



Frothing in the Yamuna

Why in News

Recently, a **layer of froth was seen floating over parts of the Yamuna river**, which has now become a repeat occurrence in Delhi.

- Earlier, [high levels of ammonia in Yamuna](#) resulted in frequent disruption to Delhi's water supply.

Key Points

- **About:**

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River of foam cuts across Delhi

Every year, as winter sets in, the Yamuna begins to resemble a glacier, as thick sheets of foam blanket the river. This froth is toxic, and can have extremely adverse effects if consumed, or even touched



What is foam or froth formation?

Foam or froth formation is a phenomenon that takes place on many lakes and streams. Foam bubbles are produced when organic matter decomposes. These foam-producing molecules have one end that repels water and another end that attracts water and 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 is foam made of?

About 1% of the foam is made up of foaming agents like phosphates and surfactants. The remaining 99% is air and water.

Why does foam form in places like the Kalindi Kunj Okhla barrage?

When water with surfactants or detergent-like molecules fall from a height (such as the Okhla barrage), they churn to form bubbles in water. Foam begins to form after monsoon, but intensify as winter approaches, because foam bubbles are much more stable in lower temperatures

What are the sources of pollution that cause foam formation?

- 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 to heavy metals in industrial pollutants 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

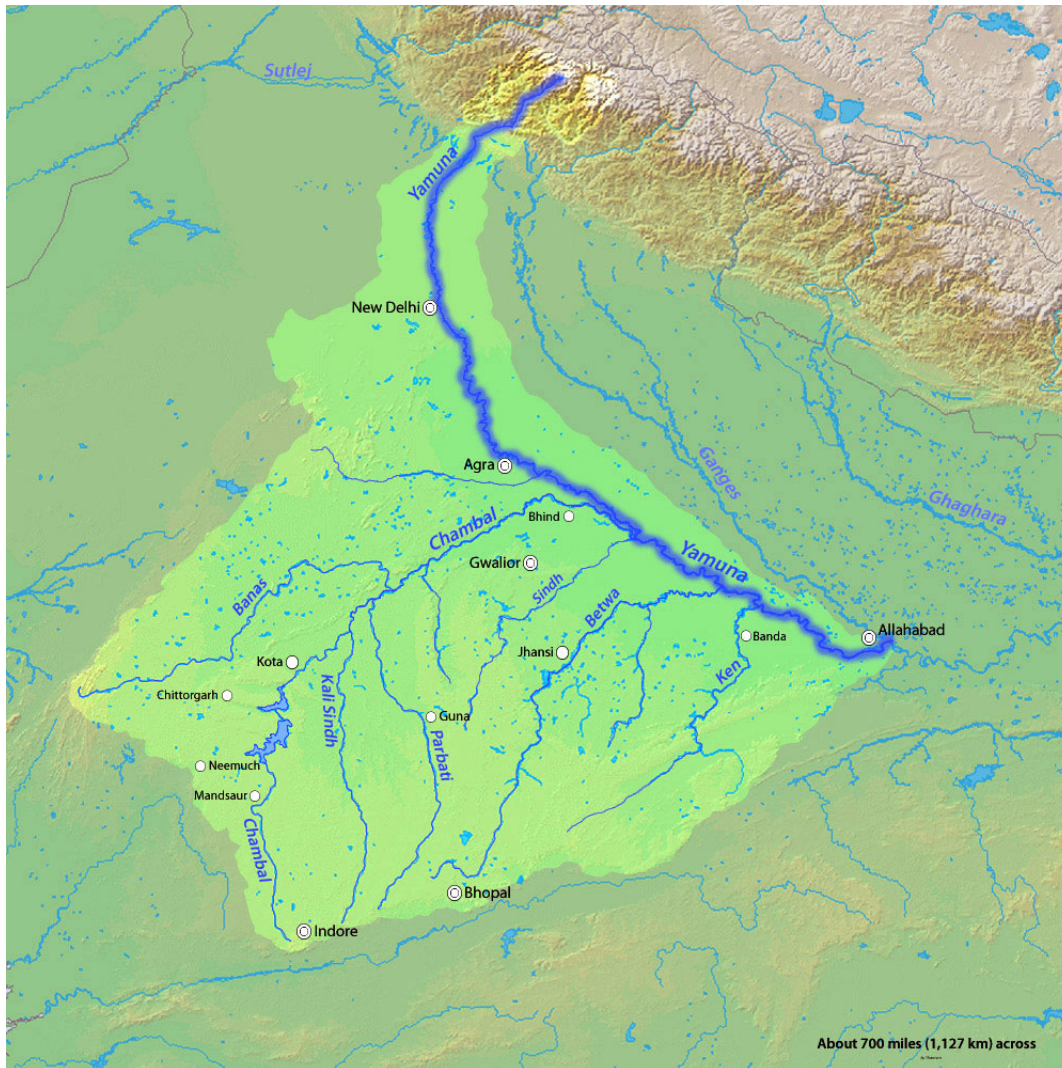
- UP, Haryana, Delhi need to upgrade sewage treatment plants
- Industrial pollution to be stopped
- Increasing the flow of the river

Steps Taken to Stop Froth Formation:

- The Delhi Pollution Control Committee (DPCC) **banned the sale, storage and transportation of soaps and detergents not conforming to the quality standards** set by the [Bureau of Indian Standards \(BIS\)](#).
- The fifth report of the [National Green Tribunal \(NGT\)](#)-appointed **Yamuna Monitoring Committee** notes that though **BIS standards for detergents have been improved**, it is not clear whether these standards will actually be enforced.
- The **role of regulatory bodies** like the [Central Pollution Control Board \(CPCB\)](#), **DPCC and Pollution Control Boards (PCBs)** is generally limited to implementing discharge/effluent standards.

Yamuna

- Source: The river Yamuna, a major tributary of river Ganges, originates from the **Yamunotri glacier near Bandarpooch peaks** in the Mussoorie range of the lower Himalayas at an elevation of about 6387 meters above mean sea level 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.
- **Length:** 1376 km
- **Important Dam:** Lakhwar-Vyasi Dam (Uttarakhand), Tajewala Barrage Dam (Haryana) etc.
- **Important Tributaries:** **Chambal**, Sindh, **Betwa and Ken**.



Source: IE

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