11.2006 by the Board officers and the analysis report revealed that the ground water had been contaminated.

4) It is relevant to mention here that the residents of nearby villages namely Baladkalan, Toori, Baladkothi and Bhawanigarh had approached the Hon'ble Punjab and Haryana High Court by way of filing a Civil Writ Petition no. 3481 of 2007 titled as Parminder Singh and Others v/s Punjab Pollution Control Board and Others against M/s Matharu Steel Pvt. Ltd. and M/s MahaLuxmiOrgo Chem Industries and its Directors Sh.Chander Shekhar Dhawan and Sh. Sunil Ahuja.

5) On the basis of the monitoring carried out by the Punjab Pollution Control Board it emerged that the industry had dumped hazardous waste at the site which had led to the contamination of the ground water.

6) The case pending before the Hon'ble Punjab and Haryana High Court was transferred to Hon'ble National Green Tribunal at New Delhi wherein the case was registered in Original Application No. 35 of 2013. The Hon'ble National Green Tribunal on the basis of four study reports conducted of the site held that the industry and its directors had polluted the ground water ever since the date of their industrial activities year 1991 till 2005 and even continuously thereafter.

7) The Hon'ble National Green Tribunal has disposed of Original Application no. 35 of 2013 vide judgement dated 23.09.2015. It was held by the Hon'ble National Green Tribunal that respondent no.4 M/S Matharu Steel Pvt. Limited having its Registered Office at Plot No. 4, Near Airport, Jhalanpur Road, Kota Rajasthan through its Director Shri. Chander Shekhar Dhawan and respondent no.5 M/S Mahalaxmi Orgochem Industries, c/o Matharu Steels Pvt. Limited, Nabha Road, Tehsil Bhawanigarh,Distict Sangrur, through Shri. Chander Shekhar Dhawan represented by respondent no.6. Chander Shekhar Dhawan, Director, M/S Matharu Steels Pvt. Limited, resident of 110-A, Sarabha Nagar, Ludhiana, respondent no.7 Sunil Ahuja, Director of M/S Matharu Steels Pvt. Limited, Resident of E-14, Sector-14, Noida, U.P. and respondent no.9. Gurcharan Singh Matharu s/o Surjit Singh Matharu Director,

Matharu Chemicals Industries Nabha Road, Bhawanigarh Tehsil Sangrur District by their industrial activities have polluted the air, land and water including the groundwater and produced and stored hazardous waste unauthorizedly and without any proper disposal. The Hon'ble National Green Tribunal had directed the said respondents to effect remediation of water contamination in the premises of the unit and all the surrounding areas polluted by the activities of the unit at their cost.

8) In order to investigate the contamination of the site and to effect remediation at the site, the Punjab Pollution Control Board vide letter no. 19199 dated 18.08.2023 has engaged National Environment Engineering Research Institute (NEERI), Nagpur for carrying out detailed Environmental Site Assessment and delineating remedial action plan, within 05 Km radius of subject cited site. The institute has submitted a final environmental assessment report dated 21.05.2024 mentioning details of short and long-term remediation measures which are to be performed at site where M/s Matharu Chemical Industries, M/s Maha Lakshmi Orgochem Ltd (Prop. M/s Matharu Steel Pvt. Ltd.) had operated. M/s Re-Sustainability Ltd. operator of sole TSDF facility in the State of Punjab located at Nimbua, DeraBassi, SAS Nagar has estimated the cost of implementing short term remedial measures i.elifting, transportation, treatment and disposal of contaminated soil from zones identified by NEERI, to be Rs. 50,13,44,573/-. In addition, Rs. 8,506/- per MT (excluding applicable taxes) expense is to be incurred on treatment and disposal of contaminated soil slurry through Monolithic Encapsulation. Further, short term remedial measures also involve cost of restoration of land by local contractor roughly amounting Rs. 1.5 crore. The cost of implementing long term remedial measures as suggested by NEERI i.e pumping and treatment of contaminated ground water aquifer through activated carbon, is projected to be approx. Rs 53.96 crore. In view of these facts of the case as such, remediation measures to be performed at the site involves about Rs. 105.59 crore.

