

# ECO FRIENDLY HOLI

: Let's play safe

A Booklet to Reduce the Harmful Effects of Synthetic Colors Celebration

No to  
synthetic  
colors

Protect  
eyes

Judicious  
use of  
water

Smart  
use of  
bonfire

Use  
natural  
colors



Dr. Ravindra Khaiwal  
Dr. Suman Mor



*Justice Adarsh Kumar Goel  
Former Judge Supreme Court of India  
Chairperson  
National Green Tribunal*



*Faridkot House  
Copernicus Marg  
New Delhi-110001  
Tel. : 011-23043507*



## **FOREWARD**

Every year after a long winter, Holi marks the beginning of spring, which symbolizes the triumph of good over evil & brings joy and fervor of colors to Indian streets. In the Indian subcontinent, Holi has been celebrated for centuries, with poems & celebrations of community fire.

I have gone through the pictorial booklet 'Eco-Friendly Holi - Let's Play Safe'. It aims to connect the new generation with their traditional eco-friendly culture & approaches. The booklet guides why we need to avoid playing Holi with water balloons, plastic water guns (pichkaris) & toxic colors. These activities have a detrimental impact on the environment & human health. The booklet also give tips on celebrating Holi using Eco-friendly practices to protect ecology & wildlife.

I am sure the pictorial booklet 'Eco-Friendly Holi - Let's Play Safe' will be a valuable tool to educate everyone in simple, easy-to-grasp pictures about aspects of Holi & will inspire them to use natural colors like henna, turmeric, sandalwood, beetroot powder & more. Using natural colors is one of the best ways to avoid wastage of water as cleaning them is easy & a considerable amount of water can be saved.

I congratulate the authors Dr. Ravindra Khaiwal from the Post Graduate Institute of Medical Education & Research, Chandigarh & Dr. Suman Mor from Panjab University, Chandigarh, for developing this excellent infographic booklet. I am confident that this pictorial booklet will motivate the public to celebrate Holi using eco-friendly & healthy practices to ensure environmental sustainability & promote human well-being.

*Adarsh*  
(Justice Adarsh Kumar Goel)

*16.3.2022*

# ECO FRIENDLY HOLI

4	HOLI: A FESTIVAL OF JOY & HAPPINESS
5	STORY BEHIND THE FESTIVAL OF COLOURS
6	STORY BEHIND THE FESTIVAL OF COLOURS
7	HOLI & SYNTHETIC COLOURS
8	HARMFUL EFFECTS OF SYNTHETIC COLOURS
9	HOLI CELEBRATION & ENVIRONMENT
10	HOLI & WASTAGE OF WATER
11	HOLI CELEBRATION & ANIMALS
12	LET'S PLAY NATURAL HOLI
13	ECO FRIENDLY & SAFE HOLI
14	JAL JEEWAN MISSION
15	SOLUTION OF COMMON PROBLEMS



## ACKNOWLEDGEMENT

This booklet is based on current knowledge & may need to be updated with the emerging evidence. Authors greatly acknowledge the support from Ministry of Environment, Forest & Climate Change.



# HOLI: A FESTIVAL OF JOY & HAPPINESS

Holi which marks the harvest of Rabi crop & the arrival of spring was traditionally celebrated using natural coloured extracts from seasonal herbs

However, gradually these herbs were replaced by synthetic dyes, some of which are toxic



Broadly there are three categories of colours available in the market

DRY POWDER



PASTE



WET COLOURS



## HOLI, ENVIRONMENT & HEALTH

Use of wood/biomass fuels for burning holi fires



Use of Toxic colours



Harmful effect on soil

Wasteful use of water during holi

# STORY BEHIND THE FESTIVAL OF COLORS



## HOLIKA-AN EVIL DEMONESS WAS BURNT ALIVE



The name of the festival of colors i.e. holi was derived from Holika, the sister of king Hiranyakashipu



He commanded everyone to worship him but his little son Prahlada refused to do so



