
A green concern
Greenergy
Published by
ABHALMAYA FOUNDATION
CONSTRUCTED BY- STUDIO 888
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01. INTRODUCTION

When the Sky Fills with Smoke

- Diwali, the festival of lights, brings joy, togetherness and celebration. However, the widespread bursting of firecrackers can turn the festive sky into a cloud of smoke and harmful pollutants.

- Every year, firecracker emissions add to the air pollution burden in many parts of India. The celebration may last a few hours, but its effects on air quality can extend beyond the festivities.

- Can we truly celebrate the festival of light while compromising the quality of the air we breathe?





02. UNDERSTANDING AIR POLLUTION

Air pollution occurs when harmful gases, smoke, dust and microscopic particles contaminate the atmosphere.

Major sources include:

- Vehicle exhaust and industrial emissions
- Construction dust and road dust
- Burning of waste and other materials
- Agricultural and other biomass burning
- Firecrackers during festivals and celebrations

While air pollution is a year-round concern, firecrackers can cause sudden increases in pollution during Diwali, particularly when weather conditions restrict the dispersal of smoke.

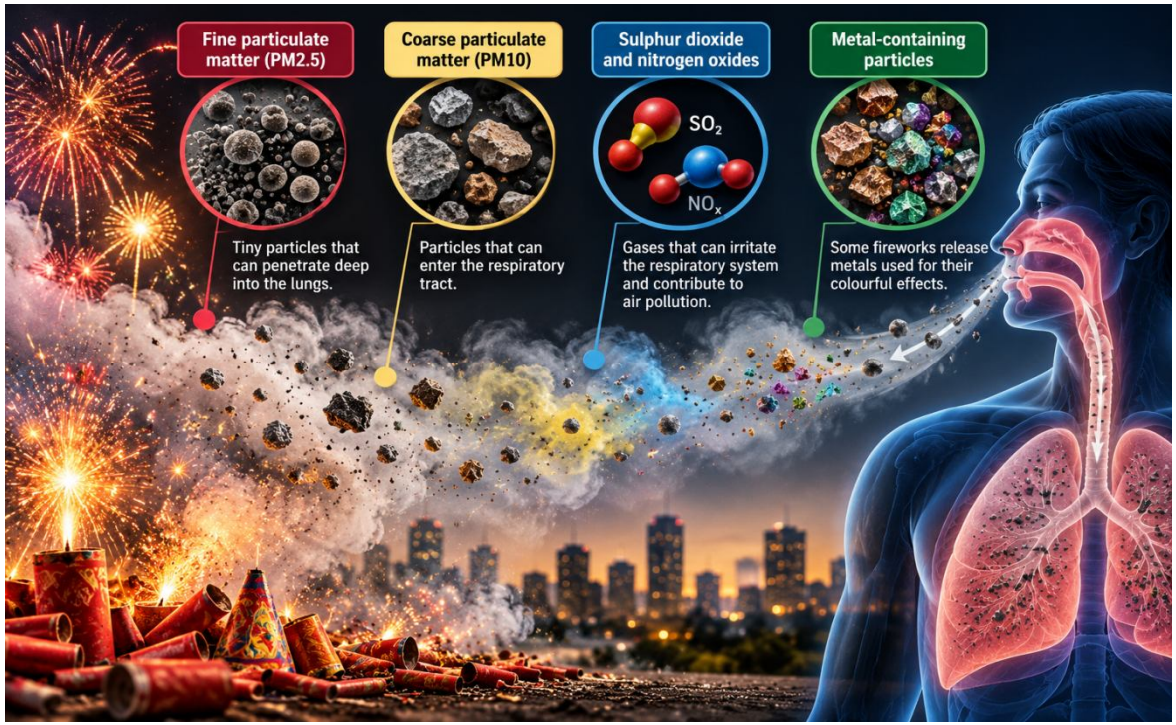
03. FIRECRACKERS: WHAT IS IN THE SMOKE?

Firecrackers release a mixture of pollutants into the atmosphere. Their emissions depend on their composition, quantity and type. The combination of these emissions can significantly affect local air quality.

