

JUNE

4

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MK Yadav Sir

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ICMR seeks to provide oral formulation of hydroxyurea to treat sickle cell disease

Bindu Shajan Perappadan
NEW DELHI

The Indian Council of Medical Research (ICMR) has invited Expressions of Interest (EoI) from eligible organisations for the "joint development and commercialisation" of a low dose or paediatric oral formulation of hydroxyurea to treat sickle cell disease in India.

India has the highest prevalence of sickle cell disease in South Asia. Over 20 million people with the disease live in the country. While most pharmaceutical companies in India market 500-mg capsules or 200-mg tablets of hydroxyurea, the biggest challenge in treatment is that it is not available in the suspension form for effective use in the case of paediatric patients, the ICMR said.

Sickle cell disease is one



Over 20 million people with sickle cell disease are residing in India, AP

of the most common monogenic disorders of haemoglobin, and hydroxyurea, a myelosuppressive agent, is an effective drug for treating patients of sickle cell disease, and thalassemia.

Risk of low dose

The ICMR said that since only high-dosage hydroxyurea tablets are available, initiating a low-dose treatment becomes a tedious

task for service providers, as the capsule or tablet has to be broken down appropriately in accordance with body weight, risking the efficacy available with measured doses.

"Thus, there is a need for paediatric formulation of HU (hydroxyurea), considering the number of SCD cases in India and in view of the launch of the National Mission to eliminate Sickle Cell Anaemia/SCD (by 2047)," it said.

The ICMR, which is the apex biomedical research body in the country, also said that in India, according to the National Health Mission's guidelines, healthcare providers initiate hydroxyurea therapy to only symptomatic sickle cell disease patients among children both because of the lack of availability of paediatric doses as well as the fear of toxicity.

In children, the prescribed dose is 10 mg to 15 mg per kilogram of body weight after two years of age. This titration of dose is difficult, and currently, it is carried out by using a fraction of the broken capsules, which is not an appropriate method because it can lead to less accurate administration of the drug, which has five dose-related side-effects.

Titration of drug

With the availability of a formulation, the titration of the drug can be better, and its dose-related side effects can be reduced.

The council said that it could enter into any form of exclusive or non-exclusive agreement with eligible manufacturing companies for joint development and commercialisation of paediatric oral formulations of hydroxyurea for sickle cell disease.

SICKLE CELL ANAEMIA

(Syllabus: GS Paper 3 – Sci and Tech)

Context: The Indian Council of Medical Research (ICMR) has invited Expressions of Interest (EoI) from eligible organisations for the "joint development and commercialisation" of low dose or paediatric oral formulation of hydroxyurea to treat sickle cell disease in India.

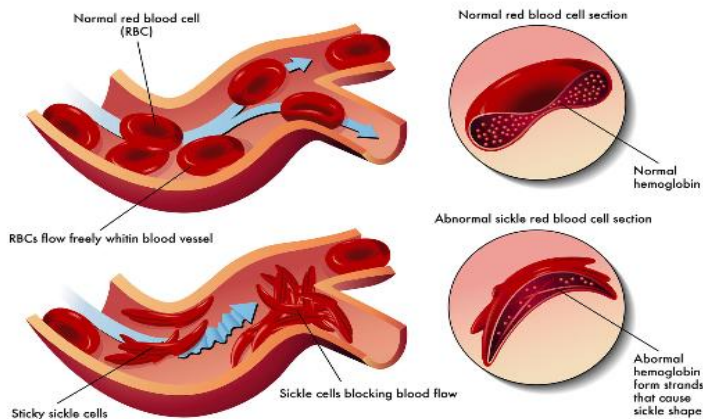
Sickle Cell Anaemia

- **About:** It is one of a group of inherited disorders known as sickle cell disease.
 - It affects the **shape of red blood cells**, which **carry oxygen to all parts of the body**.
 - In sickle cell anaemia, **some red blood cells are shaped like sickles or crescent moons**.
 - These sickle cells also become **rigid and sticky**, which can slow or block blood flow.
- **Cause:** It is caused by a **change in the gene** that tells the body to make the iron-rich compound in red blood cells called **haemoglobin**.
- **Symptoms:** Extreme tiredness or irritability due to anaemia, painful swelling of hands and feet, and jaundice in the early stages.
 - In **later stages**, individuals may experience severe pain, anaemia, organ damage, and increased susceptibility to infections.
- **Treatment:** Blood transfusions alleviate anaemia and lower pain crisis risk.
 - Hydroxyurea reduces pain frequency and prevents long-term complications; transplantation is an option too.

Indian Council of Medical Research (ICMR)

- **About:** It the apex body in India for the formulation, coordination and promotion of biomedical research, is one of the oldest medical research bodies in the world.
- **Headquarter:** New Delhi

Sickle-Cell Anemia



From 8 am today: how votes will be counted

RITIKA CHOPRA
NEW DELHI, JUNE 3

OVER THE last month and a half, 642 million voters have spoken in the largest democratic exercise in the history of the world. It is now time for them to be heard.

