Uranium Contamination in Ground Water

What is the issue?

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

What is the scenario of uranium contamination?

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

**What are the health effects?**

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

**How does uranium enter ground water?**

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

- Notably, even information of how uranium accumulated with the rocks (during sedimentation), would help in estimating the regions of prevalence.

Source: The Hindu