

## THE EFFECTS OF THE INTERIOR PLANTS ON THE HEALTH AND QUALITY OF THE ENVIRONMENT

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**Resumen:** Hoy en día, la contaminación del aire en las ciudades se ha propuesto como un gran problema. La densidad de algunos contaminantes en espacios interiores es mucho mayor que los espacios externos. Además, las comunidades están luchando con problemas de salud mental como la depresión que es una parte de la salud humana. Las plantas actúan como filtros biológicos y además de reducir el dióxido de carbono, la humedad y reducir la contaminación en el interior ayudan a los aspectos psicológicos del ser humano. Reducir la ansiedad, hacer felices a los humanos y evitar la depresión, especialmente en las sociedades modernas. El objetivo de este estudio fue investigar el efecto de las plantas sobre la salud y la calidad del ambiente interior.

El aire interior puede estar contaminado por plomo, formaldehído, barreras contra incendios y radón. Las plantas pueden purificar el aire de gases como el formaldehído y la contaminación por benceno del aire.

Un punto interesante sobre el papel de las plantas en la salud mental es que están asociados con la naturaleza y disfrutar de su belleza es una manera sencilla, pero es importante para relajar el alma y el espíritu del hombre, viendo las plantas y sus flores.

En este estudio, las plantas seleccionadas con respecto a los temas discutidos fue la tasa de benceno, formaldehído, tricloroetileno, xileno y tolueno, amoníaco, o una forma de flores y variación de color fueron anotadas.

Los resultados mostraron que las plantas *Spathiphyllum* y *Crisantemos* fueron seleccionadas como las mejores plantas para uso en interiores. *Gerbera aurantiaca*, *Lengua de la Madre*, *Jacobinia carnaflamingo* y *Liriupe* se ubicaron en el siguiente rango.

**Palabras clave:** Ambiente saludable, arquitectura sostenible, contaminación interior, aire limpio, salud mental

**Abstract:** Nowadays, air pollution in cities has been proposed as a major problem. The density of some pollutants in indoor spaces is much greater than the external spaces. In addition, communities are struggling with mental health problems like depression that is a part of human health.

Plants act as biological filters and in addition to reducing carbon dioxide, moisture and reduce pollution in the interior they help the psychological aspects of human. Reduce anxiety, make the humans happy and avoid depression, especially in modern societies. The aim of this study was to investigate the effect of plants on the health and quality of interior environment.

Indoor air may be polluted by lead, formaldehyde, fire barriers and radon. Plants can purify air from gases such as formaldehyde and benzene pollution of the air.

An interesting point about the role of plants in mental health is that they are associated with nature and enjoying from their beauty is a simple way, but it's important to relax the soul and spirit of man by watching plants and their flowers.

In this study, selected plants with respect to the items discussed was the rate: benzene, formaldehyde, trichlorethylene, xylene and toluene, ammonia, or a form of flowers and color variation were scored.

The results showed that plants *Spathiphyllum* and *Chrysanthemums* were selected as the best plants for indoor use *Gerbera aurantiaca*, *Mother-in-Law's Tongue*, *Jacobinia carntaflamingo* flower and *Liriupe* stood in the next rank.

**Keywords:** Healthy environment, sustainable architecture, interior pollution, clean air, mental health

## 1. INTRODUCTION

We have about 90% of our time indoors. Our children and babies spend most of our time indoors. The density of some pollutants in indoor spaces is much greater than the external spaces.

Health effects from indoor air pollution may be understood immediately or after the years. These effects include irritation of eyes, nose and throat, headache, dizziness and fatigue respectively. Such effects are usually short-term and can be treated immediately. Some immediate effects similar to those seen in viral colds and other diseases, so it is difficult to identify the main cause. For this reason, according to the time and location of symptoms is important. If you are not at home when the symptoms disappear and return with his return, sources of indoor air can be the main reason. (*How grow fresh air: 50 plants that purify your home or office*, 1997)

Other health effects may take years after exposure or after a long time to show their repeated. These effects, which include some respiratory diseases, heart diseases and cancer, can be severely debilitating or fatal. So trying to improve indoor air quality, even if symptoms are not noticeable condition reason. (*How grow fresh air: 50 plants that purify your home or office*, 1997)

