

## Environmental Contaminants in Mother's Milk

*Prelims: Current events of national and international importance | Health*

### Why in News?

*Recent studies in parts of rural India have detected traces of environmental contaminants, raising concerns about early-life exposure to pollutants.*

- **Breast Milk** - It is a unique bioactive fluid produced by mammalian mothers.
- **Composition** - Contains all the nutrients that an infant needs in the first 6 months of life, including fat, carbohydrates, proteins, vitamins, minerals and water

*The World Health Organisation (WHO) recommend exclusive breastfeeding for the first 6 months of life, followed by continued breastfeeding alongside complementary foods up to 2 years of age or beyond.*

- **Importance - First food and first vaccine** - Breast milk provides complete nutrition and immune protection for infants.
- Recommended by WHO as the safest nourishment for infants.
- It provides macronutrients, micronutrients, bioactive molecules and stem cells that support infant growth.
- **Benefits** -
  - Strengthening immune defences.
  - Supporting brain and neurodevelopment.
  - Shaping the gut microbiome.
  - Reducing inflammation and infections.
  - Lowering risk of allergies, autoimmune disorders, obesity and respiratory diseases.

### Key findings of the study

- **Long-term Benefits** - Study found that longer breastfeeding duration is associated with
  - Higher intelligence in adulthood
  - More years of schooling
  - Higher earnings.
- **Concern of Contaminants** - Detection of traces of pesticides, heavy metals and uranium in breast milk in parts of rural India.

*Studies have detected at least 101 contaminants in breast milk samples across India.*

- **Nature** - Detected substances fall into categories such as:
  - Carcinogens (cancer-causing agents)
  - Endocrine disruptors (chemicals that interfere with hormonal systems)
  - Neurotoxins (harmful to brain development)
  - Nephrotoxicity (kidney damage)
- **Early-life Exposure** - Indicates exposure to pollutants may begin in infancy rather than later in life.
- Infants are particularly vulnerable because their organs and immune systems are still developing and have lower body weight, increasing relative exposure.
- **Uranium in Groundwater** - Uranium-238 (U-238) is a naturally occurring radioactive element that can contaminate groundwater.
- 151 districts across 18 states had groundwater uranium levels above the WHO guideline of 30 µg/l.

*In Bihar, about 1.7% of groundwater sources are affected. Uranium contamination has been reported to have the highest level (5.25 µg/L) recorded in the Katihar district.*

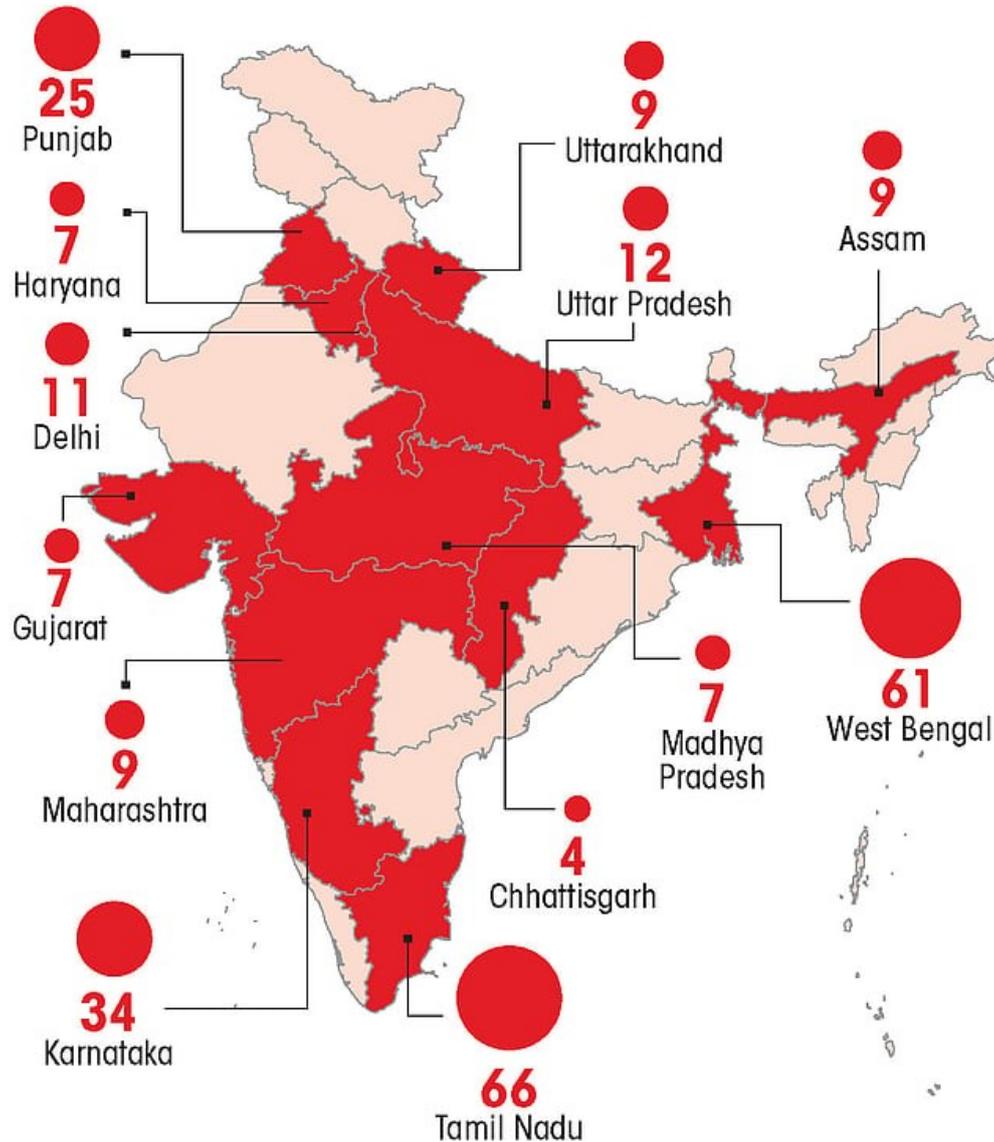
### **States with High contamination levels -**

- Punjab - 24.2% wells above limit
- Haryana - 19.6%
- Telangana - 10.1%
- Delhi - 11.7%
- Rajasthan - 7.2%

## Quite a threat

Studies have detected at least 101 contaminants in breast milk samples from across India. Several of the contaminants are potential carcinogens, endocrine disruptors and neurotoxins

● No. of contaminants found in breast milk samples studied



Source: ExHuMId Database, accessible online at: <https://cb.imsc.res.in/exhumid/>

- Smaller proportions were found in Karnataka, Madhya Pradesh, Tamil Nadu, Jharkhand, Chhattisgarh, Gujarat, Himachal Pradesh, Maharashtra, Odisha, West Bengal and Bihar.
- **Significance** - Highlights the link between environmental pollution and early-life health exposure.
- Emphasises the need for groundwater quality monitoring and pollution control.

## References

1. [Down to Earth | Environmental Contaminants in Mother's Milk](#)
2. [Nature | Contaminants in Mother's Milk](#)

