



NEWS ANALYSIS

30 DECEMBER 2024

BAJIRAO IAS ACADEMY

Q) Critically analyze whether simultaneous elections offer more benefits than frequent elections.

One Nation One Election and representative democracy

The Constitution (One Hundred and Twenty-Ninth Amendment) Bill, 2024, that was tabled in the Lok Sabha, proposes simultaneous elections for the Lok Sabha and State/Union Territory Legislative Assemblies with the insertion of Article 82(A). This ambitious reform seeks to synchronise elections, fix the tenure of the Lok Sabha, and simultaneously align elections to the State Assemblies. If the Lok Sabha or a State Assembly is dissolved before its five-year term, mid-term elections will only cover the remainder of the original tenure.

The Bill also amends Articles 83, 172, and 327, with changes effective from an 'appointed date', post-2029 general elections, thereby initiating simultaneous elections in 2034. A second Bill, the Union Territories Laws (Amendment) Bill, 2024, aligns the tenure of Union Territories' legislative Assemblies with the Lok Sabha and State Assemblies.

While the proposal seeks administrative efficiency and reduced election fatigue, critical questions arise: has the 'One Nation, One Election (ONOE)' process been truly inclusive and representative? Are there limits to our understanding of the representative spirit of Indian democracy?

Understanding representative democracy
Representative democracy is a system where citizens elect representatives to make decisions on their behalf. Rooted in the principles of free and fair elections, political accountability, and the protection of individual rights, it balances majority rule with the protection of minority interests. This form of governance becomes especially critical in diverse and populous countries such as India.

The theoretical underpinnings emphasise that elected representatives act as intermediaries, ensuring stable governance while accommodating competing interests. Citizens, being too numerous and diverse to participate directly in governance, delegate authority to their elected representatives. The system thrives on periodic elections, informed citizen participation, and institutional checks and balances.

Despite its theoretical merits, representative democracy faces growing challenges in practice. A 2024 Pew Research Center study across 24 nations, including Brazil, India, Nigeria, South Africa, the United Kingdom, and the United States, revealed widespread disillusionment with Join FREE Telegram Channel <https://t.me/+Bu7senHpQdhlODg1>



K. Gireesan
is with the Department of Public Administration, Rajiv Gandhi National Institute of Youth Development, Regional Centre, Chandigarh



Chinmay Bendre
is Senior Research Associate, MIT School of Government (MIT-SOG), Pune

The process adopted for the One Nation One Election Bill had lapses that affect India's democratic fabric

the system. Citizens increasingly questioned its effectiveness, with some exploring alternatives such as direct democracy, expert rule, or even authoritarian regimes.

In 13 countries, significant segments supported strong leaders bypassing parliamentary checks, reflecting frustration with institutional inefficiencies. Alarmingly, military rule garnered between 15% to 17% support in nations such as Greece, Japan, the U.K., and the U.S. Such trends underscore growing distrust in representative systems, driven by perceived inefficiencies, corruption, and unfulfilled promises.

Jayaprakash Narayan's critique

In India, debates about representative democracy are not new. Jayaprakash Narayan, in his seminal work, *A Plea for Reconstruction of Indian Polity* (1959), offered a deep critique of parliamentary democracy. JP argued that the reliance on individual voting created an 'atomized society', where fragmented, partisan politics overshadowed the collective national interest. JP highlighted the following defects – risks of minority governments: In a multi-party system like India, he warned that parliamentary democracy risks unstable and unrepresentative governments.

First, demagoguery and populism: JP highlighted how political parties manipulate public opinion through half-truths, empty promises, and divisive rhetoric.

Second, centralisation of power: Parliamentary democracy, according to JP, concentrates power in the state, weakening intermediary institutions between citizens and the national government.

Third, financial costs of elections: JP critiqued the exorbitant cost of elections, tethering democracy to moneyed interests and large organisations.

While critical, JP's analysis aimed to reform and strengthen democracy. His concerns resonate today as India debates ONOE and its implications for democratic representation.

For a reform as significant as ONOE, an inclusive and representative process is crucial. In representative democracies, public opinion shapes policy, holding governments accountable to citizens' aspirations and concerns. To achieve this, pre-legislative consultation becomes indispensable, enabling policymakers to gather diverse views, address challenges, and enhance transparency.

