

HEAVY METAL CONTAMINATION OF GROUNDWATER

प्रविष्टि तिथि: 04 DEC 2025 6:12PM by PIB Delhi

Central Ground Water Board (CGWB) generates ground water quality data of the country on a regional scale as part of its ground water quality monitoring program and various scientific studies conducted as per the approved Standard Operating Procedure (SOP). Overall, the data on ground water quality indicates that the ground water in the country remains largely potable with localized occurrences of contaminants in isolated pockets. Further, though sampling and analysis of all basic parameters like Electrical Conductivity (EC), Fluoride, Nitrate etc. are done regularly, trace parameter analysis is done for only select priority elements and heavy metals like Chromium, Mercury, Cadmium etc. are analyzed based on requirement only.

As per Annual Ground water Quality Report, 2025 of CGWB, during Pre-Monsoon and Post-Monsoon 2024, CGWB collected and analyzed 3,415 groundwater samples from 26 States/UTs for Arsenic and 2,537 samples from 21 States/UTs for Lead. The analysis revealed that 123 samples (3.6%), out of 3,415, exceeded the permissible limit of 10 ppb for Arsenic, while 24 samples (0.95%), out of 2,537, exceeded the permissible limit of 0.01 mg/L for Lead. State-wise details of Arsenic and Lead contamination along with the affected districts are provided in Annexure-I and Annexure-II respectively.

As part of the National Aquifer Mapping and Management Programme (NAQUIM), CGWB undertakes comprehensive aquifer mapping and conducts analysis of groundwater levels and quality of the study area. Further, while taking up such aquifer studies, special attention is being given to the aspect of ground water quality including contamination by toxic substances such as heavy metals.

Outcome of such quality analysis including heavy metal assessment is being incorporated in the NAQUIM studies report along with suitable remedial measures. The findings of NAQUIM studies have been shared with respective State line departments and district administrations.

Water is a State subject and the responsibility of taking initiatives to mitigate ground water contamination and to provide safe drinking water to citizens lies primarily with the state governments. However, to complement the efforts of the state governments, several steps have been taken by the Central Government to address these issues. Some of the important ones for provision of safe drinking water, identification, reporting and remediation of aquifer contamination and regulation of industrial effluents are mentioned below:

- i. Jal Jeevan Mission (JJM) – Har Ghar Jal, being implemented by this Ministry in partnership with states, marks an important milestone for providing contamination free potable tap water to every rural household of the country in adequate quantity, of prescribed quality and on regular & long-term basis. Following measures have been taken under JJM to facilitate action on water quality aspects at state level:
- Water safety has been one of the key priorities under the JJM since its inception. Under the JJM, Bureau of Indian Standards' BIS:10500 standards have been adopted as prescribed norms for quality of tap water service delivery.
 - While allocating the funds to States/UTs, 10% weightage is given to the population residing in habitations affected by chemical contaminants.
 - The “Drinking Water Quality Monitoring & Surveillance Framework” was devised and disseminated to states in October 2021.
 - To facilitate implementation of the above said Framework, around 2180 water quality testing laboratories have been set up in the country. Besides this, five persons, preferably women are identified and trained from every village for testing the water samples through Field Test Kits (FTKs). States/UTs have been advised to carry out testing of water quality on a regular basis and take remedial action wherever necessary to ensure that the water supplied to households is of prescribed quality.
 - States/UTs have also been advised to install community water purification plants (CWPPs) as an interim measure especially in quality affected habitations to provide potable drinking water to every household.
- ii. The ground water quality data generated by CGWB including that for heavy metal contamination, is regularly disseminated through Annual Reports, Half-yearly Bulletins and Fortnightly Alerts for quick action by the stakeholders.
- iii. In order to enhance monitoring efficiency, a new Standard Operating Procedure (SoP) for Groundwater Quality Monitoring has been adopted by CGWB, which stipulates more frequent and denser sampling, particularly in vulnerable areas to ensure a more comprehensive assessment of groundwater quality.
- iv. CGWB has also developed an innovative cement sealing technology for tapping deeper Arsenic free aquifers in the Arsenic affected areas and has so far successfully constructed 525 Arsenic safe exploratory wells, including 40 wells in Bihar, 191 in West Bengal and 294 in Uttar Pradesh. CGWB is also providing technical assistance to state departments for taking up similar constructions.
- v. Improvement in ground water quality can also be achieved to some extent by taking up artificial recharge of contaminated aquifers, which dilutes the contaminants to reduce their adverse effects. Accordingly, Ministry of Jal Shakti and other central ministries are implementing several programmes towards this end like the annual Jal Shakti Abhiyan campaign, Jal Sanchay Jan Bhagidari (JSJB) initiative, Atal Bhujal Yojana, PMKSY and MGNREGS schemes etc.
- vi. The ground water pollution also owes its origin to contamination of surface water sources for which various efforts have been made in the country like installing Sewage Treatment Plants, Effluent Treatment Plants and better system of sewage networks etc. Under National Mission for Clean Ganga (NMCG) and National River Conservation Plan (NRCP), the government has initiated several steps for improving the water quality along major river stretches of the country.
- vii. Central Pollution Control Board (CPCB) in association with State Pollution Control Boards/Pollution Control Committees (SPCBs/PCCs) is implementing the provisions of the Water (Prevention & Control) Act, 1974 and the Environment (Protection) Act, 1986 to prevent and

control pollution in water. CPCB has made a comprehensive programme on water pollution for controlling point sources by developing industry specific standards and general standards for discharge of effluents notified under the Environment (Protection) Act, 1986 for enforcement by SPCBs/PCCs.