Prahlada was a devout follower of Vishnu, the great preserver of the Universe



This made him very angry & he ordered his sister Holika to kill Prahlada



She, possessing the power to walk through fire unharmed, picked up the child & walked into a fire with him



Prahlada, however, chanted the many names of Lord Vishnu & was saved from the fire



Holika perished because she did not know that her powers were only effective if she entered the fire alone

Setting it alight as a symbolic burning of the demoness Holika to be known as Holika Dahan

## TO WORSHIP THE GOD OF LOVE

Kamadeva disturbed Lord Shiva during his meditation

This made Lord Shiva open his third eye & incinerated Kamadeva, the God of Love, to ashes

So, many people worship Kamadeva on Holi, with the simple offering of a mixture of mango blossoms & sandalwood paste



# STORY BEHIND THE FESTIVAL OF COLORS

## A GIANTNESS WAS DEFEATED BY CHILDREN

Dhundi a giantness was troubling the children in the kingdom of Prithu

She was chased away by the shouts & pranks of village youngsters

This Giantness had secured several benefits that made her almost invincible, shoutd, abuse & pranks of the boys were her undoing

This was a chink in the armour for Dhundi, owing to a curse from Lord Shiva. The little boys took advantages of her weakness & drove her out of their land



## KRISHNA PLAYS HOLI WITH THE GOPIS

Holi was a prank Lord Krishna used to play with gopis by throwing coloured powder on them

On this day images of Krishna are often carried through the streets

The festival is celebrated with great vigour in the villages around Mathura, the birthplace of Krishna

Holi is also associated with the divine dance known as raaslila staged by Lord Krishna for the benefit of his devotee gopis



# HOLI & SYNTHETIC COLOURS



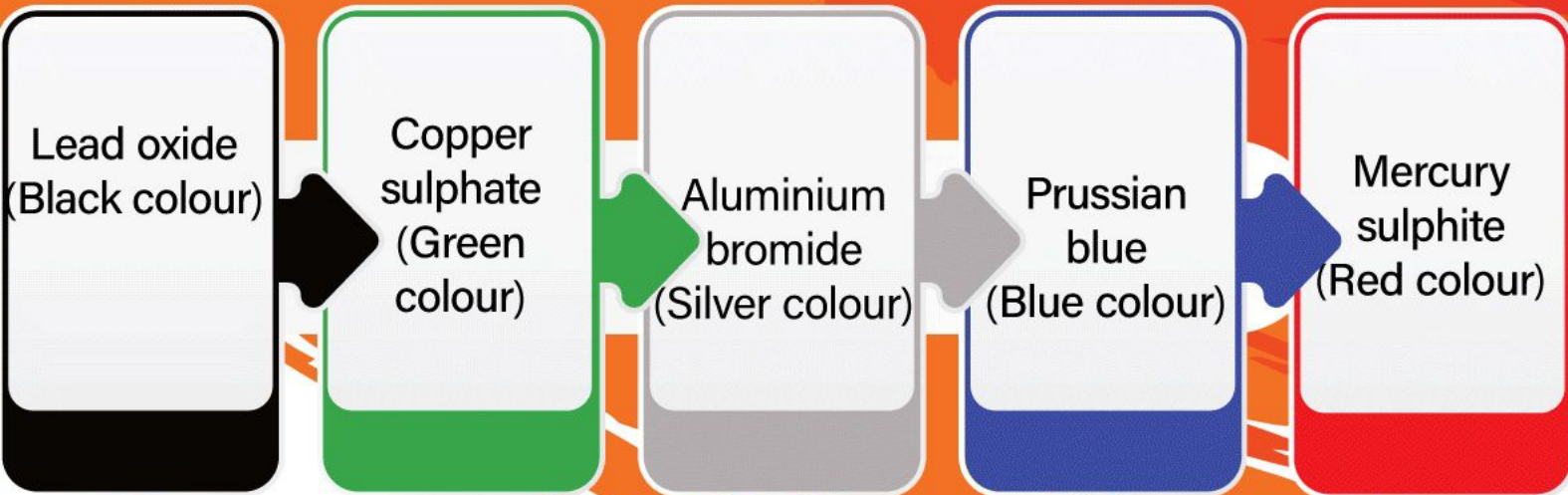
Colours are harmful as they contain

Toxic metal & chemicals like mica, acids, alkalis, pieces of glass etc.