The counting of votes will begin at 8 am on Tuesday. Fairly clear trends are likely to emerge over the following four hours.

Who will be in charge of the counting of votes?

Counting is carried out under the supervision and direction of the Returning Officer (RO) for each seat, in the presence of the candidates and their election agents. The RO, who is typically the District Magistrate of the district concerned, is nominated by the Election Commission of India (ECI).

Assistant Returning Officers (AROs) are also empowered to oversee the counting, especially where an RO is responsible for more than one constituency. The actual counting of votes in the Electronic Voting Machines (EVMs) at various tables is done by counting officers appointed by the RO, based on the anticipated number of postal ballots and the number of counting tables.

And who are these counting officials?

Each counting table has a counting supervisor who is typically a gazetted officer or equivalent, a counting assistant, counting staff drawn from Group D employees, and a micro observer. The micro observer is responsible for the sanctity of the counting process at his/her table.

These officials are chosen from a database of officers using software developed centrally by the state's Chief Electoral Officer.

Who is allowed inside the counting hall?

Counting hall may have several counting tables. Since the candidate or their election agent cannot be present at every counting location and table, the law permits the candidate to appoint as many counting agents as there are counting tables, including the table where postal ballots are counted.

The following are allowed to enter the counting hall: counting supervisors, counting assistants, micro-observers, ECI-authorized individuals and Observers, public servants on election duty, and candidates, election agents, and counting agents.

Police officers and government ministers are not classified as "public servants" in this context. No one, including the candidate, RO,

or Assistant RO, is permitted to carry a mobile phone inside the counting hall. The only person who can do so is the ECI's Observer.

Where will the votes be counted?

Rule 51 ("Time and place for counting of votes") of The Conduct of Election Rules, 1961, says that the "returning officer shall, at least one week before the date, or the first of the dates, fixed for the poll, appoint the place or places where the counting of votes will be done and the date and time at which the counting will commence."

The ECI's Handbook for Returning Officers says: "For the sake of uniformity, the date and time of counting of votes is fixed by the Commission." The location of the counting is determined by the RO and should "preferably" be at the RO's headquarters in the constituency. However, the ECI notes that "there will be no legal objection even if the place so fixed is outside the limit of the constituency".

Votes for a specific Assembly constituency are counted at a single location. However, the ECI says that "each Assembly constituency or an Assembly segment of a

parliamentary constituency is to be counted in a separate hall and under no circumstances can the counting of more than one Assembly constituency be taken simultaneously in a hall".

Each counting hall "shall be a separate room walled on all sides preferably with separate exit and entry facilities", if pre-constructed separate rooms are not available, large rooms should be divided to create halls, with each part constituting a hall separated by temporary partitions.

Each counting hall can have a maximum of 14 counting tables, in addition to the RO's table.



How does the counting begin and progress?

Two types of votes are counted: EVM votes, and votes cast through postal ballots (which are used for senior citizens, physically challenged individuals, service voters, etc.). Postal ballots are counted separately from EVM votes.

The process begins with the counting of postal ballots. All postal ballots are counted at the RO's table.

EVM counting starts 30 minutes later. The Strong Room, where the polled EVMs are

stored, is opened in the presence of the Observer, RO, ARO's, and the candidates or their election agents.

After making the necessary entries in the logbook maintained for this purpose, the seal of the lock is inspected and shown to the candidates or their election agents before being broken. The entire procedure is video-graphed with date and time stamps.

EVM counting is organised on tables arranged in rows and numbered sequentially. Seating arrangements are made for counting agents at each table.

Barricades or wire mesh are set up around each counting table to ensure that the EVMs are not physically accessible to the counting agents. The agents are required to remain seated beyond the wire mesh or barricades.

At each counting table, the votes cast at one polling station are addressed at a time. Only the Control Unit of the EVM used at each polling station is needed to determine the poll results for that station. The Ballot Units are kept in a secure strong room.

Along with the Control Unit, the vote account recorded in Form 17C for that polling station is provided to the counting table. After inspecting the paper seals, the counting official activates the Control Unit and presses

the result button, and the total number of votes for each candidate and NCITA (None of the Above) at the polling station appears on the display panel.

The counting supervisor records the results as displayed for each candidate in "Part II-Result of Counting" of Form 17C. If needed, the result button can be pressed again to allow candidates and their agents to note the results. The control unit is then turned off.

How are the results announced?

After all EVMs for a particular round have been counted, and the ECI Observer has conducted a parallel count of two randomly selected EVMs, a tabulation for the round is done.

The RO announces the result of that round of counting, and signs the relevant record (Part II of Form 17C). Following this, the RO/ARO verbally authorises the EVMs for the next round to be brought from the strong room into the counting hall.

