

Current Affairs search results for tag: science-and-technology

### **1. Dinesh Kumar Shukla assumes the charge as the Chairman of the Atomic Energy Regulatory Board ( Dec. 31, 2022 )**

Dinesh Kumar Shukla assumes the charge as the Chairman of the Atomic Energy Regulatory Board

Distinguished Scientist and former Executive Director of Atomic Energy Regulatory Board (AERB) **Dinesh Kumar Shukla** assumed the charge as Chairman, AERB on 31st December 2022. He has been appointed to this post for a period of **three years**.

The Atomic Energy Regulatory Board was constituted on November 15, 1983, by the President of India under the Atomic Energy Act, 1962 to carry out certain regulatory and safety functions.

The regulatory authority of AERB is derived from the rules and notifications promulgated under the Atomic Energy Act and the Environment (Protection) Act, 1986.

The Mission of the AERB is to ensure the use of ionizing radiation and nuclear energy in India does not cause undue risk to the health of people and the environment.

Currently, the Board consists of a full-time Chairman, an *ex officio* Member, three part-time Members and a Secretary.

Headquarters of AERB: **Mumbai**

### **2. ISRO, NCES and Andhra University to set up equipment along beaches to predict rip currents and prevent drowning at sea ( Dec. 31, 2022 )**

Indian Space Research Organisation (ISRO)

The [Indian Space Research Organisation \(ISRO\)](#) with **National Centre for Earth Sciences (NCES), Thiruvananthapuram** and Andhra University will jointly set up equipment to forecast **rip currents** at Rushikonda and RK beach of [Visakhapatnam](#), Andhra Pradesh.

According to the state government over 200 people have drowned in sea at various beaches in and around Visakhapatnam during 2012 to 2022 and of these, RK beach in the city accounted for 60 percent of deaths. Majority of the death has been due to the presence of rip currents.

The equipment will be used to inform the local marine and local police to alert visitors in the coastal areas.

**Rip currents** are powerful, narrow channels of fast-moving water which moves from shore towards sea. The rip currents are so powerful that they pull people away from the shorelines towards sea. The majority of people who are pulled away by the rip currents die when they are unable to keep themselves afloat and swim to the shore.

Rip currents are found in almost all the beaches of the world.

### **3. SpaceX launched the first 54 Starlink v2.0 satellites into orbit ( Dec. 31, 2022 )**

On December 28, 2022, the **SpaceX Falcon 9 launch vehicle** launched into **low Earth orbit** the **first 54 Starlink satellites** of the **new generation - v2.0 or Gen2**.

#### **Important facts**

- The launch took place from the **SLC-40 launch pad** of the **US Air Force Base** at Cape Canaveral. This is the **60th successful SpaceX mission** since the beginning of 2022.
- Starlink v2.0 satellites have several different configurations depending on the launch vehicle.
- v2.0 is carried by the **old Falcon 9**. The mass of such satellites is 303 kg, and the dimensions are almost the same as in v1.5.
- SpaceX currently has **3,604 operational Starlink satellites** in orbit.
- The total number of satellites planned is **12,000** with the possibility of additional expansion up to **42,000**.

#### **About SpaceX**

- It is a private spaceflight company that sends satellites and people to space, including NASA crews to the **International Space Station (ISS)**.
- The company sent its first two astronauts to the ISS on May 30, 2020, aboard the SpaceX Crew Dragon, and several more on behalf of NASA and other organizations.
- As of mid-2022, it is the only commercial spaceflight company capable of sending astronauts into space.
- SpaceX was founded by **Alan Musk**, a South African-born businessman and entrepreneur.

### **4. Five generations of high-temperature stars revealed in the largest Milky Way globular cluster Omega Centauri ( Dec. 31, 2022 )**

Astronomers and scientists at the **Indian Institute of Astrophysics (IIA)** while studying the **Omega Centauri** have found that **hot stars and white dwarfs** emitted less ultraviolet radiation than expected.

#### **Important facts**

- The largest known **globular cluster** in the **Milky Way** may provide clues to the formation of a strange class of high-temperature stars in Omega Centauri.

#### **What are Globular clusters?**

- A globular cluster is a globular group of stars.

- Globular clusters are bound together by gravity, with high concentrations of stars toward their centres.
- They can include anywhere in the millions of stars.
- These mostly orbit in the extended stellar halo surrounding spiral galaxies.
- It is a matter of research how globular clusters are formed. Or what role they played in the evolution of galaxies.

### **Omega Centauri**

- It is a globular cluster in the constellation of Centaurus that was first identified as a non-stellar object by Edmond Halley in 1677.
- Located at a distance of **17,090 light-years**, it is the largest known globular cluster in the **Milky Way** at a diameter of about 150 light-years.
- It also includes stars of a variety of ages, whereas other globular clusters contain stars from only one generation.

### **What is Galaxy?**

- It is a huge collection of **gas, dust, and billions of stars and their solar systems** bound together by gravity.
- There are more than **100 billion galaxies** in the universe, presenting beautiful structures that can be seen in telescopic images taken from the distant universe.