More dangerous when mixed with oil

Rouge chemicals seek into the skin easily when mixed with oil

## HOLI PASTE & HARMFUL CHEMICALS



## DRY COLOURS/GULAALS

Could be either asbestos or silica

Gulaal has heavy metals called systemic toxins that can get deposited on kidneys, liver & bones

Lead can lead to learning disorder, chromium to bronchial ailments, cadmium to fragile bones, nickel to dermatitis, mercury to nervous system disorder etc.

These can cause



Renal failure



Eye allergy & puffiness



Cancer



Temporary blindness



# HARMFUL EFFECTS OF SYNTHETIC COLOURS

**Wet colours :**  
**Gentian violet**  
**as a colour**



## GENTIAN VIOLET CAN CAUSE

**Skin discolouration**

**Irritation of mucous membrane**

**Dermatitis**

**B  
L  
A  
C  
K**

**LEAD OXIDE**

**Renal failure**

**G  
R  
E  
E  
N**

**COPPER SULPHATE**

**Eye allergy, puffins & temporary blindness**

**R  
E  
D**

**MERCURY SULPHIDE**

**Highly toxic can cause Skin Cancer**

**B  
L  
U  
E**

**PRUSSIAN BLUE**

**Contract dermatitis**

**S  
I  
L  
V  
E  
R**

**ALUMINIUM BROMIDE**

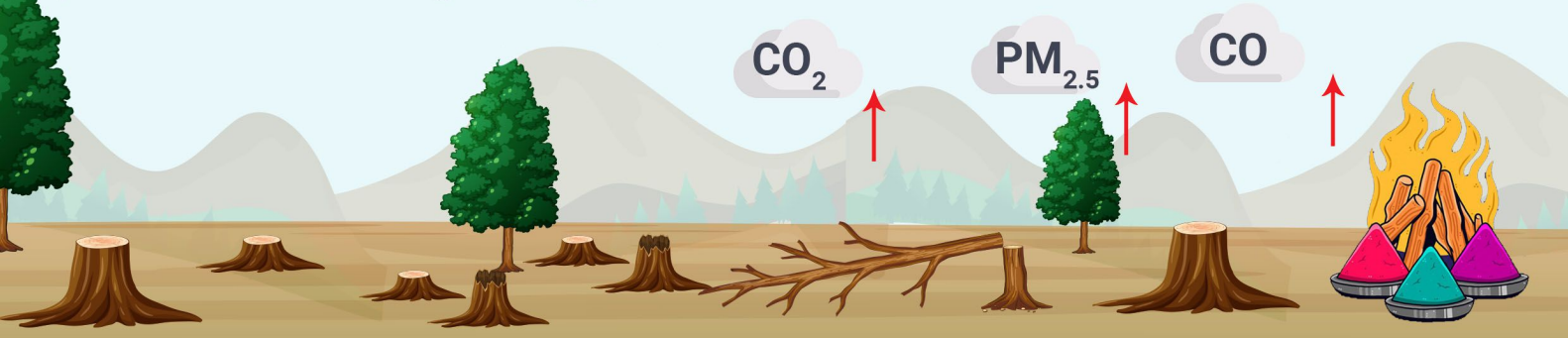
**Carcinogenic**



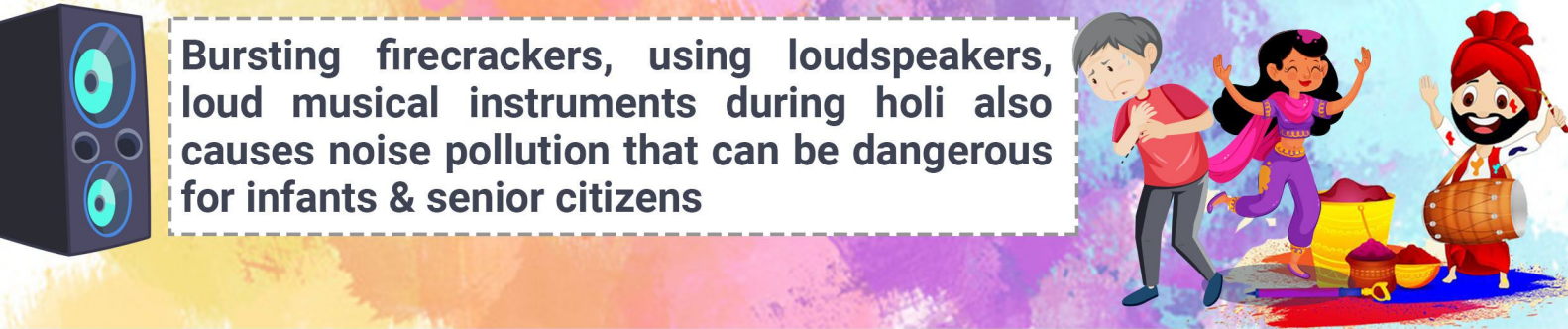


# HOLI CELEBRATION & ENVIRONMENT

Bonfire during Holi may contribute to deforestation; resulting in poor air quality as the level of gases like carbon dioxide, carbon monoxide & particulate matter goes high



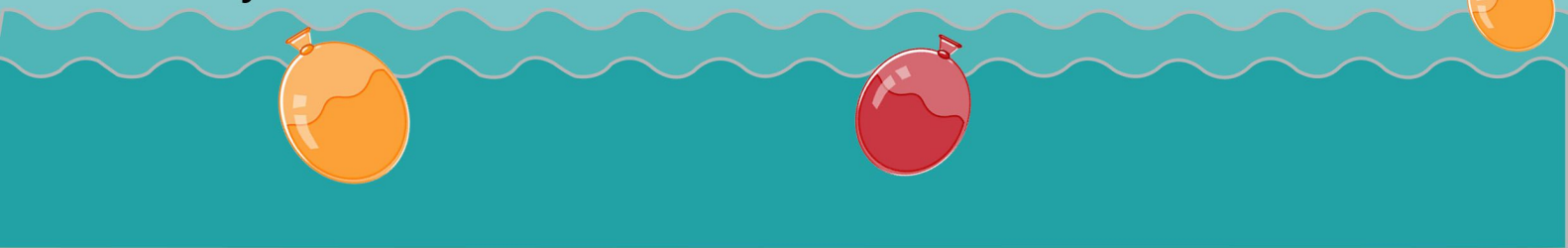
Bursting firecrackers, using loudspeakers, loud musical instruments during holi also causes noise pollution that can be dangerous for infants & senior citizens



Toxic chemicals in colours when discharge into the soil; Could leads to the deleterious effects on water resources, soil fertility, microorganisms living in these habitats



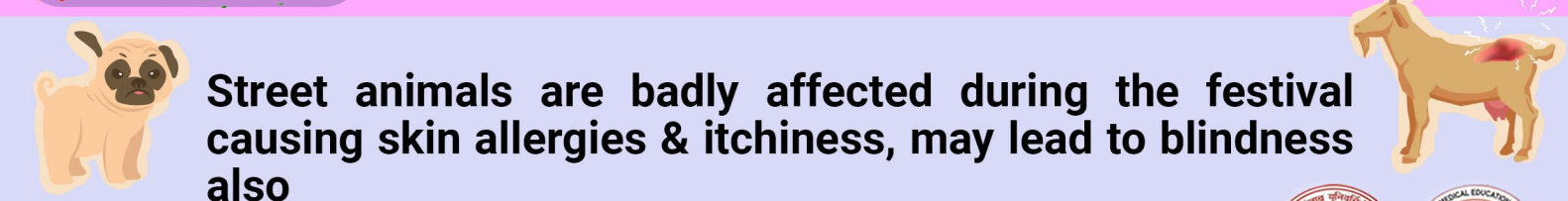
Toxic chemicals in colours are not readily degradable & cannot be removed by conventional wastewater treatment methods