The tallying of VVPAT (Voter Verified Paper Audit Trail) commences after all rounds of EVM counting are completed. This process is done sequentially, not simultaneously, for all polling stations. On average, it takes about an hour to verify the slips from each VVPAT machine.

Context: Recently, over the last month and a half, 642 million voters participated in the world's largest democratic exercise, and now vote counting has commenced under the supervision of the returning office.

Returning Officer (RO)

- **About:** The RO of a Parliamentary or assembly constituency is responsible for the conduct of elections in the respective constituency.
- **Role:** The Election Commission of India nominates or designates an officer of the Government or a local authority as the Returning Officer for each assembly and parliamentary constituency.
 - This nomination is made in consultation with the State Government or Union Territory Administration.
- **Role of Assistant Returning Officers:** The Election Commission appoints one or more Assistant Returning Officers for each constituency to assist the Returning Officer in carrying out their duties.
- **Assistance in Election Conduct:**
- After the issuance of notifications, candidates can file their nominations in the constituencies where they wish to contest.
- The Returning Officer scrutinizes these nominations after the last date for filing nominations.
- **Two types of votes are counted:** EVM votes, and votes cast through postal ballots (which are used for senior citizens, physically challenged individuals, service voters, etc.). Postal ballots are counted separately from EVM votes.

Related Terms

- **EVM:** It facilitate candidate selection through button presses.
- **VVPATs:** When a vote is cast, the VVPAT machine, attached to the Electronic Voting Machine (EVM), prints a slip displaying the voter's choice.
- **Form 17C:** As per the Conduct of Election Rules, 1961, the Election Commission of India (ECI) maintains two forms: Forms 17A and 17C.

Now, a 'Bank Clinic' to guide you on complaints

Context: Recently, the All India Bank Employees' Association (AIBEA) initiated the "Bank Clinic" program aimed at aiding bank customers in resolving grievances.

Bank Clinic

- **About:** It initiated by the All India Bank Employees' Association (AIBEA), facilitates grievance redressal for bank customers amidst technological advancements and RBI guidelines.
 - It offers guidance to customers on available remedies per RBI guidelines without directly resolving issues.
- **Channel for Redressal:** Bank Clinic complements the Banking Ombudsman process, providing an alternative avenue for complaint resolution.
- **Operational Mechanism:** Customers register complaints on the Bank Clinic website and receive detailed responses within five working days, outlining remedies and relevant RBI guidelines specific to their issues.
- **Objective:** To ensure prompt and effective resolution of customer grievances.
- **Benefits**
 - Bank Clinic fosters goodwill with customers by addressing their concerns.
 - It furnishes banks with valuable feedback, pinpointing areas of service deficiencies for improvement.

All India Bank Employees Association (AIBEA)

- **About:** It is a prominent national trade union representing bank employees in India.
- **Founded:** on April 20th, 1946, in Kolkata
- **Headquarter:** Chennai.
- **Function:** AIBEA serves as a vital advocate for the rights, welfare, and interests of bank workers nationwide.

EUROPEAN PARLIAMENT ELECTIONS THIS WEEK: WHAT HAPPENS & HOW?

AROUND 373 MILLION citizens across the 27 member states of the European Union are eligible to vote on June 6-9 in elections to the European Parliament, which is the only directly elected body of the EU.

What is the European Parliament?

The European Parliament (EP) represents the citizens of its member states. Its primary functions include negotiating EU laws with the member state governments, which are represented by the European Council.

The EP also approves the EU budget and votes on international agreements and enlargements of the bloc. It also has the power to approve or reject the appointment of the European Commission president – currently Germany's Ursula von der Leyen – and the commissioners.

Unlike national parliaments, the EP does not have the right to propose laws but can only negotiate those proposed by the executive European Commission. The EP comprises 720 Members (MEPs) elected every five years. The MEPs then elect their president for a term of two and a half years.

Who can vote in the elections?

In 21 member states, people aged 18 and above can vote. In Belgium, Germany, Austria and Malta, the minimum voting age is 16. In Greece, people who turn 17 during the election year can vote, and in Hungary, married individuals can vote regardless of age.

Citizens living in another EU country can choose to vote for candidates either from their country of origin or from their country of residence.

How is voting done?

In some member states, voters can only choose closed lists that do not allow change of order for preferred candidates, while in others they can select individual candidates in a preferential system.

REUTERS



Italy's PM Giorgia Meloni on a election campaign poster. Reuters

Depending on national laws, some electors abroad can vote at their national embassies, via mail or electronically.

Who can run?

All candidates must be EU citizens. Voters may choose from individual candidates or political parties' delegates, depending on the country. Once elected, politicians from each nation will flow into the European groups that form the Parliament, based on political orientations.

Elected individuals cannot hold functions in national governments or other political bodies such as the EU Commission.

What will the likely result be?

Six in 10 EU citizens have expressed their interest in voting in these elections, a survey by the bloc's statistics agency Eurostat showed in April.

