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MINISTRY OF SCIENCE AND TECHNOLOGY



MK Yadav Sir

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SARNA RELIGION

(Syllabus: GS Paper 2 – Vulnerable Sections)

Will implement Sarna religious code for tribals and amend GST, says Rahul

Press Trust of India
GUMLA/CHAIBASA (JHARKHAND)

Congress leader Rahul Gandhi on Tuesday promised to bring out a separate Sarna religious code for the tribals, and amend GST. Mr. Gandhi said the Agniveer scheme will be abolished if INDIA bloc is voted to power, alleging that it was initiated by PM Narendra Modi, and not by the Army.

He attacked the BJP-led Centre for "betraying" tribals and alleged that Mr. Modi had insulted President Droupadi Murmu. "PM insulted President Murmu, a tribal, by not inviting her to the new Parliament building inauguration and Ram Temple consecration in Ayodhya," Mr. Gandhi said.

"I am your *sipahi* stationed in Delhi to protect your rights on *jal, jungle, jameen*. Tribals have the first right on resources and



Congress leader Rahul Gandhi with members from the tribal community at a rally in Gumla, Jharkhand, on Tuesday. PTI

governance, but the BJP government wants to wipe out your existence and rights in the name of *vanvasi*," he said.

'BJP for Adani, Ambani'

"The BJP wants to trample your identity, culture, history, and is only committed to Adani, Ambani," Mr. Gandhi said. He added, "The Narendra Modi government handed over 24 years of MGNREGA money to industrialists by waiving ₹16 lakh crore of 22 industrialists."

He appealed to people to vote for INDIA bloc candidates – Sukhdeo Bhagat from Lohardaga and Kalicharan Munda from Khunti.

"INDIA bloc will scrap the Agniveer scheme, brought by Mr. Modi and not the Army. We do not want to differentiate between martyrs," Mr. Gandhi said at a rally in Jharkhand's Gumla.

"The BJP government implemented wrong GST schemes with five tax slabs. We will amend it...we will reduce the tax burden on the poor," he said.

Earlier, addressing a rally at Chaibasa, Mr. Gandhi accused Mr. Modi of wanting to hand over the State's *jal, jungle, jameen* to industrialists. "The PM works for Adani, Ambani... he made 22 billionaires in his 10-year tenure... ," he said. Adding that this Lok Sabha election is for saving the Constitution and the rights of tribals, poor and backward, Mr. Gandhi said INDIA bloc leaders were ready to sacrifice their lives to save the Constitution.

Addressing the rally, jailed former CM Hemant Soren's wife Kalpana said, "INDIA bloc will give a befitting reply to the BJP with *vote ki chot* (strike with vote) on May 13 (the day Singhbhum Lok Sabha seat goes to poll)."

Context: The opposition leader recently pledged to introduce a distinct **Sarna religious code** for tribals and revise the GST if the INDIA bloc secures power through the vote.

Sarna Religion

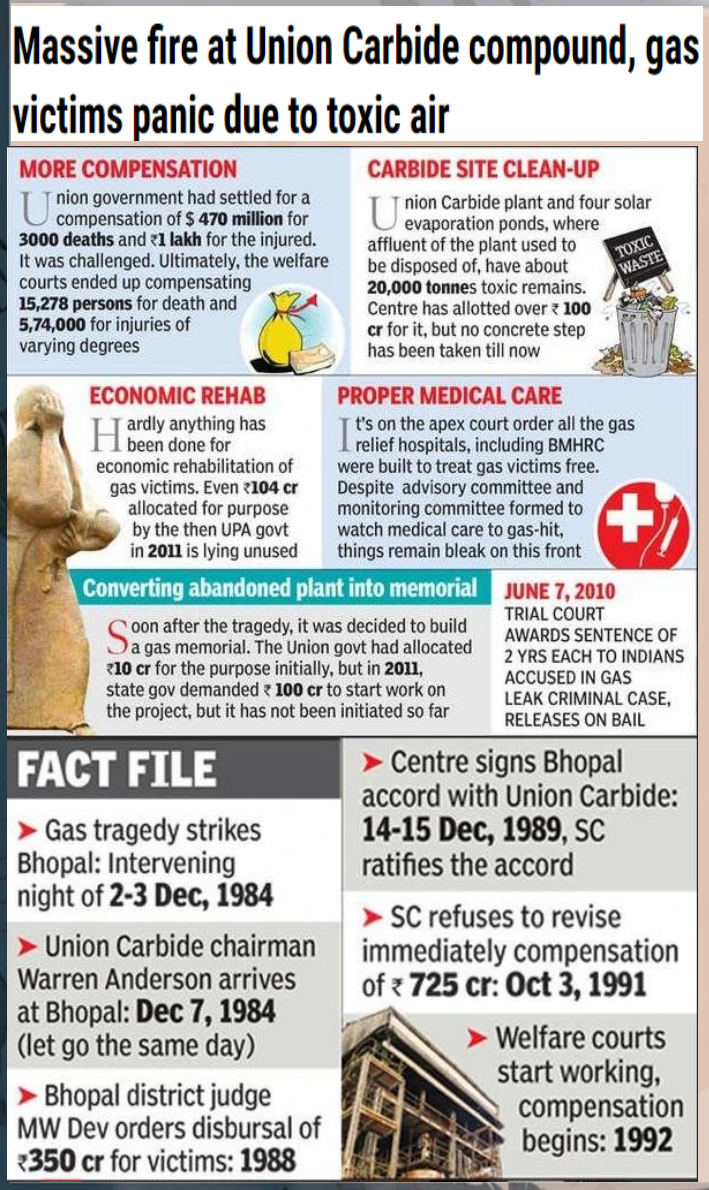
- **Nature**: Followers of the Sarna faith are nature worshippers.
- **Faith:** The holy grail of the Sarna faith is "Jal (water), Jungle (forest), Zameen (land)."
- **Prayer Practices:** Its followers pray to the trees and hills while believing in protecting the forest areas.
- **Festival:** Sarhul, a festival in which devotees worship their ancestors.
- **Idol Worship and Belief System**: Believers of the Sarna faith do not practice idol worship, nor do they adhere to the concept of the Varna system, heaven-hell, etc.
- **Geographical Concentration**: They are concentrated mainly in the tribal belt states of Odisha, Jharkhand, Bihar, West Bengal, and Assam.