9) It is relevant to mention here that the Hon'ble Supreme Court of India has considered the Principles of Precaution, Sustainable development and Polluter Pay's and decided to strictly implement the same. The decisions so taken by the Hon'ble

Supreme Court of India are summarized herein below:

a) The concept of precautionary principle was considered in M.C Mehta versus Union of India and others and vide judgment dated 11.10.1996 the Hon'ble Supreme Court of India held that the Precautionary Principle has been accepted as a part of the Law of the land.

b) The concept of sustainable development was considered in M.C Mehta versus Union of India and others (1997) 2 SCC 353 and it was decided by the Hon'ble Supreme Court of India that the development is essential for the economy of the country but at the same time the environment and eco systems have to be protected.

c) The Hon'ble Supreme Court of India has also considered the concept of Polluter Pay's Principle in Indian Council for Enviro Legal Action and others v/s Union of India and others (1996) 3 SCC 212 para 16, Vellore Citizens Welfare Forum v/s Union of India (1996) 5 SCC 647 para 12-18 and held that Polluter Pay's Principle is accepted principle and part of environmental law ofthe country without even specific statute.

10) On examination of the entire facts of the case as has been recorded herein above, it is concluded that the activities carried out by M/s Matharu Chemical Industries, M/s Maha Lakshmi Orgochem Ltd (Prop. M/s Matharu Steel Pvt. Ltd.) by its owner Gurcharan Singh Matharu and directorsChandarshekhar Dhawan and Sunil Ahuja have intentionally and deliberately caused huge environmental damage in the area of Block Aloarakh, Tehsil Bhawanigarh, District Sangrur in violation of the provisions of Environmental Laws.

11) It is pertinent to mention here that as per record available with the Board the addresses of Sh. Gurcharan Singh Matharu, Sh. Chander Shekhar Dhawan and Sh. Sunil Ahuja are as under:

i) Sh. Gurcharan Singh Matharu, # 435, Rajiv Gandhi Nagar, Kota, Rajasthan.

ii) Sh. Chander Shekhar Dhawan, # 110-A, Sarabha Nagar, Ludhiana.

iii) Sh. Sunil Ahuja, # E-14, Sector 14, Noida, Uttar Pradesh.

The above named person have also mention the above addresses in the Judicial Proceedings.

12)Thus, M/s Matharu Chemical Industries, M/s Maha Lakshmi Orgochem Ltd (Prop. M/s Matharu Steel Pvt. Ltd.), earlier situated at village Aloarakh, Tehsil Bhawanigarh, District Sangrur and its owner Sh. Gurcharan Singh Matharu and directors Sh. Chander Shekhar Dhawan and Sh. Sunil Ahuja have made themselves liable for the cost of remediation of the site in respect of the violations committed on the basis of the Principle of Precaution, Sustainable development and Polluter Pay's, which is tentatively calculated to be Rs. 105.59 crore.

13)Therefore, M/s Matharu Chemical Industries, M/s Maha Lakshmi Orgochem Ltd (Prop. M/s Matharu Steel Pvt. Ltd.), earlier situated at village Aloarakh, Tehsil Bhawanigarh, District Sangrur and its owner Sh. Gurcharan Singh Matharu and directors Sh. Chander Shekhar Dhawan and Sh. Sunil Ahuja through the above addresses are hereby directed to deposit an amount of Rs. 105.59 crore with the office of the Punjab Pollution Control Board at Patiala or Sangrur as the cost of remediation of the contaminated site at village Aloarakh, Tehsil Bhawanigarh, District Sangrur in lieu of causing huge damage to the environment due to which the tubwells in the area are spewing colored polluted water which is harmful to the health of the people of the area as well as to the vegetation, within 15-days from the date of receipt of this order, failing which necessary action will be initiated for recovery of the amount of environmental compensation by adopting coercive measures.