Even the balloons used by mostly children during the festival are capable of blocking the drainage system

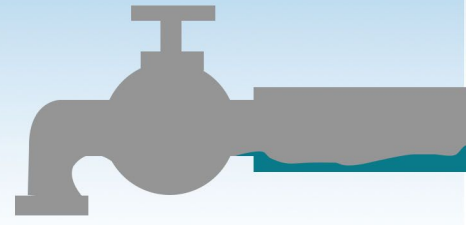


Street animals are badly affected during the festival causing skin allergies & itchiness, may lead to blindness also



# HOLI & WASTAGE OF WATER

Less than 50% of India's population has access to safely managed drinking water & over 19% of the world's population without access to clean water live in India



During the festival around 20 million litres of water is wasted in a small city



The festival of colors is also known to be celebrated with lots of water being splashed on friends & relatives



Prefer to wear old dark coloured clothes to avoid too much water while cleaning



Water is not only wasted while applying colours but also during extended baths on holi



Apply lotion or cream or rub coconut oil & let the colour fade; this will save water as well as much scrubbing



Waste less water while cleaning house by using sponges & then wipe it with dry clothe



Apply oil on your hair so that the colour washes away with a single wash

Prefer separate area to play instead of getting the whole house dirty

Use natural & dry colours as they wash off easily

Avoid playing with balloons & pichkaris

# HOLI CELEBRATION & ANIMALS

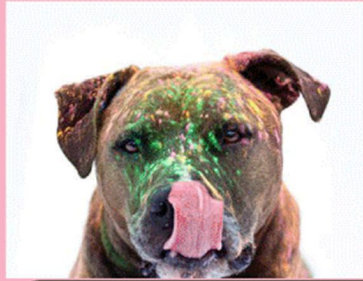
Holi colours are very toxic for animals



Animals inhale colours & get nasal irritation, respiratory allergies or infections



Lead in the colour could accumulate as poison if they lick it



Holi colours would not easily get off from the animal hair

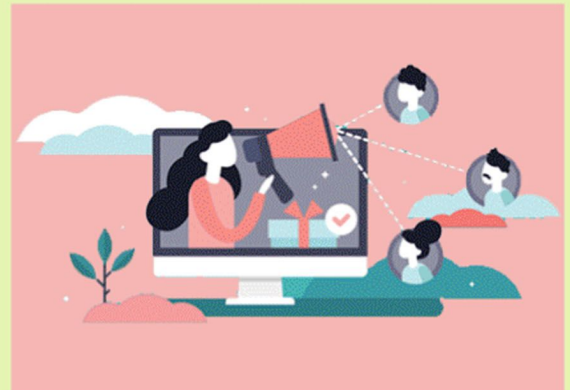


## KEEP YOUR PETS SAFE

Look carefully for the warning signs of poisoning



Spread awareness or sensitise your community



Don't feed sweets to pets & street animals



Remove colours with mild shampoos



Walk your pet before celebrations begin



Don't colour your pets & other street animals as well

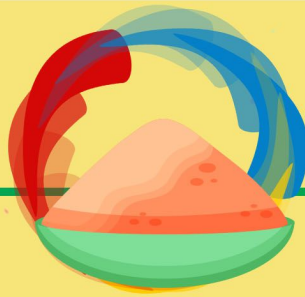


# LET'S PLAY NATURAL HOLI

Indian gooseberry (amlokhi), terminalia chebula (hilikha), berry (jamu), etc. can also be used for making natural colours for holi. So this holi, **LET US SAY NO TO CHEMICAL BASED COLOURS** & play holi with natural homemade colours



Yellow colour can be acquired by boiling marigold petals. Turmeric powder can be mixed with gram flour or rice flour for presenting yellow colour



Orange colour can be prepared by using bastard teak (palash), jetuka leaves (henna), etc.