The Pre-Legislative Consultation Policy, 2014,

mandates a minimum 30-day period for public feedback on proposed legislation. It requires draft Bills to be accompanied by explanatory notes that clarify key provisions in accessible terms.

However, the process adopted for ONOE fell short. First, inadequate consultation period: The high-level committee issued a public notice on January 5, 2024, inviting suggestions on ONOE. Citizens were given just 10 days – until January 15 – to respond, undermining the spirit of the 2014 policy. Second, lack of explanatory material: Despite the high-level committee being established in September 2023, no explanatory notes or background papers were provided, limiting citizens' understanding of the proposal's scope and challenges. Third, framing of questions: The high-level committee's approach, seeking 'yes/no' responses on supporting ONOE, appeared perfunctory, giving the impression the matter was already settled.

Such procedural lapses risk alienating citizens and stakeholders, undermining trust in the reform process. In a diverse democracy like India, meaningful public engagement is vital to ensure that policy reflects varied perspectives and fosters consensus.

Implications for representative democracy

The ONOE Bill raises critical questions about the representative nature of Indian democracy. First, centralisation versus federalism: Synchronising elections risks a further centralising of power, potentially undermining the federal spirit of the Constitution. State-specific issues may be overshadowed by national narratives. Second, inclusivity and participation: By curtailing consultation and rushing reforms, the government risks sidelining citizens' voices, weakening democratic inclusivity. Third, electoral accountability, frequent elections, while resource-intensive, enhance accountability by enabling voters to evaluate governments regularly. Simultaneous elections could dilute this accountability.

India's democratic fabric thrives on citizen participation, inclusivity, and accountability. Reforms such as ONOE, while aimed at efficiency, must not compromise these principles. A rushed process undermines trust and risks centralisation. Only by adhering to the principles above can our democracy remain truly representative in letter and spirit.

The views expressed are personal

HOW, WHAT & WHEN OF JOINT ELECTIONS

How will elections be synchronised?

In 2 stages, says panel report.

Step 1: Simultaneous polls to be held for Lok Sabha, state assemblies. **Constitutional amendment needed, but no ratification by states required.**

Step 2: Local body polls to be held within 100 days of LS & assembly elections. Amendment for this will require ratification by at least half the states.

How will a cutoff date be fixed and varying assembly tenures adjusted?

President will, through a



Former President Kovind gives report to President Murmu

notification, bring simultaneous polls into force on the date of first sitting of Lok Sabha after a general election. This becomes the 'appointed date'. Assemblies for which elections

are held after this date will have tenure only till next Lok Sabha elections (which will be simultaneous)

What happens if there is a hung House or governing party loses trust vote?

Elections will be held for the remaining period of the five-year term

When will simultaneous elections kick in?


After legislative changes are undertaken, President will notify the 'appointed date' on the first day the newly elected LS sits

Benefits of Simultaneous Election

- Reduce the significant expenditure associated with conducting separate elections annually.
- Prevent prolonged imposition of the Model Code of Conduct.
- Minimise disruptions to public life caused by frequent polls.
- Crucial manpower can be freed up for other essential tasks.
- Governments can focus more on governance rather than constant election campaigning.
- Reduces disruption to essential services, thus mitigating policy paralysis.

Key recommendations

- Simultaneous election by 2029
- Amending the Constitution in two steps
- In the first step, simultaneous elections will be held to Lok Sabha and State Assemblies.
 - a. In the second step, elections to municipalities and the panchayats will be synchronised with the rest.
 - b. Insertion of Article 324A
- Single electoral roll and election ID
- In case of a hung house, fresh elections will be conducted for the rest of the term.
- Rejected the Germany model of bringing no-confidence motion against a government



The “**One Nation, One Election**” proposal seeks to **synchronize elections to the Lok Sabha and state assemblies**, which proponents argue will reduce election-related costs. However, concerns exist that this **could centralize power and undermine India’s federal structure**.

