

Arsenic contamination

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In news– A new study has said that not just groundwater, but the arsenic has found its way into the food chain mainly rice, wheat and potato in rural Bihar.

About the new study

- The research **study was a part of the project on arsenic induced toxicity of Bihar jointly funded by the British Council in the United Kingdom and Department of Science and Technology in India.**
- It was recently published in the journal Science of the Total Environment.

Key findings –

- The study has confirmed the presence of **arsenic in the food chain in Bihar through irrigation water.**
- Three common eatables rice, wheat and potato have elevated levels of arsenic that increases the disease burden in exposed persons.
- **The concentration was higher in cooked rice compared to raw rice.**
- Arsenic is present in the groundwater as it is used on a large scale for irrigation by farmers and that is how it finds its way into the food chain as well.
- As per the dietary assessments, the food had more arsenic content than drinking water, even when arsenic levels in drinking water was **above the World Health Organization (WHO) provisional guide value of 10 micrograms per litre ($\mu\text{g} / \text{L}$).**
- At least 77 per cent of households had an arsenic concentration in drinking water below the WHO guideline value of 10 $\mu\text{g} / \text{L}$.
- Contrary to previous studies, **food was found to contribute more to arsenic poisoning than drinking water**

by 6 per cent when the arsenic concentration in drinking water was above 10 µg / L.

- This suggests that the **presence of high arsenic concentrations in water may result in higher total arsenic concentrations in the food** which could be due to both increased arsenic in cooking and naturally high total arsenic content in grains and potatoes.
- Hence the severity of arsenic contamination in Bihar, after **West Bengal, is well-acknowledged.**

What is arsenic?

- Arsenic is **naturally present at high levels in the groundwater** of a number of countries.
- Arsenic is a **natural component of the earth's crust** and is widely distributed throughout the environment in the air, water and land.
- Arsenic is **highly toxic in its inorganic form.**
- **Inorganic arsenic compounds (such as those found in water)** are highly toxic while **organic arsenic compounds (such as those found in seafood)** are **less harmful** to health.

Its impact on human health-

- **The immediate symptoms** of acute arsenic poisoning include vomiting, abdominal pain and diarrhoea.
- These are followed by numbness and tingling of the extremities, muscle cramping and death, in extreme cases.
- **Long-term exposure** to arsenic from drinking-water and food **can cause cancer and skin lesions.**
- It has also been associated with **cardiovascular disease and diabetes.**

In utero and early childhood exposure has been linked to **negative impacts on cognitive development and increased deaths in young adults.**