



SAFE & ECO-FRIENDLY DIWALI :PROMOTES KHUSHHALI

(A Guidebook for Pollution-Free & Healthy Diwali Celebration)



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Foreword



Diwali is a festival of joy, happiness, light & lamps & is celebrated with great enthusiasm. This festival signifies the victory of good over evil & traditionally celebrated by lighting earthen lamps. At present Diwali is completely different with the new trend of bursting fire crackers & fire works, which add harmful pollutants in the atmosphere & also causes noise pollution. Air pollution is the biggest environmental & public health risk factor lead to premature morbidity & mortality.

Further, the noise pollution from burning of fire crackers led to different psychological & physiological disorders. Increasing levels of air pollutants not only affect human but also other living creatures like animals & birds. Heavy metals like aluminum, magnesium, copper etc. present in fire crackers as coloring agents & binders to provide stability; can plausibly affect the living beings & environment. It also adversely affects the vulnerable population i.e. children, pregnant women, elderly & people with diseases, disproportionately. As the world is already facing the worst health issues due to COVID-19; it is extremely important to take utmost care at each step. Understanding the adverse impacts of bursting fire crackers is extremely important to respond wisely to reduce the impacts.

I commend the efforts of Dr. Suman Mor, Department of Environment Studies, Panjab University, Chandigarh & Dr. Ravindra Khaiwal, Department of Community Medicine & School of Public Health, Post Graduate Institute of Medical Education & Research, Chandigarh for bringing out this awareness booklet "Safe & Eco-Friendly Diwali: Promotes Khushhali" to address various environmental & public health issues related to bursting of fire crackers.

This booklet will help to bring awareness among people about the importance of pollution free & eco-friendly diwali, various health effects associated with burning fire crackers & how various adaptation strategies will enable people in addressing related health & environmental issues.

I wish you healthy, safe & green Diwali.

Justice Adarsh Kumar Goel
Chairperson
National Green Tribunal



SAFE & ECO-FRIENDLY DIWALI :PROMOTES KHUSHHALI

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DIWALI



: A FESTIVAL OF JOY & HAPPINESS

Diwali is the festival of lights & is celebrated in India with great pomp & fervor



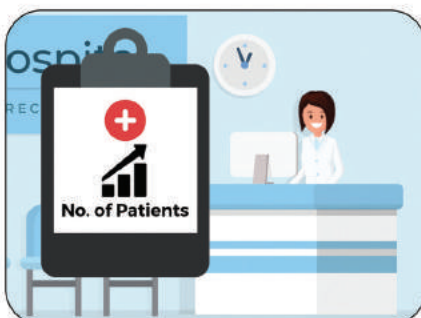
Lighting earthen lamps signifying the triumph of good over evil is the traditional way of celebration

Bursting of crackers & fireworks, add toxins to the already polluted atmosphere



This temporary joy & happiness adds hazardous toxins in air & also create noise pollution