A projection by poll aggregator Europe Elects forecast in April that out of the 720 seats, the Group of the centre-right European People's Party (EPP) would win 183, the centre-left Progressive Alliance of Socialists And Democrats (S&D) 140, Renew Europe (RE) and the European Conservatives and Reformists (ECR) 86 each.

Context: Around 373 million citizens across the 27 member states of the European Union are eligible to vote in elections to the European Parliament, which is the only directly elected body of the EU.

European Parliament

- **About:** It represents the citizens of its member states.
- **Function:** Its primary functions include negotiating EU laws with the member state governments, which are represented by the European Council.
- **Approval of the EU Budget:** The European Parliament approves the EU budget.
- **Appointment of the European Commission:** The EP has the power to approve or reject the appointment of the European Commission president and the commissioners.
- **Legislative Limitations:** Unlike national parliaments, the EP does not have the right to propose laws but can only negotiate those proposed by the executive European Commission.
- **Composition and Elections:** The EP comprises 720 Members (MEPs) elected every five years. The MEPs elect their president for a term of two and a half years.
- **Criteria of Voting**
 - **Voting Age:** In 21 member states, people aged 18 and above can vote. In Belgium, Germany, Austria, and Malta, the minimum voting age is 16. In Greece, people who turn 17 during the election year can vote, and in Hungary, married individuals can vote regardless of age.
- **Voting Options for Citizens Abroad:** Citizens living in another EU country can choose to vote for candidates either from their country of origin or from their country of residence.

'Green-beard' genes could explain how altruism arose in nature

Amoebae don't use rational numbers. Instead, they use genes to estimate kinship with other amoebae. If the genes have not diverged at all, or have diverged very little, there is kinship and it is good to cooperate. If they have diverged significantly, there is less kinship and hence cooperation is risky.

R.P. Kishore

Altruism is widespread in nature. Worker honey bees devote their entire life to bringing and caring for their sisters, the queens, and her offspring, but do not themselves reproduce. In widow spiders, a male allows a female fertilised by him to eat him, and then nourish herself and her offspring. A meerkat, a mongoose found in Africa, assumes the role of a sentinel, perching itself on a mound of sand, keeping a lookout for predators, instead of foraging for food, while the rest of the clan is feeding. If a predator is sighted, it alerts the others.

Many humans themselves have agreed that 'greater love has no man than he who lays down his life for his friends'. How can the emergence of altruism in all these diverse forms be explained?

A genetic switch

Most of the progress in answering this question has come from studies of a simpler organism that has been easier for researchers to study: the social amoeba *Dictyostelium discoideum*. The tale here involves a genetic switch. If a gene makes a worker bee altruistic, it also helps the copy of the gene in the queen and her offspring to be passed on to the next generation, even if the worker herself does not reproduce.

Such so-called 'green beard' genes allow the individuals bearing them to recognise and preferentially cooperate with each other.

Alternatively, a green beard gene could provide individuals to behave harmfully towards those carrying a different version of the gene.

Thus, scientists have postulated, green beard genes encode some kind of tag that helps the genome to know their identity (i.e. self-recognition).

Altruistic amoebae

Dictyostelium discoideum is a free-living, fast-growing, unicellular amoeba. In the wild, it feeds on bacteria that grow on decaying vegetation. In the laboratory, researchers have been known to feed them a bacterial 'sauc' grown in a Petri dish. When the bacteria run out, the amoebae stop multiplying and gather in the hundreds of thousands to form multicellular aggregates visible to the naked eye.

The aggregates then transition into fruiting bodies, each a few millimetres tall. A fruiting body is composed of a slender stalk made of dead cells, and it holds aloft a droplet of spores. About 20% of the amoebae in an aggregate altruistically sacrifice themselves to form the stalk. The remaining 80% become the spores.

Small fungi, such as ants and earthworms, disperse the spores to new food sources where they germinate to release amoebae. The newly released amoebae then go on to repeat the cycle of growth, division, and dispersal.

Reveals of cheating

Not all the amoebae in an aggregate necessarily share kinship. Some could be only distantly related, so the aggregates can potentially be genetic chimera—structures in which not all amoebae have the exact same genome. And when the



A view of *Dictyostelium discoideum* bacteria aggregating under a microscope. PUBLIC DOMAIN

genome differs, there is a risk that some strains may have found a way to 'cheat' and avoid becoming stalk cells, and as a result become represented in more than their fair share among the spores.

How does *D. discoideum* ensure that cheaters do not prosper? In 2007, researchers from the University of Manchester, in the U.K., reported that two genes in the *D. discoideum* genome—called *tgrB1* and *tgrC1*—displayed all the properties one would expect in a green beard gene. On May 11 this year, researchers at the Baylor College of Medicine in the U.S. reported evidence that *D. discoideum* amoebae use these genes to navigate the risk of cheaters.

Their findings demonstrate how sophisticated genetic machinery can confer these deceptively simple life forms the ability to express a universal virtue. Both these studies were published in the *Journal Nature Communications*.

