

House plants that purify home / office space **“Grow Fresh Air” in your space.**

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We are used to think of the indoor environment as a safe haven from the air pollution. Yet modern scientific research indicates that the indoor environment may be as much as ten times more polluted than the outdoor environment.



Millions of people fail to realize the serious nature of the problem, or even worse, fail to recognize that there is a problem. Today, people living in industrialized societies spend as much as 90 percent of their lives indoors. Increased exposure to indoor air pollutants in the community directly correlates to an increase in the number and severity of allergic reactions.

Controlling ventilation and Humidity

Ventilation helps to control indoor air pollution by diluting stale indoor air with fresh outside air. Of course, a presumption is made that the outside air is clean, which may not be the case. Certain levels of ventilation are necessary to provide human comfort. Additional ventilation is needed to remove moisture, heat and odors. It remains a balancing act to provide sufficient ventilation for comfort, without necessitating excessive energy consumption.

Respiratory infections are a well-known consequence of poorly maintained air-conditioning systems. Maintenance of such systems is an important factor in assuring good air quality. In the home, air filters, when regularly replaced can help to clean outside air as it enters the building.

Emissions from Modern Materials

In recent decades, a subtle change in the composition of building materials and furnishings has been taking place. Pressed wood products or fiberboard often replace natural wood in building construction; wall-to-wall carpeting is ever more common; furnishings in the home and office are no longer made mostly of natural materials, but are composed of synthetics that are held together with a variety of glues and resins. A plethora of electronic devices

for our comfort, work or pleasure are found in our homes, offices and public buildings. These devices are known to emit various organic compounds. Synthetic material release hundreds of volatile organic chemicals (VOCs) into the air.

Humans are also a source of pollution especially when living or working in closed, poorly ventilated areas. This becomes very apparent when a large number of people are present in a confined space for an extended period of time such as on an airplane journey.

The three primary sources of poor indoor air quality are hermetically sealed buildings and their synthetic furnishings, reduced ventilation, and human bio effluents. The lack of foresight by architects, engineers and health officials in predicting the consequences of modern building design for the quality of the air we breathe has brought us to the brink of a modern day health disaster.

Symptoms associated with sick building syndrome

- Allergies
- Asthma
- Eye, nose and throat irritations
- Fatigue
- Headache
- Nervous-system disorders
- Respiratory congestion
- Sinus congestion



Susceptibility to allergens and pollutants varies significantly between individuals. Reactions can range from no observable effects to sneezing, asthma, lung and other respiratory irritations, and even to cancer. Most customers who enter fabric, furniture or carpeting stores can smell formaldehyde and VOCs. Many experience burning eyes and throat or have other respiratory irritations.

Illnesses caused by synthetic contaminants in indoor air are most often the result of exposure to low concentrations of a mixture of chemicals. Those exposed to these may not immediately experience acute reactions. However, when exposed over an extended period, they may become sensitized.

Science is now catching up with what gardeners have known for decades, that by growing plants we can relieve stress, while helping to clean the environment. A growing body of research shows that cultivating plants

indoors and outdoors may be the best medicine available for improving mental and physical well-being at any age. Studies of interactions between plants and people have provided overwhelming evidence that plants have a measurable beneficial effect on people and the spaces they inhabit. Gardening in general has become one of the most popular leisure activities, and the cultivation of houseplants in particular has developed an enthusiastic following.

Plants not only add beauty to a room, but also make it a friendly and inviting place to live or work, they appear to have a calming, spiritual effect on most people. This perhaps explains why plants play such an important role at key stages in our lives, such as weddings, funerals, periods of illness, and birthdays. People feel relieved when they are near or tending to living plants. Businesses install interior landscaping to increase worker-productivity and reduce absenteeism. Top hotels, restaurants, and other commercial premises use plants to help attract customers.

The ability of houseplants to improve the quality of the air we breathe is now accepted scientific fact.

Because formaldehyde is the most commonly found toxin in indoor air, the ability to remove this substance from the air is used as the standard for rating these particular plants. Formaldehyde has provoked more public, regulatory and scientific controversy during the past years than any other substance. Numerous sources of formaldehyde are present in the building we inhabit. It is found in various resins and is used to treat many consumer products, including garbage bags, paper towels, facial tissues, fabrics, permanent-press clothing, carpet-backing, floor-coverings and adhesives. Formaldehyde is released by gas stoves and is found in tobacco smoke. It is also used in building materials such as plywood, particle-board and paneling. Both plywood and particle-board are used extensively in the manufacture of domestic and office furniture and fittings.