1. **Diminished State Autonomy:** Synchronizing elections could reduce states’ ability to independently govern their electoral timelines, thus weakening their autonomy.
E.g., Article 172 provides states the flexibility to dissolve assemblies; this could be restricted under the new system.
2. **National Issues Overshadowing Regional Concerns:** Simultaneous elections may lead to national issues dominating the discourse, sidelining state-specific issues.
3. **Increased Influence of National Parties:** A combined election could strengthen national political parties at the cost of regional parties, skewing political power in favor of the center.



1. **Undermining Regional Representation:** Regional parties and leaders may find it difficult to highlight localized concerns in a joint election, leading to underrepresentation of diverse voices in governance.

2. **Reduced Accountability of State Governments:** Holding elections at different intervals ensures continuous accountability for state governments; simultaneous elections could reduce this check.

3. **Challenges in Coalition Governments:** Simultaneous elections could result in more coalition governments at both state and national levels, creating governance instability.

4. **Judicial Constraints:** The judiciary may have to frequently intervene to ensure political stability if simultaneous elections result in early dissolutions or hung assemblies.

Challenges of holding judges accountable

The challenge of holding judges accountable

The review mechanism for judges in India requires 'proved misbehaviour or incapacity' to be decided by a committee set up under the Judges (Inquiry) Act, 1968. This committee functions like a trial court, but is set in motion only after a successful attempt to impeach the judge is moved either in the Lok Sabha or the Rajya Sabha

LITTEr & SPIRIT

Ramul Shankar

A speech delivered by Justice Shekhar Kumar Yadav of the Allahabad High Court, that made apparent his biases against the Muslim community at an event organised by the legal cell of the Vishwa Hindu Parishad within the Court premises on December 8, has once again spotlighted the difficulty in India's review mechanism to hold judges of the higher judiciary accountable.

The review mechanism requires "proved misbehaviour or incapacity" to be decided by a three-member committee set up under the Judges (Inquiry) Act, 1968. This committee functions like a trial court, but is set in motion only after a successful attempt to impeach the concerned judge is moved either in the Lok Sabha or the Rajya Sabha, which must be approved by the presiding officer of the House – the Speaker in the case of the Lok Sabha, or the Vice-President/Chairman in case of the Rajya Sabha. The provisions for this mechanism flow from Articles 224 (4), 225, 227, and 228 of the Constitution of India, and the Juries of the Judges (Inquiry) Act, 1968.

Justice V. Ramaswami's trial
Only two judges out of seven so far, aside from Justice Jodan against whom impeachment has been attempted, have been found guilty for their "misbehaviour" by the three-member committee, which must comprise of a Supreme Court judge, a Chief Justice of a High Court and an eminent jurist.

The first was retired Supreme Court Justice V. Ramaswami, who was found guilty of extravagant spending on his official residence such as buying air conditioners, plush furniture and bedding, without following due process, much like the accusations made against Trinamool Congress MP Mahua Moitra by the ruling BJP last year. While such misdemeanours by current accounts of corruption seem like an accurate picture of propriety, they nevertheless animated public discourse on a judge's conduct in the late 80s and early 90s. The adverse verdict by the three-member panel constituted under the Judges Inquiry Act against V. Ramaswami set the precedent of then CJI Subramachandrarao deciding not to allocate any work to him in 1993. The failure of the impeachment motion in the Lok Sabha that year, did not lead to a reversal of the CJI's decision. No case was sent for hearing before Justice Ramaswami's bench until his retirement three years later.

Article 224 (4) of the Constitution stipulates that the panel's finding must be voted upon by Parliament. The motion requires either a two-thirds majority of present MPs, voting in favour of the motion or an absolute majority in each House, for the judge to be removed. On May 10, 1995, of the 408 members present in the Lok Sabha, 291 voted for Ramaswami's removal. While no one voted against the motion, 205 abstentions by the ruling Congress ensured the defeat of the impeachment.



from FREE Telegram Channel <https://t.me/1bc7wcn7yQh0X0y1>

Resignation before accountability
The second judge to face impeachment motion was Justice Santosh Sen of the Calcutta High Court. Justice Sen became the first judge of India's higher judiciary who was voted to be removed by the Rajya Sabha by an

overwhelming majority, but he resigned in September 2011, days before the motion was to be tabled in the Lok Sabha. Justice Sen was found guilty of misappropriating ₹31.23 lakh in a case in 1985, as a court-appointed receiver in his capacity as a lawyer, and misrepresenting facts before a Calcutta court. Similarly, Chief Justice of the Sikkim High Court, P.D. Dinakaran resigned on July 29, 2010, the day of the first sitting of the three-member panel constituted under the Judges Inquiry Act, to look into 16 charges, some of them as grave as appropriating more than 200 acres of lands from farmers in Tamil Nadu's Tiruvallur district, after he became a judge of the Madras High Court.