Carelessness, negligence & ignorance results in all accidents/mishaps



Fire cracker-related injuries increase around Diwali

A TOXIC COCKTAIL OF POLLUTION

Airborne Lead

Dioxin Pollution

Air Pollution

Heavy Metal Fallout

CO₂

Ground Level Ozone Formation

Particulate Matter Pollution
PM₁₀, PM_{2.5}

Acid Rain Ingredient

TOXIC METAL IN FIRE CRACKERS – AS COLORING AGENT

Aluminum, Magnesium, or Titanium White

Carbon or Iron Orange

Sodium Compounds Yellow

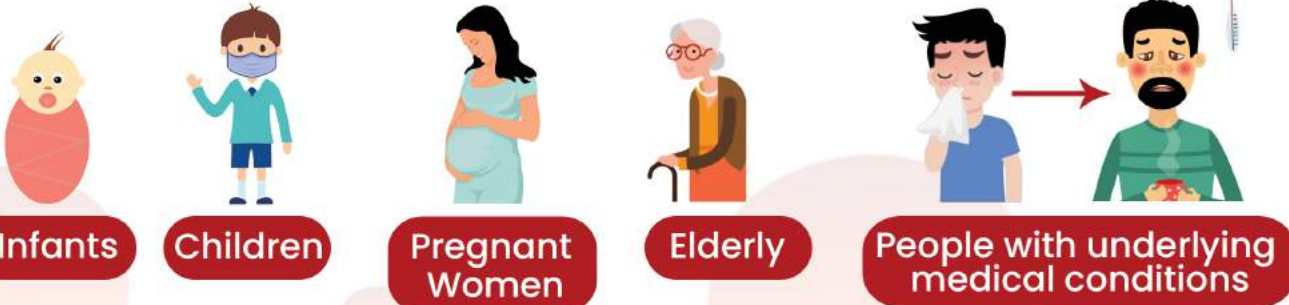
Copper Compounds Blue

Strontium Carbonate Red

Barium Mono Chloride Salts or Barium Nitrate or Barium Chlorate Green

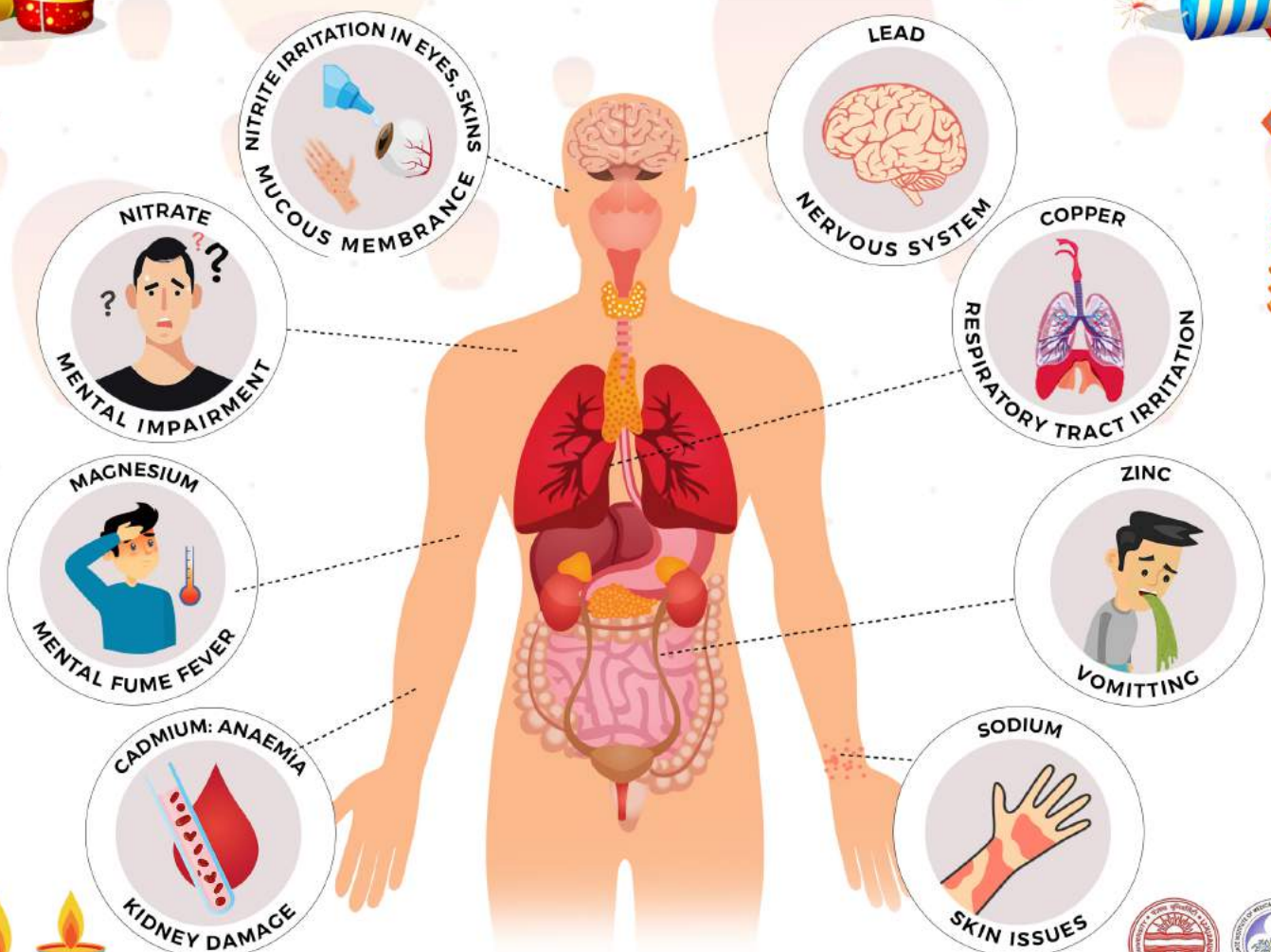


FIRE CRACKERS POLLUTION & VULNERABLE POPULATION



But no one remain untouched from exposure

HEALTH IMPACTS OF TOXIC CHEMICALS



FIRE CRACKERS & NOISE POLLUTION

Type of Cracker Noise Level (dB)

