9 February 2008

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Spathiphyllum x `Mauna Loa', a peace lily hydrid puyallup.wsu.edu

Top 15 NASA's Plants That Can Save Your Life!

The best way of getting rid of indoor air toxins

The world we live in is full of synthetic chemicals, most of which are toxic. They are encountered from our food to all the objects we touch. No wonder the explosion of Multiple Chemical Sensitivity (MCS) cases (see: http://news.softpedia.com/news/The-Disease-of-the-Technology-MCS-74254.shtml). But if you think that contamination is something occurring outdoor, you're awfully wrong. The "technology toxins" stalk inside your house, and the situation is nastier than you could imagine. The insidious aspect is that these toxins poison you most of the time, including while you are sleeping. 95% of what's inside perfumes, deodorants, body lotions, cleaning products, paints, new carpets, tobacco smoke, shampoos, gasoline and other products are petroleum derived, like acetone, camphor, benzens, aldehydes, ethanol, g-terpins and others. Other indoor contaminants should be more obvious for you: pesticides (like anti-lice products) or solvents (from paints, varnishes, adhesives, treated woods, synthetic fabrics and carpets, and detergents). "Mild" effects of our daily (or not) exposure to these chemicals are fatigue, disorientation, muscular pain, joint pain, eczemas, eruptions, dizziness, somnolence, nausea, body swelling, accelerated breathing, flue symptoms, asthma, palpitations, high pulse, sinusitis, anxiety, pneumonia, headache, memory loss, decreased focusing capacity, insomnia, [img=2]irregular heart rhythm, gut issues and mood disorders (depression and mood swings) (and we have missed many others here). About 37% of the Americans are allergic to synthetic chemical smells, vent gases, tobacco smoke, freshly applied paints, new carpets and perfumes. On long term, this exposure translates into cancers. How we are affected by this is influenced by our genes, age, sex, diet, health and mood (which influence immunity), drugs we take, medical history and lifestyle (drinking, smoking, drug consume). Modern homes and buildings, designed for energy efficiency, are often tightly sealed to impede energy loss from heating and air conditioning systems. The ventilated air inside buildings recycles all kinds of solvents, including formaldehyde (an extremely toxic chemical). Synthetic building materials used in modern construction have been found to release potential [img=3]pollutants that remain trapped in these unventilated buildings. Carpets aggravate the situation as they absorb many solvents which afterwards are released gradually over long periods of time. All this cause "Sick Building Syndrome". The poor indoor air quality costs only US tens of billions of dollars annually in lost productivity and medical care. In Australia, about 75 % of buildings are affected by "sick building syndrome" and 9% of the workforce takes off at least one day from work every fortnight because of sickness connected to this. Good night sleep in a well aerated room, healthy diet (including food supplements), and physical exercise (sweat eliminates poisons from the body). But here comes a 2-year NASA research that points to an unexpected, cost-effective, environmentally friendly, low energy and completely natural method of detoxifying our houses: the common indoor plants. NASA aimed to assess environmental issues, both on Earth and in space habitats, and this new study has been led by Dr. Bill Wolverton, formerly a senior research scientist at NASA's John C. Stennis Space Center, Bay St. Louis, Miss. Plants (more specifically the leaves) have been known to function like air pumps. At day light, they take carbon dioxide from the air to make photosynthesis. Moreover, they breathe all the time. This means they take oxygen from the air and release carbon dioxide. Plants also sweat, mainly through their leaves. Water and gases go in and out through small pores called stoma. Closed or opened stoma show how active the plants are at a given moment. Because plants sweat, they keep room's correct humidity levels. [img=4]Amongst animals, mussels and oysters function as water pumps that take small food

particles and oxygen from the water and release carbon dioxide and wastes. But the bivalves are also known to accumulate contamination toxins from the water (like heavy metals and hydrocarbons), with many episodes of severe intoxication of people that ate such seafood. Well, what NASA has found is that some plants can function like real "air oysters" in your house, accumulating the toxins that imperil your health and ultimately your life. 19 species and varieties of ornamental plants have been tested for their effectiveness in removing the main toxins connected to indoor air contamination. 17 are true houseplants, and 2 species of daisies are used indoors as seasonal decorations. The houseplants are tropical or subtropical species growing beneath dense tropical canopies, thus they subsist in low light, and are more efficient in absorbing gases, including toxic ones. Plants do not absorb contaminants only trough leaves, but also through roots and their root-associated bacteria.Some indoor plants proved to be so efficient in absorbing the air toxins that some could be launched into space integrated in biological life support systems aboard future orbiting space stations. [img=5]"The study has shown that common indoor landscaping plants can remove certain pollutants from the indoor environment. We feel that future results will provide an even stronger argument that common indoor landscaping plants can be a very effective part of a system used to provide pollution free homes and work places, "said Wolverton, involved in this kind of research for over 30 years.Each plant species was tested in sealed, Plexiglas chambers in which chemicals were injected. Tested chemicals included: Trichloroethylene (TCE), largely employed in the metal degreasing and dry cleaning industries, printing inks, paints, lacquers, varnishes, and adhesives. It is a powerful liver cancer inducing factor. The best TCE removers were peace lily (for TCE from cleaning products), Dracaena (TCE from adhesives, ink, dyes, lacquers, paints and varnishes), gerbera daisy (TCE from adhesives), and bamboo palm. [img=6]Benzene is the most common solvent in many items like gasoline, inks, oils, paints, plastics, and rubber, but it also enters into the composition of detergents, explosives, pharmaceuticals, foams and dyes.It is a skin and eyes irritant (repeated contact causes drying, inflammation, blistering and dermatitis), embryotoxic and cancer causing factor. It has been connected to human leukemia. The aromatic benzene vapors cause dizziness, weakness, euphoria, headache, nausea, blurred vision, respiratory diseases, tremors, irregular heartbeat, liver and kidney damage, paralysis and unconsciousness. Animal tests resulted in cataract formation and diseases of the blood and lymph. Chronic exposure provokes headaches, loss of appetite, drowsiness, nervousness, psychological issues and blood diseases (like anemia) and bone marrow diseases.The champion plants in removing benzene appeared to be: ivy, gerbera daisies, pot mums, peace lily, bamboo palm, and Mother-in-law's Tongue. The source of benzene also counted: Chinese Evergreens and pot mums extract well benzene coming from detergents, while Dracaena that coming from ink, dyes, tobacco smoke and rubber. Ivy extracted easily the toxins coming from petroleum products, while benzene from plastics was rapidly sucked up by Gerbera daisy. [img=7]Formaldehyde is even more common than benzene, and more toxic. It abounds in urea-formaldehyde foams, particle board or pressed wood products of which most of the office furniture is made today. It appears in paper treated with UF resins, even grocery bags, waxed papers, facial tissues and paper towels. Most common household cleaning agents have formaldehyde. UF resins are used as stiffeners, wrinkle resisters, water repellents, fire retardants and adhesive binders in floor coverings, carpets and permanent-press clothes, while simple formaldehyde abounds in natural gas, kerosene, and cigarette smoke.The chemical is an irritant of the mucosae of the eyes, nose and throat, and causes dermatitis and headaches. Formaldehyde is a common cause of asthma and has been connected to throat cancer.The best plants for removing formaldehyde proved to be the bamboo palm (from carpeting), Mother-in-law's tongue (from paper), dracaena warneckei, peace lily, dracaena marginata, golden pothos, philodendron (from carpeting and furniture), ficus (from UF foams), ivy (from cleaners) and green spider plant (from plywoods and particle boards).This is how much of the contaminants were removed by plants from a sealed room in 24 hours:Formaldehyde%

