Daily current affairs

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Biochemical Oxygen Demand (BOD)

Biochemical Oxygen Demand (BOD), is the amount of dissolved oxygen needed (i.e. demanded) by aerobic biological organisms to break down organic material present in a given water sample at certain temperature over a specific time period.

The BOD value is most commonly expressed in milligrams of oxygen consumed per litre of sample during 5 days of incubation at 20 °C and is often used as a surrogate of the degree of organic pollution of water.

Importance

- Biochemical Oxygen Demand is an important water quality parameter because it provides an index to assess the effect discharged wastewater will have on the receiving environment.
- The higher the BOD value, the greater the amount of organic matter or “food” available for oxygen consuming bacteria.
- If the rate of Dissolved Oxygen(DO) consumption by bacteria exceeds the supply of DO from aquatic plants, algae photosynthesis or diffusing from air, unfavourable conditions occur.
- Depletion of DO causes stress on aquatic organisms, making the environment unsuitable for life.
- Further, dramatic depletion can lead to hypoxia or anoxic environments.
- BOD is also used extensively for wastewater treatment, as decomposition of organic waste by microorganisms is commonly used for treatment.

What leads to Increase in BOD?

- Nitrates and phosphates in a body of water can contribute to high BOD levels.
- Nitrates and phosphates are plant nutrients and can cause plant life and algae to grow quickly. When plants grow quickly, they also die quickly.
- This contributes to the organic waste in the water, which is then decomposed by bacteria resulting in high BOD level.

What does BOD indicate?

- BOD indicates the amount of putrescible organic matter present in water. Therefore, a

low BOD is an indicator of good quality water, while a high BOD indicates polluted water.
- BOD directly affects the amount of dissolved oxygen in rivers and streams.
- The rate of oxygen consumption is affected by a number of variables: temperature, pH, the presence of certain kinds of microorganisms, and the type of organic and inorganic material in the water.

Typhoon

- A typhoon is a mature tropical cyclone that develops between 180° and 100°E in the Northern Hemisphere.
- This region is referred to as the Northwestern Pacific Basin,and is the most active tropical cyclone basin on Earth, accounting for almost one-third of the world's annual tropical cyclones.
- Hurricanes, typhoons and cyclones are all rotating storms spawned in the tropics.
- As a group, they can be referred to as tropical cyclones.
- Because of the Coriolis effect, these storms rotate counterclockwise in the Northern Hemisphere and clockwise in the Southern Hemisphere.
- A typhoon differs from a cyclone or hurricane only on the basis of location.
- A hurricane is a storm that occurs in the Atlantic Ocean or northeastern Pacific Ocean, a typhoon occurs in the northwestern Pacific Ocean, and a tropical cyclone occurs in the south Pacific or Indian Ocean.

More river stretches are now critically polluted: CPCB

- The number of polluted stretches in India's rivers has increased to 351 from 302 two years ago, and the number of critically polluted stretches — where water quality indicators are the poorest — has gone up to 45 from 34, according to an assessment by the Central Pollution Control Board (CPCB).
- While the Rs.20,000 crore clean-up of the Ganga may be the most visible of the government's efforts to tackle pollution, the CPCB says several of the river's stretches — in Bihar and Uttar Pradesh — are actually far less polluted than many rivers in Maharashtra, Assam and Gujarat.
- These three States account for 117 of the 351 polluted river stretches.
- Based on the recommendations of the National Green Tribunal, the CPCB last month apprised the States of the extent of pollution in their rivers.

Mithi among the worst

- The most significant stretches of pollution highlighted by the CPCB assessment (which is yet to be published) include **the Mithi river** — from **Powai to Dharavi** — with a BOD (Biochemical Oxygen Demand) of 250 mg/l, **the Godavari** — from **Someshwar to Rahed** — with a BOD of 5.0-80 mg/l; the **Sabarmati** — **Kheroj to Vautha** — with a BOD from 4.0-147 mg/l; and the **Hindon** — **Saharanpur to Ghaziabad** — with a BOD of 48-120 mg/l.
- In its compilation of polluted stretches in Uttar Pradesh, the **Ganga** with a BOD range of 3.5-8.8 mg/l is indicated as a 'priority 4' river.

In managing water, Surat takes the lead-Municipality to supply 115 MLD treated water to meet industrial requirement by March 2019

- India's 'Diamond City' offers a lesson for the country's ever-expanding cities on water management and the optimal use of water, which is rapidly becoming a scarce resource.
- Surat's civic body is setting up state-of-the-art sewage treatment plants (STPs) to ensure every drop of waste water is treated and reused for purposes other than drinking.
- The entire quantum of water will be treated from domestic sewerage water in tertiary treatment plants at the Bamroli and Dindoli areas for supplying to mainly textile factories in the Pandesara and Sachin industrial clusters housing over 400 dying and printing units.
- At present, 40 MLD treated water is supplied to industries in Pandesara in the city.
- This is the largest capacity of tertiary water treatment in the country which is being expanded to 115 MLD by March 2019.
- In fact, Surat was the first city in the country to start selling recycled water to industries in 2014.
- Surat's cost effective water management system is most advantageous for its contribution towards reducing the dependency on conventional resources of water, and thus optimal use of the resource.

Recycling technology

- The civic body's efforts to create infrastructure for water management is in line with the State government's policy of promoting the use of recycled water for non-drinking purposes, and reducing dependence on ground water.

Fact check

- India is facing its worst water shortage in history, according to a report by the Niti Aayog.
- Nearly 600 million Indians faced water stress and about 2,00,000 people die every year because of lack of access to safe water.

ISRO launches two U.K. satellites-Aims for early Chandrayaan-2 mission

- The late-night dark skies at lit up in bright orange hues as the PSLV-C42 lifted off and vanished into the thick black clouds, carrying two satellites from the **United Kingdom** – **NovaSAR** and **S1-4** from the first launch pad at the **Satish Dhawan Space Centre**, **SHAR** here
- The lightest version of the PSLV, flying in its core-alone version without the six strap-on motors, the PSLV-C-42 rose into the skies.
- Almost 18 minutes later, the two satellites were placed in the desired orbit by ISRO.
- This was the 12th such launch of a core-alone version of the PSLV by ISRO.
- The two satellites, owned by Surrey Satellite Technology Ltd (SSTL) were placed in a circular orbit around the poles, 583 km from Earth.
- The **commercial arm of ISRO, Antrix Corporation** earned more than Rs.220 crore on

this launch.

Usage

- The NovaSAR is a technology demonstration mission designed to test the capabilities of a new low cost S-band SAR platform.
- It will be used for ship detection and maritime monitoring and also flood monitoring, besides agricultural and forestry applications.
- The S1-4 will be used for environment monitoring, urban management, and tackling disasters.

Other Launches

- Outlining the road map for ISRO, Mr. Sivan ,the Chairman said the next six months will see 18 missions – 10 satellite missions and 8 launch vehicle missions definitely with huge load.
- Among the slew of launches scheduled over the next few months, the much-awaited and delayed, India's second lunar mission, Chandrayaan-2 finally has a launch window.
- The other launches include the GSAT series that will provide bandwidth speeds of up to 100 Gbps per second, as part of the government's Digital India efforts.
- The Cartosat and Risat satellites will also be launched within the next six months.
