

IS YOUR HOUSE
HOMESICK?



Mayfield Thermography



Consulting Services, Inc.

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Clean Air Plants & Sick Building Syndrome

Sick Interior Environments

Sources of Indoor Air

Pollution

How Plants Clean Air

Sick Interior Environments

With new technological developments and energy efficient attitudes of the nineties, buildings are becoming airtight cesspools of germs and toxins. Building occupants may experience symptoms of acute discomfort. The Environmental Protection Agency has reported that sick buildings cause an estimated loss of \$61 billion a year in employee absenteeism, medical costs, reduced productivity, and lower earnings. The term "sick building syndrome" is used to describe the occurrence of acute health and comfort effects experienced by the building occupants; these effects appear to relate to the time spent in the building and no specific cause or illness can be identified.

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Sources of Indoor Air Pollution

The National Aeronautics and Space Administration studies on indoor landscape plants and their role in improving indoor air quality included reports on toxins common to the interior environment, specifically benzene, formaldehyde, and trichloroethylene.

Pollutant	Sources	Effects on Humans
<p>Benzene</p> <p>A commonly used solvent, also found in fuels.</p>	<p>Inks, oils, paints, plastics, rubber, gasoline, detergents, pharmaceuticals, dyes, tobacco smoke and synthetic fibres.</p>	<p>Skin and eye irritation (including drying, inflammation, blistering and dermatitis), dizziness, weakness, headache, nausea, blurred vision, respiratory problems, tremors, irregular heartbeat, liver and kidney damage, loss of appetite, drowsiness, nervousness, psychological disturbances, diseases of the blood system and carcinogenicity.</p>
<p>Formaldehyde</p> <p>A disinfectant, preservative, and curing agent.</p>	<p>Particle board, pressed wood, foam insulation, paper bags, waxed papers, facial tissues, stiffeners and wrinkle resisters, water repellents, fire retardants, binders in floor coverings, carpet backing, permanent press clothes, natural gas, kerosene and cigarette smoke.</p>	<p>Irritation of mucous membranes of the eyes, nose and throat, allergic contact dermatitis, respiratory problems, eye irritation, headaches, asthma and carcinogenicity to the throat.</p>
<p>Trichloroethylene</p> <p>A commercial product for industrial use.</p>	<p>Metal degreasers, dry cleaners, printing inks, lacquers, varnishes and adhesives.</p>	<p>Potent carcinogenicity to the liver.</p>

How Plants Clean Air

Plants have proven to be important life supporters in that they remove carbon dioxide from the air and release oxygen through the process of photosynthesis. The NASA studies found that plants also work in a symbiotic relationship to remove air pollutants produced by other plants, people and industry. Trace chemicals in the atmosphere are absorbed and biodegraded by plant leaves and roots, the soil, and micro-organisms. Virtually every tropical foliage and flowering plant works to remove pollutants from the interior environment, and particular plants are better at removing certain toxins. The studies found that one potted plant per 100 square feet of floor space can help clean the air in the average home or office, although the addition of more plants would increase the rate of pollutant removal.

Air Purifying Plants

The following list of plants typically used in the interior environment outlines the plants found to be most effective in air purification, based on the NASA studies.

Plant Name	Toxins Removed
Aechmea fasciata Bromeliad	Excellent for formaldehyde and xylene
Aglaonema modestum Chinese Evergreen	Excellent for benzene and toluene
Aloe vera Aloe	Excellent for formaldehyde
<i>Chamaedorea seifrizii</i> Bamboo Palm	Excellent for benzene and formaldehyde
<i>Chlorophytum elatum</i> Spider Plant	Excellent for carbon monoxide and formaldehyde
<i>Chrysanthemum morifolium</i> Pot Mum	Excellent for trichloroethylene, good for benzene and formaldehyde

Dendrobium Orchid	Excellent for acetone, ammonia, chloroform, ethyl acetate, methyl alcohol, formaldehyde and xylene
<i>Dieffenbachia maculata aculata</i> Dumbcane	Good for formaldehyde
<i>Dracaena deremensis</i> eremensis "Janet Craig" Janet Craig	Excellent for benzene and trichloroethylene.
<i>Dracaena deremensis</i> eremensis "Warneckii" Warneckii	Excellent for benzene and trichloroethylene, good for formaldehyde
<i>Dracaena marginata</i> arginata Madagascar Dragon Tree	Excellent for benzene, good for formaldehyde and trichloroethylene
<i>Dracaena massangeana</i> Mass Cane	Excellent for formaldehyde
<i>Epipremnum aureum</i> Golden Pothos	Excellent for carbon monoxide and benzene, good for formaldehyde
<i>Euphorbia pulcherima</i> ulcherima Poinsettia	Excellent for formaldehyde
<i>Ficus benjamina</i> Weeping Fig	Good for formaldehyde
<i>Gerbera jamesonii</i> Gerbera Daisy	Excellent for benzene and trichloroethylene, good for formaldehyde
<i>Guzmania</i> "Cherry" Bromeliad	Excellent for formaldehyde and xylene
<i>Hedera helix</i> English Ivy	Excellent for benzene, good for formaldehyde and trichloroethylene
<i>Liriope muscari</i> "Variegata" Variegated Lily-turf	Excellent for formaldehyde

Musa oriana Banana	Excellent for formaldehyde
Neoregelia carolinae "Perfecta Tricolor" Bromeliad	Good for xylene
Peperomia obtusifolia Peperomia	Good for formaldehyde
Phalaenopsis Orchid	Excellent for formaldehyde and xylene
<i>Philodendron domesticum</i> domesticum Elephant Ear Philodendron	Excellent for formaldehyde
<i>Philodendron oxycardium</i> oxycardium Heart Leaf Philodendron	Excellent for formaldehyde
<i>Philodendron selloum</i> selloum Lacy Tree Philodendron	Excellent for formaldehyde
<i>Rhododendron indicum</i> indicum Azalea	Good for formaldehyde
<i>Sansevieria trifasciata</i> "Laurentii" Mother-in-law's Tongue	Excellent for benzene and formaldehyde, good for trichloroethylene
<i>Schefflera arboricola</i> Miniature Umbrella Plant	Good for benzene, formaldehyde and toluene
<i>Spathiphyllum</i> "Mauna Loa" Peace Lily	Excellent for benzene and trichloroethylene, good for formaldehyde
<i>Syngonium podophyllum</i> Arrowhead Plant	Good for formaldehyde
<i>Tradescantia sillamontana</i> Oyster Plant	Good for formaldehyde

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