Fine particulate matter (PM2.5): Tiny particles that can penetrate deep into the lungs.
Coarse particulate matter (PM10): Particles that can enter the respiratory tract.

Sulphur dioxide and nitrogen oxides:
Gases that can irritate the respiratory system and contribute to air pollution.

Metal-containing particles:
Some fireworks release metals used to produce their colourful effects.

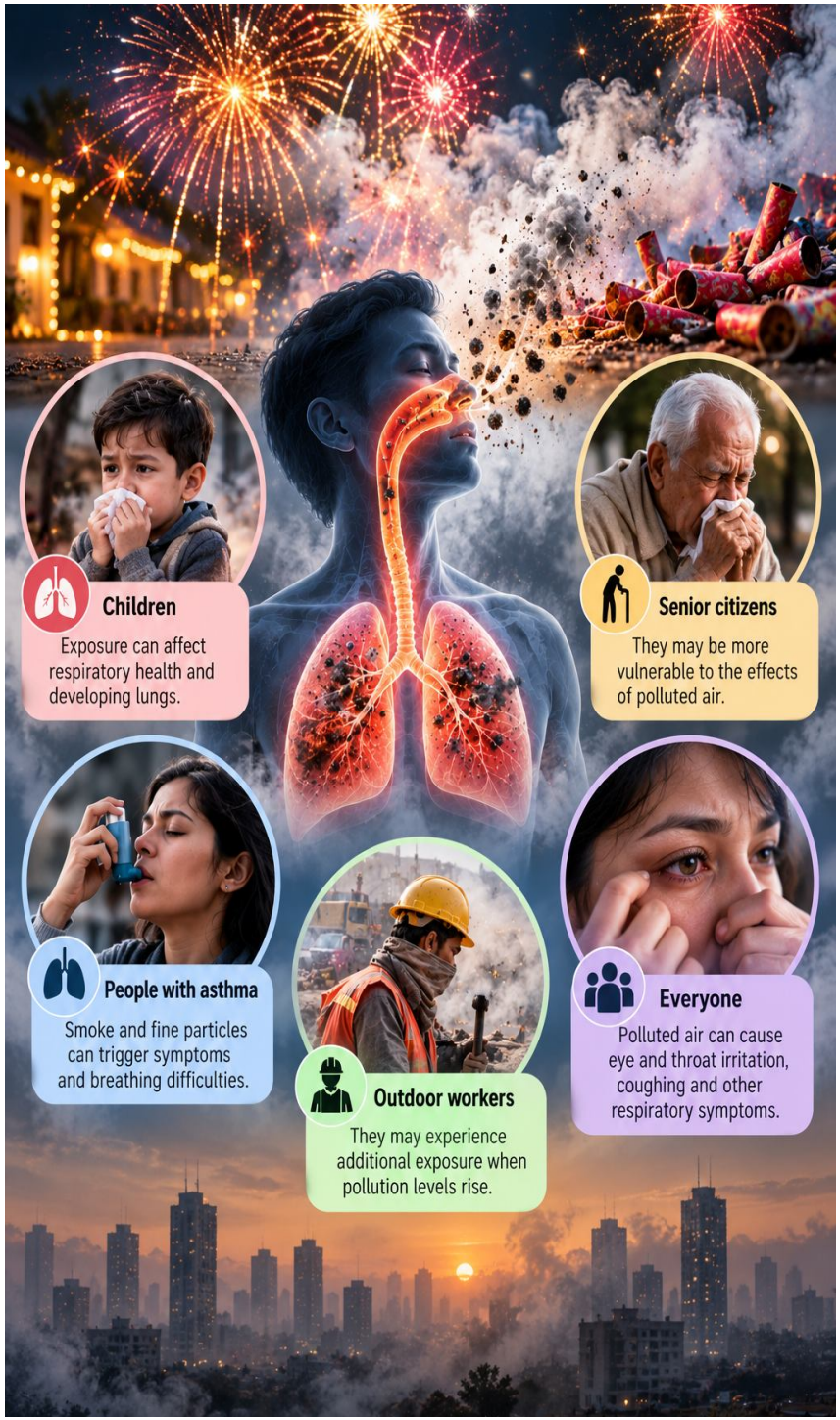


05. THE IMPACT ON HUMAN HEALTH

Air pollution is not merely an environmental issue; it is also a public health concern.

