

## Bio-Cement

### ❖ Context

- Researchers from the **Indian Institute of Technology Madras** have developed a structured model to help in the production of bio-cements.

### ❖ Background

- **Cement manufacturing** is among the **largest CO 2-producing industries**.
- Bio-cement can be a major step in developing alternative sustainable processes for manufacturing cement to reduce CO 2 emissions.

### ❖ About the Process

- The process is called **Microbially Induced Calcite Precipitation (MICP)**.
- It is the process by which **calcium carbonate precipitates** are **formed by microorganisms**, which are used to produce bio-cement.
- MICP processes are currently modelled using unstructured models.
- **S. pasteurii bacteria** was used to develop a structured model for the overall **ureolysis processes** (uptake and breaking of urea using bacteria) to scale up the MICP process.

### ❖ Advantages of Bio-cement

- Bio-cement **synthesis is more energy efficient** as it requires **temperatures in the range of 30° to 40°C** whereas conventional cement production requires above 900°C.
- It is also **eco-friendly** with negligible carbon dioxide emissions.
- Bio-cement production can also be potentially **more economical** since **production is faster** and **industrial wastes** such as lactose mother liquor (LML) and corn steep liquor (CSL) **can also be used as raw materials** for the bacteria. It has comparable shear strength, durability, reduced water absorption capacity, and permeability to the conventional cement.

### ❖ Practical Applications

- **Self-healing cement** for sealing cracks in difficult-to-reach locations.
- **Consolidation of soil structures.**
- **Removal of heavy metals and 'radionuclides'** from drinking water.

## Plastics' Role In Pathogen Transmission In Sea

### ❖ Context

- According to a recent study published in the journal *Scientific Reports*, **microplastics could also serve as transport systems for parasites derived from terrestrial animal and human hosts**. These parasites cannot replicate in seawater.

### ❖ Biofilm Formation

- When microplastic fibres and beads are placed in seawater, a **biofilm** is formed.
- The film is a sticky layer of bacteria and gel like substances that coats plastics when they enter fresh or marine waters. Researchers also call this sticky layer an **eco-corona**.
- **When parasites are added** to the same water, **parasites not only clinged** to the microplastic, **but also there numbers were increasing over time**. Gram for gram, **plastic had two to three times more parasites** than did seawater.

### ❖ Transportation

- **Pathogens from land**, thus, **can hitch a ride to the beach** on microscopic pieces of plastic, providing a new way for germs to **concentrate along coastlines** and **travel to the deep sea**.

- **Microplastics** that float along the surface could **potentially travel long distances**, **spreading pathogens to regions they would not otherwise be able to reach**.
- **Microfibers** (commonly from clothes and fishing nets) **harboured a greater number of parasites than did microbeads** (commonly found in cosmetics).
- **Plastics that sink** will **concentrate pathogens on the sea bottom**, where filter-feeding animals like clams, mussels, oysters, abalone and other shellfish live.
- A sticky **biofilm layer can camouflage synthetic plastics** in seawater, and **animals** that typically eat dead organic material may **unintentionally ingest** them.

### ❖ 'One-Health' Approach

- It emphasises the **close connection of animal, human and environmental health**. While it may seem that plastic pollution affects only animals in the ocean, it can ultimately have consequences on human health.

## Disqualification of MLAs and MPs

### ❖ Context


- Recently, the Election Commission has sent a **notice to Jharkhand Chief Minister Hemant Soren** over an **office-of-profit charge** against him for allotment of a mining lease in his name last year.
- Under **Section 9A of the Representation of the People Act, 1951** Mr. Soren could face disqualification for entering into a government contract.