14)Take notice that no further intimation or reminder will be issued or served by the Board in this regard after lapse of stipulated period of 15-days.

Adarsh Pal Vig

Prof. (Dr.) Adarsh Pal Vig
Chairman

Annexure-C
(of joint committee
report dt. 16.12.2024)

Before the Hon'ble National Green Tribunal, New Delhi

(Principal Bench)

M.A no.103 0f 2022
In
O.A no.169 of 2021

In the matter of

H.C. Arora

..... Applicant

V/s

State of Punjab & Others

..... Respondent

Submission of Joint Committee report in compliance of order dated 28.05.2024 by Member Secretary, Punjab Pollution Control Board through Chief Secretary, Punjab.

Respectfully showeth:

1) That briefly submitted MA no. 103 of 2022 filed by Sh. H.C. Arora in OA no. 169 of 2021 was heard by the Hon'ble National Green Tribunal. The grievance raised in the said application was the alleged failure of the State Authorities to take remedial measures against contamination of ground water in village Aloarakh, Block of Bhawanigarh, District Sangrur.

2) That the Hon'ble National Green Tribunal vide order dated 28.05.2024 has disposed of the said M.A no. 103 of 2022 in O.A no. 169 of 2021 and constituted a Joint Committee to oversee the work of shifting of contaminated soil and restoration of land which was contaminated.

3) That as per the directions of the Hon'ble Tribunal as contained in order dated 28.05.2024, the report of the Joint Committee is to be filed after placing the same before the Chief Secretary to Government of Punjab.

4) The Chief Secretary to Government of Punjab has authorized the Member Secretary, Punjab Pollution Control Board to submit the said report of the Joint Committee before the Hon'ble National Green Tribunal.

5) That it is relevant to mention here that the Environmental Engineer, Punjab Pollution Control Board (PPCB), Regional Office, Sangrur, Punjab has filed MA No. 76 of 2024 in O.A No. 169 of 2021 before this Hon'ble Tribunal with a prayer seeking directions to the industrial units, namely, M/s. Matharu Chemical Industries (later changed to M/s. Mahalaxmi Orgochem Industries) village Aloarakh, Tehsil Bhawanigarh, District Sangrur, Punjab and its owner Sh. Gurcharan Singh Matharu and Directors Sh. Chander Shekhar Dhawan and Sh. Sunil Ahuja to pay the remediation cost of the contaminated site amounting to ₹105.59 crores. The case was heard by the Hon'ble Tribunal on 21.08.2024 and the order was reserved for pronouncement.

6) That as per the directions of the Hon'ble Tribunal contained in order dated 28.05.2024, the first interim report of the Joint Committee was to be filed through Chief Secretary by 31.08.2024 and the subsequent report by 30.11.2024. However, the Punjab Pollution Control Board and the State of Punjab were awaiting the orders of the Hon'ble Tribunal in the application filed for directions to the persons to pay the Environmental Compensation for the remediation of the contaminated site. The orders dated 21.08.2024 passed by the Hon'ble Tribunal in MA No. 76 of 2024 have now been received.

7) That the interim report in terms of the orders of the Hon'ble Tribunal will be filed by 30.11.2024 after examining the order dated 21.08.2024 passed by the Hon'ble Tribunal in M.A No. 76 of 2024 in O.A No. 169 of 2021.

It is, therefore, prayed that the filing of interim report in the case by 30.11.2024 may kindly be allowed.

Submitted by

Date: 02-09-2024

Place: PATIALA.

