Enviro Notes

Environment Periodical for change makers

(An Environment Awareness Initiative by Nirvaan Somany)

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CHILDREN AND AIR POLLUTION

Every day around 93% of the world's children under the age of 15 years breathe air that is so polluted it puts their health and development at serious risk.

Tragically, many of them die: WHO estimates that in 2016, 600,000 children died from acute lower respiratory infections caused by polluted air.

It reveals that when pregnant women are exposed to polluted air, they are more likely to give birth prematurely, and have small, low birth-weight children. Air pollution also impacts neurodevelopment and cognitive ability and can trigger asthma, and childhood cancer. Children who have been exposed to high levels of air pollution may be at greater risk for chronic diseases such as cardiovascular disease later in life.

"Polluted air is poisoning millions of children and ruining their lives," says Dr Tedros Adhanom Ghebreyesus, WHO Director-General. "This is inexcusable. Every child should be able to breathe clean air so they can grow and fulfil their full potential."

One reason why children are particularly vulnerable to the effects of air pollution is that they breathe more rapidly than adults and so absorb more pollutants.

They also live closer to the ground, where some pollutants reach peak concentrations - at a time when their brains and bodies are still developing.

Newborns and young children are also more susceptible to household air pollution in homes that regularly use polluting fuels and technologies for cooking, heating and lighting

"Air Pollution is stunting our children's brains, affecting their health in more ways than we suspected. But there are many straight-forward ways to reduce emissions of dangerous pollutants," says Dr Maria Neira, Director, Department of Public Health, Environmental and Social Determinants of Health at WHO.

Key findings :

" Air pollution affects neurodevelopment, leading to lower cognitive test outcomes, negatively affecting mental and motor development.
" Air pollution is damaging children's lung function, even at lower levels of exposures
" Globally, 93% of the world's children under 15 years of age are exposed to ambient fine particulate matter (PM2.5) levels above WHO air quality guidelines, which include the 630 million of children under 5 years of age, and 1.8 billion of children under 15 years
" In low- and middle-income countries around the world, 98% of all children under 5 are exposed to PM2.5 levels above WHO air quality guidelines. In comparison, in high-income countries, 52% of children under 5 are exposed to levels above WHO air quality guidelines.
" More than 40% of the world's population - which includes 1 billion children under 15 - is exposed to high levels of household air pollution from mainly cooking with polluting technologies and fuels.
" About 600'000 deaths in children under 15 years of age were attributed to the joint effects of ambient and household air pollution in 2016.
" Together, household air pollution from cooking and ambient (outside) air pollution cause more than 50% of acute lower respiratory infections in children under 5 years of age in low- and middle-income countries.
" Air pollution is one of the leading threats to child health, accounting for almost 1 in 10 deaths in children under five years of age.

WHAT IS AIR QUALITY INDEX (AQI)

Air Quality Index

The air quality index (AQI) is an index for reporting air quality on a daily basis. It is a measure of how air pollution affects one's health within a short time period. The purpose of the AQI is to help people know how the local air quality impacts their health. The Environmental Protection Agency (EPA) calculates the AQI for five major air pollutants, for which national air quality standards have been established to safeguard public health.

1. Ground-level ozone

2. Particle pollution/particulate matter (PM2.5/pm 10)

3. Carbon Monoxide

4. Sulphur dioxide

5. Nitrogen dioxide

The higher the AQI value, the greater the level of air pollution and the greater the health concerns. The concept of AQI has been widely used in many developed countries for over the last three decades. AQI quickly disseminates air quality information in real-time.

How is AQI calculated?