Separating kith from kin

The *tgrB1* and *tgrC1* genes are located next to each other in the *D. discoideum* genome, and are expressed together too if one isn't expressed, the other isn't either. If the binding is strong, the *tgrB1* protein is activated, and confers altruistic behaviour—manifesting as the amoeba's willingness to form the stalk. The binding between the *tgrB1* and the *tgrC1* proteins of cells of the same strain



The study demonstrated the logic that green-beard genes use to produce altruism plus the corresponding ability to keep altruistic amoebae from being exploited by greedy ones.

is strong, and leads to self-recognition and cell-cell cooperation. Pure cultures of cells that lack the *tgrB1* and *tgrC1* genes fail to develop because they are unable to recognise each other as being allies. The *tgrB1* and *tgrC1* genes are also very polymorphic: within the same population of *D. discoideum* amoebae, they have multiple variants. In fact, they are among the most variable genes in the *Dictyostelium* genome. When the researchers in the 2007 study examined 20 strains of the amoeba isolated from a common location, they found 18 different variants of each gene.

The researchers were able to correlate differences in the *tgr* gene sequences between two strains to the efficiency with which their cells aggregated from each other in mixed aggregates and formed spore-bearing fruiting bodies. Specifically, when the binding of *tgrB1* and *tgrC1* proteins across the cells of diverged strains was weak, *tgrB1* failed to be activated, and the cells split away from each other instead of cooperating. When the researchers deleted the *tgrB1* gene but left the *tgrC1* gene intact, the

amoeba did not cheat on 'non self' amoebae that carried a different *tgrC1*. Instead, it cheated those with the same *tgrC1* variant as itself—i.e. its kin. Every family has its black sheep!

From Haldane to Voltaire On the other hand, amoebae in which the researchers activated the *tgrB1* gene alone (by introducing a mutation) were reluctant to stalk when mixed with their kin.

These findings demonstrate the logic that green beard genes use to produce altruism plus the corresponding ability to keep altruistic amoebae from being exploited by greedy ones. The *tgrB1* and *tgrC1* genes are also very polymorphic: within the same population of *D. discoideum* amoebae, they have multiple variants. In fact, they are among the most variable genes in the *Dictyostelium* genome. When the researchers in the 2007 study examined 20 strains of the amoeba isolated from a common location, they found 18 different variants of each gene.

As far as we know, amoebae do not use rational numbers. Instead, they use their rapidly evolving genes to estimate kinship with other amoebae. If the genes have not diverged at all, or have diverged very little, there is kinship and it is good to cooperate. If they have diverged significantly, there is less kinship and hence cooperation is risky. To paraphrase the philosopher Voltaire (1694-1778), if *tgr* genes did not exist, it would be necessary for the amoeba to invent them. (R.P. Kishore is a retired scientist.)

ALTRUISTIC AMOEBAE (Syllabus: GS Paper 3 – Sci and Tech)

Context: Scientists have recently gained valuable new insights into natural altruism by studying the amoeba *Dictyostelium discoideum*.

Altruistic amoebae

- **About:** It is a free-living, fast-growing, unicellular amoeba.
- **Habitat and Feeding:** In the wild, it feeds on bacteria that grow on decaying vegetation.
- **Formation of Multicellular Aggregates:** When bacteria run out, the amoebae stop multiplying and gather in the hundreds of thousands to form multicellular aggregates visible to the naked eye.
- **Transformation into Fruiting Bodies:** The aggregates transform into fruiting bodies, each a few millimetres tall.
 - A fruiting body is composed of a slender stalk made of dead cells and holds aloft a droplet of spores.
- **tgrB1 and tgrC1:** These genes are located next to each other in the *D. discoideum* genome, and are expressed together (so if one isn't expressed, the other isn't either).
 - They contain information for cells to make two cell surface proteins called TgrB1 and TgrC1.
 - The TgrB1 protein on one cell binds to the TgrC1 protein on another.

Altruism

- **Origin:** The term 'altruism' was coined by French philosopher and sociologist Auguste Comte.
- **Etymology:** It is derived from the Italian word 'altruì', meaning "to others" or "of others".
- **Definition:** It refers to the unselfish concern or act of an individual, group, or organization which is done to serve the needs, interests, and wellness of others.

Maha Pench Tiger Reserve reports first photographic record of forest eagle owl

Context: Pench Tiger Reserve (PTR), Maharashtra, recently reported the first photographic record of a spot-bellied eagle owl.

