

ANTI-FIRE CRACKERS CAMPAIGN

NO
Crackers

Let's Celebrate
A Pollution-Free
Diwali



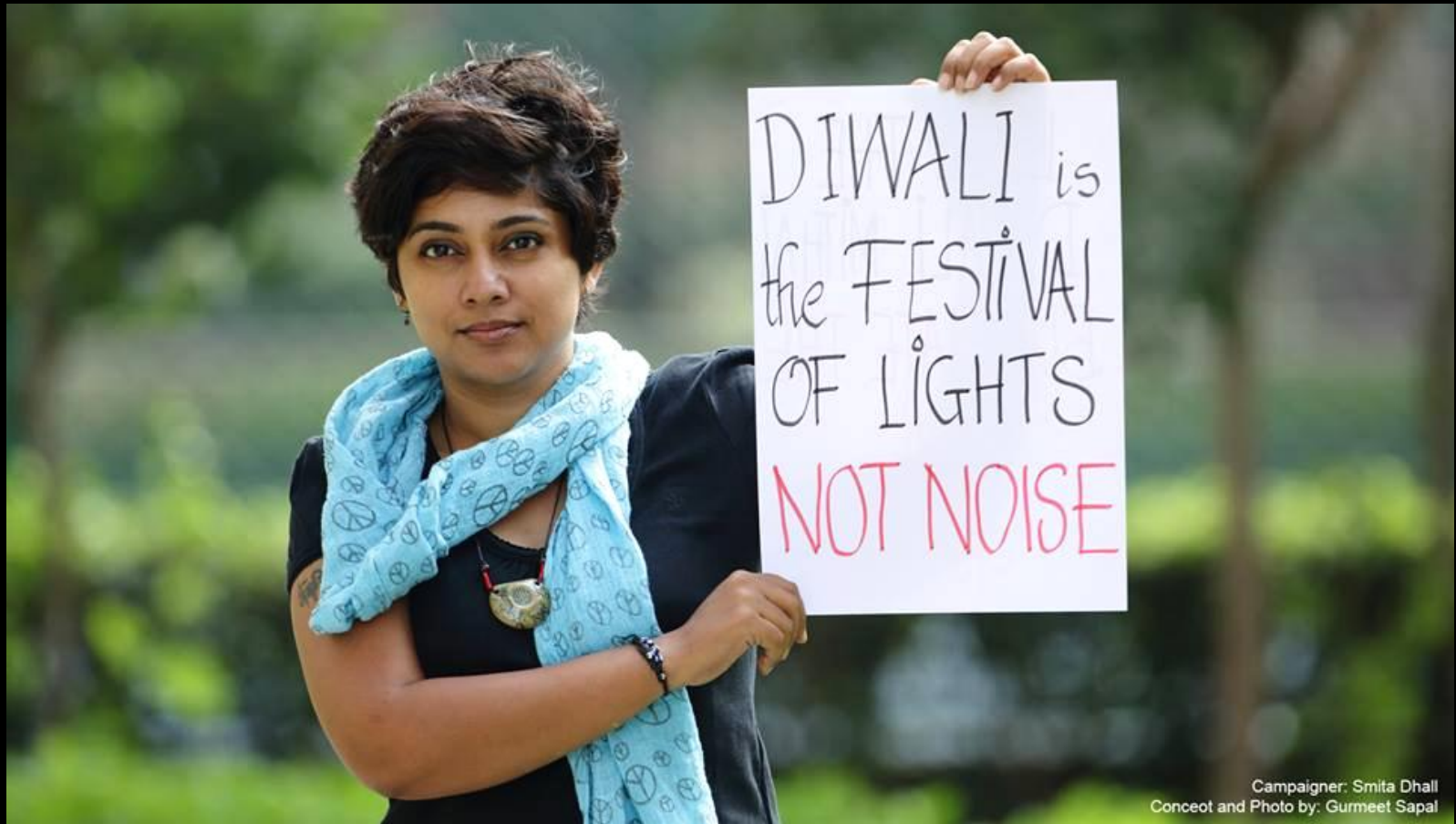
Known Health Impacts From Bursting Firecrackers Caused Due To Their Chemical Composition

**Remember
Last Diwali?**

Make it
different
this time.

