

Clean up the Air in Your Home

A LONG time ago, most households used basic cleaning devices for cleaning the house on a daily basis. A garden, open spacious verandah and a courtyard were almost mandatory in each house, of course to have better interface with the fresh environment. Most houses had high ceilings, big windows and ventilators which let in clean, cool and fresh air. People spent large amounts of their time outdoors for work, fun or play.

But, today we spend more time indoors – whether it is at home or in offices. On an average, people spend approximately 90% of their time indoors. We breathe the unpolluted stagnant air for long periods of time and consequently fall prey to the ill effects of pollution like runny nose, eye irritation, throat irritation, headaches, dizziness, and fatigue.

In fact, indoor air pollution can be up to 10 times worse than outdoor air pollution. Although complete eradication of the indoor environment pollutants is difficult, one can limit their presence. But first you need to know the sources of these pollutants, how they affect our health and the necessary remedial actions.

The Sources

The main sources of indoor air pollution are combustion, building material, and bio-aerosols. The incomplete combustion of biomass fuels releases particulates, carbon monoxide, formaldehyde, etc., which have drastic effects on health. The combustion of coal results in production of sulphur oxides, arsenic, and fluorine. Some sources, such as building materials, furnishings, and household products like air fresheners, release pollutants continuously. In fact, the entire house is a source of indoor air pollution in the following ways:

- **Walls:** Paint fumes in freshly painted walls; moulds in damp walls and particulates in walls shedding paint flecks. Paints and building products release formaldehyde, benzene and other Volatile Organic Compounds (VOCs) which are injurious to health.
- **Carpets and Rugs:** They trap dust mites, pet danders, cockroach allergens, particulates, moulds and dust. Slight disturbance like walking, makes the pollutants airborne.
- **Kitchen:** Often a big source of excreta of cockroaches, dangerous gases released during cooking including burning of inefficient fuels like wood, bacteria/virus/fungi in unclean areas.
- **Furniture:** Furnishings of the furniture trap bacteria/virus/fungi, dust mites, pet danders, cockroach allergens, particulates, moulds and dust. The paints, polishes and varnishes of the furniture carry chemicals that are injurious to health.

- **Toilets:** Unclean and unventilated toilets are hubs of bacteria/virus/fungi and excreta of cockroaches.

- **Mattresses and Furnishing** are hubs of dust mites, bacteria/virus, fibre in new furnishing that can go airborne.

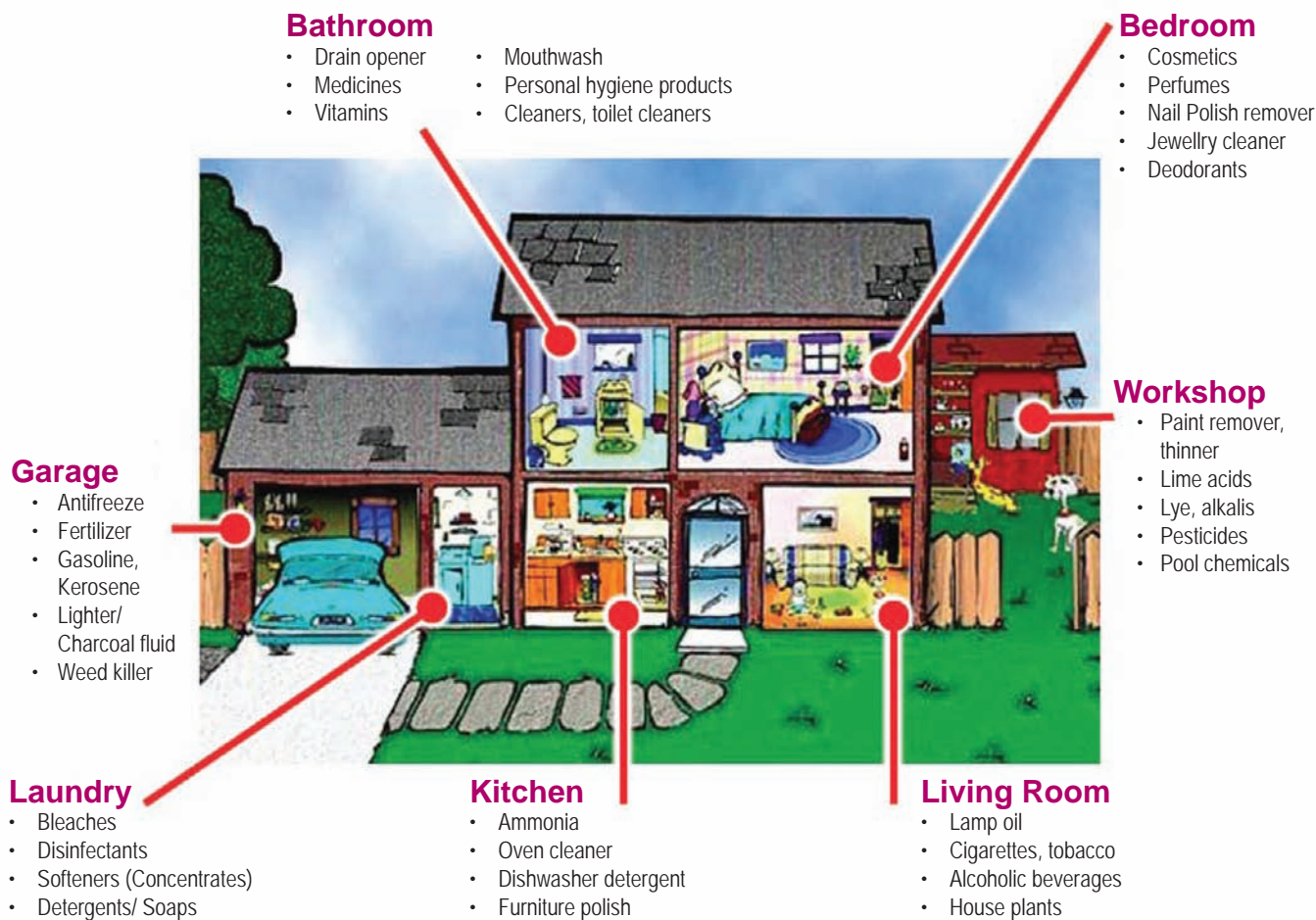
- **Household chemicals** like aerosol spray products, air fresheners, detergents and dishwashing soaps release dangerous chemicals, including Volatile Organic Compounds (VOCs) which can irritate the eyes or the throat or cause headaches. Many organic compounds are cancerous, for e.g. methylene chloride present in aerosol spray paints, etc. Benzene is also cancerous. The main sources are tobacco smoke, stored fuels and paint supplies. Perchloroethylene is the chemical used in dry cleaning. It can cause cancer in animals.

