Uranium Contamination in Ground Water

What is the issue?

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- Reports of widespread uranium contamination in groundwater across India demand an urgent response.
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- Groundwater contamination across India must be probed and mapped, and safe sources need to be identified.
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What is the scenario of uranium contamination?

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- **Evidence -** A recent study, has found over 30 micrograms per litre (mcg/l) of the heavy metal in parts of north-western, southern and south-eastern India.
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- Reports of uranium contamination has cropped up across India in recent years, with south Bangalore recording 2000 mcg/l of uranium in groundwater.
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- Previously, regions of Andhra Pradesh and Telangana were found to have over 500 mcg/l of uranium in their aquifers.
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- More recently, parts of Gujarat and Rajasthan recorded undesirable uranium levels in their waters.
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- **Regulations -** Drinking such water can damage one’s kidneys, and the World Health Organization (WHO) prescribes '30 mcg/l' as an upper limit.
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- But unfortunately, the residents of the regions surveyed were using wells recording far greater uranium levels as their main source of drinking water.
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- Significantly, as the “Bureau of Indian Standards” does not specify a norm for uranium level, water is not tested regularly for it.
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What are the health effects?

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- Preliminary studies on the health effects of drinking uranium-tainted water among animals and humans have revealed that it causes kidney damage.
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- Notably, this is said to be caused by the chemical effect of uranium, rather than a radiological, even though uranium is radioactive.
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- Nonetheless, we need more comprehensive systematic studies to establish the chronic health effects of uranium exposure.
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How does uranium enter ground water?

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- The mechanism by which uranium enters groundwater is still under research.
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- Two types of terrains have been identified with heavy contamination, namely:
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- Alluvial aquifers in Rajasthan and other north-western regions
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- Crystalline rocks such as granite in southern regions like Telangana.
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- Some researchers have hypothesized that over-extraction of ground water exposes uranium to air, which triggers its release from the rocks.
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- Further research is needed in this regard as it would help in identifying regions where safer water can be found.
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- Notably, even information of how uranium accumulated with the rocks (during sedimentation), would help in estimating the regions of prevalence.
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Source: The Hindu

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