

**BEFORE THE NATIONAL GREEN TRIBUNAL
PRINCIPAL BENCH, NEW DELHI**

Original Application No. 676/2023

News Item titled "Agriculture Runoff causing groundwater pollution in Punjab Making Drinking Water Unsafe Reveals Study" appearing in The Times of India dated 12.10.2023.

Date of hearing: 30.01.2025

CORAM: **HON'BLE MR. JUSTICE PRAKASH SHRIVASTAVA, CHAIRPERSON**
 HON'BLE MR. JUSTICE ARUN KUMAR TYAGI, JUDICIAL MEMBER
 HON'BLE DR. AFROZ AHMAD, EXPERT MEMBER

Respondent: Mr. Sandeep Bajaj, Additional AG & Ms. Manpreet Kaur, AAG for the State of Punjab.
 Ms. Sunieta Ojha, Advocate for Punjab PCB (Through VC).
 Mr. Vikrant Pachnanda & Mr. Mukul Katyal, Advocates for CPCB.

ORDER

1. This OA has been registered *suo motu* on the basis of a news item titled as "Agricultural Runoff Causing Groundwater Pollution in Punjab, Making Drinking Water Unsafe, Reveals Study". The news item is based upon a research study released by the Indian Institute of Technology (IIT) Mandi. The publication of the news item reveals that human activity has increased groundwater pollution, particularly through agricultural runoff in Punjab, making it unsafe for drinking and raising health risks. The research paper was published in the journal *Environmental Science and Pollution Research*, showing that in the last two decades, the groundwater demand has increased due to the absence of monsoon. The groundwater department and local farmers have to exploit groundwater from deeper geological strata which are enriched in heavy metals and few are radioactive, having serious health impacts. The study involved the measurements of pH, electric conductivity (EC) and various ions from over 315 sites in Punjab and the study revealed a disturbing trend with water

quality declining in the southwestern region of Punjab, adversely affecting the health of the residents. The study highlights the alarming state of groundwater pollution in Punjab and underscores the urgent need for mitigation measures. News item states that Punjab once celebrated as the “bread bowl of India”, is now infamously referred to as the "cancer capital" of India.

2. The Tribunal by order dated 03.11.2023 after taking up the matter in *suo motu* exercise of power had impleaded the concerned respondent and had issued notice to them. Respondent no. 1, CPCB had filed the reply dated 17.01.2024 mentioning that the groundwater quality monitoring in Punjab was done at 43 locations out of 46 during 2019-2023 and disclosing the major findings as under: -

“4.0 MAJOR FINDINGS

The water quality monitored at 43 out of 46 locations in the State during the years 2019-2023 by CPCB in association with Punjab Pollution Control Board (PPCB) under National Water Quality Monitoring Programme (NWMP) reveals the following:

- *Nitrate concentration in 01 out of 43 monitored locations during the years 2019 & 2020 is exceeding its BIS Drinking Water Standards IS 10500:2012, acceptable limit of 45.0 mg/L. However, during 2022 and 2023, nitrate concentration is found complying.*
- *Fluoride concentration has been observed exceeding in the range of 9.5-18.6% during the years 2019 (05 out of 43 locations), 2020 (04 out of 42 locations) & 2022 (08 out of 43 locations) against BIS Drinking Water Standards IS 10500:2012, acceptable limit of 1.0 mg/L.*
- *TDS concentration has been observed exceeding in the range of 53.4-70.7% during the years 2019-2023 against BIS Drinking Water Standards IS 10500:2012, acceptable limit of 500.0 mg/L. Out of monitored locations, 23 locations out of 43 in the year 2019, 29 out of 41 locations in the year 2020, 22 out of 33 locations in the year 2021, 30 out of 43 locations in the year 2022 and 24 out of 40 locations in the year 2023 were found non-complying.*
- *Monitored Heavy metals viz Arsenic, Cadmium, Copper, Lead, Chromium Total, Nickel, Zinc, Mercury are found complying in all during entire period of monitoring, with the Acceptable Limit prescribed by BIS Drinking Water Specifications IS 10500:2012.*

- *Iron concentration has been observed exceeding in the range of 11.6-30.3% during the years 2019-2023 against BIS Drinking Water Specifications IS 10500:2012, acceptable limit of 0.3 mg/L.*
- *12 Pesticides monitored at 43 locations indicate that all these pesticides were Below Detection Limit (BDL) in the State.”*

3. The above finding reveals that at some places, nitrate, fluoride, TDS and iron concentrations were found to be exceeding the prescribed limits.