Spot Bellied Eagle Owl

- **About:** It is also known as the forest eagle-owl, is a formidable bird of prey inhabiting forests in the Indian Subcontinent and Southeast Asia.
- **Size and Appearance:** This owl is notably large, measuring between 50 to 65 cm (20 to 26 in) in length, ranking sixth in length among owl species worldwide.
- **Distribution and Habitat:** This species is distributed through the Lower Himalayas from Kumaon east to Burma, thence to central Laos and central Vietnam.
 - They are found throughout the Indian subcontinent and peninsular Southeast Asia, reaching the southernmost limits of their range in Sri Lanka and 12 degrees north in southern Thailand.
- **Key Features:** Its distinguishing traits include rich chocolate brown upperparts speckled with white spots, a massive wingspan of up to 1.7 meters, and a primarily nocturnal lifestyle.
 - As an apex predator, it preys on various animals like rodents, small mammals, reptiles, and insects.
 - The spot-bellied eagle-owl is solitary, territorial, and maintains a distinct home range, characteristic of its behavior as a large owl species.
- **Conservation Status:**
 - **IUCN:** Least Concern
 - **Wildlife (Protection) Act, 1972:** Schedule IV
 - **CITES:** Appendix II.

Pench Tiger Reserve

- **Location:** situated in Maharashtra.
- **Geographical Features:** The sanctuary spans across Madhya Pradesh and Maharashtra.
 - The Madhya Pradesh portion lies in the Satpura ranges.
- **National Park:** Comprising the Indira Priyadarshini Pench National Park, Pench Mowgli Sanctuary, and a buffer zone.



Over 1 lakh farmers voluntarily gave up their PM-Kisan benefits last year

HARIKISHAN SHARMA
NEW DELHI, JUNE 3

BIHAR, UTTAR Pradesh and Rajasthan lead the chart of 1.16 lakh farmers who have voluntarily given up the benefits of the annual Rs 6,000 Pradhan Mantri Kisan Samman Nidhi (PM-Kisan) scheme across the country from June 2023 to May 2024, according to data available with

THE TOP 5 STATES

No. of beneficiaries who surrendered PM-Kisan

Bihar	29,176
Uttar Pradesh	26,593
Rajasthan	10,343
Maharashtra	7,825
Jharkhand	6,215

the Ministry of Agriculture & Farmers Welfare.

The state breakup: 29,176 farmers' families, the maximum, surrendered PM-Kisan benefits in Bihar; followed by Uttar Pradesh (26,593) and Rajasthan (10,343).

Sources said the Agriculture Ministry had introduced a module in the PM-Kisan mobile app and website last year which

CONTINUED ON PAGE 2

Context: Recently released data from the Ministry of Agriculture & Farmers Welfare shows that Bihar, Uttar Pradesh, and Rajasthan lead the chart of 1.16 lakh farmers who voluntarily gave up the annual Rs 6,000 PM-Kisan scheme benefits between June 2023 and May 2024.

PM-KISAN Scheme

- **About:** This Scheme is a Central Sector Direct Benefit Transfer (DBT) Scheme.
- **Launch:** February 2019 (made effective from December 2018) to give income support to farmers.
- **Funding:** 100% funding of rupee 6000 in 3 installments.
- **Implemented by:** Ministry of Agriculture and Farmer's Welfare.
- **Purpose:** The scheme is meant to provide income support to all landholding farmer's families across the country and enable them to meet expenses related to agriculture as well as domestic needs.
- **Beneficiaries:** Farmer families rest with the State / UT Governments.

PM-KISAN Mobile App

- **About:** Created through a partnership between the National Informatics Centre and the Ministry of Electronics and Information Technology, has been introduced.
- **Application Status:** Farmers using the app can conveniently check the status of their applications, providing transparency and real-time updates.

World's biggest aviation summit flies back to India after 42 yrs

OVER 1,000 AIRCRAFT ORDERS SINCE FEB 2023

■ **2023 February:** Air India placed orders for 470 aircraft, including 190 B737MAX

■ **June:** Orders for 500 aircraft, including 375 A321neo, placed by IndiGo

■ **January:** Akasa placed orders for 150 aircraft

■ **2024 April:** IndiGo placed orders for 30 aircraft

■ **June:** IndiGo reportedly in talks with ATR to place an order for 100 turboprop aircraft

Source: Airline announcements

THE TOP 6 In terms of flights handled per week



IndiGo to host 81st IATA annual general meeting in Delhi next year

DEEPAK PATEL
New Delhi, 3 June

India will host the world's most premier aviation event, the annual general meeting (AGM) of the International Air Transport Association (IATA), next year, after a gap of 42 years.

This will be the third time the IATA AGM — considered one of the most significant events in the aviation industry's calendar — has convened in Delhi, after 1958 and 1983.

The chiefs and various other top executives of almost all global airlines, aircraft manufacturers, and other aviation sector stakeholders

gather once a year at the IATA's AGM to discuss issues pertaining to the global aviation sector.

IndiGo, India's largest airline by market share, will be the host airline of the AGM and the World Air Transport Summit, which will take place in Delhi between June 8 and 10, 2025, IATA announced on Monday.

About 330 airlines, comprising more than 80 per cent of global air traffic, are members of IATA.