- Standard Classic----- 138
- Topaz Bomb
- Hydrogen Bomb-----135
- Hydro Bomb-----136
- Bullet Bomb----- 136
- Mini Bomb-----133
- Parrot Bomb-----134

Noise pollution cause short-term & long term health issues

140dB

Fire crackers cause high noise affecting living beings

NOISE POLLUTION & HEALTH IMPACTS

Auditory Effects

Non-Auditory Effects



PERMANENT DEAFNESS



HEARING IMPAIRMENT



ANNOYANCE



ISCHEMIC HEART DISEASE



SLEEP DISTURBANCE



HYPERTENSION



INTERFERES WITH CONCENTRATION & COMMUNICATION



DECREASED SCHOOL PERFORMANCE



IMPACT OF FIRE CRACKERS ON BIODIVERSITY



Due to poor vision, especially at night, birds bump into unknown objects & injure themselves



Fire crackers can burn or permanent blind flying birds



Creates confusion & panic among animals



Psychological disorder of stress in dogs



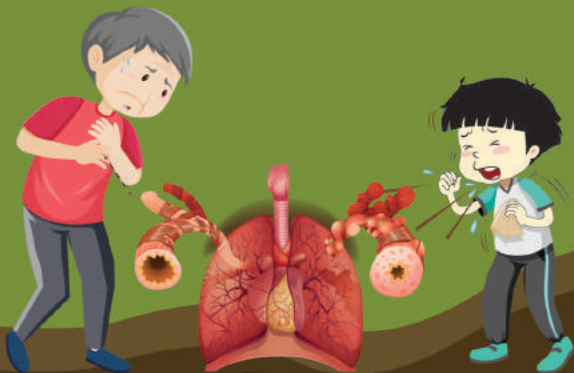
Excessive burning of fire-crackers also burn the skin of stray animals



Temporary deafness in animals & disorient birds



Throat, nose & eye-related problems



High noise levels lead to withdrawal behavior or hyperactivity in pregnant women, children & those suffering from respiratory problems



Noise pollution lead to restlessness, temporary or permanent hearing loss, severe ear pain, sleep disturbance etc in humans & animals



DIWALI & E-WASTE MANAGEMENT

Electrical & electronic waste equipments comprise of wastes generated from used electronic devices & house hold appliances which are not fit for their original intended use & are destined for recovery, recycling or disposal

On diwali we buy many electrical & electronic equipments. Lets responsibly dispose our E-Waste



LET'S BE RESPONSIBLE & MANAGE OUR E-WASTE

Think before buying any electronic gadget because lesser the waste, lesser will be the need of recycling & reusing

Reduce the volume, reuse, repair or upgrade

Always buy from responsible manufacturer/producer

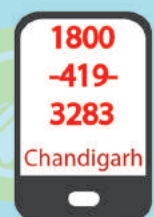
Do not throw any lighting & decorative material after using it

Safely store in a home in black bag & handover to authorized E- Waste collector

Make sure the manufacturer collect the waste material through dealers



CHECK TOLL FREE NUMBER
OF YOUR CITY TO SAFELY
DISPOSE E-WASTE



GREEN CRACKERS



As per NGT direction Green crackers are permitted only in cities & towns where air quality is moderate & below

- Substantially reduces emissions & absorbs dust
- Causes atleast 30% less air pollution compare to traditional fire crackers
- Produced to control the environmental disturbance
- They do not contain hazardous elements like barium nitrate



GREEN CRACKERS: SWAS, STAR & SAFAL



SWAS

Safe Water Releaser

- Suppress the dust released by releasing water vapour in the air
- Does not comprise potassium nitrate & sulphur
- The particulate dust released will reduce by approximately 30 percent