4. The respondent no. 2, Punjab Pollution Control Board (PPCB), had also filed the reply dated 12.01.2024 disclosing that out of the monitoring at 43 groundwater locations, the samples were found to be beyond parameters in respect of drinking water. The disclosure by respondent no. 2 in this regard is as under: -

“xxx-----xxx-----xxx-----xxx

- iv. The comparison of the data against the drinking water standards as per IS 10500:2012 (WHO Standards) has been carried out. Parameters beyond permissible and desirable limits are highlighted and compiled and are enclosed as Annexure-B.*

xxx-----xxx-----xxx-----xxx”

5. It has further been stated by respondent no. 1 that information regarding radioactive substances is not available in the laboratories of PPCB, therefore, the parameters of radioactive substances have not been commented upon.

6. Respondent No. 4, Department of Water Supply and Sanitation, State of Punjab by filing the reply had taken a stand that this department is responsible only for providing safe and potable drinking water to the people of rural areas of the State through ground/canal/surface-based water supply scheme. The stand of respondent no. 4 in this regard is as under: -

“7. That the Department of Water Supply and Sanitation, Punjab is responsible only for providing safe and potable drinking water to the people of rural areas of the state through ground/canal/surface-based water supply schemes. DWSS, Punjab is extracting water through tube well based schemes only for drinking & cooking purposes of the rural population to meet their basic needs only. However, if any contamination is found in the Departmental sources only then accordingly remedial measures are being taken by the Department.”

7. Respondent no. 5, Department of Agriculture and Farmers Welfare, State of Punjab, has disclosed the parameters set for the groundwater quality assessment, and in respect of south-west Punjab, it has been stated that deposition of salts released from the parent rock, ancient drainage basins and lack of proper natural drainage are major reasons for relatively higher impacts of salinity in south-west Punjab.

8. The state of Punjab has filed the compliance report dated 13.09.2024 disclosing that out of samples collected from 337 locations, samples from 34 locations were found to be contaminated and out of these 34 contaminated locations, 18 locations fall under the purview and jurisdiction of the Department of Water Supply and Sanitation and remaining 16 locations fall under the jurisdiction of Department of Local Government. It also mentions the remedial measures which have been adopted.

9. The latest report of the State of Punjab dated 28.01.2025 states that Punjab Biotechnology Incubator (PBTI), SAS Nagar has been assigned the project relating to the study of biomagnification of contamination of food chain and that the interim report and final report of the study will be submitted by the PBTI to the Government at the end of 4th, 8th, 12th and 18th months. The affidavit further states that the Government of Punjab undertakes to implement the recommendations of the interim study report as well as the final report of the PBTI. Concerning 34 locations, where

contamination was found, it is stated that these 34 contaminated locations have been sealed by the concerned department, and remedial measures were taken for the supply of potable drinking water. The stand of the State of Punjab in the latest report dated 28.01.2025 is as under: -

“2) That in compliance to the order dated 17.01.2025 of the Hon'ble Tribunal, it is submitted that the Punjab Biotechnology Incubator (PBTI), SAS Nagar has been assigned the project relating to the study of biomagnification of contaminants in food chain. The PBTI has submitted project proposal on "Assessments of Contaminants (Heavy Metals) in Crops Grown in Punjab" to the Department of Agriculture and Farmer's Welfare. The brief scope of work of the study is mentioned herein below:

