

PRAYAS4IAS

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Special Issue

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All about lightening strikes

(Source: [Indian Express](#))



Context: *At least 30 people were killed in separate incidents of lightning in various parts of the country in 1 day. While Rajasthan reported 18 deaths, Uttar Pradesh recorded 12. Casualties have also been reported from Madhya Pradesh. Earlier in June, 20 persons were killed in lightning strikes in three districts of south Bengal. Deaths due to lightning have become frequent in the country. In July last year, 40 people were killed by lightning in Bihar in two separate incidents.*

How common are deaths by lightning?

- More common than is sometimes realised in the urban areas.
- As a whole, India sees 2,000-2,500 lightning deaths every year on average. Lightning is the biggest contributor to accidental deaths due to natural causes.
- A few years ago, over 300 people were reported killed by lightning in just three days — a number that surprised officials and scientists.
- And yet, lightning remains among the least studied atmospheric phenomena in the country. Just one group of scientists, at the Indian Institute of Tropical Management (IITM) in Pune, works full-time on thunderstorms and lightning.
- Occurrences of lightning are not tracked in India, and there is simply not enough data for scientists to work with.
- Often, safety measures and precautions against lightning strikes do not receive as much publicity as other natural disasters such as earthquakes.
- Several thousand thunderstorms occur over India every year. Each can involve several — sometimes more than a hundred — lightning strikes. Dr Sunil Pawar of IITM says incidents of lightning have been showing an increasing trend over the last 20 years, especially near the Himalayan foothills.

What is lightning, and how does it strike?

- Lightning is a very rapid — and massive — discharge of electricity in the atmosphere, some of which is directed towards the Earth's surface.
- These discharges are generated in giant moisture-bearing clouds that are 10-12 km tall. The base of these clouds typically lies within 1-2 km of the Earth's surface, while their top is 12-13 km away.
- Temperatures towards the top of these clouds are in the range of minus 35 to minus 45 degrees Celsius.



- As water vapour moves upward in the cloud, the falling temperature causes it to condense. Heat is generated in the process, which pushes the molecules of water further up.
- As they move to temperatures below zero degrees celsius, the water droplets change into small ice crystals. They continue to move up, gathering mass — until they are so heavy that they start to fall to Earth.
- This leads to a system in which, simultaneously, smaller ice crystals are moving up and bigger crystals are coming down.
- Collisions follow, and trigger the release of electrons — a process that is very similar to the generation of sparks of electricity. As the moving free electrons cause more collisions and more electrons, a chain reaction ensues.
- This process results in a situation in which the top layer of the cloud gets positively charged, while the middle layer is negatively charged.
- The electrical potential difference between the two layers is huge — of the order of a billion to 10 billion volts. In very little time, a massive current, of the order of 100,000 to a million amperes, starts to flow between the layers.
- An enormous amount of heat is produced, and this leads to the heating of the air column between the two layers of the cloud. This heat gives the air column a reddish appearance during lightning. As the heated air column expands, it produces shock waves that result in thunder.

How does this current reach the Earth from the cloud?

- While the Earth is a good conductor of electricity, it is electrically neutral. However, in comparison to the middle layer of the cloud, it becomes positively charged.
- As a result, about 15%-20% of the current gets directed towards the Earth as well. It is this flow of current that results in damage to life and property on Earth.
- There is a greater probability of lightning striking tall objects such as trees, towers or buildings. Once it is about 80-100 m from the surface, lightning tends to change course towards these taller objects.
- This happens because air is a poor conductor of electricity, and electrons that are travelling through air seek both a better conductor and the shortest route to the relatively positively charged Earth's surface.

What precautions should be taken against lightning?

- Lightning rarely hits people directly — but such strikes are almost always fatal.
- People are most commonly struck by what are called “ground currents”. The electrical energy, after hitting a large object (such as a tree) on Earth, spreads laterally on the ground for some distance, and people in this area receive electrical shocks.
- It becomes more dangerous if the ground is wet (which it frequently is because of the accompanying rain), or if there is metal or other conducting material on it. Water is a conductor, and many people are struck by lightning while standing in flooded paddy fields.
- The Met office routinely issues warnings for thunderstorms. But this is a very generic advisory, and for locations that are very large in area.
- Predicting a thunderstorm over a pinpointed location is not possible. Nor is it possible to predict the exact time of a likely lightning strike.
- For reasons given above, taking shelter under a tree is dangerous. Lying flat on the ground too, can increase risks. People should move indoors in a storm; however, even indoors, they should avoid touching electrical fittings, wires, metal, and water.

