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## High Level of Ammonia in Yamuna

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### Why in News

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Recently, **high levels (around 3 parts per million) of ammonia in the Yamuna river** has been detected in Delhi which led to the disruption of water supply in Delhi.

As per the **Bureau of Indian Standards (BIS)**, the acceptable **maximum limit of ammonia in drinking water is 0.5 parts per million (ppm)**

### Key Points

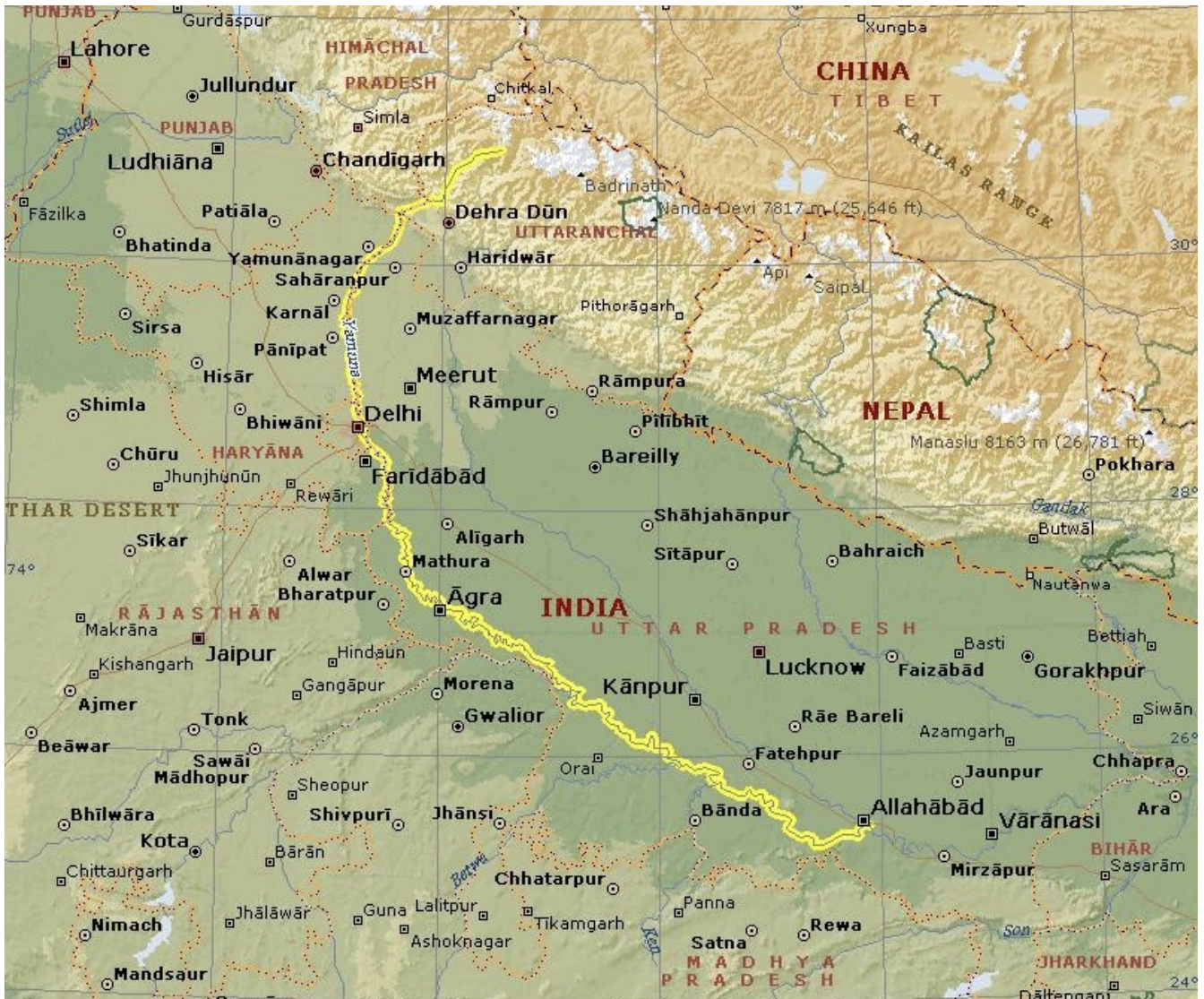
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- **Ammonia:**
  - Its **chemical formula is  $\text{NH}_3$** .
  - It is a **colourless gas** and is **used as an industrial chemical** in the production of fertilisers, plastics, synthetic fibres, dyes and other products.
  - It **occurs naturally in the environment** from the breakdown of organic waste matter, and may also find its way to ground and surface water sources **through industrial effluents, contamination by sewage or through agricultural runoff**.
- **Effect of High Level of Ammonia:**
  - Ammonia **reduces the amount of oxygen in water** as it is transformed to oxidised forms of nitrogen. Hence, it also increases **Biochemical oxygen demand (BOD)**.
  - If the concentration of ammonia in water is above 1 ppm it is toxic to fishes.
  - In humans, long term ingestion of water having ammonia levels of 1 ppm or above may **cause damage to internal organs**.

- **Treatment:**
  - Mixing of freshwater with ammonia polluted water.
  - Chlorination.
    - Chlorination is the process of adding chlorine or chlorine compounds such as sodium hypochlorite to water.
    - This method is used to kill certain bacteria and other microbes in tap water. However, chlorine is highly toxic.
- **Long Term Solution:**
  - Stringent implementation of guidelines against dumping harmful waste into the river.
  - Making sure untreated sewage does not enter the water.
  - Maintain a sustainable minimum flow, called the **ecological flow**.  
**Ecological flow** is the minimum amount of water that should flow throughout the river at all times to sustain underwater and estuarine ecosystems and human livelihoods, and for self regulation.

## Yamuna

- The river Yamuna, a **major tributary of river Ganges**, originates from the **Yamunotri glacier** near **Bandarpoonch peaks** in the **Mussoorie range of the lower Himalayas** in **Uttarkashi** district of **Uttarakhand**.
- It **meets the Ganges** at the **Sangam in Prayagraj, Uttar Pradesh** after flowing through **Uttarakhand, Himachal Pradesh, Haryana and Delhi**.
- **Length:** 1376 km
- **Important Dam:** Lakhwar-Vyasi Dam (Uttarakhand), Tajewala Barrage Dam (Haryana) etc.
- **Important Tributaries:** **Chambal**, **Sindh**, **Betwa and Ken**.



**Source: IE**