

Greetings from AQS!

Last year's hurricane activity left behind thousands of moldy buildings along with growing concerns about the impact indoor mold growth will have on health. For example, exposure to mold puts nearly 60 million Americans living with asthma and allergies at greater risk for asthma and allergy attacks.

This issue of airfAQS focuses on cutting-edge tools, technologies and services designed to help you identify, manage and understand mold and allergens in order to protect a building and its occupants. Several initiatives of note include the Centers for Disease Control and Prevention's (CDC) National Health and Nutrition Examination Survey (NHANES) once again selecting AQS to perform allergen and endotoxins analyses for 2006.

We also are very excited about a recently completed 18-month pilot program for the GREENGUARD Environmental Institute's microbial resistance program. The outcome of the pilot program is an easy to understand rating system that quickly tells architects, specifiers and building managers how resistant building materials are to mold. This rating system has tremendous potential, especially when used in conjunction with the GREENGUARD Mold Protection Program™. You will see these rankings soon in GREENGUARD's Product Guide™.

You can count on AQS to not only stay abreast of the latest developments but also to lead the industry in identifying and creating practical solutions to the most pressing indoor environmental issues.

We extend our best wishes for a successful year.

Sincerely,



Tony Worthan
President

FROM THE FIELD

Asthma and Indoor Air Quality

According to the Centers for Disease Control and Prevention (CDC), asthma affects nearly 20 million Americans and is one of the most common and expensive diseases in the US.

Results of a recent CDC study showed that the amount of pollution from nitrogen oxides, carbon monoxide and small particulate matter from the air has a direct impact on the number of emergency room visits related to asthma. These results indicate that the key to asthma prevention and control is to reduce the presence of asthma triggers.



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INSIDE AIR

AQS Introduces Microbial Resistance Testing Program



Air Quality Sciences (AQS) and the GREENGUARD Environmental Institute (GEI) have teamed up to create an easy to use rating system that quickly tells architects, specifiers and building managers how resistant building materials are to mold. This rating system is the product of an 18-month pilot study that measured and ranked indoor materials for their ability to support mold growth.

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AQS happenings

NHANES Update: AQS Continues to Assist CDC in Studying Household Allergens

The Centers for Disease Control and Prevention's (CDC) National Health and Nutrition Examination Survey (NHANES), has again selected AQS to perform allergen and endotoxins analyses for 2006. In 2005, NHANES included dust sampling for allergens and endotoxin for the first time and selected AQS to provide these analyses.

AQS was chosen based on our cutting-edge laboratory facilities, extensive quality assurance programs and high-quality customer service. AQS processes thousands of samples and provides customized tracking and customer service to meet the demanding needs of the program. The results of

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For more information go to www.aqs.com

AQS happenings

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these analyses will help health professionals understand the types, sources and levels of allergens present in homes and generate a better understanding of the relationship between household allergens, the indoor environment and respiratory illnesses, such as asthma and allergies.

Conducted since 1960, NHANES tracks trends and provides information about the health and nutritional status of the US population. The study selects 5,000 participants of all ages from across the United States, representing a cross-section of the US population. Participants undergo extensive interviews, medical examinations, and specimen collection and analysis, which are used to compile a detailed health profile that follows a wide range of health issues from nutrition, vision and psychological health to reproductive health and bone density.

In addition to NHANES, AQS continues its leadership role in the study of indoor environments and health. In the summer of 2003, for example, AQS participated in a study, sponsored by the US Department of

Housing and Urban Development (HUD) that examined the levels and types of molds prevalent in homes in Atlanta. The results of this study documented the types and groups of mold typically found in urban homes in the southeast that have not had water damage. By establishing a baseline of what is typical, it will be easier to determine what is atypical, based on a comparison. The results were released in the November 2004 issue of the peer-reviewed journal *Applied and Environmental Microbiology*.

AQS is dedicated to charting new territory in indoor air quality investigations, conducting research that considers the impact of indoor environmental conditions on health, educating our customers and providing services that create healthier indoor environments.

To learn more about the NHANES program, visit www.cdc.gov/nchs/nhanes.htm. To learn more about AQS' allergen testing services, call us at 770-933-0638 and ask for Laboratory Services.



AQS microbiology laboratory technician preparing an allergen test sample on an ELISA plate.

On the Speaker Circuit

AQS Building Consulting will be exhibiting at this year's PLRB/LIRB Claims Conference and Insurance Services Expo on **April 3rd and 4th** in Nashville, TN.

At this year's AIHce in Chicago, IL, Dr. Horner will be speaking on the Indoor Biologics: Exposure Assessment and Health Effects roundtable on **May 18th**. His topic is "Environmental Assessment of Mold Exposures."

AQS Building Consulting also will be exhibiting at Construction Expo to be held in Atlanta, GA on **June 13th and 14th**.

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Did You Know ?

Basic Facts About Mold

With current knowledge, there are still uncertainties and lack of scientific data to support the real facts about the effects of mold-related health effects. Below is a list of facts that we do know:

- In the US, about 60 million people have asthma and allergies and more than 30 percent of these people are sensitive to mold and fungal allergens.
- According to the US Department of Housing and Urban Development, an estimated "25 percent of airways disease and 60 percent of interstitial lung disease may be associated with moisture in the home or work environment."
- For mold to grow indoors, a source of sufficient moisture must be present. The best way to prevent indoor mold growth is to eliminate sources of excess moisture.