"We look forward to gathering the aviation industry in Delhi, India's gateway city, for the 81st IATA AGM in 2025. It's been over four decades since the industry came together for an IATA AGM in Delhi," said IATA's Director General Willie Walsh.

"With record aircraft orders, impressive growth, and world-class infrastructure developments, India is firmly on the trajectory to become the world's third-largest aviation market within this decade. With such bright prospects, it's the perfect time for the IATA AGM to return to India and witness these exciting developments first-hand," said IATA's Director General Willie Walsh.

IndiGo CEO Pieter Elbers said India's rise in the global aviation landscape over the past years had been nothing short of remarkable. "India, becoming the third-largest economy within the next few years and leading the fourth industrial revolution with the use of AI

(artificial intelligence), is a nation on the move," Elbers said.

The decision to host the 81st IATA AGM in India was made at the 80th IATA AGM, which is currently going on in Dubai. Union Aviation Minister Jyotiraditya Scindia said it was a proud moment for Indian aviation.

Under Prime Minister Narendra Modi's leadership, the sector has grown tremendously with a record passenger count, development of world-class infrastructure, enhanced regional connectivity, and historic aircraft orders, he said. "I am certain that this will provide national and international stakeholders with a platform to further explore the Indian aviation market and open new avenues for collaboration and sustainability," he said.

To meet the growing demand in the country's air travel market, Indian carriers have made four huge aircraft orders since 2023.

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Context: India will host the world's most premier aviation event, the annual general meeting (AGM) of the International Air Transport Association (IATA), next year, after a gap of 42 years.

International Air Transport Association (IATA)

- **About:** It is the trade association for the world's airlines, representing some 330 airlines over 80% of total air traffic.
- **Established in:** 1945 by a consortium of airlines to serve as an international trade body.
- **Headquarters:** Montreal, Canada, serving as a central hub for its global operations.
- **Mission:** To advocate for, guide, and support the airline industry in various capacities.
- **Membership and Representation:** Currently, IATA's membership encompasses around 300 airlines, accounting for 94% of global international scheduled air traffic.
- The organization includes prominent passenger and cargo airlines from around the world within its membership.
- **Significance:** IATA plays a pivotal role in supporting different facets of aviation activities, including policy formulation and addressing environmental concerns within the industry.

Former BrahMos engineer sentenced to life for spying

Pradip Kumar Maitra
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NAGPUR: A Nagpur court on Monday sentenced Nishant Pradeepkumar Agrawal, a former engineer with the Indo-Russian joint venture BrahMos Aerospace Pvt Ltd, to life imprisonment for spying for the Inter-Services Intelligence (ISI) of Pakistan.

The additional sessions judge of Nagpur district court, MV Deshpande, found Agrawal

NISHANT AGRAWAL WAS FOUND GUILTY OF LEAKING DATA ABOUT BRAHMOS MISSILES TO AN ALLEGED HANDLER IN PAKISTAN

guilty and convicted him under Section 235 of the Code of Criminal Procedure (CrPC), for an offence punishable under Sec-

tion 66 (b) of the IT Act, and various sections of the Official Secrets Act (OSA), 1923.

He was earlier seen as a promising professional, and honoured for his achievements, people aware of the matter said.

Agrawal will also face 14 years of rigorous imprisonment under OSA, along with a fine of ₹3,000, special public prosecutor Jyoti Vajani said. Failure to pay the fine would result in six more months of imprisonment.

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BrahMos

- **About:** It holds the title of the fastest cruise missile globally, clocking in at Mach 2.8, which is nearly three times the speed of sound.
- **Deployment Options:** BrahMos variants are deployable from land, air, and sea, showcasing its versatility and adaptability across different military scenarios.
- **Integral to Indian Armed Forces:** All three variants of BrahMos are actively in service within the Indian armed forces, highlighting its significant role in bolstering defense capabilities.

OFFICIAL SECRETS ACT (OSA) 1923

(Syllabus: GS Paper 3 – Security)

Context: Recently, a Nagpur court handed down a life sentence to Nishant Pradeep kumar Agrawal, a former engineer at BrahMos Aerospace Pvt Ltd, convicting him for espionage on behalf of Pakistan's Inter-Services Intelligence (ISI) and for violating several sections of the Official Secrets Act (OSA) and the IT Act.

Official Secrets Act (OSA) 1923

- **About:** It serves as India's primary anti-spying legislation, aiming to protect national interests.
- **Historical Background:** Originating in the British colonial era, the Act finds its roots in the Indian Official Secrets Act of 1889, aimed at stifling dissent against British policies.
- **Provisions**
 - The Act expanded its provisions in 1923 to safeguard government privacy and secrecy, especially concerning national security.
 - **Defined Obligations:** High-ranking government officials, their contractors, and those contracted to protect confidential information are legally bound by the Act.
 - **Identification of Foreign Agents:** The Act defines "foreign agents" as individuals suspected of working for foreign authorities, posing a threat to national security.
 - **Prohibited Activities:** Entering restricted areas or aiding others in doing so, as well as gathering or communicating sensitive information detrimental to national safety, is strictly prohibited.
 - **Penalties:** Violations of the Act, especially those endangering state security, are punishable by imprisonment for up to three years, with the possibility of extension.