The Need for a Distinct Sarna Religion Code:

- **Identity Assertion**: The demand for a separate Sarna Religion Code arises primarily from the assertion that they do not identify as Hindus.
- **Census Data**: Various tribal organizations contend that during the 2011 census survey, over 49.57 lakh individuals in 29 States and Union Territories across India self-identified as Sarna under the "Others" category, surpassing the count of Jains (44.51 lakh) who have a separate religious code.
- **Distinct Cultural Values**: Advocates of the Sarna faith argue that the religious and cultural values of tribals are distinct and cannot be equated with followers of other faiths.
- **Call for Inclusion**: They call for the inclusion of a separate column for the Sarna Religion Code in the delayed Census 2021.

BHOPAL GAS TRAGEDY

(Syllabus GS Paper 3 – Disaster Management)



Context: Recently, a massive fire erupted at the Union Carbide factory in Bhopal, sparking panic among locals. This site infamously witnessed the 1984 methyl isocyanate gas leak, claiming thousands of lives and disabling millions.

Bhopal Gas Tragedy

- **About:** On December 3, 1984, **Methyl Isocyanate (MIC)** leaked from the pesticide plant of Union Carbide in Bhopal, Madhya Pradesh, causing one of the worst chemical disasters globally.
- **Characteristics of Methyl Isocyanate (MIC)**: It is a highly flammable liquid with a sharp, strong odor, evaporating quickly when exposed to air.
    - Exposure to concentrations as low as 21ppm can lead to death within minutes due to its extreme toxicity.
- **Cause of Bhopal Gas Leak:** The disaster occurred on December 3, 1984, when 40 tons of toxic methyl isocyanate (MIC) gas leaked out of a pesticide factory in Bhopal.
- **Occurrence of Events**: The Union Carbide factory contained three underground tanks used to store liquid Methyl Isocyanate (MIC), pressurized with inert nitrogen gas, allowing the liquid MIC to be pumped out as needed.
- **Symptoms of Exposure**: Coughing, severe eye irritation, suffocation sensation, burning in the respiratory tract, breathlessness, stomach cramps, and vomiting.
- **Causes of Death**: Choking, reflexogenic circulatory collapse, and pulmonary edema were the primary causes of death among affected individuals.
- **Legislative Actions in Response:**
    - **The Bhopal Gas Leak Disaster (Processing of Claims) Act**: It was passed in 1985, empowering the Indian government to settle claims and represent affected individuals.
    - **The Public Liability Insurance Act of 1991**: It made compulsory for industries to obtain insurance, with premiums contributing to an Environment Relief Fund for compensating victims of similar disasters.

HINDUSTAN TIMES
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EARTH OBSERVATION DATA
(Syllabus: GS Paper 3 – Sci and Tech)

Earth observation likely to yield economic benefits: WEF report

Jayashree Nandi
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NEW DELHI: Earth observation could drive over $3 trillion in economic benefits globally by 2030 while advancing climate and nature solutions, according to a World Economic Forum report released Tuesday.

The report identified five key areas where earth observation (EO) can have an impact: environmental monitoring, early warning systems, shipping route optimisation, precision agriculture, and supply chain monitoring.

"Earth observation is a vital component of the Fourth Industrial Revolution," said Jeremy Jurgens, managing director and head of the Centre for the Fourth Industrial Revolution at the World Economic Forum (WEF). "It converges with artificial intelligence, digital twins and climate technology to offer a powerful toolset for economic prosperity and sustainable growth."