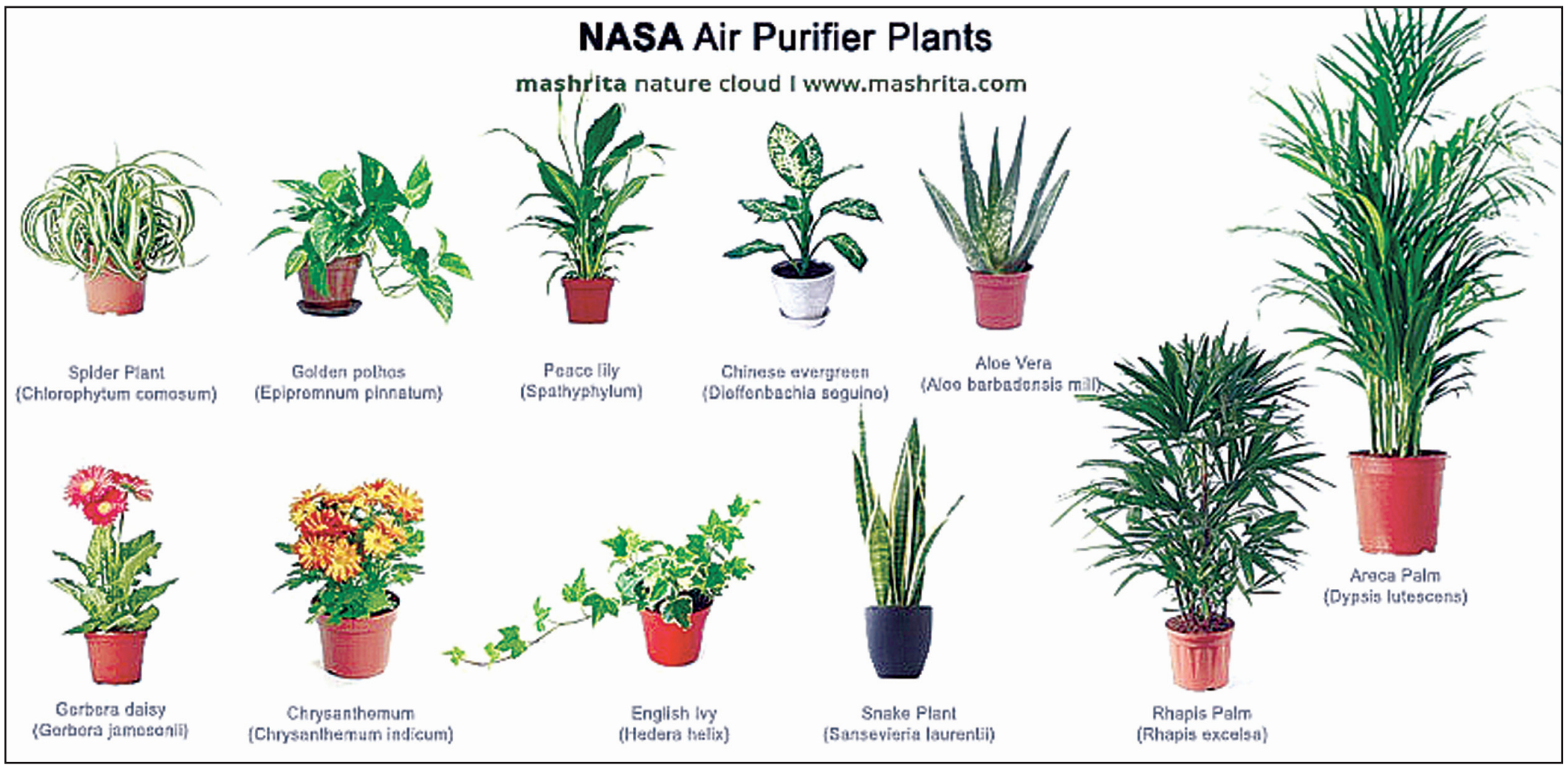
Different countries use different point scales to report air quality. India follows that a 500 point scale. Every day monitors record concentrations of the major pollutants. These raw measurements are converted into a separate AQI value for each pollutant (ground-level ozone, particle pollution, carbon monoxide, and sulphur dioxide) using standard formulae developed by EPA. The highest of these AQI values are reported as the AQI value for that day.