- **Children:** Exposure can affect respiratory health and developing lungs.
- **Senior citizens:** They may be more vulnerable to the effects of polluted air.
- **People with asthma:** Smoke and fine particles can trigger symptoms and breathing difficulties.
- **Outdoor workers:** They may experience additional exposure when pollution levels rise.
- **Everyone:** Polluted air can cause eye and throat irritation, coughing and other respiratory symptoms.

Reducing exposure to polluted air is an important step towards protecting public health.



06. BEYOND HUMANS: NATURE ALSO SUFFERS



- The effects of firecracker celebrations extend beyond people.
- Birds and animals may experience distress from loud explosions, while smoke and airborne particles affect the environment they inhabit.
- Firecracker waste can also leave streets and public spaces littered with paper, plastic and chemical residues.
- A healthy environment depends on protecting not only human health but also the plants, animals and ecosystems with which we share our planet.

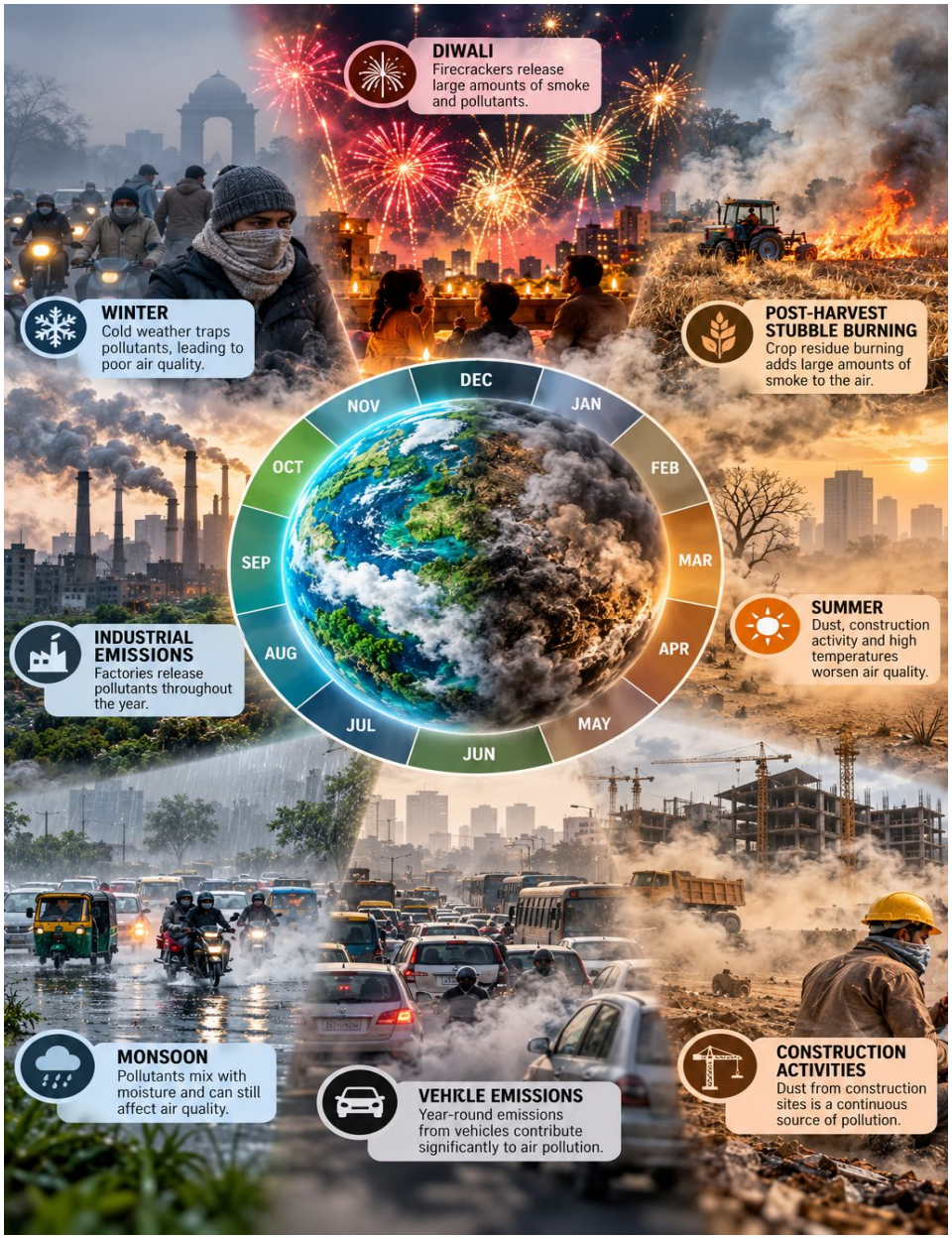
07. AIR POLLUTION: A YEAR-ROUND CHALLENGE

