Concerns Regarding Groundwater Contamination | Haryana | 14 Jan 2025

Why in News?

According to a recent report released by the **Ministry of Jal Shakti**, **groundwater** quality varies considerably across India, with certain states and UT such as **Arunachal Pradesh, Mizoram, Meghalaya** and **J&K** fully meeting **Bureau of Indian Standards (BIS) standards** while states like **Rajasthan, Haryana** and **Andhra Pradesh** facing widespread contamination.

Key Points

- The northeastern states of **Arunachal Pradesh, Mizoram,** and **Nagaland**, along with **Jammu & Kashmir,** have showcased **exceptional groundwater management practices**.
- A notable concern in the report, based on quality data at **15,259 groundwater monitoring locations** and focused assessment at **4,982 trend stations across** the country in **2023,** is the **"elevated levels of uranium in several regions".**
- The samples with **high uranium concentrations** were clustered in areas identified as **over-exploited, critical, and semi-critical groundwater stress zones**, such as Rajasthan, Gujarat, Haryana, Punjab, Tamil Nadu, Andhra Pradesh and Karnataka.
    - Rajasthan and Punjab are shown as **regional hotspots of uranium contamination**.
- The report also reflects significant concerns over the quality of water due to high concentrations of **nitrate, fluoride, arsenic,** and **iron** in groundwater.
- Almost **20%** of the samples exceeded the permissible limit for **nitrate** while **9%** of samples had **fluoride levels** above the acceptable limit.
    - **Arsenic contamination** was found in 3.5% of samples.
    - Fluoride concentration exceeding the permissible limit is a major concern in **Rajasthan, Haryana, Karnataka, Andhra Pradesh** and **Telangana**.
    - **Rajasthan, Tamil Nadu and Maharashtra** have some of the highest incidences of **nitrate contamination,** with over **40%** of water samples exceeding the permissible limit.
        - The report attributed it primarily to agricultural run-off and overuse of fertilizers.
    - Elevated **arsenic levels** were found in several states, particularly in the **floodplains of the Ganga** and **Brahmaputra rivers**, during the assessment.
        - This includes regions of **West Bengal, Jharkhand, Bihar, Uttar Pradesh, Assam, and Manipur,** as well as areas in the **Punjab,** and Rajnandgaor district in **Chhattisgarh**.
- The report underlined that **Rajasthan, Delhi, Gujarat, Haryan, Punjab, Telangana, Andhra Pradesh** and **Karnataka** are the most severely affected by **high Electrical Conductivity (EC) value** in groundwater.
    - **EC** which is a measure of the ease with which water conducts electricity. It is actually the **measure of mineralization of water** and indicative of the **degree of salinity** of ground water.
    - It tells about how much **dissolved substances, chemicals,** and **minerals** are present in the water. Higher amounts of these impurities will lead to a **higher conductivity.**
- A **rising trend in EC levels** signals a **deeper issue of groundwater salinization**.

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GROUNDWATER OVERUSE & DEPLETION