Benzene%Trichloroethylene%Dracaena massangeana7021.412.5Dracaena deremensis50 7020Ficus Benjamina47.43010.5Spathiphyllum508023Epipremnum aureus6767 9.2 Chrysanthemum morifolium615341The plants recommended by the NASA research are: 1. Philodendron scandens subsp oxycardium heartleaf philodendron (philodendrons come from tropical Americas and are related to arrowheads). 2. Philodendron domesticum, elephant ear philodendron.3. Dracaena fragrans, varieties `Massangeana', `Janet Craig' and `Warneckii', cornstalk Dracaena, happy plant or Corn Plant, a relative of dragon trees from Africa.4. Hedera helix, common ivy, which is also an outdoor plant originated from southern Europe.5. Chlorophytum comosum, spider plant, a South African species.6. Ficus benjamina, weeping fig tree, from southeastern Asia and Australia.[img=8]7. Epipremnum aureum, golden pothos, silver vine, devil's ivy, is a species coming from southeastern Asia and New Guinea, related to philodendrons.8. Spathiphyllum x `Mauna Loa', a peace lily hydrid obtained from tropical American and Asian species.9. Philodendron bipinnatifidum cut-leaf philodendron, tree philodendron, selloum, self-header from the rain forests of Paraguay and southeastern Brazil.10. Aglaonema modestum, Chinese evergreen from southern China, related to philodendrons.11. Chamaedorea sefritzii, bamboo or reed palm, a palm tree species originated from tropical Americas.12. Sansevieria trifasciata, snake plant or mother-in-law's tongue, an African plant related to Butcher's broom.13. Dracaena marginata , red-edged dracaena or Madagascar dragon tree.14. Gerbera jamesonii, Gerbera daisy, from South Africa.15. Chrysanthemum x morifolium, pot mums, a hybrid daisy from Asia.[img=9]As plants have various ecologies, their efficiency varied depending on the light amount. The best plants in intense light were the Ficus and some Dieffenbachia species. In medium light, were Bamboo Palm and Dracaena. In low light, Spathiphyllum worked best. "Plants take substances out of the air through the tiny openings in their leaves (stoma). But research in our laboratories has determined that plant leaves, roots and soil bacteria are all important in removing trace levels of toxic vapors. Combining nature with technology can increase the effectiveness of plants in removing air pollutants. A living air cleaner is created by combining activated carbon and a fan with a potted plant. The roots of the plant grow right in the carbon and slowly degrade the chemicals absorbed there," said Wolverton.[img=10]The results recommend for an average home of under 2,000 square ft (200 square meters) 15 to 18 houseplants, grown in 6 in (15 cm) containers or larger. The more vigorous the plants, the better. "Two plants per 100 square feet or two plants per a small office keep the air pure [and] healthy," recommended Wolverton. These plants not only make your office or house a more pleasant place, but also they will increase air quality, making you feel better and perform/work better. Further research is aimed to see the efficacy of indoor plants in removing other common indoor air pollutants, like asbestos; or coming from pesticides, detergents, solvents, and cleaning fluids; fibers released from clothing, furnishings, draperies, glass, carpets, and insulation; fungi and bacteria; and tobacco smoke. Credits: cvetcence.blog.com.mkComment: Chamaedorea sefritzii, bamboo or reed palmCredits: nybg.orgComment: Sansevieria trifasciata, snake plant or mother-in-law's tongueCredits: westcoastnurseriesComment: Dracaena marginata , red-edged dracaena or Madagascar dragon treeCredits: mobot.orgComment: Gerbera jamesonii, Gerbera daisyCredits: intrinsicperennialgardens.comComment: Chrysanthemum x morifolium, pot mums