Although Diwali firecrackers receive considerable attention, air pollution cannot be solved by addressing one festival alone.

Vehicle emissions, industrial activities, road dust, construction and waste burning contribute to pollution throughout the year.

Reducing firecracker emissions is one meaningful step, alongside long-term efforts to improve transport, energy use, waste management and industrial practices.

Clean air requires continuous action, not seasonal concern.



3. Noise Pollution: When Celebration Becomes Disturbance

Air pollution is not the only concern. The loud explosions produced by firecrackers can create sudden and intense noise, disturbing the peace of neighbourhoods.

Excessive noise can cause stress, interfere with sleep and create discomfort. Very loud sounds may also pose a risk to hearing, depending on their intensity and the distance from the source.

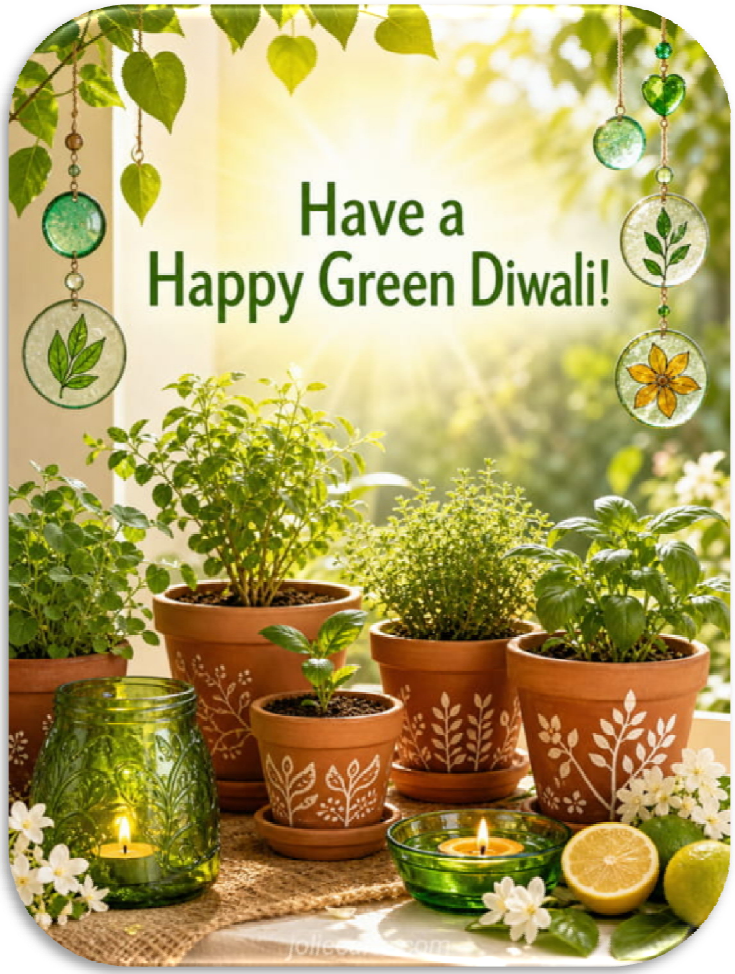
For babies, senior citizens, hospital patients and people who are sensitive to loud sounds, Diwali nights can become particularly distressing.

