

DETECTION OF LEAD IN GROUND WATER UNNAO DISTRICT OF UTTAR PRADESH – A REVIEW

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ABSTRACT

Lead is not considered an essential nutritional element and is a cumulative poison to humans. Acute lead poisoning is extremely rare. The major source of lead contamination is the composition fuel. Lead is removed from the atmosphere by rain and falls back on the earth surface and seeps into the ground. Lead passes from the soil to water and to the plants and finally into the food chain. Unnao is the one of major industrial towns adjacent to Kanpur having most of cotton, leather, pharmaceutical, steel and other industries. Unnao industrial area is situated near Kanpur in northern side of Ganga River having more than 50 industrial units. The effluents discharged by the industries, after passing through effluent treatment plant. The quality of ground water in the industrial areas is under constant threat of contamination directly or indirectly. Remarkable high concentration of lead in some parts of ground water of Unnao districts is a common feature in the region.

***Keywords:** Lead ground water, Unnao, Uttar Pradesh.*

INTRODUCTION:

Lead is a chemical element denoted by Pb and atomic number is 82. Lead is soft and malleable, and has low melting point. When freshly cut, lead is bluish-white, it tarnishes to a dull gray color, when exposed to air. Lead has the highest atomic number of any stable element and concludes three major decay chains of heavier elements. Lead is still widely used for pipe, paint, batteries, cable-sheathing, lead crystal glass etc.

Lead has no known biological role. It can accumulate in the body and cause serious health problems. It is toxic, tetraogenic and carcinogenic. Exposure to lead can occur by contaminated air, water, dust, food or consumer products. Children are at greater risk as they are more likely to put objects in their mouth such as those that contain

lead paint and absorb a great proportion of the lead that they eat. Exposure at work is a common cause of lead poisoning in adults with certain occupations at particular risk.

Lead poisoning can cause a variety of symptoms and signs like Intellectual disability, abdomen pain, constipation, headaches, irritability, memory problems, inability to have children, tingling in the hands and feet.

EXPERIMENTAL:

In this study 53 ground water samples were collected from different locations of Unnao district and send them to IITR Lucknow for instrumental examination in which 15 samples found to contain lead as a contaminant given in table 1.

Table 1: Analysis of ground water samples for lead content (Post- monsoon season)

S No.	Sample ID	Location	Lead(mg/L)
1	G-5	Boiler point, Dakari, Unnao	0.090
2	G-6	Opp. H/O Shankar singh, Maswasi, Unnao	0.087
3	G-7	CETP outlet complex, Unnao	0.053
4	G-8	Haze mansoor alam india ltd. Unnao	0.081
5	G-10	Babuganj hata temple, Unnao	0.066
6	G-18	H/O Ramsajeevam, Rambakhs khera Unnao	0.057
7	G-20	Durjan khera village, Unnao	0.060
8	G-22	Teekar railway crossing, gate no. 31, Unnao	0.060
9	G-23	H/O munnulal, Mukund kheda, Unnao	0.057
10	G-26	Opp. m/s Elena company, Unnao	0.102
11	G-30	H/O Rajesh yadav, Jhanjari, Unnao	0.057
12	G-44	Payjal yojna, Maswasi, Unnao	0.087
13	G-48	H/O Jagannath, Jalimkheda, Unnao	0.069
14	G-51	Opp. H/O Bachchu singh, Tribhuvan kheda, Unnao	0.060
15	G-55	Opp. Banerjee hospital, Magarwara, Unnao	0.087

RESULTS AND DISCUSSION:

- The permission limit for lead in ground water is 50 µg/l.
- Samples show a high percentage of Pb in ground water (0.102).
- Results shows many area of Unnao district are affected by the excess of Pb and it can enter in human body by water or food.
- High level of Pb in body is very harmful and cause many serious problems like anemia, gastrointestinal disturbance, gradual paralysis in muscles, constipation etc.

EFFECT ON BODY

Lead is not an essential element and produces adverse effect on human body. Exposure to lead can occur by contaminated air, water, dust, food and consumer products. Symptoms may include abdomen pain, constipation, headaches, irritability, memory problems, inability to have children and tingling in hands and feet. It causes almost 10% of intellectual disability of otherwise unknown cause and can result in behavioral problems. Some of the effects are permanent. In several cases anemia, seizures, coma or death may occur.

CONCLUSION

From the above discussion, it is quite clear that the presence of lead has been recorded in many locations and the ground water quality standard has been violated for lead. The permissible limit of lead in ground water is 50 µg/l. The high values of lead at these locations may be due to disposal of industrial waste in the surrounding area.

Lead poisoning is preventable. This includes by individual efforts such as removing lead containing items from the home, workplace efforts such as improved ventilation and monitoring, and nationwide policies such as laws that ban lead in products.

REFERENCES

1. Binns, H.J. ; ricks, O.B. "Helping parents prevent lead poisoning" ERIC digest.
2. National safety council (2008). "Lead poisoning" fact sheets, Itasca, Illinois, U.S. : National safety council.
3. Health and safety executive UK. "Lead" working safety with lead. HSC.
4. A report of ministry of water resources, Govt. of India.
5. APHA (1992), standard Methods for the examination of water and waste waters, American public Health association, 13th edition, Washington DC.

6. CGWB (2010) ground water contamination in industrial area, unnao district, uttar Pradesh, central ground water board, Northern region, Lucknow, April 2010.
7. IITR (2010) Analysis of water samples from selected sites in unnao, Indian institute of toxicology research, lucknow, April 2010.