

Indiana IAQ

June 2010

About Indiana IAQ:

A new kind of newsletter that addresses the concerns of everyone interested in Indoor Air Quality (IAQ) in Indiana. From the many questions and concerns received this newsletter and the ones to follow are developed from specific concerns. Information is collected and applied this way to the articles published.

Who can write in? *Anyone!* Contractors, mitigation technicians, restoration and remediation technicians, real estate professionals, banks, doctors, lawyers, insurance professionals, investors, *anyone* with an interest in IAQ.

To submit an idea for an article, write to:

IndianaIAQ@solutionsiec.com.

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MEMBER OF



Can Plants Help Clean the Indoor Environment?

In all of my years working in the indoor air quality (IAQ) industry, I have heard all kinds of stories for and against various products and processes to cleanse the indoor environment of unwanted pollutants. While some of these are based on a desired image others have been, to varying degrees, researched. Using plants to help create a cleaner indoor environment is one of those researched areas with reports projecting the author's desired image.

You have to remember that the indoor environment is comprised of many things, and each structure—even each area within a structure—provides a different set of inter-related particulates,

gases, vapors, dusts, mists and fumes. These things often do not work singularly, by themselves, rather they work together to create the type of indoor environment you will be occupying.



The Purple Waffle Plant is considered a good plant to use to reduce some VOCs.

Keeping that in mind you should always look at a product or process at its base pros and cons. What can it do (like remove particulates), and what won't it

do (like remove gases and vapors)? Furthermore, you should look at potential occupant sensitivities to the product or process. As with the particulates, vapors, gases, fumes, etc. occupant sensitivities can vary from structure to structure, even room to room.

I begin with all of this to create a foundation for our discussion on plants and their use as indoor environmental cleaners. I do this because plants, as does everything else, have to be looked at in this context before you can begin to understand the pros and cons of their use in your indoor environment. Failure to do this could result in a false sense of security, disappointment, dis-comfort and dis-ease.

(read more on page 3)

Thoughts on Flooding, Mold and Bacteria

If you live in the Southern and Midwestern United States (U.S.) it feels like we have been hit unusually hard with bad weather and flooding conditions. Just as we get our feet re-established from one storm here comes another one! Well, I thought that I would address some concerns

about flood damaged property and their indoor environmental conditions.

I receive a lot of calls from concerned building owners saying things like, "My office or home has flooded. What do I do to prevent mold and from getting sick?"

(read more on page 2)



EPA Releases Draft Formaldehyde Assessment Report

Earlier this week the EPA released a Toxicological Review of Formaldehyde -Inhalation Assessment for public viewing and comment. According to the EPA website, *“Public comments received on the Toxicological Review within 90 days after the release of the FRN will be provided to the National Academy of Sciences (NAS) independent scientific peer review committee for its consideration.”*

Formaldehyde is a widely used chemical found in many consumer products and common building materials such as plywood and insulation. Formaldehyde is also a by-product of combustion and other industrial processes.

Its volatility makes it a significant issue for human health. The World Health Organization’s (WHO) International Agency for Research on Cancer (IARC) has classified formalde-

hyde as a known human carcinogen. The health effects associated with elevated levels of formaldehyde exposure have been closely studied in recent years and have brought to light the dangers from prolonged and repeated contact.

Major exposure risks associated with formaldehyde come from occupants inhaling contaminated air. Exposure to elevated levels of formaldehyde can trigger asthma attacks, nausea, watery eyes, headaches and difficulty breathing as well as other health effects. The current “permissible exposure limits” (PELs) for formaldehyde in the workplace are 0.75 parts per million (ppm) as an 8 hour time-weighted average (TWA). This means that exposures for an 8 hour work day should not exceed 0.75 ppm PEL.

“The draft EPA document on formaldehyde addresses the human health effects of chronic inhalation exposure,” reported Joe

Frasca, Senior Vice President at LA Testing. *“The WHO already labels formaldehyde as a known human carcinogen and it is imperative that people’s exposure to this chemical be minimized to prevent a host of medical problems.”*

Authors: LA Testing is a nationally recognized and locally focused provider of quality environmental and materials testing services and products to professionals and the general public. The company has an extensive list of accreditations from leading organizations as well as state and federal regulating bodies. LA Testing can be reached at www.LATesting.com or (800) 755-1794.

Thoughts on Flooding, Mold and Bacteria

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Flood damaged structures immediately create an environment with numerous types and quantities of pollutants that are unseen without a proper indoor environmental assessment; furthermore, flood damaged structures create health consequences which can be sensed: immediately, post-exposure, and/or long-term. In fact, the health risks associated with flood damage are so serious the Institute of Inspection, Cleaning and Restoration Certification (IICRC) calls them a *“public health concern”* and recommends an *“independent Indoor Environmental Professional who has no business affiliation with the Remediator should be used for [the] purpose”* of assessing damage otherwise unseen and overlooked during normal water damage processing (S500-2006, *Standard & Reference Guide for Professional Water Damage Restoration*, www.iicrc.org).

The health consequences of occupying a flooded building vary with the size, mass, concentration and other contaminants (which interact with one another) as well as individual sensitivities and exposure. Exposure can be through inha-

lation, ingestion, and absorption.

The lists of microorganisms and contaminants that can be found in flood damaged buildings are numerous. They range from fungi, bacteria, protozoa to dangerous viruses. Flood waters may also contain sewage, or black water, as well as residuals from medicines, household cleaners and industrial waste.



One of the main dangers from flood contamination comes from the ingestion or inhalation of infected materials. As certain microorganisms grow they may release contaminants into the air,

this is also the case when a flooded area is disturbed during post flood cleaning. Also anyone that touches anything contaminated has the risk of ingesting contaminants by touching their mouths and rubbing their eyes.