The global value of EO data could grow from $266 billion to over $700 billion by 2030, rivalling the GDP of medium-sized economies like Belgium ($628 billion), the report said. It projected EO data could contribute $3.8 trillion cumulatively to global GDP between 2023 and 2030.

The Asia Pacific region is positioned to capture the largest share of EO's value by 2030 at $315 billion, while Africa and South America could see the largest percentage growth.



Earth Observations refers to collection of data about activities and the characteristics on Earth.

EO refers to collecting information about activities and characteristics on Earth, both natural and artificial, including physical, chemical, biological and anthropogenic (human) systems. EO includes both remote sensing technologies and "in-situ" data sources. Remote sensing uses a variety of sensors to measure reflected or emitted energy from distant environments. In-situ data is collected adjacent to the measuring instrument, like temperature readings by a thermometer.

For environmental monitoring, satellites and aircraft-based sensors can help track CO2 and methane emissions, pinpoint emissions sources like oil and gas pipeline leaks. For early warning systems, EO can be used to better characterise wildfire risk and speed up detection. EO can help make farming precise by monitoring plant health and nutrient uptake from soil, and supply chains can be kept under watch by detecting problems like illegal deforestation.

EO data has the potential to eliminate 2 gigatons of greenhouse gas emissions annually, equivalent to the combined yearly emissions of 476 million gas-powered cars, according to the report's estimates. Broadly, earth observation can both keep an eye on climate variables — such as levels of greenhouse gases in the atmosphere — and on emissions.

These can then help targeted action to reduce emissions and inform mitigation actions.

The report noted that 2024-2030 is a critical window to advance EO for climate and nature goals, with major international commitments linked to UN sustainable development goals, biodiversity, and emissions reductions culminating in 2030 targets. Over this period, environmental disclosure requirements will take effect, thousands of new EO satellites are expected to launch, and technologies like AI may catalyse adoption. The report projected global EO adoption could increase 30% or more by 2030 based on a survey of about 40 industry leaders.

EO, which includes both remote sensing and in-situ data collection, can measure almost everything on Earth's surface and many phenomena above it. The launch of Landsat 1 by the U.S. Department of the Interior in July 1972 fundamentally changed many scientific disciplines and paved the way for widespread EO data use.

The report comes amid ongoing climate negotiations, where the monitoring of CO2 and methane emissions via satellite has been contentious. Developed nations, the largest historical polluters, could use this capability to pressure developing countries to curb emissions more stringently, experts said. Last December, 196 countries agreed in Dubai to transition away from fossil fuels to achieve net zero emissions by 2050.

"The developing world has to soon enter a much stricter transparency regime in terms of emissions data reporting. While it will be up to countries to devise their own internal data measurement, reporting, and verification structures, there will be increasing international scrutiny and data quality checks, said Vaibhav Chaturvedi, fellow, Council on Energy, Environment and Water (CEEW).

Context: Earth observation data can generate over USD 3 trillion in economic benefits globally and help eliminate two gigatonnes of greenhouse gas emissions annually by 2030, according to a new report by the World Economic Forum.

Earth Observation

- **About:** It involves the use of remote sensing technologies to monitor land, marine, and atmosphere.
- **Satellite-based Imaging**: EO utilizes satellite-mounted payloads to collect imaging data about the Earth's characteristics.
- **Data Processing**: The collected images are processed and analyzed to extract various types of information for diverse applications.

Earth Observation Data

- **About:** It is a unique source of commensurable information. It can be combined with administrative, social and economic data at multiple scales for in-depth policy analysis.
- **High-Resolution Dataset**
  - **High Resolution:** The dataset offers a high-resolution of 38 meters.
  - **Temporal Coverage**: It provides multi-temporal data spanning from 1975 to present, updated yearly since 2017.
  - **Built-Up Area Extent**: Measures the extent of built-up areas and the timing of their development.
- **Applications of Built-Up Area Data**
  - **Regional Summaries**: The data provides summaries of built-up areas by administrative regions.
  - **Impact Assessment:** Useful for assessing the impacts of land use policies.
  - **Urbanization Patterns**: Helps understand local, regional, and global patterns of urbanization.

Key Point of Report

- Environmental monitoring – satellites and aircraft-borne sensors can monitor CO2 and methane emissions, pinpoint emissions sources like oil and gas pipeline leaks;
- Early warning – EO can be used to better characterise wildfire risk and to spot wildfires faster among others;
- Shipping route optimisation;
- Precision agriculture, including monitoring plant health and nutrient uptake from soil;
- Supply chain monitoring to detect illegal deforestation, etc.

NEW INDIAN EXPRESS

May 7

FWD-200B

(Syllabus: GS Paper 3 – Sci and Tech)

First indigenous bomber UAV unveiled in Bengaluru

Context: The FWD-200B, India's inaugural indigenous bomber UAV aircraft, crafted by Flying Wedge Defence, an Indian defense and aerospace firm, was recently revealed.