What Pollutes the Air?

We know the sources of indoor air pollution. We also need to know the pollutants in them and what health effect they cause.

1) **Asbestos:** It is present in building materials but becomes a threat from damaged/deteriorated insulation, fireproofing, sound proofing and floor/wall tiles. This is because under such conditions, the micro fibres of asbestos are released from these materials which remain suspended in air for long. As a result, it can cause major breathing problems and cancer.

2) **Bacteria and Viruses:** They live comfortably in crowded areas and areas with poor air circulation. Damp,



humid air promotes them. When the dead bacteria break down, toxins are released which further cause allergies like coughing and wheezing.

3) Carbon Monoxide: It is an odourless, colourless, but dangerous gas. It is produced when fuels are burned in limited supply of air for e.g. burning coal/wood indoors. It reduces the blood's ability to carry oxygen. Low levels of carbon monoxide can cause headache, nausea, dizziness and confusion. High levels can even cause death. Pregnant women, infants, elderly people, and immunity compromised people are especially sensitive to carbon monoxide exposures.

4) Dust mites: They are microscopic pests that can trigger allergic reactions and asthma in many people. They live in the bedding, mattresses, upholstered furniture, carpets or curtains. A dust mite allergy can range from mild to severe. The symptoms include runny

nose, watery eyes, cough, congestion and sneezing. Humidity is the most important factor in determining whether a house has high concentrations of dust mites.

5) Formaldehyde: It is a colourless and flammable gas with a distinct odour. It is a known human carcinogen. It also causes headache, runny nose, nausea, difficulty in breathing, wheezing, asthma attacks and other respiratory symptoms. It is found in many cosmetics, dish soaps, medicines, etc. High humidity and high temperatures speed up the release of formaldehyde. Smoking, burning wood, fuel, and paper also produce formaldehyde. Overheated cooking oils also emit formaldehyde.

