

## Green Crackers

Green Crackers are environmentally friendly fireworks and can reduce the air pollution caused by traditional firecrackers. These have been developed by the Council of Scientific and Industrial Research (CSIR) and is an extremely important topic from the [UPSC exam](#) perspective.

These green crackers include flower pots, pencils, sparklers, maroons, bombs and chakkar and have been developed by National Environmental and Engineering Research Institute (NEERI), a CSIR lab.

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## What are Green Crackers?

With an aim to control the increasing air pollution, Green Crackers are being developed. They are eco-friendly and do not comprise components which can be harmful for the environment.

Given below are all the necessary details about the development of Green crackers and implementation of their use by the general public:

- These have been developed by the Council of Scientific and Industrial Research (CSIR) and an agreement has been signed with around 230 companies for manufacturing and selling these in the market
- The green-crackers are expected to cause atleast 30% less air pollution in comparison to the traditional firecrackers
- The manufacturing cost of these crackers will almost be the same, or may even cost less than the traditional crackers
- To differentiate green crackers from the regular ones, the system of Quick Response (QR) coding has been developed
- The main motive of producing green crackers is to control the environmental disbalance
- These green crackers have been named based on the three: Safe Water Releaser (SWAS), Safe Thermite Cracker (STAR), and Safe Minimal Aluminium (SAFAL)
- Testing for these green crackers have been ongoing for many years, but a bulk of initial testing green crackers was done in Sivakasi, Tamil Nadu, one of the major hubs for cracker manufacturing industries

Based on the current ecological situation, green crackers in India have become a necessity and all Indian states intend to adapt the selling of these fireworks from the coming years.

## Green Crackers - A Background Study

A lot of factors were held responsible for bringing around green crackers. Discussed below are the same:

- In the last couple of years, major legal battles have been fought for complete ban on the traditional firecrackers which have intensely polluted the environment
- Based on multiple sessions in higher courts, in 2019, the Supreme Court allowed CSIR to manufacture green crackers in bulk and ensure their selling in the market
- The approval of these crackers was given by Petroleum and Explosives Safety Organisation (PESO)
- PESO's approval was based on multiple factors including less pollution, less loud and had to be free of mercury, arsenic and barium
- These crackers will release water vapour or air as a dust suppressant and diluent for gaseous emissions

## What is the difference between Traditional & Green Crackers?

**Composition of Green Crackers** - They do not comprise barium nitrate which is one of the most hazardous elements present in any regular cracker

**Composition of Regular Crackers** - A traditional firecracker comprises of six key elements:

- **Fuel:** Mainly Charcoal or Thermite are present in them all
- **Oxidising Agents:** Nitrates and Chlorates which produce oxygen inside the cracker
- **Reducing Agents:** Something like sulphur, which can burn the oxygen present in the firecracker
- **Regulators:** To ensure the speed and intensity with which a cracker bursts
- **Coloring Agents:** Multiple colours appear when a cracker bursts, this role is played by the colouring agents. Given below are the elements which provide different colours:
  - **Strontium salts** - Red Colour
  - **Burning of metals** - White Colour
  - **Sodium salts** - Yellow Colour
  - **Barium salts** - Green Colour
  - **Calcium Salts** - Orange Colour
  - **Copper Salts** - Blue Colour
- **Binders:** All the components of the firecracker require a medium which can bind them

Green crackers will thus help in uplifting the quality of air and ensure that minimum hazardous material is released into the atmosphere with its fumes.

## Advantages of Green Crackers

It has been observed that every year the quality of air has been declining and what may seem like fog during the winters is actually [Smog](#) (smoke+fog). Thus, the introduction of these Green Crackers in India will majorly affect the quality of air in a positive manner.

It must also be noted that over the years many accidents have come up where children and adults have died due to firecracker incidents. With green cracker manufacturing, such accidents may also reduce.

But along with its advantages, one of the biggest disadvantages of Green crackers is that only the manufacturers who have signed a deal with CSIR will be allowed to manufacture these crackers. All the other industries which produce the traditional type of crackers may be left unemployed. No small manufacturing unit will be allowed to produce green crackers.

The components and elements required for creating a green cracker may not be available for everyone which may also be a reason for many manufacturers to opt for this job.

However, 70% of India's crackers are manufactured in Sivakasi, Tamil Nadu, which continues to be the leading supplier of Green Crackers in India.

## Green Crackers: SWAS, STAR & SAFAL

These green crackers have been given three different names:

### 1. **SWAS - Safe Water Releaser**

- They will release water vapour in the air which will suppress the dust released
- It will not comprise potassium nitrate and sulphur
- A diluent will be released for gaseous emissions
- The particulate dust released will reduce by approximately 30 percent

### 2. **STAR - Safe Thermite Cracker**

- Does not comprise potassium nitrate and sulphur
- Reduced particulate matter disposal
- Reduced sound intensity

### 3. **SAFAL - Safe Minimal Aluminium**

- Minimum usage of aluminium
- Usage of magnesium instead of aluminium
- Reduction in sound in comparison to traditional crackers

Thus, considering the tremendous deterioration in the quality of air which declines even more during the winter season in India, taking up strict actions to control Air Pollution had become a major concern.

Candidates must be aware of other important terms and concepts which are important for the upcoming [IAS Exam](#) and focus on their preparation.

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