Such instances highlight that members of India's higher judiciary enjoy a disproportionately greater level of immunity when compared with even elected officials as they "continue to enjoy the perks of being a retired judge, the pension" and other benefits, said jurist Mohan Gopal, who was part of the three-member committee in the Dinakaran case. Such resignations abort the trial and subsequent impeachment, something not allowed to even sitting or former Chief Ministers, like in the case of Jayalalitha in the disproportionate assets petition decided in 2014.

The former Jay Judicial Accountability Justice Sen became the first judge of India's higher judiciary who was voted to be removed by the Rajya Sabha by an

August 6 that year, seeking a continuation of the committee's investigation arguing that "the jurisdiction of the Committee is unimpaired by the factum of removal...". The JYA contention was that there were two separate parts to the removal process of a justice – one that concerns finding guilt, which is governed by Article 224 (5) and the second, which is impeachment, which is governed by article 224 (4) and is within the jurisdiction of Parliament. "The purpose of impeachment is not merely removal from office, but a more substantial one about accountability to the people whose trust is alleged to be breached and whose confidence in judiciary needs to be reinforced," the JYA argued.

"Though Article 224(5) of the Constitution uses the words "removed from office" and is silent on the issue of disqualification from holding future office, the finding of guilt by the Committee and the subsequent proceedings in Parliament will have the effect of disqualifying the person from holding public office in future. It may be noted that Justice V.Ramaswami having been found guilty by the Committee, continued to hold office as a judge of the Supreme Court and retired with all the benefits, taking advantage of the defect of the impeachment motion. Post retirement he was appointed as Chairperson of the Tamil Nadu Law Commission," said JYA.

The need to complete proceedings
RTI petitions by former Andhra legal affairs officer, V. Venkatesan revealed that both jurist Mohan Gopal and the Chairman of the three-member panel retired justice Alab Alam believed the work of the committee must continue. The RTI replies made public a set of correspondence between Mohan Gopal and the two members of the committee, and of the committee with the Rajya Sabha Chairperson Hamid Ansari. Mr. Venkatesan has included these letters as annexures to his 2014 book Constitutional Conundrums: Challenges to India's Democratic Process. In his August 15, 2010 letter to Justice Alab Alam and J. S. Kohar, the then Chief Justice of the Karnataka HC, Mr. Gopal writes, "the resignation of Justice P.D. Dinakaran presents our Committee with an unprecedented situation. Any decision we take will have a profound and far-reaching impact on the framework for judicial accountability in our country – both in terms of the future implementation of the Judges Inquiry Act, 1968, and in terms of the manner in which the current Constitutional and legal framework for judicial accountability is reformed... While undoubtedly the investigation and the proof stage arises only when there is a proper removal from office and is the essential first step or that purpose, it would be an error to ignore the independent role and value of the investigation and proof part of the process as and by itself... A view that the resignation would result in the investigation and proof process being elevated would in effect place in the hands of the judge who is the object of the investigation the power to end the investigation against him by resigning – an absurd situation that the legislature could not have intended. In such the circumstances, there is no incentive arising from this process for any judge to avoid misbehaviour or any judge to avoid investigation into charges against him at any point by resigning from office."

While the Chair Justice Alab Alam concurred and sought the continuation of the Committee, the request was rejected by Rajya Sabha Chairman Hamid Ansari.

THE GIST

▼ Only two judges so far have been found guilty by their "misbehaviour" by the three-member committee, which must comprise of a Supreme Court judge, a Chief Justice of a High Court and an eminent jurist.

