

## UPSC Daily Current Affairs | Prelim Bits 12-11-2024

### Bio-derived Foam

*Researchers at the Indian Institute of Science (IISc) in Bengaluru have developed an innovative, eco-friendly bio-derived foam recently.*

- It is a bio-derived foam that offers a sustainable alternative to plastic materials used in traditional Fast-Moving Consumer Goods (FMCG) packaging.
- The foam is made from bio-based epoxy resins, made from non-edible oils approved by the US Food and Drug Administration (FDA) and hardeners derived from tea leaves.
- It is an alternative to conventional expanded polystyrene (EPS) and polyurethane (PU) foams.
- It disintegrates in landfills ***without contaminating groundwater***, offering a sustainable alternative to traditional plastic foams.
- These bio-foams can disintegrate within ***3 hours*** when exposed to eco-friendly solvents at ***80°C***.
- The foams contain chemical bonds that can be broken and reformed in response to external stimuli.
- This allows the material to be mechanically reprocessed or dissolved in eco-friendly solvents within hours.
- It is sustainable packaging solutions, offering industries an environmentally responsible.

*Each year, around 2.3 million tonnes of plastic foam are produced worldwide, but less than 1% of it is recycled.*

- **Significance** - Researchers said the production of 10,000 traditional plastic foam cups results in approximately 308 kg of greenhouse gas emissions.
- The Indian foam market, valued at USD 7.9 billion in 2023, is expected to grow to USD 11.1 billion by 2032, with a compound annual growth rate (CAGR) of 3.85%.

### References

1. [Deccan Herald | Bio-derived Foam](#)
2. [Times of India | Biodegradable foam](#)

### International Chess Federation (FIDE)

*An Indian prodigy, Anish Sarkar, has become the world's youngest chess player to be ranked by the International Chess Federation all at the age of three.*

- The International Chess Federation (FIDE) is the ***governing body for international chess competitions*** and the organization that connects national chess federations.
- FIDE regulates all international chess competitions and is responsible for organizing chess and its championships at the global and continental levels.
- **Founded in** - Paris, France on July 20, 1924.
- Its original name in French is Fédération Internationale des Échecs, which is where the acronym FIDE comes from.
- **Headquarters** - Lausanne.
- **Motto** - FIDE's motto is Gens una sumus, which is Latin for "We are one Family".
- **Member federations** - 201 member federations.
- The ***International Olympic Committee (IOC)*** recognized FIDE as a Global Sporting Organization in 1999.
- FIDE also keeps records of players' ratings.

## **FIDE Rating system**

- According to the FIDE Qualification Commission, players get official ratings by participating in FIDE-rated tournaments.
- The FIDE Rating system is a numerical system in which fractional scores are converted to rating differences and vice versa.
- Its function is to produce measurement information of the best statistical quality.
- **Eligibility** - To become a FIDE-recognized tournament, certain regulations on time limits for a game, a minimum rating for players and other criteria must be met.
- Also, to be included in the rating list, a player must be registered through a national chess federation which is a member of FIDE, unless otherwise approved by FIDE Council.
- The federation must not be temporarily or permanently excluded from membership at the time.
- **Types of rating** - Standard, Rapid and Blitz, which reflect different game lengths.
- In order to get a Standard rating, you will need to play at least 5 games against players who are already rated, and score at least ½ point (a draw) in those games.
- Currently, FIDE awards ***chess's highest honor*** to a player who is able to achieve a FIDE Classical or Standard rating of 2,500, plus 3 Grandmaster norms.
- These norms are defined by a set of complex and rigorous rules regarding tournaments, games, and players, set out in the FIDE Title Regulations.

## **Reference**

[The Indian Express | International Chess Federation or FIDE](#)

## **Antariksha Abhyas, 2024**

*Antariksha Abhyas, 2024, a tri-service three day Exercise hosted by Defence Space Agency begins in New Delhi.*

- It is the ***1<sup>st</sup> Ever Space Exercise*** to help secure national strategic objectives in space.

- It is a first of its kind exercise being conducted and is expected to integrate India's space capability in military operations.
- **Aim** - To war-game the growing threats from and to Space Based Assets and Services.
- **Conducted by** - The Defence Space Agency of Headquarters Integrated Defence Staff.
- **Participants** - Specialist branches under Headquarters Integrated Defence Staff namely Defence Cyber Agency, Defence Intelligence Agency and Strategic Forces Command.
- In addition, the exercise intends to identify vulnerabilities in conduct of operations in the event of denial or disruptions of space-based services.