All about Electing a Speaker and Deputy Speaker

(Source: [Indian Express](#))



Context: *The Maharashtra Legislative Assembly has been without a Speaker for most of this year. Last week, it concluded its two-day Monsoon Session without electing a Speaker.*

How the Speaker and Deputy Speaker are elected

- The Constitution specifies offices like those of the President, Vice President, Chief Justice of India, and Comptroller and Auditor General of India, as well as Speakers and Deputy Speakers.
- Article 93 for Lok Sabha and Article 178 for state Assemblies state that these Houses “shall, as soon as may be”, choose two of its members to be Speaker and Deputy Speaker.
- The Constitution neither sets a time limit nor specifies the process for these elections. It leaves it to the legislatures to decide how to hold these elections.
- In Lok Sabha and state legislatures, the President/Governor sets a date for the election of the Speaker, and it is the Speaker who decides the date for the election of the Deputy Speaker. The legislators of the respective Houses vote to elect one among themselves to these offices.
- Haryana and Uttar Pradesh specify a time-frame for holding the election to the Speaker and Deputy Speaker’s offices. In Haryana, the election of the Speaker has to take place as soon as possible after the election.
- And then the Deputy Speaker is to be elected within seven more days. The rules also specify that if a vacancy in these offices happens subsequently, then the election for these should occur within seven days of the legislature’s next session.
- Uttar Pradesh has a 15-day limit for an election to the Speaker’s post if it falls vacant during the term of the Assembly. In the case of the Deputy Speaker, the date for the first election is to be decided by the Speaker, and 30 days is given for filling subsequent vacancies.
- The Constitution provides that the office of the Speaker should never be empty. So, he continues in office until the beginning of the next House, except in the event of death or resignation.

The roles of the Speaker, Deputy Speaker

- According to the book Practice and Procedure of Parliament, published by the Lok Sabha Secretariat, the Speaker is “the principal spokesman of the House, he represents its collective voice and is its sole representative to the outside world”.
- The Speaker presides over the House proceedings and joint sittings of the two Houses of Parliament. It is the Speaker’s decision that determines whether a Bill is a Money Bill and therefore outside of the purview of the other House.
- The Deputy Speaker is independent of the Speaker, not subordinate to him, as both are elected from among the members of the House.
- Since Independence, the Lok Sabha Deputy Speaker’s position has grown in importance. In addition to presiding over the House in the absence of the Speaker, the Deputy Speaker chaired committees both inside and outside of Parliament.
- For example, M Thambidurai, the Deputy Speaker of the previous Lok Sabha, headed the Lok Sabha Committee on Private Members Bills and Resolutions, and the committee that looked at the MP Local Area Development Scheme. He also chaired several committees formed under the aegis of the conference of presiding officers of legislative bodies in India.
- The Deputy Speaker ensures the continuity of the Speakers office by acting as the Speaker when the office becomes vacant (by death, as in the case of the first Lok Sabha Speaker G V Mavalankar in 1956, and G M C Balayogi in 2002, or because of resignation by Speaker N Sanjiva Reddy in 1977 for fighting the Presidential election.).
- In addition, when a resolution for removal of the Speaker (as in 1987 against Lok Sabha Speaker Balram Jakhar) is up for discussion, the Constitution specifies that the Deputy Speaker presides over the proceedings of the House.