### **5. MoU signed for commercial production of indigenously developed vaccine 'Lumpi-ProVac' ( Dec. 31, 2022 )**

An MoU for the production of **Goat Pox Vaccine** and "**Lumpi-Provac**" vaccine was signed in **Nagpur** on December 29, 2022 in the presence of Union Minister of Fisheries, Animal Husbandry, **Parshottam Rupala** and Chief Minister of Maharashtra **Eknath Shinde**.

#### **Important facts**

- Rupala praised the commendable effort put forth by ICAR in developing indigenous vaccine **Lumpi-ProVac for LSD**.
- Lumpi-ProVaccine is used for the prophylactic immunization of animals against **Lumpy Skin Disease**.
- The vaccine technology will meet the standard of the market and significantly provide a defence mechanism to control the devastating lumpy skin disease.
- **Goat pox vaccine** is currently used to control lumpy Skin Disease in livestock and has been shown to be effective against lumpy.
- Union Minister Rupala further highlighted the relevance of the technology and requested the **IVBP, Pune** to start manufacturing the vaccine at a large scale without any delay.

- National Centre for Veterinary Type Culture, ICAR-National Research Centre on Equines (ICAR-NRCE), Hisar (Haryana), in collaboration with ICAR-Indian Veterinary Research Institute (IVRI), Izatnagar (UP) developed a homologous live-attenuated LSD vaccine, named Lumpi-ProVacInd.
- **Agrinnovate India Limited (AgIn)**, the commercial arm of DARE, Ministry of Agriculture and Farmers' Welfare, granted "Non-Exclusive Rights" for Commercial production of "Lumpi-ProVac", to Institute of Veterinary Biological Products (IVBP), Pune.

## **Lumpy Skin Disease**

- It is caused by infection of cattle or buffalo with the poxvirus Lumpy skin disease virus (LSDV).
- The virus is one of three closely related species of the genus Capripoxvirus.
- The other two species are Sheeppox virus and Goatpox virus.
- Due to its infectious nature and its impact on the economy, the World Organization for Animal Health (WOIE) has declared it a notable disease.

## **6. Union Home Minister Amit Shah launches the "Prahari app" of the Border Security Force ( Dec. 29, 2022 )**

Union Home Minister Amit Shah launches the "Prahari app" of the Border Security Force

The Union Home and Cooperation Minister Amit Shah launched the Mobile App '**Prahari**' of the [Border Security Force \(BSF\)](#) in New Delhi on 29 December 2022. Union Minister of State for Home Affairs **Nityanand Rai**, Director General of BSF **Pankaj Kumar Singh** were amongst those dignitaries present on the occasion.

### **Usefulness of the Prahari' app**

Amit Shah said that the BSF 'Prahari' app is a great example of Proactive Governance. "Now jawans can get personal information and information related to accommodation, Ayushman-CAPF and leaves on their mobiles. Be it GPF, Bio Data or grievance redressal on "Centralized Public Grievance Redress and Monitoring System" (CP-GRAMS) or information on various welfare schemes, now Jawans can get all this information through the app and this app will also connect them with the portal of the Ministry of Home Affairs."

The Union Home Minister also said that a "**BSF Drone/UAV and Cyber Forensic Lab**" has been set up in Noida, Uttar Pradesh through which captured drones of Pakistan have been thoroughly mapped for their linkages and locations across the border. These drones are used to bring narcotics and arms and ammunition to spread terrorism in India.

The **Border Security Force** was raised on 1 December 1965 after the India-Pakistan war of 1965. It is a border force which is deployed along the International border with **Bangladesh** and **Pakistan**.

BSF is also known as the nation's 'first **line of defence**'. It comes under the Union Ministry of Home Affairs.

## **7. Indian Army inaugurates first ever two-storey 3-D printed dwelling unit in Ahmedabad ( Dec. 29, 2022 )**

Indian Army inaugurates first ever two-storey 3-D printed dwelling unit in Ahmedabad

The **Indian Army** inaugurated its **first 3-D Printed House Dwelling Unit** (with Ground plus One configuration) for soldiers at **Ahmedabad Cantt** on 28 December 2022.

### **Important facts**

- The dwelling unit has been constructed by **Military Engineering Services (MES)** in association with **MiCoB Pvt Ltd**, incorporating the latest 3D Rapid Construction Technology.
- The **71 sqm dwelling unit** with **garage space** was completed in just 12 weeks using 3D printed foundations, walls and slabs.
- The disaster-resistant structures comply with **Zone-III earthquake** specifications and green building norms.
- The formation is a testimony to the commitment of the Indian Army in promoting the '**Atmanirbhar Bharat Abhiyan**'.

### **About Technology**

- This technique uses a solid 3D printer that accepts computerized three-dimensional designs.
- It builds up a 3-D structure in a layer-by-layer manner by extruding a specially designed special type of concrete.
- The Ahmedabad-based Golden **Katar Division of the Indian Army** has been instrumental in taking forward the project with manifold applications in operation.