Blue pea, jacaranda or any other blue flowers can be boiled for making blue colour

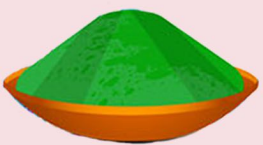
## RED

Red colour can be acquired by boiling petals of red hibiscus or red roses, beet or carrots. Tomato or carrot juice, pomegranate peel, puroi xaak guti, red sandalwood can also be used for the same



## GREEN

Green colour can be prepared by boiling different green leafy vegetables in water such as spinach (paleng), mustard greens (laai), coriander (dhania), etc. Neem leaves or other kinds of green leaves with medicinal values can also be helpful in this regard



## PINK

Rose, rose periwinkle (nayantara) or four o' clock flower (godhuli gopal) can be used to make pink colour for holi. Pink colour can also be prepared by mixing finely chopped beets in water or by boiling onion peels in water



# ECO FRIENDLY & SAFE HOLI

Don't force anyone to play if they are not interested



Celebrate in a dry way



Play with natural colours



Don't throw colours on plants & animals



Prepare home made sweets & avoid outside food



Avoid the use of balloon & plastic bags



Beware of cuts & wounds while playing holi



Burn environment friendly waste for holi bonfire



Don't litter & pollute the environment



Protect eyes from attacks as the chemicals can badly affect causing blindness & infections



Pay attention while playing holi



Avoid playing in mud & dirty places



# JAL JEEWAN MISSION

Improvement in living standards in rural communities by providing drinking water supply at affordable service delivery charges



## THE BROAD OBJECTIVE OF THE MISSION

For villages in drought prone & desert areas, Sansad Adarsh Gram Yojana (SAGY) villages etc prioritize the provision of Functional Household Tap Connection (FHTC)



For every rural household provide functional tap connections

Ensure sustainability of water supply system

Monitoring the functionality of tap connections

### PROVIDE TAP CONNECTIONS TO:



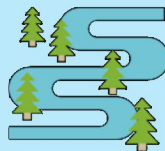
School



Involving stakeholders to bring awareness regarding safe drinking water



Health care



Ensure water treatment, catchment protection, water quality management are taken care of in short & long term



Anganwadi centers etc.



Ensure as well as promote voluntary ownership among local community



# SOLUTION OF COMMON PROBLEMS

## EYE IRRITATION



Use water to flush the irritant if feeling pain or stinging sensation



Visit doctor if pain doesn't subside in a short time



For intense pain visit doctor for saline flushing or specialised eye drops



Wear sunglasses to prevent the colours from getting into the eyes



## COLD, COUGH & FEVER



Limit the use of water while playing

Seek places with more sun so that you can dry off faster

Take a warm shower & change into dry clothes if feeling cold

Consult a doctor if the condition is getting worse



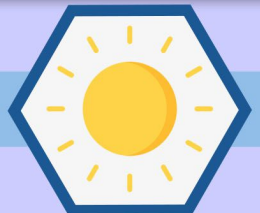
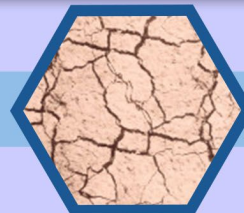
## SKIN ALLERGIES



Wear long sleeved shirt & pajama to limit direct exposure

Don't use the products that can dry the skin

Avoid spending excessive time in the sun





This pictorial guide how we can celebrate eco-friendly Holi by connecting the new generation with the traditional culture & approaches. This booklet also describes the detrimental impact of toxic colors, plastic pichkaris & water balloons on environment & health.

## About the Authors



### **Dr. Suman Mor**

Chairperson & Associate Professor  
Department of Environment Studies  
Panjab University, Chandigarh -160014, India



### **Dr. Ravindra Khaiwal**

Professor of Environment Health  
Department of Community Medicine &  
School of Public Health PGIMER  
Chandigarh -160012, India