FWD-200B

- **About:** It is an indigenous military grade bomber **unmanned aerial vehicle (UAV),** marking India's pioneering step into unmanned bomber aircraft technology.
- **Origin:** Designed and manufactured by Flying Wedge Defence and Aerospace Technologies, an Indian defense and aerospace company, showcasing India's capability in homegrown defense technology.
- **Payload Capacity:** Classified as a MALE (medium-altitude, long-endurance) Unmanned Combat Aerial Vehicle, boasting a payload capacity of 100 kg, suitable for various military operations.
- **Integrated Features:** The Unmanned Aerial System (UAS) of FWD-200B includes optical surveillance payloads and is equipped with missile-like weapons, enabling precise air strikes with strategic advantage.
- **Specifications:** With a maximum speed of 370 kmph (200 knots) and an endurance capacity ranging from 12 to 20 hours, FWD-200B offers significant operational flexibility.
    - Its ground control station range extends up to 200 km, ensuring effective remote operation and control.



TIMES OF INDIA

May 7

BLACK SEA

(Syllabus: GS Paper 2 – IR)

On Cam: Russia 'Slaps' Ukraine's Unmanned Sea Drones in Black Sea near Crimean peninsula



Context: After Russia withdrew its larger warships due to a series of devastating attacks, Ukraine's advancing drone boats seem to be targeting smaller, high-speed vessels in the Black Sea.

Black Sea

- **About:** A marginal mediterranean sea lying between Europe and Asia, east of the Balkans, south of the East European Plain, west of the Caucasus, and north of Anatolia.
- **Bordering countries:** Bulgaria, Georgia, Romania, Russia, Turkey, and Ukraine.
- **Main river:** The Black Sea is supplied by major rivers, principally the Danube, Dnieper and Dniester.
- **Mountains:** It is surrounded by the Pontic Mountain in the South, Caucasus Mountain in the East, and Crimean Mountain in the North.
- **Island**: It contains several islands, with the largest ones being Snake Island (Ukraine), Giresun Island (Turkey), and St. Ivan Island (Bulgaria).
- **Connecting water bodies:**
  - Drains into the Mediterranean Sea via the Turkish Straits and the Aegean Sea.
  - The Bosporus Strait connects it to the small Sea of Marmara which in turn is connected to the Aegean Sea via the Strait of the Dardanelles.
  - To the north, the Black Sea is connected to the Sea of Azov by the Kerch Strait.
- **Meromictic Basin:** The Black Sea is the world's largest body of water with a meromictic basin.
  - A meromictic lake has layers of water that do not intermix.

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RWANDA

(Syllabus: GS Paper 2 – IR)

How is the U.K. deporting migrants to Rwanda?

Does the East African nation have an economic incentive to be part of the U.K's asylum plan?

Sumeda

The story so far:

Last week, the British authorities deported an asylum seeker to Rwanda under a voluntary returns scheme and started detaining other migrants in the country in preparation for deportations to Rwanda by July as part of an immigration law passed by the U.K. Parliament. In April 2022, the U.K. struck a deal with Rwanda to address issues related to undocumented migration. However, the relocation policy was declared unlawful by the U.K. Supreme Court. In response, the Conservative government finalised a new agreement with Rwanda to ensure additional safeguards. The new legislation allows authorities to remove asylum seekers who have made "unauthorised journeys" since January 1, 2022, to Rwanda for processing of asylum claims.

How was the deportation facilitated?

The Voluntary Returns Scheme (VRS), under which the migrant was sent to Rwanda by the U.K. government, is not an entirely new programme. The plan was introduced by the Home Office in 1999 and co-funded by the European Refugee Fund. In 2002, a reintegration assistance programme was added to the scheme to help repatriated migrants meet their basic needs after arrival, such as finding a place to live, finding a job etc. The current plan is an extension of the existing VRS.

Under the new programme, the British government offers financial assistance to migrants and failed asylum seekers who opt to depart to a "safe third country," or a country they are "admissible to." A person is eligible to apply for the service if they have been in the U.K. illegally or have overstayed their visa; withdrawn, or want to withdraw their application to stay in the country; claimed asylum; or have an official letter confirming that they are a victim of modern slavery. A one-off payment is available to those departing to a country recognised as developing by the Organisation for Economic Cooperation and Development (OECD). The OECD categorises Rwanda as a low-income developing country. Over the years, several individuals have been sent to Rwanda from the U.K. under the VRS. As per the latest data, 19,253 individuals were voluntarily returned from Britain under the returns scheme last year.

Is Rwanda safe for refugees?

The landlocked country of Rwanda is one of the most densely populated countries in the world with a population of over 13 million people. While the country has recorded significant progress in recent years in developing its economy, it continues to feature among the least developed nations in the world.