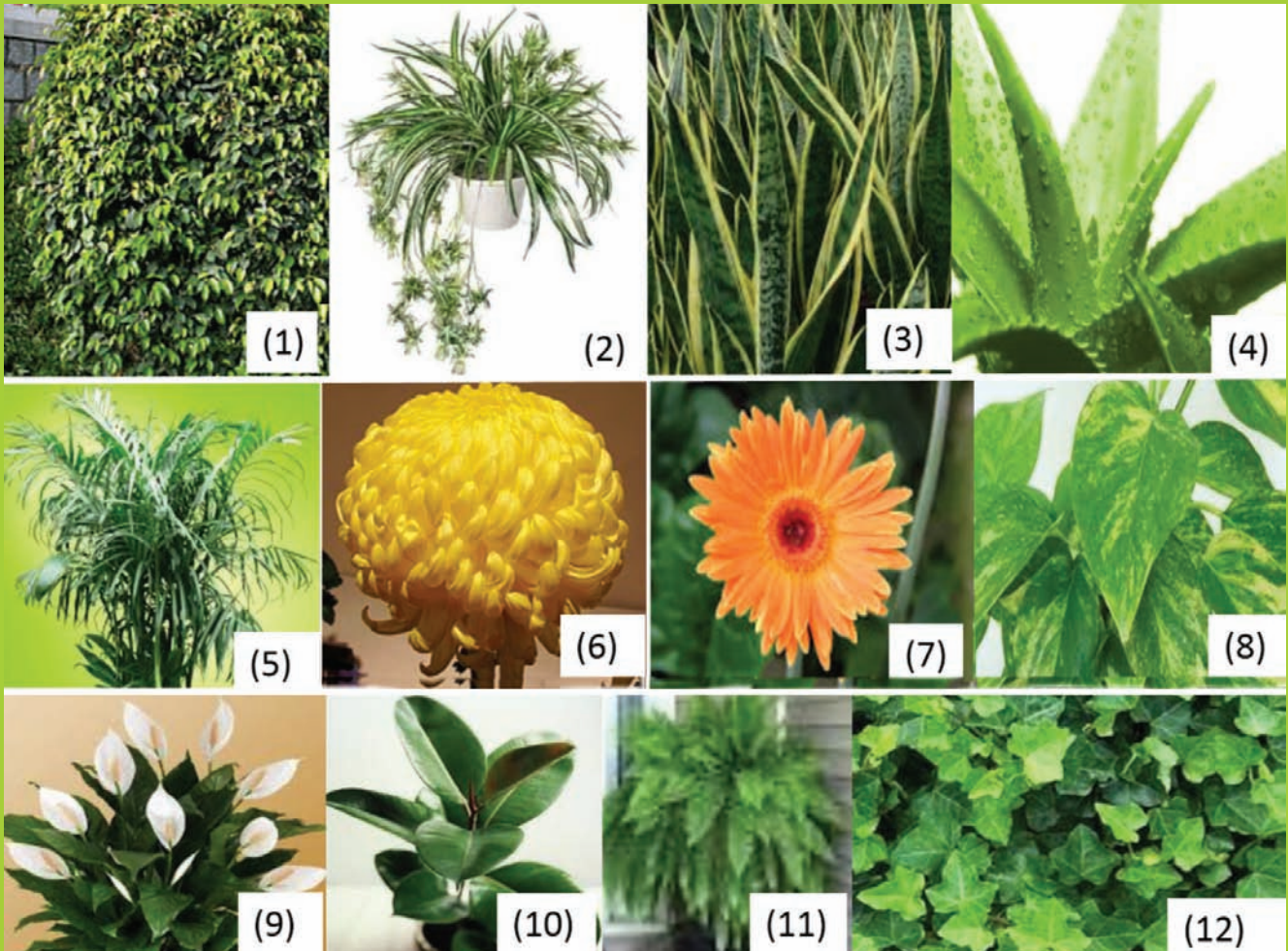
6) Pet Dander: It is composed of tiny bits of skin shed by pets. These bits are allergens. Animals with fur carry allergens from other sources, like dust, etc. People with allergies may

experience upper and lower respiratory tract symptoms including congestion, sneezing, runny nose, chest tightness and wheezing. Other symptoms are itching, watery eyes, and eczema or rashes.

7) Lead: It is a toxic metal that was once regularly used in the manufacturing of common household products. It is a naturally occurring element and does not deplete with time. It is present in paints, water pipes and fertilizers. When these things deteriorate, lead is exposed to the environment. It can harm almost all organs. The acute effects of lead poisoning include seizures, paralysis, anaemia, abdominal pain, constipation, vomiting and even death.

8) Moulds: Dampness and mould lead to asthma, coughing, wheezing, nasal congestion, sore throat, sneezing and rhinitis.

9) Tobacco smoke: Most people are susceptible to the ill effects of tobacco



PLANTS THAT CLEAN INDOOR AIR

There are several plants that can keep the air inside your house clean.