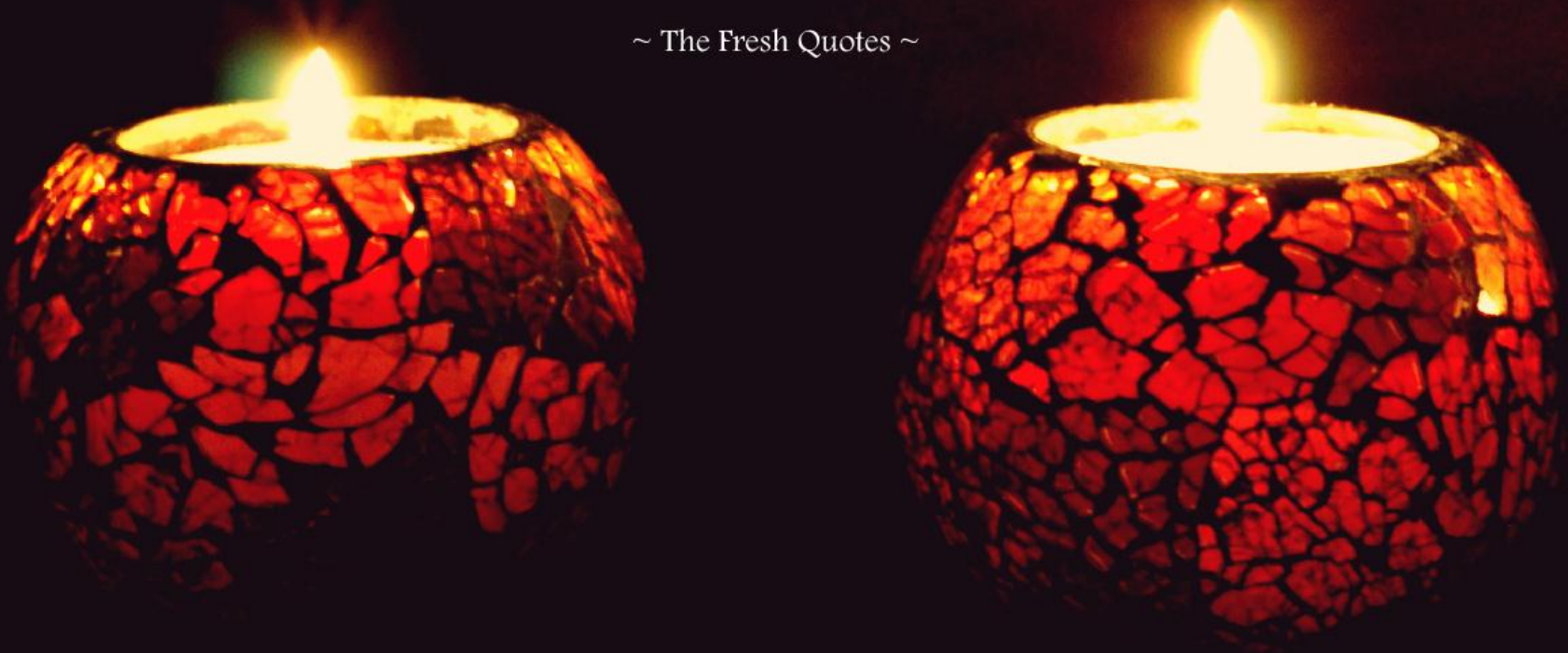


The Hon'ble Supreme Court of India has banned the bursting of fire-crackers or any noise generating fireworks of high decibels to control the noise pollution.



