



## Froth in Yamuna

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# River of foam cuts across Delhi

Every year, as winter sets in, thick sheets of foam blanket the Yamuna. This froth can have adverse effects if consumed, or even touched



## WHAT IS FROTH?

Foam bubbles are produced when organic matter decomposes. These foam-producing molecules have one end that repels water and another that attracts water. They work to reduce the surface tension on the water surface. These foam bubbles are lighter than water, so they float on the surface as a thin film that gradually accumulates.

## What causes Yamuna's froth blanket?

- Untreated sewage may contain soap/detergent particles
- Industrial run-off
- Organic matter from decomposing vegetation
- Presence of filamentous bacteria that let out surfactant molecules
- Pollutants from sugar and paper industries in UP that travel through the Hindon Canal

### Health hazards

- Short-term exposure can lead to skin irritation, allergies
- Ingestion may cause gastrointestinal problems and diseases like typhoid
- Long term exposure can cause neurological issues and hormonal imbalances

## How can froth formation be stopped?

### IN THE SHORT-TERM

- Rid Okhla pondage of water hyacinth
- Detergents must be biodegradable so they do not persist and lose their ability to cause foam

### IN THE LONG TERM

- UP, Haryana, Delhi need to upgrade sewage treatment plants
- Industrial pollution to be stopped
- Increasing the flow of the river

### The substances that pollute the Yamuna

#### Biological O<sub>2</sub> demand Standard: 3mg/l or less

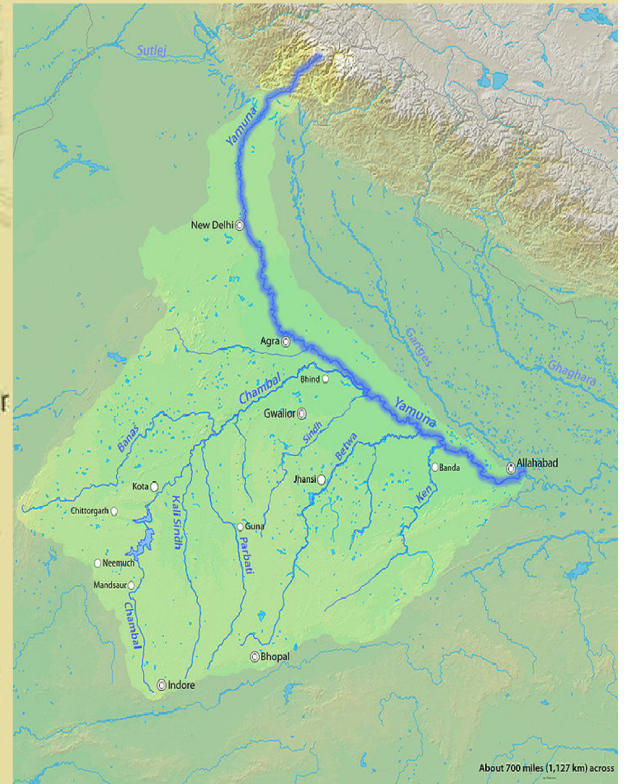
BOD is a measure of the amount of oxygen required to remove waste organic matter from water in the process of decomposition by aerobic bacteria.

#### Dissolved O<sub>2</sub> demand Standard: 5mg/l or more

DOD is the amount of oxygen in aquatic environments that is accessible to fish, invertebrates, and all organisms in the water.

#### Faecal coliform Standard: 500-1,000 ml

**Faecal Coliform:** These are bacterial organisms most commonly used to monitor the removal of pathogens from wastewater treatment plants.



## Yamuna River

**Length:** 1376 km

**Source:** The river Yamuna, a major tributary of river Ganges, originates from the Yamunotri glacier in Uttarkashi district of Uttarakhand.

**Basin:** It meets the Ganges at the Sangam (where Kumbh mela is held) in Prayagraj, Uttar Pradesh after flowing through Uttarakhand, Himachal Pradesh, Haryana and Delhi.

**Important Dams:** Lakhwar-Vyasi Dam (Uttarakhand), Tajewala Barrage Dam (Haryana) etc.

**Important Tributaries:** Chambal, Sindh, Betwa and Ken.

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