▼ Article 224 (4) of the Constitution stipulates that the panel's finding must be voted upon by Parliament. The motion requires either a two-thirds majority of present MPs, voting in favour of the motion or an absolute majority in each House, for the judge to be removed.

▼ Such instances highlight that members of India's higher judiciary enjoy a disproportionately greater level of immunity when compared with even elected officials as they "continue to enjoy the perks of being a retired judge, the pension" and other benefits, said jurist Mohan Gopal.



Context

❖ **Justice Shekhar Kumar Yadav's** speech at a Vishwa Hindu Parishad event, showing **bias against Muslims**, has raised concerns about the challenges in holding higher court judges accountable in India.

The judges need to be accountable

- ❖ **Judges are the guardians of the Constitution** and are expected to exhibit the highest ethical standards to maintain public trust in the judiciary.
- ❖ **Accountability ensures that the judiciary acts as a fair and impartial arbiter**, without overstepping or undermining democratic institutions.
- ❖ **Judicial independence is vital, but unchecked power can lead to misconduct** or corruption, as seen in cases like Justice V. Ramaswami and Justice Soumitra Sen.
- ❖ **Accountability is critical to reinforcing public confidence** in the judiciary, especially in a democracy where the judiciary acts as a check on other branches of government.

Accountability Mechanism for Judges

- ❖ The process for holding judges accountable is governed by the **Judges (Inquiry) Act, 1968**, supported by **Articles 124(4), 124(5), 217, and 218** of the Indian Constitution.
- ❖ A judge can only be removed based on "***proved misbehaviour or incapacity***" as determined by a **three-member committee** comprising:
 - ❖ A Supreme Court judge
 - ❖ A Chief Justice of a High Court
 - ❖ An eminent jurist

Impeachment Process:

- ❖ Initiation of impeachment requires a motion in either the Lok Sabha or Rajya Sabha, approved by the respective presiding officer.
- ❖ Removal demands a **two-thirds majority** of members present and voting in both Houses of Parliament.

Reforms required to ensure accountability of judges

Continue Investigations Post-Resignation:

- ❖ Resignation should not end an investigation, as it allows accused judges to evade accountability.
- ❖ Legal reforms must ensure the continuation of proceedings to establish guilt or innocence, irrespective of resignation.
- ❖ Establish a more robust framework to investigate allegations without requiring parliamentary approval at the initial stages.

Revisiting the Judges (Inquiry) Act:

- ❖ Amendments are needed to address procedural delays and reduce political interference in impeachment motions.

40 anniversary of bhopal gas tragedy

M.P. govt. begins disposal of toxic waste from Union Carbide factory

Mehul Malpani
BHOPAL

The Madhya Pradesh government has begun the process to dispose of 337 tonnes of toxic waste accumulated on the premises of Union Carbide India Ltd. in the State capital, Bhopal, 40 years after the disaster, senior officials aware of the developments said on Sunday.

The waste is expected to be moved to the Pithampur industrial area near Indore late on Sunday or Monday night.

Confirming the development to *The Hindu*, Bhopal gas tragedy relief and rehabilitation Department director Swatantra Kumar Singh said the packing and stacking of the waste material was currently under way at the Union Carbide factory site under the supervision of the Central Pollution Control Board (CPCB) and the Madhya Pradesh Pollution Control Board (MPPCB).

Once packed, the toxic and chemical waste will be



Clean-up begins: Police personnel stationed at the gate of the Union Carbide factory in Bhopal on Sunday. A.M.FARUQUI

dispatched to a Treatment, Storage, and Disposal Facility (TSDF) in Pithampur of Dhar district, Mr. Singh said, adding that the movement of the waste may begin late on Sunday or Monday night, depending on when it is completely packed.

“We have arranged for 12 specially designed airtight containers for the waste and currently the waste is being packed in airtight bags and loaded onto the containers. Once done, the containers will be loaded in 12 trucks and

dispatched to Pithampur,” he said. “We cannot confirm the exact time when it will be moved due to security reasons and the waste is also being packed with necessary precautions so we cannot rush it. It could be either Sunday or Monday night,” he said, adding that specially trained workers have been called in to pack and load the waste.