**This Diwali.
Only Diyas,
No Fireworks.**

~ The Fresh Quotes ~



Color Producing Compounds Used In Firecrackers

Metal & Its Compounds	Colour
Strontium Salts & Lithium Salts (Li_2CO_3 , SrCO_3)	Red
Calcium Salts (CaCl_2 , $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$)	Orange
Incandescence of Iron or Charcoal	Gold
Sodium Compounds (NaNO_3 , Na_3AlF_6)	Yellow

Metal & Its Compounds

Colour

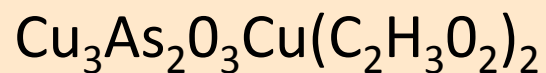
White Hot Metal (CaO)

Electric White

Barium compounds with Chlorine (BaCl⁺)

Green

Copper Compounds and Chlorine



Blue

Mixture of Strontium (red) and Copper (blue) compounds

Purple

Burning aluminium, titanium or magnesium powder

Silver

It's in our hands!



Summary Of Chemicals Used Causing Sparkling Effects In Firecrackers

Chemical Compounds	Purpose Usage	Chemical Compounds	Purpose Usage
Lead Dioxide/ Nitrate/ Chloride	Oxidizer	Aluminium	Brilliant Whites
Lithium compounds	Blazing Reds	Potassium Nitrate	In Black Powder
Mercury (Mercurous chloride)	Chlorine Donor	Ammonium and Potassium	Propellant / Oxidizer
Barium Nitrate	Glittering Greens	Copper Compounds	Blues

Impact Of Non-Stoichiometric Ingredients In Firecrackers On Health

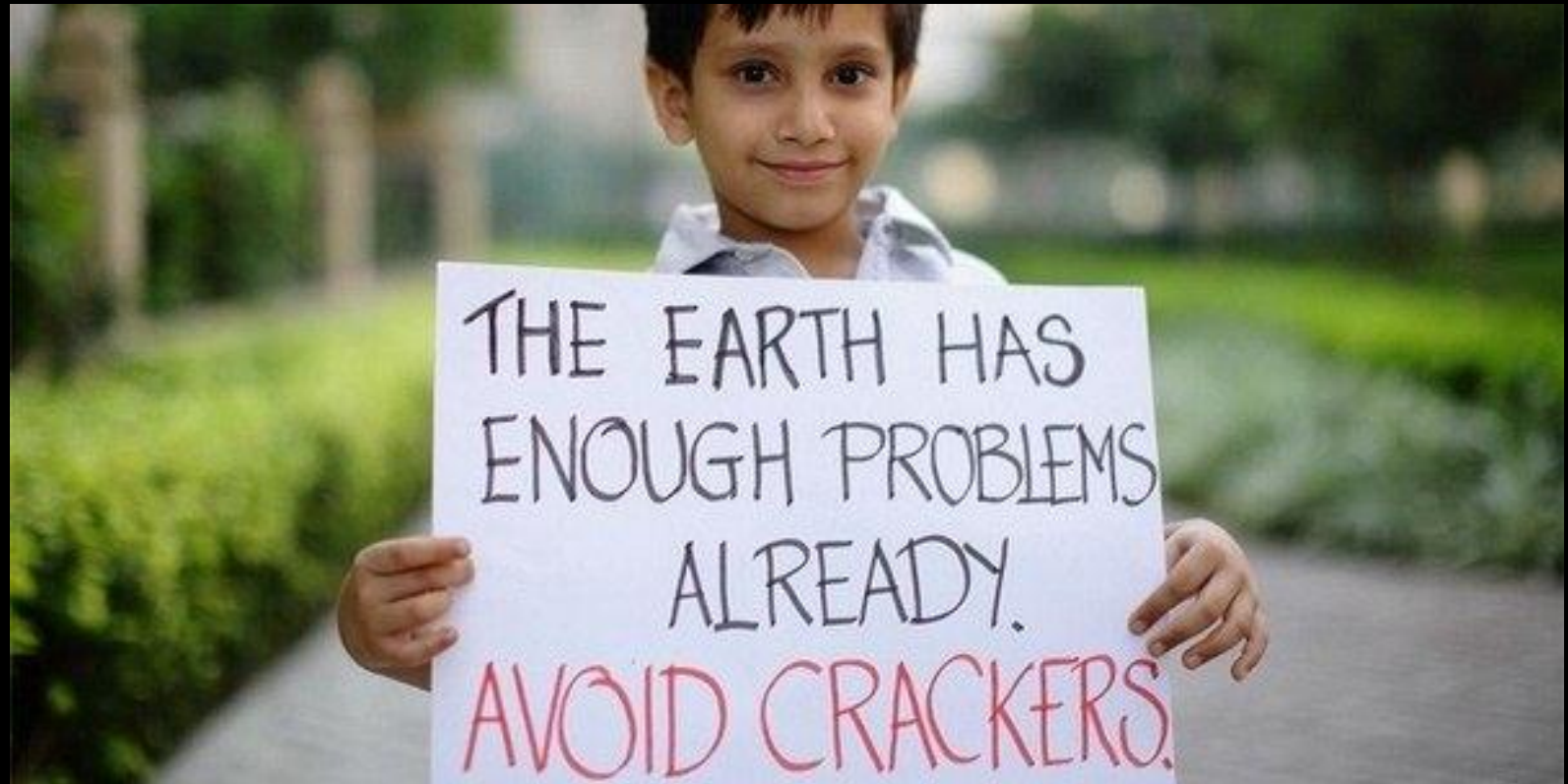
- The lighting effects and noise levels depend on the chemistry of fireworks and the combustive features of the ingredients.
- The major concern is inappropriate stoichiometric amounts of the ingredients in making common firecrackers.