STAR

Safe Thermite Cracker

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



SAFAL

Safe Minimal Aluminium

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

LET'S SAY 'NO' TO FIRE CRACKERS



SAFETY FIRST

- Do not burn fire crackers, they harm
- As per NGT direction Green crackers are permitted only in cities & towns where air quality is moderate & below
- Follow safety precautions, while burning green crackers

DO'S

Follow state guidelines (Burning fire cracker between 8:00 p.m. to 10.00 pm)



Buy fireworks only from the licensed shop



Use a long candle/'phooljhari' for igniting fire crackers & keep elbow joint straight to increase the distance between the body & green crackers. Also keep them at arm's length



Keep fireworks in a closed box & away from source of fire

When bursting green crackers, refer open spaces like playgrounds & stand back while lighting green crackers. Keep a couple of buckets of water handy for putting out fires



Wear well-fitting cotton cloths

Wear shoes while bursting green crackers



In case of burns, splash tap water & repeat the process till the burning sensation reduces & seek medical help

Have an adult accompany children while bursting green crackers



LET'S SAY 'NO' TO FIRE CRACKERS



SAFETY FIRST

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- As per NGT direction Green crackers are permitted only in cities & towns where air quality is moderate & below
- Follow safety precautions, while burning green crackers

DON'TS



Do not buy fire crackers from street vendors

Do not ignite fireworks while holding them



Do not keep flammable materials like wood, electrical cables, fuel, lighted lamps etc. around where you store or light fireworks

Do not burst green crackers in crowded areas



Do not wear long, loose synthetic clothes while lighting green crackers. The loose ends can catch fire

Do not ignore a burn injury



Do not let your children burst green crackers on their own

Do not light green crackers bare foot



FINE

NGT MANDATED FINE WHERE FIRE CRACKERS ARE BANNED

₹10,000- for selling any kind of fireworks

₹2000- if anyone found using or allow the firing of fireworks

FIR under Disaster Act

LET'S SAY 'NO' TO FIRE CRACKERS



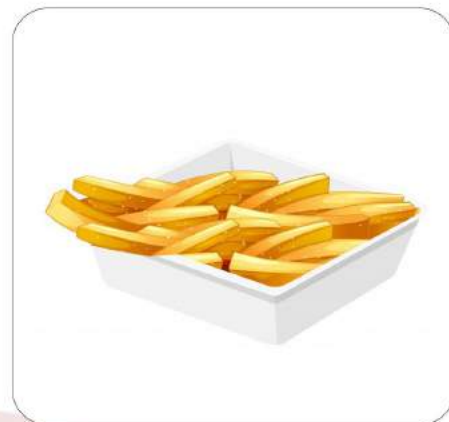
FOOD SAFETY & DIWALI



Keep yourself hydrated



Avoid artificial sweets.
Eat healthy food e.g.
fruits



Prefer grilling, baking
instead of deep frying



Prefer eating small
portions



Make your own sweets
instead of buying from
outside



Replace fatty foods, high
calorie sweets with
healthier alternative like
fruits & low calorie sweets



While buying sweets,
check the 'Best before
date'



Avoid Transfats ; commit for
taking healthy fats and oil in
foods



Do not drink

OUR DIWALI: GREEN DIWALI

**PROMOTE SAFETY,
CLEAN ENVIRONMENT
& BLUE SKY**



For Promoting Eco-Friendly Instead of Pollution-Friendly Diwali



Only community bursting & ensure physical distance

Prefer a walk while going to market whenever possible

Use fire crackers between 8 P.M. & 10 P.M. only

Say no to fire crackers



Promote green crackers & lazer shows



Spread awareness about the noise & air pollution due to the bursting of fire crackers

Promote eco-friendly practices like diya & candle lighting



Promote local products



Prohibit selling/bursting of fire crackers near the silence zones



Due to the presence of lead in paint; always avoid painted diyas



OUR DIWALI: GREEN DIWALI



Lighting your house naturally & don't use electric lights



Use natural colors for rangoli decoration instead of chemical colors



Turn down the volume of music



Gift a plant this diwali to loved ones



For your diwali shopping say no to polythene



Reuse products for diwali decoration



Maintain Social distance while going to market & visiting friends



Always wear face cover/mask, maintain etiquette while stepping out



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This booklet is prepared under National Clean Air Programme to create awareness about the importance of pollution free & eco-friendly Diwali. We encourage you to take adaptive measures to minimize the adverse impacts of bursting fire crackers on health & environment.

