The Health Benefits of Indoor Plants

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Silverhill Institute of Environmental Research and Conservation

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- Focus on current environmental issues and to provide realistic and practical advice to stimulate individual action;
- Provide balanced information amongst the array of multiple competing advocacy positions; and
- Support environmental stewardship through individual action to protect and enhance woodlots and wetlands.

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This report was prepared by Ujunwa Nwachukwu, M.E.S.

Introduction

Indoor plants are commonly used for their aesthetics benefits, while their role in reducing airborne pollution is often overlooked. NASA (National Aeronautics and Space Administration) studies have found that indoor air pollution averages two to five times higher than outdoors. The average person spends nearly 90 percent of their time inside, predominantly in homes, offices and schools. The right choice of plants can be an excellent way of improving indoor air quality and general health.

Materials including wood, household chemicals, and plastics used in furniture and various other indoor products can release harmful compounds and gases affecting indoor air quality. Other contributors include cigarette smoke, mould and bacteria, cooking, dander from pets, and cleaning products. These factors coupled with poor ventilation contribute to a condition known as **"Sick Building Syndrome",** which is a combination of symptoms associated with poor indoor air quality.

Fatigue, headache, stress, and cold have all been connected with the bioaccumulation of contaminated indoor air. Health Canada reports that numerous visits to the emergency room and medical offices, increased hospitalization, and thousands of premature deaths can be attributed to the negative health effects of poor indoor air quality. While everyone is affected by air quality, children, pregnant women and the elderly are most at risk of experiencing the adverse effects of indoor air pollution. In children, contaminated

air poses significant long and short-term respiratory health risks, including bronchitis, pneumonia, and asthma.

Health Benefits of Plants

Plants can be aesthetically pleasing and excellent decorative items. Flowering plants fill rooms with colors that can improve mood, help relax the mind, and increase creativity and productivity. There are further advantages of having plants indoors, which include significant physical health benefits.

Volatile Organic Compounds (VOCs) are byproducts of a variety of materials and processes that contribute to indoor air pollution. The most common VOCs posing a risk to health are formaldehyde, benzene, and trichloroethylene. As natural air filters, plants can significantly reduce the concentration of VOCs and other harmful substances in indoor environments while enriching the oxygen content of the air. NASA studies concluded that plants are capable of reducing the presence of airborne mould spores and bacteria by up to 60%. Understandably, different plants have varying abilities to cleanse indoor pollutants. As such, it is important to make an informed decision when purchasing a plant that links the most suitable variety with the sources of VOCs present in the indoor environment.

The following table identifies specific plants, the VOCs they remove or reduce in indoor air, plant care information and general price ranges.

PICK FROM THE FOLLOWING:

Plant	VOC it removes	Indoor Source of VOCs	Plant Care	Price Range
 **Aloe Vera**	Formaldehyde and benzene	Chemical based cleaners and paints	Easy to grow with enough sunlight.	$4.99 to $30.99
 **Bamboo Plant**	Formaldehyde, benzene and trichloroethylene	Plastics, inks, detergents, pharmaceuticals, paints, dyes, woods and rubber products	Thrives under low light conditions as well as easy to maintain.	$17.99 to $29.99
 **Chinese Evergreen (*Aglaonema crispum* 'Deborah')**	Benzene	Plastics, paints, detergents and numerous other indoor sources	Low maintenance plant that prefers lowlight conditions.	$10.35 to $21.99
 **Chrysanthemum**	Benzene	Plastics, paints, detergents as well as numerous other indoor sources	Requires lots of care and bright light conditions to bloom.	$9.99 and above

Plant	VOC it removes	Indoor Source of VOCs	Plant Care	Price Range
 **English Ivy (*Hedera helix*)**	Formaldehyde and benzene Note: It also reduces air borne fecal-matter particles	Cleaning products, cigarette smoke, wood, paper products, air borne fecal – matter particles from pests	Easy to maintain.	$8.97 and above
 ***Gerber Daisy (Gerbera jamesonii)***	Formaldehyde, benzene and trichloroethylene	Dry cleaning and ink products; and numerous other sources	Propagates and blooms under maximum sunlight and the right amount of water.	$4.97 to $19.11
 ***Janet Craig (Dracaena deremensis)***	Formaldehyde, benzene and trichloroethylene	Numerous range of indoor sources	Medium to low light tolerant plant. Requires little water for growth.	$3.99 and above
 **Golden Pothos or Devils Ivy (*Scindapsus aures*)**	Formaldehyde	Gasoline “exhaust fumes”, carpeting materials, paneling and furniture products made with particle board	Extremely easy to maintain under low to bright light conditions. Fast growing and grows well under fluorescent light.	$3.99 and above