Additionally, the government in Rwanda has been accused of stifling dissent, keeping a tight control on media and opposition, and supporting rebel groups in the Democratic Republic of Congo. "Arbitrary detention, ill-treatment, and torture in official and unofficial detention facilities were



Context: British authorities recently deported an asylum seeker to Rwanda under a voluntary returns scheme and began detaining other migrants in readiness for deportations to the East African nation by July.

Rwanda

- **About:** Rwanda, officially known as the Republic of Rwanda, is a landlocked nation situated in the Great Rift Valley of Central Africa, where the regions of the African Great Lakes and Southeast Africa intersect.
  - Positioned just a few degrees south of the Equator.
- **Capital:** Kigali.
- **Bordering countries:** Uganda, Tanzania, Burundi, and the Democratic Republic of the Congo.
- **Nile River:**
  - **Location:** Flows through several countries, including Egypt, Sudan, South Sudan, Ethiopia, Uganda, Congo, Kenya, Tanzania, Rwanda, and Burundi.
  - **Characteristics:** The longest river globally, playing a crucial role in the history and development of ancient civilizations.
- **Great Rift Valley: :** Extends from Lebanon in Asia to Mozambique in southeastern Africa.
- **Sahara Desert:** Covers northern Africa, including parts of Algeria, Chad, Egypt, Libya, Mali, Mauritania, Morocco, Niger, Sudan, and Tunisia.

HINDUSTAN TIMES Page 17

PULITZER PRIZE

(Syllabus: GS Paper 1 – Awards)

Pulitzer Prizes honour wide Gaza war coverage

Agencies
letters@hindustantimes.com

NEW YORK: The war in Gaza featured prominently in Monday's Pulitzer Prizes, which included a special citation for journalists covering the Israel-Hamas conflict.

The New York Times won a Pulitzer in international reporting for its "wide-ranging and revelatory coverage of Hamas's lethal attack in southern Israel on October 7", as well as reporting on "the Israeli military's sweeping, deadly response".

"This war has also claimed the lives of poets and writers," the committee said. "As the Pulitzer Prizes honour categories of journalism, arts and letters, we mark the loss of invaluable records of the human experience."

The prize also recognised jailed Russian opposition politician and Washington Post contributor Vladimir Kara-Murza "for passionate columns written at great person risk from his prison cell warning of the consequences of dissent in Vladimir Putin's Russia and insisting for a democratic future for his country."

Kara-Murza, a prominent critic of Putin's regime, is currently jailed in Russia, where he is serving a 25-year prison term — the lengthiest known sentence among Putin's detained dissenters. He was convicted of "treason" following remarks made during a speech in the United States, where he accused Russia of perpetrating "war crimes" against Ukraine.

The awards, given out at Columbia University, come as the New York college has faced backlash for calling in police to clear out pro-Palestinian protesters. The police largely blocked media from the scene and threatened student journalists covering the events with arrest.

Other awards honoured US journalists' reporting on migrant child labour, racial disparities in the legal system and gun violence.

Reuters won two Pulitzer Prizes, taking home the breaking news photography award for searing images of the Israel-Gaza conflict as well as the national reporting award for a series of investigations into Elon Musk's manufacturing empire.

ProPublica won the coveted public service award for stories detailing undisclosed gifts and trips that US Supreme Court justices, particularly Clarence Thomas, accepted from wealthy donors. The New York Times and the Washington Post each captured three prizes.

The Associated Press won for feature photography for its coverage of migrants trekking from Latin America to the US.

The annual Pulitzers, first presented in 1917, are the most prestigious honours in US journalism.



Migrants walk across the Darien Gap from Colombia to Panama in hopes of reaching the US, on May 9, 2023. The image was part of a series by Associated Press photographers that won the 2024 Pulitzer Prize for feature photography. AP

Context: Recently, both The New York Times and The Washington Post each received three Pulitzer Prizes for their 2023 coverage, spanning topics from the Gaza conflict to gun violence.

Pulitzer Prize

- **About:** It is an annual award bestowed by Columbia University, New York City, recognizing exceptional public service and achievement in American journalism, letters, and music.
- **Establishment**: 1917
- **Fellowship**: $500,000
- **Prestige and Tradition:** Highly esteemed awards, conferred each May, symbolizing excellence in various fields since their inception.

Indians Who Have Won the Pulitzer Prize

- **Gobind Behari Lal (1937)**: First Indian to win the Pulitzer Prize for journalism, affiliated with the Ghadar Party in America.
- **Geeta Anand**: In 2002 received Pulitzer Prize as part of The Wall Street Journal staff for Explanatory Reporting on corporate corruption. Her series of reports on healthcare as a lead reporter was a finalist in the 2003 Pulitzer Awards too.
- **Sanghamitra Kalita:** Recognized for her role as managing editor of the Los Angeles Times.
- **Siddhartha Mukherjee (2011)**: Awarded for his work "The Emperor of All Maladies: A Biography of Cancer," offering insights into the complexities of cancer.
- **Channi Anand, Mukhtar Khan, and Dar Yasin (2020)**: Associated Press photographers, honored in the Feature Photography category for their exceptional work.
- **Danish Siddiqui, Adnan Abidi, Sanna Irshad Mattoo, and Amit Dave (2022)**: Won a Pulitzer in the Feature Photography Category for covering the Covid-19 pandemic in India.