Mr. Singh also said that a green corridor of about 250 kilometres would be prepared for the movement of the waste. He said the workers were staying

on the factory campus and all arrangements had been made for them.

“A particular team of workers only does a 30-45 minute shift instead of a regular 8-9 hour shift as longer exposure to the waste may be harmful for them,” he added.

Meanwhile, security personnel have been deployed in large numbers in and around the UCIL premises in Bhopal and movement of transport vehicles has been witnessed since Saturday.

Earlier on December 3, the Madhya Pradesh High Court had set a four-week deadline for the authorities for the disposal of the toxic waste.

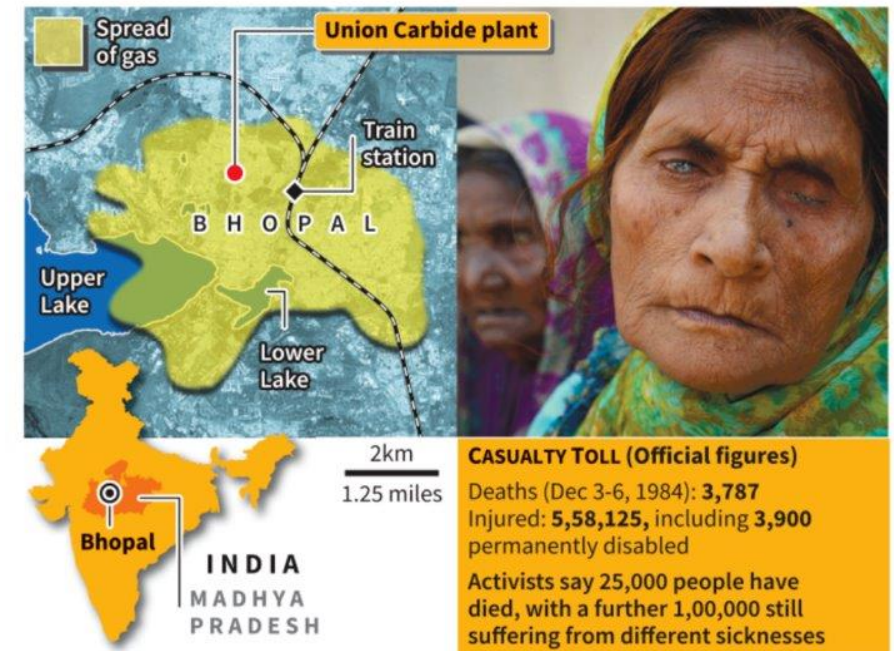
Referring to the High Court’s directions, Mr. Singh on December 27 wrote to multiple authorities, including the Pithampur Industrial Waste Management Pvt. Ltd. that has been tasked with the packing, loading, transporting and incinerating the waste material, to start the disposal process.

Context

- ❖ **Bhopal Gas Tragedy**, which is considered the **worst industrial disaster in history** that occurred in the **Union Carbide India Limited (UCIL)** pesticide plant of Bhopal, Madhya Pradesh.
- ❖ This event left a **lasting imprint on public health, the environment, and industrial safety practices**, moreover killed thousands of people instantly and left lasting scars on survivors, future generations, and the environment.

