

2. Green Firecrackers – Environment

The Supreme Court has allowed the manufacture of certified green crackers to protect livelihoods but banned their sale in Delhi-NCR due to pollution concerns. Although less polluting than traditional ones, these NEERI-developed crackers are not entirely harmless as they emit high levels of dangerous ultrafine particles.

About Green Crackers

Green crackers are eco-friendly firecrackers developed in 2018 by the National Environmental and Engineering Research Institute (NEERI), a constituent laboratory of CSIR. They are designed to have a smaller environmental footprint compared to traditional firecrackers.

Reduced Pollution – They are engineered to reduce air and noise pollution by 30–40%.

Safer Chemicals – They use safer chemical formulations, replacing toxic elements like barium nitrate with less harmful alternatives such as potassium nitrate and aluminium.

Lower Noise Levels – Green crackers produce sound at a level of 100–130 decibels (dB), significantly lower than the 160–200 dB produced by conventional crackers.

Authenticity – Genuine green crackers can be identified by a QR code and a distinct green logo issued by NEERI.

Types of Green Crackers

NEERI has developed three main types of green crackers, each with a specific mechanism for reducing pollution.

Type	Acronym Meaning	Key Feature / Benefit
SWAS	Safe Water Releaser	Releases water vapor as it burns, which suppresses dust and particulate matter. It reduces SO ₂ and particulate matter by approximately 30%.
SAFAL	Safe Minimal Aluminium	Uses minimal amounts of aluminium in the flash powder, leading to a reduction in particulate matter emissions by 35–40%.
STAR	Safe Thermite Cracker	Reduces the use of potassium nitrate (KNO ₃) and sulphur, which significantly cuts down on SO ₂ and NO _x emissions.

Challenges and Limitations of Green Crackers

While green crackers are a step in the right direction, they are not a perfect solution and come with their own set of challenges.

The Problem of Ultrafine Particles (UFP) – Although they reduce larger particulate matter (PM_{2.5} and PM₁₀), studies show that green crackers release a spike in Ultrafine Particles (UFP), which are smaller than 1 micron. These tiny particles are considered more harmful as they can penetrate deep into the lungs, tissues, and even the bloodstream, causing serious health problems.

Economic and Operational Hurdles – Green crackers are more expensive to produce and require a longer drying time, making the transition difficult for manufacturers without adequate financial support.

Market and Livelihood Issues – Demand for all types of firecrackers has dropped due to pandemic-related restrictions and state-level bans. The market is also plagued by illegal sales and mislabeling, where conventional crackers are falsely sold as "green," which undermines the environmental goals and harms the livelihoods of genuine producers.

The Way Forward

To make the transition to safer celebrations effective, a multi-pronged strategy is required.

Strict Monitoring and Compliance – Regular inspections must be conducted to ensure that manufacturers are adhering to NEERI and PESO certifications and are not selling their products in prohibited areas like Delhi-NCR.

Controlled Distribution – The government should consider a system of licensed production hubs with digital tracking of inventory. This would help monitor the entire supply chain, from production to sale, and prevent leakage into local markets.

Awareness and Enforcement – Strong awareness campaigns are needed to educate both traders and consumers about how to identify genuine green crackers. This must be complemented by strict law enforcement to curb the illegal sale and bursting of non-compliant firecrackers.

Source – <https://www.newindianexpress.com/cities/delhi/2025/Sep/27/manufacturing-of-green-crackers-okay-in-delhi-no-sale-supreme-court>