Ruling party or Opposition

- Usually, the Speaker comes from the ruling party. In the case of the Deputy Speaker of Lok Sabha, the position has varied over the years.
- Until the fourth Lok Sabha, the Congress held both the Speaker and Deputy Speakers positions. In the fifth Lok Sabha, whose term was extended due to the Emergency, an independent member, Shri G G Swell, was elected the Deputy Speaker.
- The tradition for the post of the Deputy Speaker going to the Opposition party started during the term of Prime Minister Morarji Desai's government.
- The two subsequent Lok Sabhas had members from the DMK (G Lakshmanan) and AIADMK (Thambidurai, in his first stint in this position) becoming Deputy Speaker. During the governments of PMs V P Singh and Chandra Sekhar, Shivraj Patil of the Congress was the Deputy Speaker.
- The first time the Deputy Speaker's position went to the BJP was during the term of Prime Minister P V Narasimha Rao.
- In the 13th Lok Sabha, during the tenure of Prime Minister Atal Bihari Vajpayee, Congress MP P M Sayeed became the Deputy Speaker. In Prime Minister's Manmohan Singh's two terms, the Deputy Speaker's position went first to the Shiromani Akali Dal and then to the BJP.
- Then in the 16th Lok Sabha, the office of Deputy Speaker was again occupied by Thambidurai, whose party, AIADMK, was an ally of Prime Minister Narendra Modi's government.

All about the colonial sedition law

(Source: [Indian Express](#))

Context: Recently, while hearing a petition filed by Major General (retired) SG Vombatkere who has challenged Section 124A of the IPC which deals with the offence of sedition, Chief Justice of India N V Ramana observed that the “colonial law” was used by the British to silence Mahatma Gandhi and Bal Gangadhar Tilak.

The sedition law has been challenged several times over the last few years but it has managed to survive all of the challenges against it. In the landmark case of 1962, Kedar Nath versus Union of India, the Supreme Court upheld the constitutional validity of the sedition law while trying to curtail its misuse. The court said at the time that unless accompanied by an incitement or call for violence, criticism of the government cannot be labelled sedition.

When was the sedition law introduced in India?

- The sedition law which is enshrined in Section 124A of the Indian Penal Code (IPC) was introduced by the British government in 1870 to tackle dissent against colonial rule. The original draft of the IPC, which was enacted in 1860, did not consist of this law.
- Section 124A states the following, “Whoever, by words, either spoken or written, or by signs, or by visible representation, or otherwise, brings or attempts to bring into hatred or contempt, or excites or attempts to excite disaffection towards, the Government established by law in India, shall be punished with imprisonment for life, to which a fine may be added; or, with imprisonment which may extend to three years, to which a fine may be added; or, with fine.”
- A blog published by the Library of Congress (LOC) notes that in the 19th and 20th centuries, the law was used primarily to suppress the writings and speeches of prominent Indian nationalists and freedom fighters.



- Over the years, various people have been booked under this provision of the IPC, including author Arundhati Roy for her controversial remarks on Kashmir, Hardik Patel (who is facing sedition cases related to the 2015 Patidar quota agitation) and more recently, climate activist Disha Ravi, Kanhaiya Kumar, Umar Khalid, journalists Vinod Dua and Siddique Kappan among others.

When was sedition law used against Gandhi and Tilak?

- According to the LOC blog, the first known instance of the application of the law was the trial of newspaper editor Jogendra Chandra Bose in 1891.
- Other prominent examples of the application of the law include the trials of Tilak and Gandhi. Apart from this, Jawaharlal Nehru, Abul Kalam Azad and Vinayak Damodar Savarkar were also charged with sedition.
- In 1922, Gandhi was arrested on charges of sedition in Bombay for taking part in protests against the colonial government. He was sentenced to six years in prison but was released after two years because of medical reasons.
- Before Gandhi, Tilak faced three trials in cases related to sedition and was imprisoned twice. He was charged with sedition in 1897 for writing an article in his weekly publication called Kesari and was sentenced to 12 months imprisonment. He was tried again in 1908 and was represented by MA Jinnah. But his application for bail was rejected and he was sentenced to six years.
- The second time he was tried was also because of his writings, one of which referred to the murder of European women in Muzzafarpur when bombs were thrown by Bengali terrorists.
- This is what Tilak wrote in his article, “This, no doubt, will inspire many with hatred against the people belonging to the party of rebels. It is not possible to cause British rule to disappear from this country by such monstrous deeds. But rulers who exercise unrestricted power must always remember that there is also a limit to the patience of humanity.”
- Interestingly, the judge who announced Tilak’s sentence in the second trial, Justice DD Davar, had represented him in his first trial in 1897.