### **What is 3D Printing?**

- 3D printing uses computer aided design (CAD) to create three-dimensional objects through the layering method.
- The model to be printed with the help of software is first developed by the computer, which then instructs the 3D printer.

## **8. IOCL to help in the TB elimination effort of Uttar Pradesh and Chhattisgarh ( Dec. 28, 2022 )**

IOCL to help in the TB elimination effort of Uttar Pradesh and Chhattisgarh

The government of India owned **Indian Oil Corporation Limited (IOCL)** has signed a Memorandum of Understanding (MoU) with the Central TB Division under the Ministry of Health and Family Welfare and the states of **Uttar Pradesh** and **Chhattisgarh** to undertake an

intensified [TB elimination project](#). This effort of the IOCL is part of its [Corporate Social Responsibility](#).

The MoU was signed in presence of Union Minister of Health and Family Welfare **Dr. Mansukh Mandaviya** and Union Minister of Petroleum & Natural Gas and Housing & Urban Affairs, **Hardeep Singh Puri** in New Delhi on 28 December 2022.

According to the World Health Organisation **26% of Tuberculosis (TB) cases** in the world in 2020 was reported from India. Within India Uttar Pradesh and Chhattisgarh share the highest burden of TB cases among large states in India. The Indian Government has set a target to eliminate **TB in India by 2025**.

Indian Oil has emerged as the first corporate to supplement state efforts in Active Case Finding campaign (ACF) by investing close to Rs. 64 crore in all 75 districts of UP, covering approximately 10% of its population once a year for three years.

Indian Oil will also introduce handheld X Ray Units, Mobile Medical Vans, equipped with cutting-edge diagnostic technology in Uttar Pradesh and Chhattisgarh. This would aid diagnosis of TB in rural areas and hard-to-reach communities leading to improved early case detection and thereby ensuring early treatment.

Under **Corporate Social Responsibility (CSR)** certain public or private sector companies have to spend a minimum **2% of the average net profits** made during the 3 immediately preceding financial years on certain sectors identified by the government...

Every year **March 24 is observed as World Tuberculosis Day in the world**.

## **9. Indian Institute of Science Bengaluru to be G20 Science working group's secretariat ( Dec. 28, 2022 )**

Indian Institute of Science (IISc), Bengaluru,

The **Indian Institute of Science (IISc), Bengaluru**, will function as the **secretariat for Science 20 (S20)**, a working group set up [as part of the G20](#) which will be **presided over by India in 2023**.

### **Important facts**

- The theme of the S20 in 2023 is '**Disruptive Science for Innovative and Sustainable Development**'.
- This broad issue will be discussed throughout the year in different regions of India.
- Three issues will be discussed at the discussions in **Agartala, Lakshadweep, and Bhopal**: universal holistic health, clean energy for a greener future, and bridging science and society.
- Apart from the discussions, there will be an inaugural conference in **Puducherry and a summit in Coimbatore**.

### **About Science 20 (S20)**

- **Established in 2017**, the Science 20 (S20) is one of the newest groupings of the G20.
- In line with the G20, it has a non-permanent rotating secretariat and operates more like a **forum** rather than an organisation.
- The **main objective** of the S20 group is to present consensus-based recommendations for selected topics of interest to policy makers.
- These science-driven recommendations are developed through task forces consisting of international experts.
- A **Sherpa** is appointed to support and guide the task forces.
- Each task force focuses on a broad topic that is relevant to scientists, policy makers, and society alike.
- The S20 summit is held annually, usually before the respective G20 summit.

## **10. Scientists freeze Great Barrier Reef coral in world-first trial ( Dec. 27, 2022 )**

Scientists freeze Great Barrier Reef coral in world-first trial

Scientists working on Australia's **Great Barrier Reef** have successfully tested a new method for **freezing and storing coral larvae**, in a bid to restore the reef threatened by climate change.

### **Important facts**

- Cryogenically frozen coral can be stored and later reintroduced into the wild but the process requires **sophisticated equipment including lasers**.
- A new lightweight "**Cryomesh**" could be manufactured more cheaply and better protect corals, according to scientists.
- Cryomesh is a specially **fabricated mesh** used as a substrate in cryopreservation. The mesh technology will help store coral larvae **at -196°C (-320.8°F)**.
- Scientists are conducting scientific research to protect coral reefs as rising ocean temperatures are destabilising this fragile ecosystem.
- The Great Barrier Reef has experienced **four bleaching events** in the past seven years.

### **What are Coral reefs?**

- Coral reefs are one of the most biologically diverse **marine ecosystems on Earth**.
- They play an important role in marine ecosystems and support habitats for **flora and fauna in the ocean**.

- Each coral is called a **polyp** and thousands of such polyps live together to form a **colony**.

**About Great Barrier Reef**

- It extends for **1400 miles** along the **north-east coast of Queensland, Australia** and is the world's most extensive and rich coral reef ecosystem.
- It is made up of more than **2,900 reefs and more than 900 islands**.
- It is the largest single structure in the world made by living organisms.
- This reef was selected as a **World Heritage Site in 1981**.