- a) Collection of 1700 samples of Agri-Food Commodities (Pulses, Cereals, Fruits & Vegetables and Milk) from 34 locations across 16 districts of Punjab and analysis of samples for 10 heavy metals including uranium.*
 - b) Collection and analysis of 600 soil samples from the locations where agri-food commodities are being sampled and analysis of these samples for 10 heavy metals including uranium.*
 - c) Collection of 500 irrigation water samples (from tubewell/ surface water sources) being used for irrigation of above Agri-Food Commodities and analysis of these samples for 10 heavy metals including Uranium, 05 cations, 05 anions and 05 general parameters.*
 - d) Data analysis and report preparation.*
- 3) That the objective of the study is to assess the Biomagnification of contaminants (heavy metals) in food chain through analysis of agri-food commodities, soil and irrigation water.*
- 4) That the duration of the project of the aforementioned study is 18 months. The interim reports and the final report of the study will be submitted by the Punjab Biotechnology Incubator (PBTI), SAS Nagar (Mohali) to the Government at the end of 4th, 8th, 12th and 18th months as per details given below:*
- i. 1st Interim report of pre monsoon season (8 districts) at the end of 4th month.*
 - ii. 2nd interim report of pre monsoon season (16 districts) at the end of 8th month.*
 - iii. 3rd interim report of post monsoon season (8 districts) at the end of 12th month.*
 - iv. Final report submission at the end of 18th month.*

- 5) *That a copy of the project proposal on Assessments of Contaminants (Heavy Metals) in Crops Grown in Punjab given by Punjab Biotechnology Incubator (PBTI), SAS Nagar is enclosed as Annexure-A.*
- 6) *That the Government of Punjab undertakes to implement the recommendations of the interim study reports as well as the final report of the PBTI and based on the findings and recommendations of the study report, remedial measures will be taken.*
- 7) *That further it is submitted that after the analysis of samples collected from 337 locations in the State of Punjab, 34 locations were found contaminated. Out of the said 34 contaminated locations, 18 locations fall under the purview of the Department of Water Supply and Sanitation and 16 locations fall under the purview of the Department of Local Government. The said 34 contaminated locations have been sealed by the concerned departments and the remedial measures taken for supply of potable drinking water are summarized herein below.*

A) 18 Locations (Department of Water Supply and Sanitation)

- i. *02 locations namely Chunni Kalan & Bhugrana of District Fatehgarh Sahib have recently been covered with the Large Surface Water Project Nanowal and 01 location namely Sangatpura of District Patiala has been attached with adjoining Water Supply Scheme of Laloda, District Patiala which is supplying potable water.*
- ii. *Out of remaining 15 locations, 08 locations are provided with Reverse Osmosis (RO) plants, 06 locations are provided with. Community Water Purification Plant (CWPP) and one location is provided with Arsenic cum Iron Removal Plant.*
- iii. *As regards, the performance of AIRPS/CWPP/ROs installed and their efficiency for the remaining 15 site locations of DWSS, the samples of raw water as well as treated water were collected and got analyzed in the NABL accredited laboratory of DWSS, which reveals that all the Plants are functioning well and giving satisfactory results.*
- iv. *These plants have been found efficient in the removal of contaminants from the sources of the Department of Water Supply and Sanitation and potable drinking water is being provided through these plants.*
- v. *A copy of the report given by the Department of Water Supply and Sanitation vide letter no. 58 dated 14.01.2025 is enclosed as Annexure-B.*

B) 16 (Department of Local Government)

- i) *To provide potable drinking water at the 16 sealed locations through other nearest municipal water source, water samples from that nearest municipal water source*

were collected and analyzed for 24 parameters based upon physiochemical parameters and heavy metals through NABL accredited labs of DWSS. Out of these 16, results of 10 were found to be within permissible limits. Results of balance 6 water sources of respective towns Bhikhiwind, Jagraon, Nihal Singh Wala, Rahon, Kotha Guru and Bhadaur, were found to be more than permissible limits.