Plant	VOC it removes	Indoor Source of VOCs	Plant Care	Price Range
 **Heart leaf philodendron (*Philodendron oxycardium*)**	Formaldehyde, benzene and trichloroethylene	Cigarette smoke, heating and cooking fuels, wood products, facial tissues, cleaning products, personal care products and waxed papers	Toxic when eaten, avoid use around children. Does best in bright indirect sunlight. Very easy to grow.	$3.99 and above
 **Kentia Palm (*Howea forsteriana*)**	Benzene and Hexane	Plastics, paints, detergents and numerous other indoor sources	Indirect sunlight. Requires occasional watering.	$30 to $45
 **Mass Cane (*Dracaena massangeana*)**	Formaldehyde, benzene and trichloroethylene	Clears indoor air pollution from several sources	Medium to low light tolerant plant. Requires little water for growth.	$20.99 to $100

Plant	VOC it removes	Indoor Source of VOCs	Plant Care	Price Range
 **Mother-in-law's tongue or Snake plant (*Sansevieria trifasciata* 'Lautentii')**	Formaldehyde and trichloroethylene	Cigarette smoke, heating and cooking fuels, wood products, facial tissues, cleaning products, personal care products and waxed papers	Drought-resistant and tolerates a variety of light conditions. Hard to damage or kill.	$4.99 to $40.99
 **Peace Lily (*Spathiphyllum* 'Mauna Loa')**	Formaldehyde, benzene and trichloroethylene	The best for the removal of three most common indoor VOCs sources	Relatively easy to maintain. Survives in low light conditions.	$6.99 to $51.99
 **Queensland Umbrella Tree (Schefflera 'Amate')**	Benzene	Plastics, paints, detergents and numerous other indoor sources	Requires full indirect sun. Allow soil to dry between watering.	$30 and up

Plant	VOC it removes	Indoor Source of VOCs	Plant Care	Price Range
 **Red-edged Dracaena (*Dracaena marginata*)**	Formaldehyde and trichloroethylene	Cigarette smoke, heating and cooking fuels, wood products, facial tissues, cleaning products, personal care products and waxed papers	Drought-resistant and tolerates a variety of light conditions. Hard to damage or kill.	$9.94 to $67.99
 **Spider Plant (*Chlorophytum comosum*)**	Formaldehyde, benzene, carbon monoxide and xylene	Mostly from industrial products used around the house like rubber and printing	Easy to maintain under medium to bright light condition.	$3.99 to $24.99
 **Mother Fern (*Asplenium bulbiferum*)**	Formaldehyde	Paneling, furniture and other products manufactured with particle board	Easy to grow and maintain. Ensure soil is kept moist and well-drained.	$3.99 and above
 **Weeping Fig (*Ficus benjamina*)**	Formaldehyde, benzene and trichloroethylene	Various indoor sources	This long-lasting indoor tree should be kept close to direct sunlight. Water thoroughly, allowing soil to dry between waterings.	$20.99 to $100

Plant	VOC it removes	Indoor Source of VOCs	Plant Care	Price Range
 **Warneck Dracaena (*Dracaena deremensis* 'Warneckii')**	Formaldehyde, benzene and trichloroethylene	Mainly pollutants associated with oils and varnishes	Easy to grow even without direct sunlight. Able to reach up to 12 feet.	$6.99 and above

Conclusion:

Plants filter harmful substances out of the air and encourage healthy living conditions, acting as natural humidifiers by emitting water vapour and creating a comfortable atmosphere for building occupants. While any plant grown inside will help improve overall air quality, some are particularly useful in removing airborne contaminants as noted in the preceding discussion.

Improving indoor air quality and your health and those of your family members is easy. Simply find the plants you like and beautify your home while also improving the quality of air you breath.

Resources

National Aeronautics and Space Administration. (1989). *Interior Landscape Plants for Indoor Air Pollution Abatement*. Retrieved from http://ntrs.nasa.gov/archive/nasa/casi.ntrs.nasa.gov/19930073077_1993073077.pdf

Orwell, R.L. et al. (2004). Removal of Benzene by the Indoor Plant/Substrate Microcosm and Implications for Air Quality. *Water, Air and Soil Pollution, 157(1-4*), 193-207.