Firecrackers are made of chemicals/metallic agents some of which are toxic when they are burst.



The major constituents of smog that forms from firecracker emissions contain SO_x , NO_x and significant dust load or particulate matter that may contain any of the following heavy metals ex. Pb, Hg, Sr, Li, Al etc.



DEEP BURNS INSIDE YOUR BODY

Chemical composition of commonly available fireworks, their role and physiological effects

- Toxic Element
- Toxic Effect

● ALUMINIUM

- Skin conditions, accumulation within the body, cause of Alzheimer's disease

● NITRIC OXIDE

- Poisonous, reacts with lung tissue

● CADMIUM COMPOUND (BANNED)

- Lung damage, cancer, gastrointestinal problems

● PERCHLORATE (AMMONIUM AND POTASSIUM)

- Poisonous, contaminates ground and surface water, lung cancer, cause of thyroid complications

● ANTIMONY SULPHIDE

- Respiratory irritation, lung cancer

● POTASSIUM NITRATE

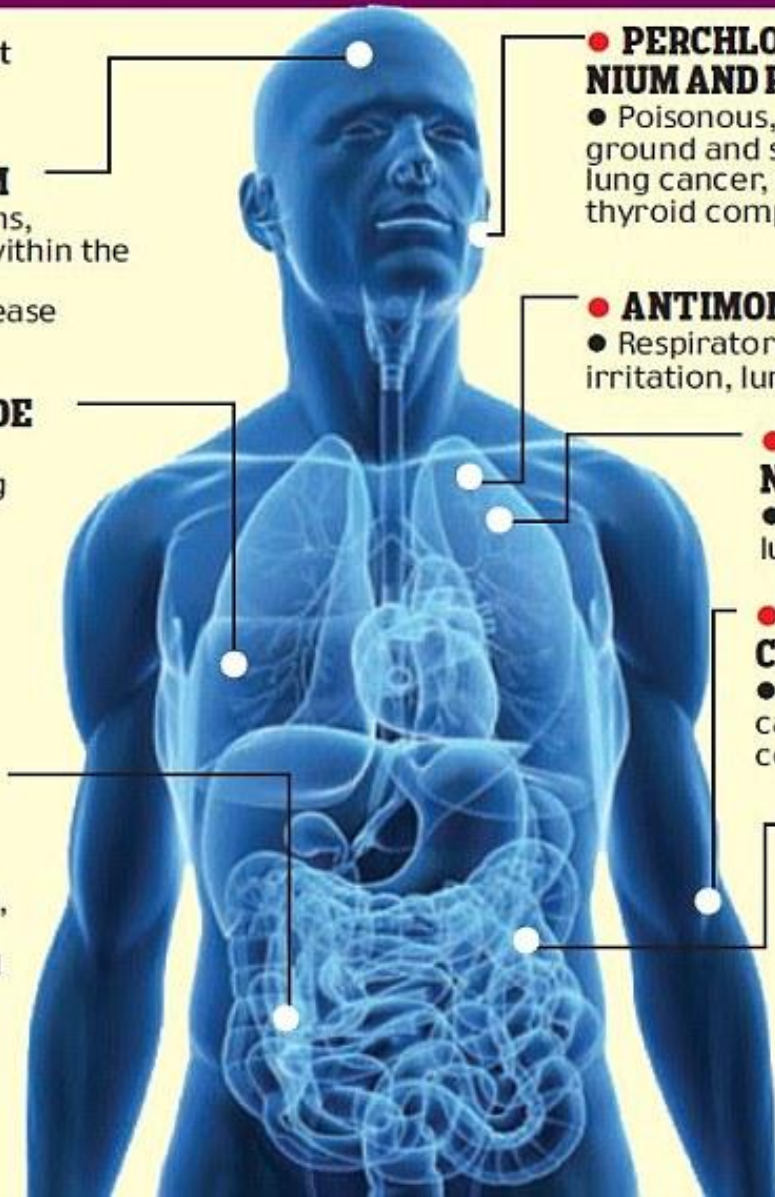
- Poisonous, lung cancer

● ARSENIC COMPOUNDS

- Lung cancer, skin conditions

● BARIUM NITRATES

- Poisonous, respiratory irritation, radioactive effects, gastrointestinal problems, muscular weakness



Environmental Health Effects: Hazardous & Toxic Nature of Ingredients Used In Firecrackers

Table below provides an overview of immediate/long term effects of commonly used ingredients used in making firecrackers.