1. **Weeping Fig:** Commonly known as Ficus, it typically filters out pollutants of carpets and furniture such as formaldehyde, benzene and trichloroethylene. It can be kept indoors with indirect bright sunlight.
2. **Spider plant:** It cleans off benzene, formaldehyde, carbon monoxide and xylene. It can be easily transplanted. It prefers dry soil and bright indirect sunlight.
3. **Snake plant:** Commonly called mother-in-law's tongue, it is one of the best for filtering out formaldehyde.
4. **Aloe vera:** It is easy-to-grow, sun-loving succulent that helps clear formaldehyde and benzene.
5. **Bamboo Palm:** It can thrive in shady indoor spaces. It tops the list of plants best for filtering out both benzene and trichloroethylene.
6. **Chrysanthemum:** It is a beautiful flowering plant that filters out benzene and can withstand bright direct light.
7. **Gerbera Daisy:** It is effective at removing trichloroethylene and benzene. This flowering plant needs direct sunlight.
8. **Golden pothos:** It removes formaldehyde. The plant needs bright, indirect light.
9. **Peace lily:** It needs shade and once a week watering. It topped NASA's list for removing all three of most common VOCs — formaldehyde, benzene and trichloroethylene. It can also combat toluene and xylene. However, its leaves can be poisonous to pets and children.
10. **Rubber Plant:** It tolerates very little sun and is great for removing formaldehyde.
11. **Boston Fern:** It is highly efficient in removing formaldehyde, benzene and xylene.
12. **English Ivy:** It is an invasive species that is quite effective in removing formaldehyde.

Common Indoor Air Polluters

smoke either through active or passive smoking. However, infants and young children are at increased risk of lower respiratory tract infections like pneumonia and bronchitis. Asthma patients are especially at higher risk.

10) Excreta of Pests: This includes the excreta of cockroaches, rats and mice and is a potent allergen. Symptoms include sneezing, watery eyes, coughing, shortness of breath, dizziness, lethargy, fever, and digestive problems.

11) Nitrogen dioxide: It is a colourless, odourless gas that causes shortness of breath after exposure to high concentrations. Repeated exposures may lead to the development of lung disease such as emphysema. Children and people with lung weakness are especially at risk.

12) Particulates: These are released from incomplete combustion of fuels. They settle in lungs and can irritate or damage lung tissue. A number of deadly pollutants can adhere on them and get into the lungs.

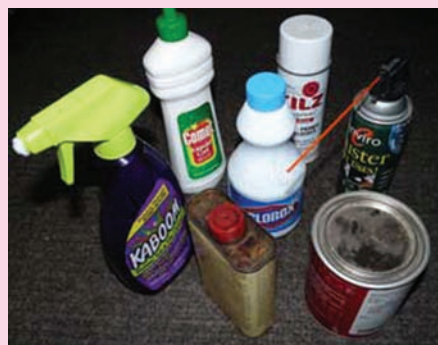
13) Pesticides: These include insecticides, termiticides, rodenticides, etc. in the form of sprays, liquids, sticks and foggers. They can cause headaches, dizziness, weakness, tingling sensations, and nausea.

The immediate ill effects of polluted indoor air may start immediately after a single or repeated exposures. Symptoms include irritation of the eyes, nose, and throat, headaches, dizziness, and fatigue. Sometimes, the allergic reaction is similar to those from colds or other viral diseases, so it is often difficult to differentiate the two.

These are usually short-term and treatable, sometimes by removing the pollutant itself. The chances of body's immediate reactions to indoor air pollutants depend on age and preexisting medical conditions. That is why it is important to pay attention to the time and place from where the symptoms originated. If the symptoms diminish in the absence of the probable allergen, infection is ruled out.



Smoke



Pesticides



Moisture

VOCs and Chemicals



Smoking



Dust



Pet Dander

Reducing Indoor Air Pollution

- 1) Keep your home clean. Properly dispose of clutter, food leftovers and unused material of any sort.
- 2) Use warm water and soap for cleaning purpose. Baking soda can be used for scrubbing and a solution of vinegar and water can clean glass.
- 3) Wet mop the floor, doors and windows on a frequent basis.
- 4) Increase home ventilation. Keep doors and windows open. Ensure cross ventilation. Signs that reveal improper ventilation of the house are damp walls, smelly interiors especially open cupboards, books and shoe rack.
- 5) Remove carpets and all furnishings and fabrics that trap dust, especially the ones that cannot be cleaned on a frequent basis.
- 6) Reduce the use of air fresheners and pesticides.

7) Cook food with proper ventilation system. Employ exhaust fans or chimneys.

8) Reduce dampness. Even without mold, dampness can cause upper and lower respiratory problems.

9) Burn cleaner fuel like LPG instead of kerosene stoves, coal, wood, etc.

10) Do not smoke if children are present, particularly infants and toddlers.

11) Eat well balanced nutritious diet. Children, not deficient in iron and calcium, will absorb less lead.

12) Keep plants that clean indoor air.

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