NGT Acts On Partial Combustion Of Fuels

Asks DPCC, CPCB And Ministry To File Replies

TIMES NEWS NETWORK

New Delhi: Taking suo-motu cognizance of a TOI report titled "How partial combustion fuels your bad-air woes", National Green Tribunal has issued a notice to Delhi Pollution Control Committee, Central Pollution Control Board, and Union Ministry of environment and forest and climate change.

National Green Tribunal observed that the news item raised a substantial issue relating to compliance with environmental norms and asked agencies to file their response in the matter.

"The article quotes a study published in 'Nature Communications' journal, stating that incomplete combustion sources, led by biomass burning and vehicles, put secondary organic aerosols in the air and increase oxidative potential in Delhi-NCR. The news item states that 'oxidative potential' refers to free radicals that are generated when pollutants interact with certain substances in the environment or in people's bodies. These free radicals can cause damage by reacting with cells, proteins, and DNA, and im-

pact our health. Oxidative potential measures how likely air pollution is to cause this reaction, which in turn can lead to health problems like respiratory diseases, heart disease, and accelerated ageing," observed the bench headed by Justice Prakash Shrivastava.

NGT noted that the news item further stated that older, poorly maintained vehicles, and the ones that idle can cause incomplete combustion. It stated that local sources and processes are the main factors contributing to widespread air pollution across the region. Ammonium chloride, and organic aerosols

from traffic exhaust, residential heating, and oxidation of unsaturated vapours from fossil fuels are the dominant particulate matter sources inside Delhi.

The study also indicated that the emissions of ammonium chloride are caused due to the burning of plastic or industrial waste, etc., whereas the emissions of ammonium sulphate are due to the burning and usage of coal for various purposes.

Due to all these factors, there has been a rise in the air pollution oxidative factor which is said to be the key indicator causing adverse health effects.

YOU READ IT HERE

How Partial Combustion Fuels Your Bad-Air Woes

New Study Reveals It Adds To Health Problems

Prityanshu Agarwal@timesnews

New Delhi: A new study by DTU-Karper has revealed that incomplete combustion of biomass fuels plays a significant role in the poor air quality and associated health risks in north India. The study published in 'Nature Communications' journal stated that incomplete combustion, caused by biomass burning, increases

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2024

oxidative potential in northern India. The study also indicated that the emissions of ammonium chloride are caused due to the burning of plastic or industrial waste, etc., whereas the emissions of ammonium sulphate are due to the burning and usage of coal for various purposes.

Context: Recently, the National Green Tribunal took suo-motu cognizance of a Times of India report titled "How partial combustion fuels your bad-air woes," prompting it to issue notices to the Delhi Pollution Control Committee, Central Pollution Control Board, and the Union Ministry of Environment and Forests and Climate Change.

PARTIAL COMBUSTION OF FUEL

(Syllabus: GS Paper 3 – Env and Eco)

Partial Combustion of Fuel

- **About:** It is also known as incomplete combustion, often results in the release of carbon monoxide gas (CO).
- **Poisonous Nature of Carbon Monoxide:** CO is a poisonous gas due to its ability to reduce the oxygen-carrying capacity of our blood when inhaled.
- **Emission of Carbon Dioxide (CO₂):** When fossil fuels undergo combustion, they emit significant amounts of carbon dioxide (CO₂) into the atmosphere.
- **Impact:** Greenhouse gases, including carbon dioxide, trap heat in the Earth's atmosphere, contributing to global warming.
 - **Global Temperature Increase:** The average global temperature has already risen by 1°C due to the accumulation of greenhouse gases in the atmosphere.
 - **Global Warming:** Exceeding a 1.5°C increase in global temperature poses risks such as sea level rise, extreme weather events, biodiversity loss, species extinction, food scarcity, worsened health outcomes, and increased poverty for millions worldwide.
- **Study:** The study indicated that the emissions of ammonium chloride are caused due to the burning of plastic or industrial waste, etc., whereas the emissions of ammonium sulphate are due to the burning and usage of coal for various purposes.
 - Due to all these factors, there has been a rise in the air pollution oxidative factor which is said to be the key indicator causing adverse health effects.

National Green Tribunal (NGT)

- **Established:** Under the National Green Tribunal Act 2010.
- **Location:** New Delhi with 4 other location - Bhopal, Pune, Kolkata and Chennai
- **Composition:** Chairperson, the Judicial Members, and the Expert Members.
- **Tenure:** 5 years and are not eligible for reappointment.
- **Appointment:** The Chairperson is appointed by the Central Government in consultation with the Chief Justice of India (CJI).
- **Disposal of cases:** NGT is mandated to make disposal of applications or appeals finally within 6 months of the filing of the same.

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