Numerous adverse health problems have been ascribed to formaldehyde exposure, ranging from well-documented effects such as eye, nose and throat irritation, to more controversial claims including asthma, cancer, chronic respiratory diseases and neuropsychological problems.

Most houseplants, whose origins began underneath the canopy of tropical rainforests, have evolved over millions of years. These plants naturally thrive in dimly lit, warm and humid environments. Nature has equipped these plants with the ability to culture microbes on and around their roots that can degrade complex organic structures found in leaves and other jungle debris. Plant leaves can also absorb gaseous organic substances and digest or

translocate them to their roots where they serve as food for microbes. Transpiration is another means plants have of moving air-polluting substances to microbes around their roots.

High transpiration rates create convection currents that cause air flow. As water rapidly moves from roots up through plants, air is pulled down into the soil around the roots. This is one means by which plants can supply oxygen and gaseous nitrogen to their root microbes. Nitrogen gas can also be converted by root microbes into nitrate, a plant food.

Personal breathing Zone:

A personal breathing zone is an area of 6 to 8 cu.ft. (0.17 to 0.23 cu.-m), surrounding an individual. These are usually areas where an individual remains for several hours, such as at a desk or computer, watching television or asleep. Plants placed within a personal breathing zone can add humidity, remove bio effluents and chemical toxins, and suppress airborne microbes. These benefits are in addition to their aesthetic and psychological values.

Air Purification on a large scale

Although houseplants can help clean the air within a personal breathing zone, providing clean, healthy air for an entire building is also desirable. Increased ventilation is neither efficient, cost-effective nor environmentally responsible. Allowing materials to off-gas before installation is helpful, but many products continue to off-gas for years.

If one views a buildings as having its own ecosystem, then the use of plants to improve indoor air quality is certainly feasible. While this may not be the total solution, houseplants can certainly be included as an integral component in creating a healthy building. To accomplish this goal, architects and builders must design with plants in mind. Often, plants are only an afterthought to fill a void in a vacant corner, or they are added later by the occupants in an attempt to create a link with nature.

Temperature:

Most houseplants thrive in broadly the same temperatures that we enjoy.

Others require special arrangements, such as a change in temperature when the seasons change or a cool location for a rest period. Most plants will grow in a temperature range of 65 to 75°F (18 – 24°C). Fluctuations of a few degrees on either side are not harmful and most plants will enjoy a slight drop in temperature at night.

Avoid placing plants too close to window. The air near a window can be much hotter or colder than the room temperature. Also keep plants away

from fireplaces, radiators and heating or cooling vents. No plants like blasts of hot or cold air.

Humidity

Moisture in the atmosphere is as important to human health and well-being as it is to houseplants. The ideal humidity for plants and humans ranges between 35 and 65 percent. Humidity levels are closely linked to air temperatures: the warmer the air, the more rapidly moisture is lost.

Probably the simplest method of providing humidity for a plant is to mist its leaves regularly. In extremely dry conditions, misting more than once a day may be necessary.

Grouping plants together is also helpful. Plant leaves will catch and hold transpired moisture from neighboring plants. Remember that plants themselves are natural humidifiers! The drier the air, the more moisture a plant gives off through the process of transpiration.

Circulation

The movement of fresh, moist air helps plants to breathe. When plants are grouped together, allow room for air circulation. When air is unable to circulate, plants are more susceptible to fungal disease and pests. Avoid drafts or sudden changes in temperature around plants.

The accumulation of dust on leaves can clog the stomata (the microscopic openings on the leaves), which may result in slower plants growth. Misting helps to remove dust, but perhaps the best method for most plants is to simply wipe leaves with a damp cloth. Do not use a dry dust cloth or soft brush as this causes dust to become airborne.