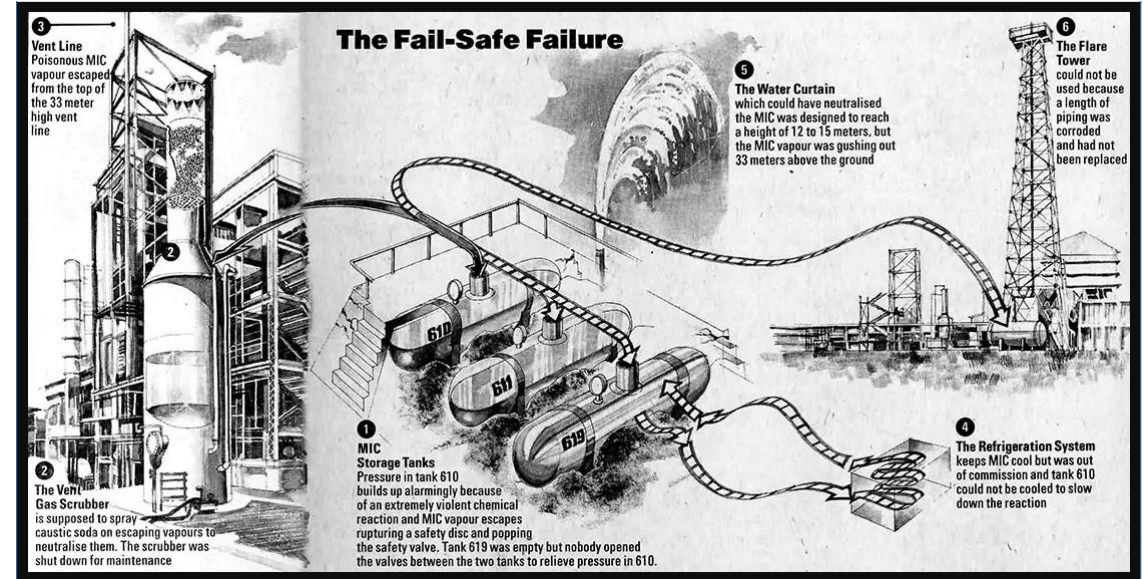
Bhopal Gas Tragedy 1984

- ❖ **The Union Carbide India Limited (UCIL)** owned by the Indian subsidiary of the American firm union carbide corporation was **established in 1969** and the primary objective was to **produce the pesticide named Sevin, with the brand name for carbaryl.**
- ❖ The production process involved the **use of methyl isocyanate (MIC) as an intermediary.** The Bhopal Gas Tragedy 1984 took place on December 2nd, 1984 where around **40 tons of MIC gas leaked into the atmosphere** over several hours.
- ❖ People woke up **coughing, choking, and experiencing severe burns** and irritation in their eyes and lungs.
- ❖ In just a few hours hundreds of people died, many people tried to cross the border of Bhopal. This incidence **left people with many health diseases, respiratory issues, maladies and blindness** resulting from exposure to toxic gas.



Bhopal Gas Tragedy Causes

- ❖ Bhopal Gas Tragedy is considered the **world's worst industrial disaster** due to the loss of human lives, environmental, and economic losses. That incident was caused due to **technical failures, managerial negligence, and systemic issues**.
- ❖ Union Carbide plant in Bhopal was **not designed to handle hazardous chemicals like MIC**. Multiple tanks were connected, increasing the risk of leaks.
- ❖ The refrigeration system had been shut down to cut costs, and the flare tower was out of service.



- ❖ **Union Carbide Corporation (UCC) prioritized profit over safety**. Audits and maintenance schedules were neglected to minimize expenses.
- ❖ **The plant stored large quantities of MIC**, exceeding safety limits which increased the risk of a sudden and total failure that is impossible to recover from.

Bhopal Gas Tragedy Government Responses

- ❖ The Government of India responses to the Bhopal Gas Tragedy evolved over time, including immediate relief measures, legal actions, and long-term policy changes.
- ❖ The Indian government passed the **Bhopal Gas Leak Disaster (Processing of Claims) Act, 1985**. In 1989, the government negotiated a **\$470 million settlement with Union Carbide Corporation (UCC)** which was criticised as insufficient according to the losses from the tragedy.
- ❖ The Bhopal disaster initiated significant changes in India's regulatory framework for environmental and industrial safety:
 - ❖ **Environment Protection Act, 1986**: Gave the government powers to protect and improve the environment.
 - ❖ **Amendments to the Factories Act, 1948**: Introduced stricter safety provisions for industries handling hazardous materials.
 - ❖ **Public Liability Insurance Act, 1991**: Ensured quick compensation for victims of industrial accidents without lengthy cases.

Space Docking experiment (SpaDeX)

ISRO to sign off 2024 with space docking experiment mission today

The Polar Satellite Launch Vehicle will place two satellites, Chaser and Target, into orbit; the two spacecraft will attempt docking in the first week of January; the exercise is expected to serve as a stepping stone to India's future space missions

The Hindu Bureau
BENGALURU

The Indian Space Research Organisation is set to end the year with the launch of the PSLV C60/SpaDeX mission on Monday. The Polar Satellite Launch Vehicle is scheduled to lift off at 9.58 p.m. from the Satish Dhawan Space Centre in Sriharikota.