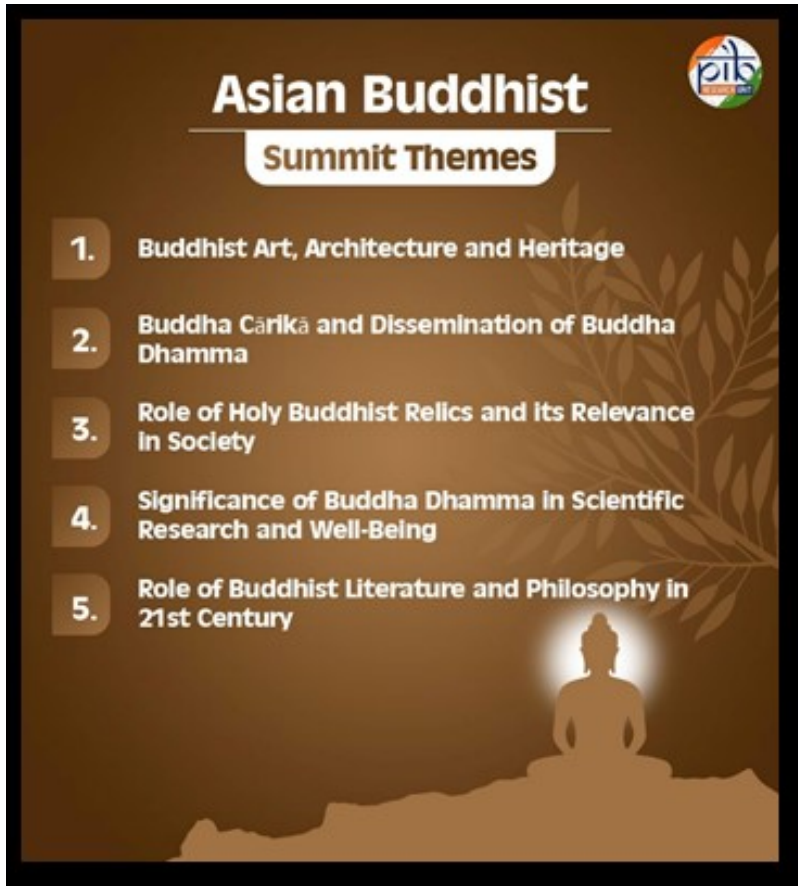
## References

1. [PIB | 'Antariksha Abhyas - 2024'](#)
2. [Deccan Herald | 'Antariksha Abhyas'](#)

## First Asian Buddhist Summit, 2024

*Recently, the Ministry of Culture and the International Buddhist Confederation (IBC), organized the First Asian Buddhist Summit.*

- **Theme** - *'Role of Buddha Dhamma in Strengthening Asia'*.
- **Participants**- 32 countries with over 160 international participants of 'Sangha' leaders, scholars, experts and practitioners from various traditions across Asia.
- **The Delhi Declaration** - The summit adopted the declaration at the conclusion of the event.
  - Strengthening bonds between Asian countries based on the principles of Buddha Dhamma.
  - Working upon Buddhist literature, especially Pali.
  - Fostering and sharing the historical journey of Buddhist art and heritage (including architecture).
  - Connect Asian Buddhist Circuit through Buddhist Pilgrimage and Living Heritage.
  - Recognize the relevance of scientific and medical aspects of Buddha Dhamma (religion).



- **Significance of Buddhist Summit-** Focuses on the foundational teachings of the Buddha and their modern-day applications.
- Explores the ways in which Buddhist principles can contribute to sustainable development, social harmony, and international cooperation.
- Mainly concerned with the religious aspects and its associated discourse.
- Threw up many innovative ideas emanating from the ancient philosophy and science of Dhamma.
- Dhamma as a guiding framework for ethical governance compassionate action, and sustainable development.
- Aligns with India's Act East Policy and Neighborhood First Policy, focusing on collective, inclusive, and spiritual development in Asia.

### **International Buddhist Confederation**

- It is a Buddhist umbrella body with its base in New Delhi.
- It serves as a common platform for Buddhists worldwide.
- It was established under the patronage of the supreme Buddhist religious hierarchy.
- **Membership** - More than 320 organizations, both monastic and lay, in 39 countries.

### **Reference**

[The Hindu| First Asian Buddhist Summit 2024](#)

## Microplastics

*Recently, the researchers founded that microplastics could be affecting weather and climate by producing clouds.*

- **Microplastics** - They are fragments of any type of plastic less than 5 mm (0.20 in) in length.
- They can originate from larger plastic waste as it breaks down, Resin pellets, Microbeads, Tires, Synthetic clothing.
- The problem with microplastics is that like plastic items of any size they do not readily break down into harmless molecules.
- On beaches, microplastics are visible as tiny multicolored plastic bits in sand.
- In the oceans, microplastic pollution is often consumed by marine animals.
- **Types of Microplastics** - Primary microplastics and Secondary microplastics.
  - **Primary microplastics** - Any plastic fragments that are already 5.0 mm in size or less.
  - **Secondary microplastics** - They are arise from the degradation (breakdown) of larger plastic products through natural weathering processes.
- **Research findings** - They act as ice-nucleating particles that produce clouds in conditions where they would not form.
- They are suspended in small droplets of water and slowly cooling these droplets to observe how the microplastics affected ice formation.
- The average temperature at which the droplets froze was 5-10 degrees warmer than droplets without microplastics.
- They are insoluble as a defect into a droplet, it can nucleate ice at warmer temperatures.
- They are interacting with the climate system and the process of cloud formation is triggered by microplastics.
- **Clouds effect on weather and climate** - If microplastics are present, they could cause ice crystals to form, potentially increasing rain or snowfall.
- They reflect incoming sunlight away from the Earth's surface, which has a cooling effect.
- They absorb some radiation that is emitted from Earth's surface, which has a warming effect.
- If microplastics increase the presence of ice particles in clouds compared with liquid water droplets, this shifting ratio could change clouds' effect on Earth's energy balance.

*The world is producing 57 million tons of plastic pollution per year.*

## References

1. [The NDTV World| Microplastics in the Atmosphere](#)
2. [The PBS Organisation| Microplastics in the Atmosphere](#)



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