- ii) Swift action was taken to evaluate the availability and feasibility of providing potable water to the six affected towns from alternative nearby sources. Options such as utilizing the nearest available Water Treatment Plant (WTP), installing tubewells adjacent to nearby canals, etc. were thoroughly assessed. During this evaluation, it was identified that a 50 MLD capacity WTP at Village Daudhar, near Nihal Singh Wala town, is already operational under the Department of Water Supply and Sanitation and has surplus availability of potable water. Accordingly, an MoU was signed between the departments to supply potable water to Nihal Singh Wala by tapping into the existing water supply line near the town. The work has already commenced, and potable water will be provided to the residents of Nihal Singh Wala by 14.01.2025.*
 - iii) Additionally, the feasibility of providing potable water to the six affected towns by Installing tubewells adjacent to nearby canals was also evaluated. As a result, tenders worth Rs 55.84 crore have already been floated to provide potable water supply to these towns. Work orders have been issued for Bhadaur, Bhikhiwind, Nihal Singh Wala, and Jagraon, with the Installation expected to be completed within the next four to six months. For Kotha Guru and Rahon, tenders have been technically evaluated and will be awarded by 20.01.2025 Meanwhile, potable water is being supplied to the public through municipal tankers.*
 - iv) Simultaneously, under the AMRUT 2.0 scheme, the groundwater supply for these six towns is being transitioned to surface water supply. Funding of Rs. 155.43 crore has already been secured to support this initiative.*
 - v) A copy of the report given by the Punjab Water Supply and Sewerage Board vide letter no. PWSSB/2024/729 dated 10.01.2025 is enclosed as Annexure-C.”*
- 8) That further it is submitted that health check-up camps conducted by the Department of Health and Family Welfare, Punjab through the respective Civil Surgeons at all the 34 contaminated sites. At 18 contamination sites, the health check-up camps were conducted by the Department Water Supply and Sanitation and at 16 contamination sites by the Punjab Water Supply and Sewerage Board. Also, health check-up camps were conducted at few additional sites to find and disease related to the mentioned pollutants and to monitor the health of residents. In the report, it has been found that none of the examined population reported by*

symptoms related to ground water contamination. A copy of letter dated 16.01.2025 of the Department of Health and Family Welfare, Punjab is enclosed as Annexure-D.

- 9) *That in view of the above stated facts, it is submitted that remedial and mitigation measures have been taken at the contaminated sites to ensure portable drinking water to the people of the area. The study relating to the assessment of heavy metals in crop growth in the State of Punjab has been entrusted to Punjab Biotechnology Incubator (PBTI), SAS Nagar (Mohali) and as per the proposal given by PBTI, the study will take around 18 months for completion and the PBTI will submit interim reports to the Government at the end of 4th, 8th, 12th months and the final report at the end of 18th month. The Government of Punjab undertakes to implement the remedial measures considering the findings and recommendations of the study report of PBTI.*
- 10) *It is, therefore, prayed that the above-mentioned case may kindly be disposed with appropriate orders and time period of 18 months may kindly be granted to the State of Punjab for the completion of the study relating to the assessment of heavy metals in crop growth.”*

10. In the aforesaid background, the State of Punjab has sought 18 months for completion of the study related to the assessment of heavy metals in crop growth. Since the State of Punjab has disclosed that at all the 34 contaminated locations, remedial measures had been taken, for assessment of the heavy metals in the crop growth, the study has already been assigned to PBTI, which will take 18 months. Therefore, the OA at this stage is disposed of with the following directions:-

- A. CPCB will conduct the sample test of 34 locations which were found to be contaminated within three months and submit the affidavit along with details of the sample report with the Registrar General of the Tribunal.
- B. The State of Punjab will ensure uninterrupted supply of potable drinking water in the areas that were found to be contaminated and will carry out regular checks of all the contamination-prone areas and, wherever the contamination is found, take remedial action without any delay.

C. The State of Punjab will submit the action taken report on completion of 4th, 8th,12th and 18th month, along with the interim and final report of the PBTI received at the end of 4th, 8th,12th and 18th month, before the Registrar General of the Tribunal. If found necessary, the OA will be listed for consideration before the bench again.

Prakash Shrivastava, CP

Arun Kumar Tyagi, JM

Dr. Afroz Ahmad, EM

January 30, 2025
Original Application No. 676/2023
Avt..