In addition, from the perspective of psychology plants at home creates a sense of positive attitude to life and peace, happiness and satisfaction, intimacy and tranquility in the people. Flower color is a very important point, so that bright color flowers like pink, white, purple and - lead to calm emotions and flowers with warm colors and, yellow, orange and ...-increase the sense of excitement and vitality. (*The effect of flowers and plants on people's mood*, 1986)

### 1.2. Plants impact on mental health

The behavioral researchers of Rogers (Rutgers) in New Jersey showed that contact with nature and enjoy the beauty of plants, planting flowers and plants or receive gifts such as flowers can be the real joy and freshness to the mankind. (*The effect of flowers and plants on people's mood*, 1986)

Flowers and plants create a positive attitude to life and a sense of peace, happiness, satisfaction, intimacy and tranquility in the people. The light colors like orange will create sense of excitement

and vitality in the humans (*The effect of flowers and plants on people's mood*, 1986).

The results of research show that it is better to allocate a space for plants at homes this space can include some flowers in pots, planting flowers on the porch, the windows, the sides of the room and the use of flowers at the entrance of the house, the living room and the bedroom is essential, especially in guests entering to be happy with it.

### 1.3. Effective plants for purifying air pollution

Flowers and plants affect to reduce air pollution in homes. Plants convert carbon dioxide into oxygen. They are able to destroy harmful pollutants. Studies have shown symptoms such as headaches and anxiety are reduced by plants.

Houses and new buildings are often designed strictly against loss of energy. In addition to the synthetic materials used in modern structures which produce pollutants in unventilated spaces. (Wolverton, Johnson & Bounds, 1989)

For example, English ivy, Sunflowers, Chrysanthemums, Lilies and Palm Straw were found best herbs for purification of air from benzene.

White Lily Farm, Sunflower and Palm Straw are very effective in treating trichlorethylene.

In addition, according to research revealed that Reed palm, Sansevieria trifasciata, White Lily Farm, golden pathos and Spider plants are very good in formaldehyde purification. (Wolverton, Johnson & Bounds, 1989)

## 2. FINDINGS

The various plants that had most effects on indoor pollution were selected and with due attention to psychological effects of plants on humans the plants categorized in perspectives of: benzene, formaldehyde, trichlorethylene, xylene toluene, ammonia, Having flower and shape or form variety of plants, the latter two subjects are obtained from the psychological effects of plants on humans. (Table. 2 and fig1)

Pollutants	Source	Adverse Health Effects
Volatile Organic compounds (VOCs)	Solvents and chemicals, perfumes hair spray, furniture polish, glues, air fresheners, moth repellents, wood preservatives, second-hand tobacco smoke	Headaches. eye/nose/throat irritation. nausea and loss of coordination, cancer
Second-hand Tobacco Smoke	Cigarettes. cigars, pipes, etc.	Many detrimental health Effects, including cancer
Pesticides	Plant and animal pesticide products	Not generally safe, even if used according to directions. children, pregnant women and the elderly, as well as those with respiratory disease (asthma) are especially at risk.
Biological Pollutants	Plant pollen, dust mites (Invisible to the naked eye), animals (droppings and urine), pet hair, insects (sawdust and waste) fungi/mold spores, parasites. some bacteria and viruses	Asthma and allergies ;infectious diseases
Formaldehyde	Gas emitted by carpets, particleboard and insulation foam	Irritation to the eyes and nose, may promote some allergies, cancer
Asbestos	Old linoleum flooring, old walls (with old insulation) , old ceilings . Considered safe unless disturbed in such a manner as to release fibers into the air (by demolition. cutting it. etc.)	enter the lungs and may cause cancer
Radon	A gas naturally released by soil , A problem in enclosed areas and even in well-ventilated spaces If the source is strong. Worse in certain areas of the country . Generally higher in a building with an unfinished crawlspace or basement .	Lung cancer

Table 1. Different types of indoor pollutants (How grow fresh air: 50 plants that purify your home or office, 1997)

Plants types	shape or form variety of plants	Having flower	Ammonia	xylene and Toluene	trichlorethylene	formaldehyde	Benzene
Phoenix roebelenii				√		√	
Areca palm				√			
Boston fern				√		√	
Pteridium aquilinum				√		√	
Nettle		√		√	√	√	√
Liriodendron	√		√	√		√	
Spider plant	√			√		√	
Scindapsus aureus	√			√		√	√
Spathiphyllum	√	√	√	√	√	√	√
Jacobinia carntaflamingo flower	√		√	√		√	