BUSINESS LINE
Page 10

EFFICON

(Syllabus: GS Paper 3 – Sci and Tech)

BASF launches insecticide Efficon to tackle sucking pests

KV Kurmanath
Hyderabad

Chemical solutions company BASF has launched Efficon, a new insecticide, in India to help farmers tackle sucking pests.

Classified under the new IRAC group 36, the product represents a new class of insecticides (Group 36 – pyridazine) with no known cross-resistance with existing products, making it a superior insecticide resistance management tool. "Piercing and sucking pests pose a significant threat to crops in India, causing extensive damage amounting to 35 to 40 per cent loss in productivity and yields. Farmers in the country can now manage this challenge with Efficon," Giridhar Ranuva, Business Director of Agricultural Solutions, BASF India, said.



POTENT. Efficon represents a new class of insecticides with no known cross-resistance with existing products

He along with some Indian and global leaders of BASF launched the product here on Monday. Stating that the company recommends two applications, he said the product starts working on its target in just two hours of its application.

EARLY RECIPIENT

India is among the earliest countries after Australia, where the product was launched in 2023, to get the product.

"It is effective on multiple life stages of target pests like aphids, jassids and white flies. Upon application, Efficon quickly stops insects from feeding and plant injury," Simone Barg, Senior Vice President, BASF Agricultural Solutions, Asia Pacific, said.

BASF's Agricultural Solutions division, which generated sales of €10.1 billion, invested 900 million on R&D in 2023.

BASF had 2,335 employees in India with eight production sites and 42 offices. In 2023, BASF registered sales of about €2.4 billion in India.

Advantages:

- Supports integrated pest management (IPM) by being compatible with beneficial releases.
- Demonstrates favorable safety and environmental characteristics.
- Effectively manages pests with diminished susceptibility to alternative insecticides.
- Promotes rapid cessation of feeding, thereby reducing virus transmission.
- Offers enhanced crop protection post-closure through systemic, oral, and contact actions.

Context: Chemical solutions company BASF has launched **Efficon, a new insecticide**, in India to help farmers tackle sucking pests.

Efficon

- **About:** Efficon insecticide marks the debut of compounds in the market belonging to the new IRAC group 36, representing a groundbreaking class of insecticides (Group 36 — pyridazine).
- **Feature**: Efficon presents a unique mode of action, specifically targeting piercing and sucking pests like Aphids, Jassids, and Whiteflies, effectively controlling multiple life stages of these pests.
- **Impact**: Upon application, Efficon swiftly halts insects from feeding, mitigating plant injury and offering enduring residual control, thanks to its systemic properties.
- **Agricultural Threat Mitigation**: Piercing and sucking pests, prevalent in India, inflict substantial harm to crops, leading to productivity and yield losses ranging from 35 to 40 percent.
- **Early Market:** India, following Australia, emerges as one of the initial nations where Efficon was launched, with its introduction in 2023.

THE HINDU

Page 5

WEST NILE FEVER

(Syllabus: GS Paper 3 – Sci and Tech)

Kerala on alert as man dies of West Nile fever

Sources say that a 79-year-old man from Thrissur died on May 3; five cases have been reported in Kozhikode and four patients have been discharged in the district and 2 in Malappuram; Health Minister says there is no need to worry; officials have been told to intensify pre-monsoon cleaning drive

The Hindu Bureau
KOZHIKODE

The Kerala government issued an alert in the State on Tuesday against West Nile fever, a mosquito-borne viral infection, after one death and eight cases were reported from Kozhikode, Malappuram and Thrissur districts in recent days.

According to official sources, the death of a 79-year-old man from Vadanappally in Thrissur on May 3 has been attributed to the infection. Five cases have so far been reported in Kozhikode. There are two suspected cases in Malappuram too.

Kozhikode Collector Snehil Kumar Singh told mediapersons on Tuesday evening that four of the five infected persons had been discharged from the Government Medical College Hospital. One person is still under treatment.

Three of them are natives of Kozhikode city and one each from Koodaranhi and Nanminda. Another suspected patient has been admitted to a private hospital, Mr. Singh added.



Battling the virus: The Kozhikode Collector says that four infected persons have been discharged from hospital. FILE PHOTO

Minister's statement

A statement from Health Minister Veena George said the infection had been reported from various districts in the State since 2011 and there was no reason to worry. District Medical Officers have been told to intensify pre-monsoon cleaning drives in coordination with the Department of Local Self-Government and the respective district administration, she added.