Light

All plants need light, but the amount of light needed varies with each genus and species. Generally, plants that bloom, bear fruit or have variegated foliage need more light than plants with plain green foliage. Most of the houseplants we know today originally came from tropical and subtropical regions. A variety of lighting conditions is found within these regions, from dimly lit areas underneath the canopy of rainforests to bright, open grasslands and even mountainous terrains. Even though a plant has been removed to a different location, it continues to need lighting conditions similar to those in its native habitat or it may not survive.

Usually plants from arid regions, such as cacti and succulents, are the only ones that can survive in direct sunlight all day. Some can withstand direct light for short periods before burning. Others prefer indirect or filtered light, as through a sheer curtain. A basic understanding of a plant's light needs will help in maintaining a healthy plant.

Containers:

Standard containers are the traditional way of growing houseplants. The planter consists of a pot with drainage holes in the bottom and a corresponding drain pan or saucer to catch excess water. Water is poured onto the soil surface. Top-watering leaches minerals from the soil into the drains pan.

Therefore, more frequent applications of fertilizer are necessary.

Standard containers have the advantage that containers and potting soils and plants are readily available. In addition, for salt-sensitive houseplants, the leaching out of minerals is advantageous. A disadvantage of standard containers is that watering is largely guesswork. Overwatering results in root rot and mold growth in drain pans and on floor coverings. Under watering causes stress to the plant. Over-damp top soil also encourages mold growth and air circulation to the roots is reduced. Minerals leach out of the soil requiring more frequent feeding.

Pests

The insects most commonly found on houseplants are mealy bugs, spider mites, aphids and scale insects.

Spider mites:

These tiny insects are so small they are hardly visible to the naked eye. Dry, warm conditions promote their growth. They produce fine webs on the undersides of leaves and suck out plant juices. Infested plants become stunted and may die.

Mealy bugs

These are soft, powder-covered insects that look like specks of cotton. Sucking insects, they cause stunted or distorted growth in plants. Mealy - bugs produce a sticky substance that can encourage the growth of sooty mold.

Scale insects : Scale insects are soft or hard, reddish gray or brown, with round or oval bodies. They are slow-moving and resemble tiny turtles. They secrete a sticky substance that promotes the growth of sooty mold.

Aphids, or plant lice: Are tiny, soft -bodied insects that cluster on buds, stems or new plant growth.. Aphids, like mealy bugs and scale insects, also secrete a sticky substance, called honeydew. The presence of aphids results in curled, distorted leaves or flowers.

Pest Management

Careful inspection of plants before bringing them indoors is certainly advisable. Meeting a plant's environmental needs reduces plant stress and a healthy plant is less vulnerable to attack. When pest control is necessary, non-toxic or less toxic insecticides can offer effective control.

However, the recently introduced synthetic insecticides are less desirable.

You can try making your own non-toxic spray solution. The following ingredients, mixed into a spray bottle, and shaken vigorously, can be sprayed onto plant leaves:

2 teaspoons (10 ml) vegetable oil

1/8 teaspoon (0.6 ml) dishwashing detergent

230 ml of warm tap water

When choosing plants for your home, make sure you are aware of their care needs and any particular problems to which they may be susceptible.



House plants which help in purifying the inside atmosphere of our homes / office spaces / Buildings and have been tested by the National Aeronautics and Space Administration (NASA) during various researches conducted, to name a few:

1. Areca Palm
(Chrysalidocarpus lutescens)
2. Lady Palm (Rhapis excelsa)
3. Bamboo Palm
(Chamaedorea Seifrizii)
4. Rubber Plant (Ficus Robusta)
5. Dracaena deremensis
6. Hedera Helix (English ivy)
7. Phoenix Roebelenii
(Dwarf Date Palm)
8. Ficus Alii
9. Boston Fern
(Nephrolepis Exaltata)
10. Dracaena fragrans
11. Peace Lily
(Spathiphyllum sp.)
12. Golden Pothos
(Epipremnum Aureum)
13. Chrysanthemum Morifolium
14. Gerbera Jamesonii
15. Dracaena Marginata
16. Syngonium Podophyllum
17. Philodendron domesticum
18. Diffenbachia (Dumb Cane)
19. Ficus benjamina
20. Philodendron Selloum



Along with the plants there are a large number of other house plants which serve the same purpose and the list is long.

Happy Breathing with fresh, green companions the “House Plants” .