A festival should spread joy, not force others to endure noise.



08. TOWARDS A GREENER DIWALI

Celebrations can be joyful, colorful and meaningful without excessive smoke and noise.



GREAT GREEN GRAND

- Choose traditional diyas and energy-efficient decorative lights.
- Celebrate through cultural programmes, music and community gatherings.
- Avoid burning waste and dispose of festive litter responsibly.
- Encourage children to participate in environmental awareness activities.
- Follow local regulations and official guidance concerning firecrackers.
- Spread awareness about cleaner and more responsible celebrations.

Small changes in our choices can inspire larger changes in our communities.

09.THE ROLE OF EVERY CITIZEN



A cleaner future depends on shared responsibility.

Individuals: Make environmentally conscious choices and reduce unnecessary emissions.

Educational institutions: Promote environmental education and organise clean-air campaigns.

Communities: Encourage responsible festivals and discourage waste burning.

Businesses: Adopt sustainable practices and support environmental awareness initiatives.

Government and institutions: Monitor air quality, enforce applicable regulations and promote effective pollution-control measures.

Every action matters when the goal is cleaner air for all.

10. AIR POLLUTION CAUSED BY DIFFERENT FIRECRACKERS



1. Snake Tablets

64,500 µg/m³ Highest measured peak

Snake tablets produce ash and smoke as they burn. In the cited study, they recorded the highest peak PM2.5 concentration among the six firecracker types tested. The fine particles released can irritate the respiratory system and may worsen asthma and other breathing problems.



2. Garland of 1,000 Crackers

38,540 µg/m³

These long strings of crackers release repeated bursts of smoke and particles as they explode. They also create intense noise. Their repeated firing can contribute to short-term deterioration in local air quality, especially in crowded residential areas.



3. Pulpul Crackers

28,950 µg/m³

Pulpul crackers release fine particles and combustion products when ignited. The study recorded a high peak PM2.5 concentration for this type. Smoke from these crackers can be particularly concerning for children, older adults and people with respiratory conditions.



4. Sparklers (Phuljhari)

10,390 µg/m³

Sparklers may appear less smoky than some other firecrackers, but burning their chemical coating releases fine particles and metal-containing compounds. Their smoke should not be inhaled directly, especially by children holding them close to their faces.



5. Ground Spinners (Chakri)

9,490 µg/m³

Chakris spin rapidly on the ground and emit sparks, smoke and fine particles during combustion. Although their measured peak was lower than that of the first four types, they still contribute to localized air pollution and can cause burns or fire accidents if used carelessly.



6. Flower Pots (Anar)

4,860 µg/m³

Flower pots create a fountain of sparks and smoke. They had the lowest peak PM2.5 concentration among these six types in the cited study. However, a lower reading does not mean pollution-free or safe: emissions vary with the product, quantity, surroundings and burning conditions.

1. What is PM2.5 and why is it dangerous?

PM2.5 consists of extremely fine particles that can travel deep into the lungs. Exposure can irritate the respiratory system and worsen asthma and other heart or lung conditions.

2. What other pollutants do firecrackers release?

Fireworks can release several types of pollutants, including:-

- Fine particulate matter: PM2.5 and PM10.

- Gases: Sulphur dioxide (SO_2), nitrogen oxides (NO_x) and carbon monoxide (CO), depending on the firecracker and burning conditions.

- Metal-containing particles:

Certain fireworks may release metals such as barium, strontium, copper and aluminium, which are used to produce different colours and effects.

6. How can we celebrate a greener Diwali?



Choose diyas and decorative lights. Enjoy festive lighting without adding firecracker smoke.



Celebrate together responsibly. Choose activities that do not expose neighbours, children or animals to smoke and loud noise.



Keep public spaces clean. Collect and dispose of festival waste responsibly.



Spread Awareness. Encourage friends, families, schools and communities to make informed choices.




Great Green Grand
Thank you