The information was provided by THE MINISTER OF STATE FOR JAL SHAKTI **SHRI RAJ BHUSHAN CHOUDHARY** in a written reply to a question in Lok Sabha today.

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(Lok Sabha US Q713)

ANNEXURE-I

ANNEXURE REFERRED TO IN REPLY OF QUESTION NO. 713 ANSWERED IN LOK SABHA ON
04.12.2025

REGARDING “HEAVY METAL CONTAMINATION OF GROUNDWATER”

State-wise details of Arsenic (As) sample analysis:

Based Annual Ground Water Quality Report, 2025

S.No.	State/UT	Total No. of Samples Analyzed	No. of Samples having As > 10 ppb	% of Samples Having As > 10ppb	No. of Districts wherein Arsenic has been reported in isolated pockets (As > 10ppb)	Names of Districts wherein Arsenic has been reported in isolated pockets (As > 10 ppb)
1	A&N Islands	28	0	0.00	0	
2	Arunachal Pradesh	15	0	0.00	0	
3	Assam	154	4	2.60	4	Golaghat, Kamrup, Lakhimpur, Nalbari

4	Bihar	13	6	46.15	4	Bhojpur, Buxar, Madhubani, Sheohar
5	Chandigarh	8	0	0.00	0	
6	Chhattisgarh	257	0	0.00	0	
7	Delhi	86	0	0.00	0	
8	Goa	6	0	0.00	0	
9	Gujarat	114	0	0.00	0	
10	Haryana	160	2	1.25	1	Sonipat
11	Jammu & Kashmir	17	2	11.76	1	Jammu
12	Karnataka	118	2	1.69	2	Gadag, Raichur
13	Kerala	185	0	0.00	0	
14	Madhya Pradesh	49	0	0.00	0	
15	Manipur	3	0	0.00	0	
16	Meghalaya	38	0	0.00	0	
17	Nagaland	66	0	0.00	0	
18	Odisha	413	6	1.45	4	Bhadrak, Ganjam, Sambalpur, Sundargarh
19	Punjab	296	27	9.12	6	Amritsar, Ferozpur, Gurdaspur, Hoshiarpur, Patiala, Tarn Taran
20	Rajasthan	100	0	0.00	0	

21	Tamil Nadu	286	5	1.75	5	Cuddalore, Nagapattinam, Ramanathapuram, Thoothukkudi, Tiruvannamalai
22	Tripura	44	0	0.00	0	
23	UT of Puducherry	7	0	0.00	0	
24	Uttar Pradesh	612	23	3.76	14	Bahraich , Balrampur, Ballia, Barabanki, Bareilly, Bijnor, Farrukhabad, Fatehpur, Lakhimpur Kheri , Moradabad, Pilibhit , Rampur, Sambhal, Shahjahanpur
25	Uttarakhand	104	0	0.00	0	
26	West Bengal	236	46	19.49	6	Coochbehar, Malda, Murshidabad, Nadia, North 24 Parganas, South 24 Parganas
	Total	3415	123	3.60	47	

ANNEXURE-II

ANNEXURE REFERRED IN REPLY TO QUESTION NO. 713 ANSWERED IN LOK SABHA ON
04.12.2025 REGARDING “HEAVY METAL CONTAMINATION OF GROUNDWATER”.

**State-wise details of Lead (Pb) sample analysis:
Based Annual Ground Water Quality Report, 2025**

S.No.	State/UT	Total No. of Samples Analyzed	No. of Samples (Pb > 0.01 mg/L)	% of Samples (Pb > 0.01 mg/L)	No. of Districts Wherein Lead has been reported in isolated pockets (Pb > 0.01mg/L)	Names of Districts Wherein Lead has been reported in isolated pockets (Pb > 0.01 mg/L)
1	Arunachal Pradesh	15	0	0.00	0	
2	Assam	155	5	3.23	4	Cachar, Dibrugarh, Kamrup, Udalguri
3	Bihar	12	0	0.00	0	
4	Chandigarh	8	0	0.00	0	
5	Delhi	86	8	9.30	4	North, North West, South West, West
6	Goa	6	0	0.00	0	
7	Haryana	160	0	0.00	0	
8	Jammu & Kashmir	12	0	0.00	0	
9	Karnataka	118	1	0.85	1	Raichur
10	Madhya Pradesh	28	0	0.00	0	
11	Manipur	3	0	0.00	0	
12	Meghalaya	38	0	0.00	0	
13	Nagaland	67	0	0.00	0	

14	Odisha	413	3	0.73	2	Nuapada, Sambalpur
15	Punjab	296	1	0.34	1	Hoshiarpur
16	Rajasthan	98	2	2.04	2	Barmer, Bhilwara
17	Tamil Nadu	286	2	0.70	2	Tiruppur, Viluppuram
18	Tripura	44	0	0.00	0	
19	UT of Puducherry	7	0	0.00	0	
20	Uttar Pradesh	581	2	0.34	2	Budaun, Chandauli
21	Uttarakhand	104	0	0.00	0	
	Total	2537	24	0.95	18	

(रिलीज़ आईडी: 2198926) आगंतुक पटल : 502
इस विज्ञप्ति को इन भाषाओं में पढ़ें: हिन्दी