The space agency, for the first time, will be attempting the Space Docking Experiment (SpaDeX), which will demonstrate in-space docking using two small spacecraft.

According to the ISRO, SpaDeX is designed to develop and demonstrate the technology needed for spacecraft rendezvous, docking, and undocking using two small satellites. "SpaDeX will serve as a milestone in advancing India's capabilities in space docking, a critical technology for future space missions, including satellite servicing, space station opera-

tions, and interplanetary missions," it said. The demonstration of this technology is essential for futuristic missions such as sending an Indian astronaut on the moon, sample return from the moon, the building and operation of an Indian space station.

The PSLV-C60 will launch the two small spacecraft, Chaser and Target, also named SDX01 and SDX02, weighing about 220 kg each, into a 470-km circular orbit at a 55-degree inclination separately. The SDX02 spacecraft will be the first to separate 15 minutes after the launch followed by the SDX01 a few seconds later.

Incremental velocity

"The demonstrated precision of the PSLV vehicle will be utilised to give a small relative velocity between the Target and Chaser spacecraft at the time of separation from the launch vehicle. This incremental velocity will allow the Target spacecraft to build a 10-

20 km inter-satellite separation with respect to the Chaser within a day. At this point, the relative velocity between the Target will be compensated using the propulsion system of the Target spacecraft," the ISRO said.

It added that at the end of this drift arrest manoeuvre, Target and Chaser will be in the same orbit with identical velocity but separated by about 20 km, known as Far Rendezvous. "With a similar strategy of introducing and then compensating for a small relative velocity between the two spacecraft, the Chaser will approach the Target with progressively reduced inter-satellite distances, ultimately leading to the docking of the two spacecraft," it added. The docking is expected to take place in the first week of January.

Twenty-four PS4-Orbital Experiment Module payloads will also be flown onboard the PSLV-C60 SpaDeX mission.



Countdown begins: The launch vehicle being moved to the first launch pad of the Satish Dhawan Space Centre. r11



The SPADEX mission is a collaborative initiative by the Indian Space Research Organisation (ISRO).

SPADEX, which stands for Space Docking Experiment, is a twin spacecraft mission with a focus on advancing technologies related to orbital rendezvous, docking, formation flying, and in-space satellite servicing.

- ❖ The Indian Space Research Organisation (ISRO) is set to launch its **Space Docking Experiment (SpaDeX)** onboard the **PSLV-C60 rocket**.

What is Space Docking?

- ❖ Space docking refers to the **process of bringing two spacecraft together in orbit to physically link them.** This technology is essential for a variety of advanced space missions, including:
- ❖ **Human spaceflight missions**, such as sending humans to the Moon and later bringing lunar samples back to Earth.
- ❖ **Building and operating a space station**, such as India's planned **Bharatiya Antariksh Station.**
- ❖ **Satellite servicing missions**, where one spacecraft can dock with another to perform maintenance or refueling.



- ❖ SpaDeX is a key mission for ISRO as it aims to **demonstrate India's capability in orbital docking.**
- ❖ If successful, it will place India alongside space giants like **China, Russia, and the United States**, who have already achieved docking technology.
- ❖ The mission also supports **cost-effective satellite operations**, especially in scenarios where multiple rocket launches are needed to achieve shared objectives.

Key Details of the SpaDeX Mission:

- ❖ **Primary Payloads:** The mission involves two spacecraft—**SDX01 (Chaser)** and **SDX02 (Target)**—that will be launched into an orbit 5 km apart.
- ❖ **Mission Process:** Over the course of 10 to 14 days, ISRO scientists will attempt to bring the two spacecraft closer to a distance of just **3 meters** before they dock at an altitude of **470 km** above Earth.
- ❖ **Launch Vehicle:** The **PSLV-C60** is the rocket carrying the SpaDeX mission.



Thank you

Address

**B-47, Main Road Shivalik
Enclave, Block-B, Shivalik Colony,
Malviya Nagar, New Delhi-110017**

Phone Number +91 8178833167