Compound	Environmental Health Effects
Aluminium	Contact dermatitis, bio-accumulation
Sulfur Dioxide	Acid rain from sulphuric acid affects water sources, vegetation & causes property damage.
Potassium Nitrate	Toxic dusts, carcinogenic sulfur-coal compounds
Perchlorate – Ammonium & Potassium	Can contaminate ground & surface waters, can cause thyroid problems in humans & animals

Compound	Environmental Health Effects
Copper Compounds	Polychlorinated dioxins and di-benzofurans. Can bio-accumulate, Risk of Cancer
Antimony Sulfide	Toxic smoke, possible carcinogen
Lead Dioxide/ Nitrate/ Chloride	Bio-accumulation, developmental danger for kids and unborn babies, may remain airborne for days, poisonous to plants and animals
Lithium Compounds	Toxic and irritating fumes when burned
Mercury	Toxic heavy metal. Can bio-accumulate.
Barium Nitrate	Poisonous fumes can irritate the respiratory tract. Possible radioactive fallout.

Compound	Environmental Health Effects
Nitric Oxide	Toxic by inhalation. Is a free radical.
Nitrogen Dioxide	Highly toxic by inhalation.
Ozone	Greenhouse gas that attacks and irritates lungs
Arsenic Compounds	Toxic ash can cause lung cancer, skin irritation and wart formation
Strontium Compounds	Can replace calcium in the body Strontium Chloride is slightly toxic.

This Diwali forget crackers...
LAUGH TOGETHER INSTEAD

Thank You