Air Quality Index Levels of Health Concern	Numerical Value	Meaning
Good	0 to 50	Air quality is considered satisfactory, and air pollution poses little or no risk.
Moderate	51 to 100	Air quality is acceptable; however, for some pollutants there may be a moderate health concern for a very small number of people who are unusually sensitive to air pollution.
Unhealthy for Sensitive Groups	101 to 150	Members of sensitive groups may experience health effects. The general public is not likely to be affected.
Unhealthy	151 to 200	Everyone may begin to experience health effects; members of sensitive groups may experience more serious health effects.
Very Unhealthy	201 to 300	Health warnings of emergency conditions. The entire population is more likely to be affected.
Hazardous	301 to 500	Health alert: everyone may experience more serious health effects.

How to Grow Clean Air

1989, National Aeronautics and Space Administration (NASA) in collaboration with Associated Landscape Contractors of America (ALCA) carried out Clean Air Study and published results which provide a definitive list of plants that are most effective at purifying indoor air.
The study, led by Dr. B. C. Wolverton, found that plants are effective at filtering likes of benzene, ammonia and formaldehyde etc from the air, helping to neutralize effects of Sick building syndrome. They found certain tropical plants, which are commonly used as houseplants, are quite effective in removing formaldehyde, trichloroethane, benzene and other pollutants from air and replacing them with breathable oxygen.

Report suggests to have at least one plant at every hundred square feet at home or at office space.



SAY NO TO FIRECRACKERS

Diwali brings unwatchable excitement and celebratory spirit. Though Diwali is actually a festival of lights, in the past few years it has become a festival much of pollution and poor air quality. It is that time of year when pulmonologists are busy with patients complaining of breathing difficulties and related ailments. It is about time we realize that fireworks can light up the entire sky above our home for few moments but can adversely affect our environment and our health for a long time.
Firing crackers on Diwali increase the concentration of dust and pollutants in the air. After firing, the fine dust particles get settled on the surrounding surfaces which are packed with chemicals like copper, zinc, sodium, lead, magnesium, cadmium and pollutants like oxides of sulphur and nitrogen. These invisible yet harmful particles affect the environment and in turn, put our health at stake.
Here is how the Chemicals used in Crackers affect our Health:

" Copper: Irritates the respiratory tract.
" Cadmium: Leads to anemia by reducing the capacity of blood to carry oxygen.
" Zinc: Can cause metal fume fever and induces vomiting.
" Lead: Harms the nervous system.
" Magnesium: Metal fume fever is caused by Magnesium fumes.
" Sodium: It is a highly reactive element and caused burns when it is combined with moisture.
Possible Health Risks that Occur as a result of Firing Crackers:

" The thick smoke generated even by the little sparklers and flowerpots can affect the respiratory tract, especially of young children.
" The smoke that pollutes air can make people's condition much severe who are suffering from colds and allergies. It also causes congestion of throat and chest.
" During Diwali, the levels of suspended particulate matter increase. When people are exposed to these pollutant particles, they may suffer from eye, nose, and throat related problems
" The air and noise pollution's that are caused by fire crackers can affect people with disorders related to heart, respiratory and nervous system.
" To produce colours when crackers are burst, radioactive and poisonous elements are used. When these compounds pollute the air, they increase the risk of cancer in people.
" Getting exposed to harmful chemicals while firing crackers can hinder the growth in children and increases the toxic levels in their bodies.?
The problem is compounded with Diwali usually celebrated in the month of October- November when many cities face smog and fog. The gases released in the air get trapped in the fog and trigger the pollution levels. Even though the Government has banned the use of fireworks, ignorant and selfish people continue this malpractice in the name of tradition. We children need to spread awareness and ensure that we can all breathe easy this festive season.

10 TIPS TO PROTECT KIDS FROM AIR POLLUTION

Stay indoors as far as possible.

Try to club activities together to avoid multiple trips to the city.

Use air masks to keep out dust, pollutants, bacteria and viruses.

Use heavy curtains and keep the polluted air from entering your homes.

Don't burn garbage - use sustainable waste management.

Drink plenty of fluids to flush out toxins.

Avoid strenuous activity and sports

Eat the right foods that help to boost our immune systems.

Use air purifiers to help everyone breathe and sleep better.

Keep indoor plants that help purify the air.