After a flooding event, a mold and sewage contamination inspection in residential and commercial properties has become a common occurrence to safeguard the health and well being of occupants. These inspections are a small price to pay for protecting people from the health effects that can come from being exposed to dangerous microorganisms and other contaminants.

For more information on how SOLUTIONS IEC can help you with your flood damage contact Jason at (877) 624-7185.

Author: Jason Yost, CIEC, CMRS, WRT, is owner of SOLUTIONS IEC, and has been in the cleaning, restoration, remediation, mitigation, and IAQ industry for over seventeen years. Jason is a member of the Indoor Air Quality Association and a board member of the American Council for Accredited Certification. Visit Jason’s IAQ PRO.FILE at: www.iaqa.org/profile_agreement.asp?id=223.

FEMA Warns That Mold May Be Hidden

After flooding devastated Rhode Island, the Federal Emergency Management Association (FEMA) warned, last month, that mold, while hidden in a lot of homes, can still be harmful. Additionally, FEMA reports that it is almost certain that mold has grown in the homes affected by flooding. *"You could pretty much guarantee that you'll have a mold and mildew issue because it's in the air, mold and mildew spores are around everywhere,"* says FEMA worker, Robert Achila.

FEMA spokesman Leo Skinner says that the agency has awarded \$27.5 million in grants to 12,518 homeowners and renters hit by the flooding. He says FEMA is providing rental assistance for 2,227 people who can not go home because of the flood damage.

FEMA also has given small-business loans to hundreds of the thousands of

applied small businesses in the area. Over \$7 million in low-interest loans were granted, according to FEMA spokesman Carl Sherrill.



"FEMA's mission is to support our citizens and first responders to ensure that as a nation we work together to build,

sustain, and improve our capability to prepare for, protect against, respond to, recover from, and mitigate all hazards." (FEMA: <http://www.fema.gov/about/index.shtm>)

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Can Plants Help Clean the Indoor Environment?

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Institutions like the University of Georgia and the National Aeronautics and Space Administration (NASA) have done some research on plants and, according to these sources, there are benefits to some plant types use indoors against various Volatile Organic Compounds (VOCs). You may be asking why NASA was involved in such research. Well, early in their space program they became aware of over *"107 volatile organic compounds (VOCs) in the air inside the Skylab space station."* These VOCs included *"formaldehyde, benzene, and trichloroethylene, all known irritant and potential carcinogens."* Previously an environmental scientist, B.C. "Bill" Wolverton, with the United States military had found that certain swamp plants were removing agent orange from the air around them, so work began to investigate this further to help create healthier and more productive work environments for their astronauts and for the growing population occupying (more) airtight structures. The idea was, as NASA puts it, *"If man was to move into closed environments, on Earth or in space, he must take along nature's life support system."* Plants.



The BioHome at NASA's Stennis Space Center was 45 feet long and 16 feet wide.

NASA used BioHomes, like the one pictured here, to research the effects of various plants on the indoor environmental quality related to VOCs. What they found was that once the plants were introduced to the indoor environment *most of the VOCs and complaints of Sick Building Syndrome (SBS) had been depreciated.*

Mr. Wolverton went on to develop Wolverton Environmental Services, Inc. and found that when indoor ventilation systems are properly developed and maintained along with proper plant use the

indoor environment could be improved. You can read more about his work and discoveries in *"How to Grow Fresh Air: 50 Houseplants That Purify Your Home or Office."*

Keep in mind that the assessments of these BioHomes did not (at least it hasn't been reported by NASA to) include occupant sensitivities to particulates, especially asthma and allergy triggers. As I said before, care should be given before implementing any process or procedure.

Many types of plants produce allergy and asthma triggers and can become sources of airborne contamination while removing the unwanted VOCs. It is never advisable to remove one pollutant with another one, nor is it ever advisable to depend on a dilution solution to contamination, like plant use, without first exhausting all source-removal options. But plants can be a benefit to you and your building's health. Developing personalized spaces for personalized use can compliment other processes and procedures . . . (read more on page 4)



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www.SolutionsIEC.com

SOLUTIONS IEC is a truly experienced business that, with over seventeen years of mitigation, restoration, remediation and hygiene practices, can assist you in determining the Category and Condition of the damaged structure; develop a protocol that is real and specific to the structure; and can provide expertise beyond just an inspector's role. Our staff of professionals have been recognized in both indoor environmental consulting (Council-certified Indoor Environmental Consultants) and microbial remediation supervision (Council-certified Microbial Remediation Supervisors) - two of the most prestigious awards in the industry today! Don't let poor IAQ take control of your life. Empower yourself with SOLUTIONS—Indoor Environmental Consulting—today!

Serving the Indiana and Illinois states!



Can Plants Help Clean the Indoor Environment?

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... and improve the indoor environmental quality around you.



Wolverton Environmental Services Inc. designed this sustainable ecosystem to show how a building's circulation system and a rooftop garden could work together to clean indoor air.

A few of the plant types identified useful, against some VOCs, included *Hemigraphis alternata* (purple waffle plant), *Hedera helix* (English ivy),

Hoya carnosa (variegated wax plant), and *Asparagus densiflorus* (Asparagus fern), according to research at the University of Georgia. Furthermore, *Tradescantia pallida* (Purple heart plant) was rated superior for its ability to remove four of the VOCs tested against. The complete study and abstract are available on the ASHS HortScience electronic journal web site: <http://hortsci.ashspublications.org/cgi/content/abstract/44/5/1377>.



Hoya carnosa, the variegated wax plant

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Various forms of *Tradescantia* plant life.

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