(Er. Gurindar Singh Majithia)
Member Secretary,
Punjab Pollution Control Board

(On behalf of the State of Punjab)

Report on

"Evaluation of Acute Toxicity of Groundwater as per the USEPA/OECD"

1. Introduction

Polluted groundwater is a significant environmental and public health concern. Groundwater, which is found beneath the Earth's surface in soil pore spaces and fractures of rock formations, serves as a crucial source of drinking water for billions of people worldwide. When contaminants such as chemicals, heavy metals, pesticides, or pathogens seep into the groundwater, they can compromise the safety of this vital resource. Pollution can result from industrial activities, agricultural runoff, improper waste disposal, or leaking underground storage tanks. Contaminated groundwater risks ecosystems and human health, making its protection and remediation a critical priority [1].

2. Methods

The acute test was conducted to determine the safety and potential toxicity of the groundwater of different groundwater sources. The groundwater sources were tubewells in different places in Sangrur Panjab, near the Mathura Chemical site.

The groundwater quality is given below in table no.1.

Sr. No.	Parameters	Result				Method reference
		MG-2	MG-3	MG-6	MG-34	
1.	pH	7.6	7.1	7.1	7.4	APHA-23rd Edition 2017-4500-H^+ B
2.	Total Dissolved Solid (TDS) (mg/L)	349	1526	1208	322	APHA-23rd Edition 2017-2540-C
3.	Total Hardness as $CaCO_3$ (mg/L)	120	1060	670	164	APHA-23rd Edition 2017-2540-C
4.	Calcium as Ca^{2+} (mg/L)	26	152	128	27	APHA-23rd Edition 2017-3500-Ca-B
5.	Magnesium as Mg^{2+} (mg/L)	13	163	84	23	APHA-23rd Edition 2017-3500-Mg-B
6.	Dissolved Oxygen (DO) (mg/L)	3.8	3.1	3.3	4.4	APHA-23rd Edition 2017-4500-O-C

7.	Chemical Oxygen Demand (COD) (mg/L)	2	360	100	2	APHA-23rd Edition 2017-5200-COD-D

2.1 Acute ecotoxicity

Acute ecotoxicity was determined against adult zebrafish (*Danio rerio*) as per OECD 203 guidelines (OECD 2000). The fish were procured from the local dealer in Nagpur, Maharashtra. They were maintained and tested in 25L glass tanks. The water was dechlorinated and well-aerated for 24 hours before introducing to the fish. The test conditions were dissolved oxygen at 80%, temperature 24°C, and 12 h light: 12 h dark period. The mean body weight and length of randomly selected zebrafish were 0.35 ± 0.11 g and 3.29 ± 0.48 cm. Fish were acclimatized for two weeks before exposure to the test chemical. The fish were fed twice with commercial (optimum aquarium) food). No mortality or any sign of abnormality was observed during acclimatization.

The fish (7 nos for each concentration) were exposed to different groundwater for the test at 100%, 50 %, 25 %, 12.5 %, and 6.25 %, V/V. The ground was mixed with distilled water in a volume-by-volume ratio.

3. Result

3.1 Acute ecotoxicity

The LC50 describes the amount of chemicals that cause death in 50% of test animals used during a toxicity study. The LC50 value was determined at 96 h in the zebrafish exposed to different groundwater. (**Fig. 1**).

Fig. 1: Representative photos of fish tanks during the ecotoxicity test

The acute LC50 in adult zebrafish shows that the groundwater MG-2, MG-3, MG-6, and MG-34 does not pose acute toxicity.

Please Note: Death of 2 fishes (mortality) was observed in MG-3 at 100% and MG-2 at 100 % at 50%. This mortality did not cross the LC50.

4. References

1. Li, P., Karunanidhi, D., Subramani, T. *et al.* Sources and Consequences of Groundwater Contamination. *Arch Environ Contam Toxicol* **80**, 1–10 (2021). https://doi.org/10.1007/s00244-020-00805-z
2. Toxicity–Up, A. O. (2001). OECD guideline for testing of chemicals. *Organisation for Economic Co-Operation and Development: Paris, France*, 1-14.