The infection was confirmed after samples of blood and cerebrospinal fluid of suspected patients were examined at the Virus Research and Diagnostic Lab attached to the medical college hospital. They were later sent to the National Institute of Virology, Pune, for official confirmation.

Symptoms of fever

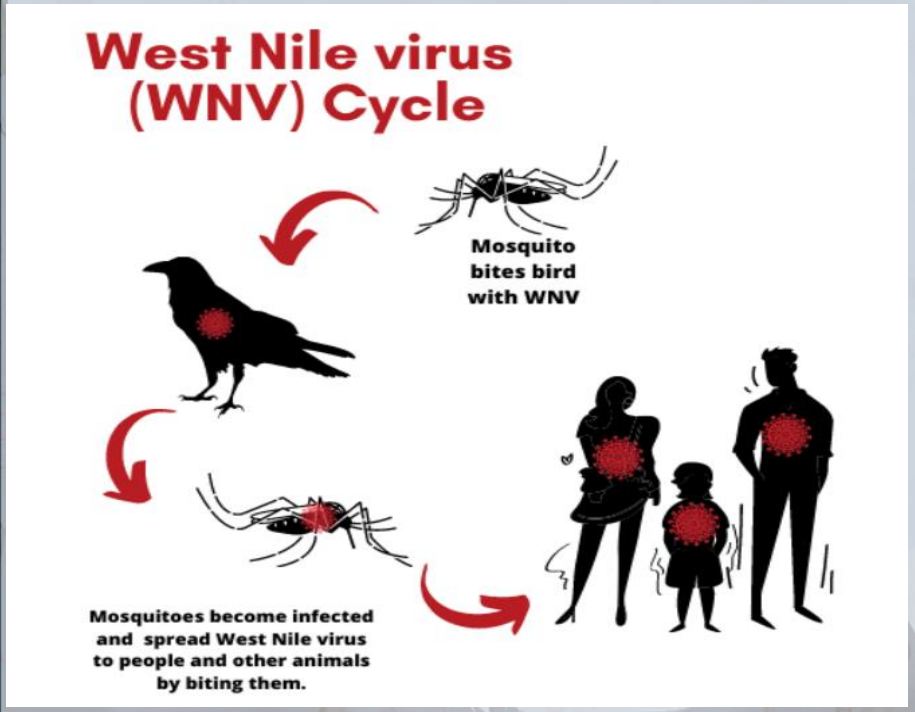
Symptoms of the infection include high fever, headache, neck stiffness, disorientation, stupor, coma, tremors, convulsions, muscle weakness, and paralysis.

Most of the symptoms are similar to that of Japanese encephalitis. However, 80% of the patients need not show any symptoms.

The disease is spread by the Culex species of mosquitoes. As per the World Health Organization (WHO), human infection is most often the result of bites from the infected mosquitoes. This happens when they feed on infected birds, which circulate the virus in their blood for a few days.

There has been no human-to-human transmission so far.

The WHO says that the treatment is supportive for patients with neuro-invasive West Nile virus, often involving hospitalisation, intravenous fluids, respiratory support, and prevention of secondary infections. No vaccine is available for humans.



Context: The Kerala government issued an alert in the State against West Nile fever, a mosquito-borne viral infection, after one death and around eight cases were reported from Kozhikode, Malappuram and Thrissur districts in recent days.

West Nile Fever

- **About**: It is an infection by the West Nile virus
- **Symptoms**: High fever, headache, neck stiffness, disorientation, stupor, coma, tremors, convulsions, muscle weakness, and paralysis.
    - Most of the symptoms are similar to that of Japanese Encephalitis. However, 80% of the patients need not show any symptoms.
- **Spread by**: Culex species of mosquitoes. As per the World Health Organisation, human infection is most often the result of bites from the infected mosquitoes.
- **Transmission**: Via mosquito bites. Birds are considered the natural hosts of the virus on whom mosquitoes prey and become infected.
    - There has been no human-to-human transmission so far.
- **Treatment:** The WHO says that the treatment is supportive for patients with neuro-invasive West Nile virus, often involving hospitalisation, intravenous fluids, respiratory support, and prevention of secondary infections. No vaccine is available for humans.

TIMES OF INDIA

Page 2

Siblings overcome thalassemia odds with half-match marrow transplant

Anuja.Jaiswal
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New Delhi: Siblings, Radhika Jha, 10, and her younger brother Shivansh, 8, from Pune, have been leading a normal and blood transfusion-free life since 2018 and 2022, respectively, after their successful haploidentical bone marrow transplants (50% HLA match) procedures at Dharamshila Narayana Hospital in the city.

They were diagnosed with thalassemia major a few months after their birth. The genetic disorder made the two children dependent on monthly blood transfusions.

According to doctors, the children underwent haploidentical bone marrow transplants (BMT) that involves using a donor who shares half of the necessary genetic markers with the recipient. Radhika's donor was her father, and Shivansh's donor his mother.

