

## EXPLAINED

Relevant for: Polity | Topic: Judiciary in India: its Structure, Organization & Functioning, Judges of SC & High Courts, Judgments and related Issues

Orders violated: Firecrackers are not labelled with information on the person responsible for legal compliance. | Photo Credit: [Getty Images/iStockphoto](#)

**The story so far:** The Supreme Court on September 29, 2021 [observed that six major fireworks manufacturers had violated orders](#) requiring them not to use prohibited chemicals such as Barium salts and to label the firecrackers in compliance with the law. In a warning to the manufacturers, the court felt that it had to take a balanced view of the production and use of firecrackers, because so much of it was being burst, and people could not be allowed to suffer and die from pollution. It directed the Environment Ministry to serve a copy of [an inquiry report of the CBI](#), which found violations after conducting a court-ordered probe. The case has been posted for October 6.

Three years ago, the [court ruled out a full ban on firecrackers](#) and [issued orders](#) stipulating that only reduced emission and green crackers be allowed, with tight restrictions on timings when they could be burst. The latest orders, in continuation of others, relate to a petition — [Arjun Gopal and Others vs Union of India and Others](#) — filed on behalf of three children in 2015, seeking measures to mitigate air pollution and asserting their right to clean air under Article 21 of the Constitution.

Firecrackers use fuel and oxidisers to produce a combustion reaction, and the resulting explosion spreads the material in a superheated state. The metal salts in the explosive mix get 'excited' and emit light. In an explanatory article [The chemistry behind fireworks](#), University of Pennsylvania inorganic chemist Eric Schelter says the interaction between the firecracker fuel and the oxidiser releases energy. Metals in the mix, which have a varying arrangement of electrons in shells outside their nucleus, produce different wavelengths of light in this reaction, generating spectacular colours. Barium compounds, for example, produce green light and Strontium and Lithium salts, red. But as many studies show, the burning of firecrackers is an unusual and peak source of pollution, made up of particles and gases. One study in Milan, Italy, quantified the increase in the levels of several elements in the air in one hour as 120 times for Strontium, 22 times for Magnesium, 12 times for Barium, 11 times for Potassium and six times for Copper. The Central Pollution Control Board conducted a study in Delhi in 2016, and found that the levels of Aluminium, Barium, Potassium, Sulphur, Iron and Strontium rose sharply on Deepavali night, from low to extremely high. For instance, Barium rose from 0.268 microgrammes per cubic metre to 95.954 mcg/m<sup>3</sup>. Similar episodic spikes have been recorded in China and the U.K. Pollution from firecrackers affects the health of people and animals, and aggravates the already poor ambient air quality in Indian cities. This has resulted in litigation calling for a total ban on firecrackers, and court orders to restrict the type of chemicals used as well as their volume. Many crackers also violate legal limits on sound.

The Central government says the Council of Scientific and Industrial Research, through its National Environmental Engineering Research Institute (CSIR-NEERI), Nagpur, has come out with firecrackers that have "reduced emission light and sound" and 30% less particulate matter using Potassium Nitrate as oxidant. These crackers are named [Safe Water Releaser](#), which minimises Potassium Nitrate and Sulphur use, but matches the sound intensity of conventional crackers, Safe Minimal Aluminium, where Aluminium use is low and Safe Thermite Crackers with low Sulphur and Potassium Nitrate. These crackers are to be identified using unique QR codes to guide consumers. The Supreme Court had also previously ordered that the Petroleum

and Explosives Safety Organisation should certify the composition of fireworks only after being assured that they were not made of banned chemicals.

The petitioners argue that out of about 2,000 manufacturers, only 120 had the capacity and inclination to work with the court to green the crackers; the respondents, who are part of an industry that seeks light regulation because it provides jobs to many, must now present their case. Evidently, the new cracker formulations have not had many takers. Firecrackers are not labelled with information on the person responsible for legal compliance, as ordered by the court. At the recent hearing, the Supreme Court Bench of Justices M.R. Shah and A.S. Bopanna took on record the CBI report and noted that there had been a “flagrant violation” of previous orders. It took note of the large volume of crackers burnt almost every day and felt inclined to fix responsibility. “If liability is fixed on the Commissioner of Police, only then can this happen,” it remarked.

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