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<p>❖ <b>Representation of the People Act, 1951</b></p> <ul style="list-style-type: none"> <li>The act was <b>passed by the parliament under Article 327</b> of the constitution.</li> <li><b>Salient Features of the act:</b> <ul style="list-style-type: none"> <li>It regulates how <b>elections and by-elections</b> are held.</li> <li>It provides the administrative <b>infrastructure for holding elections</b>.</li> <li>It deals with the <b>registration of political parties</b>.</li> <li>It lays out the <b>requirements and disqualifications</b> for House membership.</li> <li>It includes <b>laws to combat corruption and other crimes</b>.</li> <li>It lays down the <b>procedure for settling doubts and disputes</b> arising out of elections.</li> </ul> </li> </ul> <p>❖ <b>Qualification for Contesting Election</b></p> <ul style="list-style-type: none"> <li>A person <b>must be a member of the constituency's electorate</b>.</li> <li>If a person <b>wants to contest for a seat reserved for them</b>, he or she <b>must be a member of a Scheduled Caste or Scheduled Tribe</b> in any state/Union Territories.</li> </ul>	<p>❖ <b>Disqualification</b></p> <ul style="list-style-type: none"> <li>A person can be disqualified on below grounds. <ul style="list-style-type: none"> <li>Disqualification on <b>conviction for certain election offenses</b> and corrupt practices in the election.</li> <li>A person convicted of any offence and sentenced to <b>imprisonment for not less than two years</b>.</li> <li>Disqualification on <b>ground of corrupt practices</b>.</li> <li>Disqualification for dismissal for <b>corruption or disloyalty</b>.</li> <li>Disqualification for <b>office under Government Company</b>.</li> <li>Disqualification for <b>failure to lodge account of election expenses</b>.</li> <li>Disqualification for <b>promoting enmity</b> between different groups or for the offense of bribery.</li> <li>A person <b>must not have been punished for preaching and practicing social crimes</b> such as Untouchability, Dowry, Sati etc.</li> </ul> </li> </ul> <p>❖ <b>Office of Profit</b></p> <ul style="list-style-type: none"> <li>The expression office of profit has <b>not been defined in the Constitution or in the RPA 1951</b>.</li> <li>Its ambit has to be <b>inferred only from the pronouncement of the courts and other competent authorities</b> like the Election Commission and the president.</li> </ul>
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## News in Between the Lines

<p><b>National Open Access Registry (NOAR)</b></p> 	<p>❖ <b>Context</b></p> <ul style="list-style-type: none"> <li>Recently, the <b>National Open Access Registry (NOAR)</b> has successfully gone live from 1st May 2022.</li> </ul> <p>❖ <b>Key Highlights</b></p> <ul style="list-style-type: none"> <li>NOAR is <b>launched by the ministry of power</b>.</li> <li><b>Implementing Agencies-</b> National Load Despatch Center (NLDC) operated by Power System Operation Corporation Limited (POSOCO).</li> <li>It is an <b>integrated platform accessible to all stakeholders in the power sector</b>, including open access customers (both sellers and buyers), power traders, power exchanges, National/Regional/State LDCs and others.</li> <li><b>Payment gateway provided</b> for making payments and integrated with NOAR shall facilitate financial accounting and tracking of short-term open access transactions.</li> <li><b>Significance:</b> <ul style="list-style-type: none"> <li>NOAR would be key to facilitate <b>faster electricity markets and enable the integration of Renewable Energy (RE) resources</b> into the grid.</li> <li>It will also <b>enable seamless market participation by the open-access consumer</b> with easier and faster access to the short-term electricity market comprising about 10% of all India demand.</li> </ul> </li> </ul>
<p><b>PK2</b></p>	<p>❖ <b>Context</b></p> <ul style="list-style-type: none"> <li>Recently, researchers at IIT Mandi have identified a <b>drug molecule that can be used to treat diabetes</b>.</li> </ul> <p>❖ <b>Key Highlights</b></p> <ul style="list-style-type: none"> <li><b>Current drugs used for the treatment of diabetes</b>, such as <b>exenatide and liraglutide</b>, mimic GLP1 (hormonal molecule) and bind to GLP1R (protein structures present in the cells) to trigger insulin release.</li> <li>These drugs are <b>administered as injections</b>, and they are <b>costly and unstable after administration</b>.</li> </ul>

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### ❖ About PK2

- The molecule is **known as PK2**.
- It is **able to trigger the release of insulin by the pancreas**.
- PK2 was **rapidly absorbed by the gastrointestinal tract**, which means that it **can be used as an oral medication rather than an injection**.
- After two hours of administration, **PK2 was found distributed in the liver, kidney, and pancreas of the mice**, but there were no traces of it in the heart, lungs, and spleen. There was a **small amount present in the brain**, which shows that the molecule may be able to cross the blood-brain barrier.
- It was **cleared from circulation in about 10 hours**.

### e-Shram Portal



### ❖ Context

- Recently, the Union Labor and Employment Ministry said that the **Ministry was working on a mechanism to process accident insurance claims by unorganized workers registered on the e-Shram portal**.