"The first eight years after the birth of our first child in 2014 were the toughest period of our lives. In fact, we have started living and leading a normal life after my children underwent bone marrow transplantation in 2022," said Ashutosh Jha, a software engineer in Pune. He added that though the period was very tough, they didn't lose hope.

"We tried almost every possible option to find a cure for our daughter's condition, but without success. The only solutions were either a bone marrow transplant (BMT) or a lifetime of blood transfusions. A doctor in Pune suggested having another baby to get a matching transplant without much complication. Without any delay, we planned our second child two years later. We went for a prenatal diagnosis at 8 weeks to a genetic counsellor, as we are both thalassemia minor carriers, a condition in which blood transfusion is not required."

The doctor suggested doing the diagnosis at the 16th week, as it would have fewer complications and no harm to the baby. However, the result came after one month, by which time 20 weeks had passed. Unfortunately, the sample was also infected. "Though our family became complete, we were now parents to two thalassemia patients," Jha said.

WORLD THALASSEMIA DAY

They were devastated, he said. In August 2017, Ashutosh and Preeti arrived at Dharamshila Narayana Hospital, hoping to give their children a new life.

"After extensive tests, Ashutosh was finally chosen as a donor. On March 26, 2018, Radhika took the leap of faith into her new life, now free of thalassemia," said Dr Suparno Chakrabarti, consultant haematologist and BMT specialist, head & program director — haploidentical BMT and haematology.

After the success of the procedure, the parents wanted the same for Shivansh.

However, the covid-19 pandemic arrived.

Nevertheless, they persevered, and it was Shivansh's turn on Jan 30, 2022. The donor was Preeti.

Dr Sarita Jaiswal, consultant haematologist and BMT specialist, program director of haploidentical BMT, said that when both the parents carry the thalassemia trait, known as thalassemia minor, their offspring face varying probabilities of inheriting the condition.

"In such cases, there is a 25% chance of the child inheriting a normal haemoglobin genotype, free of thalassemia. Conversely, there is a 50% likelihood of the child becoming a thalassemia carrier, inheriting one thalassemia gene and manifesting as thalassemia minor. Typically, carriers of thalassemia minor experience mild symptoms or remain asymptomatic. However, the most severe outcome, thalassemia major, occurs in 25% of cases when the child inherits thalassemia genes from both parents," she said.

WHAT IS THALASSEMIA MAJOR

- It is a genetic disorder characterised by abnormal production of haemoglobin, the protein responsible for carrying oxygen in red blood cells
- Individuals with thalassemia major have impaired production of normal haemoglobin, leading to severe anaemia
- Other complications relate to blood transfusions and iron overload, along with bone deformities, enlarged spleen and growth retardation
- Treatment typically involves regular blood transfusions and iron chelation therapy to manage symptoms
- But a definitive cure can be achieved through a bone marrow transplant

Complications & success rate of haploidentical BMT

- **Complications can arise due to mismatch between donor and recipient,** including graft-versus-host disease (GVHD), where the donor's immune cells attack the recipient's tissues, and graft failure, where the transplanted cells fail to engraft and function properly
- There is a **risk of infection** due to the suppression of the recipient's immune system during the transplant process
- The procedure remains complex and requires meticulous pre-transplant evaluation, **careful donor selection, and close monitoring** during and after the transplant
- According to studies, estimated overall survival and disease-free survival was **89.2% and 85.7%,** respectively



A HAPPY FAMILY | Radhika & Shivansh, who suffered from major thalassemia, leading a normal life after haploidentical bone marrow transplant. While the son got the graft from the mother, the daughter got it from the father

THALASSEMIA

(Syllabus: GS Paper 3 – Sci and Tech)

Context: Recently, siblings from Pune successfully underwent haploidentical bone marrow transplants at Dharamshila Narayana Hospital, triumphing over thalassemia major.

Thalassemia

- **About:** It is an inherited blood disorder resulting from inadequate production of hemoglobin, caused by genetic mutations passed from parents to children.
  - Hemoglobin is crucial for red blood cell function, and insufficient levels lead to various health issues.
- **Symptoms**: Fatigue, weakness, pale or yellowish skin, facial bone deformities, slow growth, abdominal swelling, and dark urine are common symptoms of thalassemia.
  - These symptoms vary in severity and can significantly impact quality of life.
- **Caused by**: Mutations in the DNA of cells responsible for hemoglobin production are the underlying cause of thalassemia.
- **Classification**:
  - Thalassemia is classified based on either the affected part of hemoglobin (alpha or beta) or the severity of the disorder.
  - Variants include alpha thalassemia, beta thalassemia, and different degrees of severity such as trait, carrier, intermedia, or major thalassemia.
- **Treatment**: A blood or bone marrow transplant, also called a hematopoietic stem cells transplant, replaces blood-forming stem cells that aren't working properly with healthy donor cells.
- **World Thalassemia Day**: 8 May each year

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