### ❖ About e-Shram Portal

- e-Shram is a portal **created by the Ministry of Labor and Employment In August 2021**.
- **Purpose:**
  - It was launched for **better execution of various social security schemes** for unorganized sector workers who are not members of the EPF or ESIC.
  - To create a **national database of unorganized workers (NDUW)**.
- **UAN:**
  - UAN is a **12-digit number uniquely assigned to each unorganized worker after registration on the e-Shram portal**.
  - UAN number will be a **permanent number**.
- **e-Shram Card:** Workers will be provided with an e-SHRAM card which will have a 12 digit unique number.
- **Unorganized Worker:** Any worker who is a home-based worker, self-employed worker or a wage worker working in the unorganized sector and not a member of ESIC or EPFO.
- **Eligibility criteria to register on e-Shram portal:**
  - Any worker who is unorganized and **aged between 16-59**.
- **Benefit:**
  - **Accidental Insurance cover of 2 Lacs under PMSBY**.
  - In future, all the **social security benefits** of unorganized workers will be delivered through this portal.
  - In emergency and national pandemic like situations, this database may be utilized to **provide necessary assistance to the eligible unorganized workers**.

### Koilastila Gas Field



### ❖ Context

- Recently, **Bangladesh has discovered a new gas field with the capacity to produce 20 million cubic feet of gas per day (MMCFD)** at the Koilastila Gas field. It will be **possible to supply 17-19 million cubic feet of gas daily** to the national grid.

### ❖ About Koilastila Gas Field

- Koilastila Gas Field is a **natural gas field at Sylhet, Bangladesh**.
- It was **discovered in 1962 by Pakistan Shell Oil Company**.
- It has been producing gas since 1983.
- It is **controlled by Sylhet Gas Fields Limited**.

### USCIRF Report

### ❖ Context

- A group of eminent Indian-Americans expressed disappointment over the latest annual report of the **US Commission on International Religious Freedom** and alleged that it is biased against India.

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### ❖ Key Highlights Of The Report

- USCIRF's annual report provides recommendations to enhance the U.S. government's promotion of freedom of religion or belief abroad.
- The report recommended to the US Administration to **designate 15 countries "countries of particular concern" (CPC)** in the context of **status of religious freedom**.
- Of them, **the 10 nations that were designated as CPC in 2021 were** - Burma, China, Eritrea, Iran, North Korea, Pakistan, Russia, Saudi Arabia, Tajikistan, and Turkmenistan. **The five other nations are** - **Afghanistan, India, Nigeria, Syria, and Vietnam**. It also recommends **12 countries** for placement on the State Department's **Special Watch List (SWL)** based on their governments' perpetration or toleration of severe violations.
- **The recommendations are not binding on the US government.**

### Districts As Export Hubs Scheme



### ❖ Context

- The **Directorate General of Foreign Trade (DGFT)**, under **Ministry of Commerce**, has proposed a Districts as Export Hubs scheme.

### ❖ Key Highlights

- The **DGFT has sought ₹6,000 crore** from the finance ministry for the proposed scheme. The scheme aims to **help producers across 200 districts scale up manufacturing and find foreign buyers** for their goods.
- It has been proposed as a **centrally-sponsored scheme**, where **60% of the total cost of around ₹10,000 crore** will be borne by the **Centre**, and the rest by states. The **scheme, if approved by the finance ministry, will be part of the new foreign trade policy (FTP)**.
- Under the initiative, **District Export Promotion Committees (DEPCs)** have been constituted in most of the districts and **products and services with export potential have been identified in each district**.
- The FTP was initially scheduled for 1 April 2020, but was postponed multiple times to April 2022 owing to the covid-19 pandemic.
- **India's exports touched the highest ever \$419 billion in 2021-22, exceeding the target fixed for the year by \$19 billion.**

### National Anti-Profiteering Authority



### ❖ Context

- India's anti-profiteering authority has swung into action after a year, with two new members joining it. The NAA's work was affected last year with the lack of quorum as there were vacant positions.

### ❖ Key Highlights

- **To pass a judicial order, a quorum of three is required**, which was not there following the vacancies since April 2021.
- With over 200 cases piled up, the National Anti-Profiteering Authority (NAA) has expedited the number of hearings.
- However, **its tenure is set to end in November** and **GST council is mulling to bringing anti-profiteering cases under the Competition Commission of India**.
- According to the **anti-profiteering rules under GST, whenever rate of GST is reduced the benefits of input tax credit should be passed on to the recipient by way of commensurate reduction in prices**.
- If any supplier does not do the same and indulge in **illegal profiteering**, it may lead to inflation.

### ❖ Anti-profiteering Mechanism

- **CGST Act, 2017** mandates a **3-tier structure** for the investigation and adjudication of the complaints regarding profiteering.
  - **National Anti-profiteering Authority (NAA)** - decision making.
  - **Directorate General of Anti-Profiteering (DGAP)** – investigation.
  - **State-level Screening Committees and Standing Committee** - screening complaints.

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