- Exposure to mold may potentially cause health problems in some people, such as allergies, asthma, hypersensitivity pneumonitis and other immunological effects.
- Types of mold that are known to produce mycotoxins under certain conditions include *Stachybotrys chartarum*, *Aspergillus fumigatus*, *Trichoderma harzianum* and *Fusarium moniliforme*. Exposure to mycotoxins can cause health problems in some people.
- The US Environmental Protection Agency states that "potential health concerns are an important reason to prevent mold growth and to remediate and clean up any existing indoor mold growth."
- Studies show that one-half of our nation's 115,000 schools have prob-

lems linked to indoor air quality, affecting approximately 10 percent of the US population, nearly 28 million people - mostly children.

- Recent studies also have identified *Aspergillus*, *Cladosporium*, *Penicillium* and *Alternaria* as the most common molds found in indoor environments with mold problems.
- Indoor mold growth can be confirmed through direct evidence (visual and/or microscopic exam) or by looking for indirect evidence from indoor air and dust samples.

Visit the AQS Aerias IAQ Resource Center at www.aerias.org to learn more about mold and how to minimize the indoor mold growth.

INSIDE AIR

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The study's first phase focused on developing the measurement technique and establishing a baseline of results across newly manufactured products. The second phase called for stakeholder participation in a more complete measurement and product ranking study. Ten manufacturers participated and more than 30 products were analyzed, including wallcoverings, adhesives, insulations and flooring.

All of the products were inoculated with standard indoor molds and incubated under high moisture conditions. The test method follows the guidelines of ASTM D 6329-03, *Standard Guide for Developing Methodology for Evaluating the Ability of Indoor Materials to Support Microbial Growth Using Static Environmental Chambers*. The results showed that a quantitative ranking scale is reliable and reproducible across a broad range of materials. Validation of the study indicated that products could be ranked following a three-week incubation period according to the scale in Table 1.

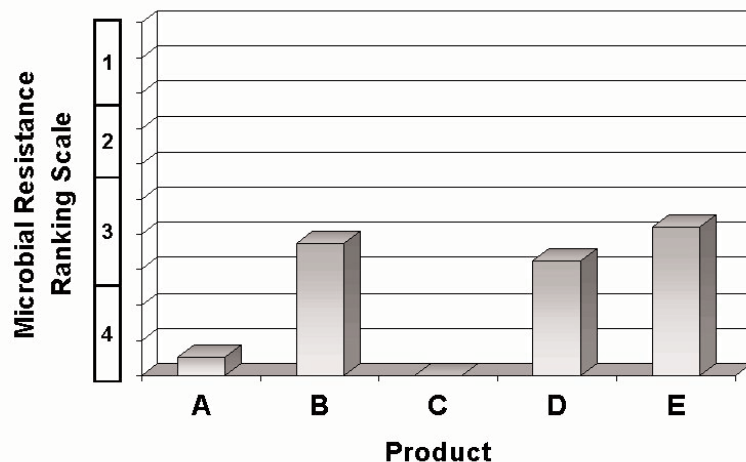
Figure 1 demonstrates the variation in the ability to support or resist mold growth (microbial susceptibility) of the products in the pilot study.

The GREENGUARD Product Guide™ will provide an optional microbial resistance ranking for products that are either Greenguard certified or listed by the program. This ranking will allow specifiers, architects and building managers to

Table 1

Ranking	Definition
1	Highly Susceptible to Mold Growth
2	Susceptible to Mold Growth
3	Resistant to Mold Growth
4	Highly Resistant to Mold Growth

Figure 1



select appropriate materials for their specific projects and customer needs. Manufacturers have the option of testing at AQS for the GREENGUARD Ranking Program or for their individual use. Many manufacturers frequently evaluate various product formulations for their resistance to mold growth to

identify susceptible materials or to evaluate the efficacy of biocides and anti-fouling treatments.

For more information, contact AQS' product testing group at 770-933-0638 and ask for Product Evaluations.

FROM THE FIELD

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Asthma triggers include dust mite, cockroach, animal and rodent allergens, second-hand smoke, mold, nitrogen oxides, sulfur dioxide, ozone, particulates, volatile organic compounds (VOCs) and dust. Up to one million children have aggravated asthma symptoms due to environmental tobacco smoke and between 10 percent and 32 percent of all persons with asthma are sensitive to fungal allergens.

Environments outside the home such as schools and workplaces can be important

sources for allergens and asthma triggers. Research indicates that adults who develop asthma show a decrease in work performance.

Take a proactive approach in resolving any IAQ issues in your child's school or in your workplace. Tips include lowering the amount of moisture in your living environment, which can decrease the potential for indoor mold growth, dust mites and cockroaches. Also take steps to reduce exposure to formaldehyde and VOCs emissions, keep living areas clean, control exposure to pets and avoid cooking with

natural gas stoves. Make sure asthma medications are taken properly.

AQS recently published an in-depth research paper titled "Asthma and Damp Buildings: Making the Connection." The paper lists some of the known facts on asthma and describes studies that connect damp buildings to the development of asthma. The paper is available free of charge on the Aerias-AQS IAQ Resource Center website, under the White Paper section in the Premium Content tab at www.aerias.org.

AQS happenings

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Dr. Horner will be presenting on "Uncontrolled Mold: Exposure Assessment in the Wake of Hurricane Katrina" at an Indoor Biotechnologies' annual professional training course entitled "Health Effects of Indoor Allergens, Molds and Endotoxin: THEORY & PRACTICE" in Charlottesville, VA on **June 26th**.

Dr. Horner also is speaking at a seminar, Construction Defects: Water Intrusion & Other Calamities Conference on **July 14th** in Atlanta, GA. His presentation will be "Construction Defects and Water Intrusion: Understanding What Really Goes On."

Barb Epstein will be presenting "Green Trade-off: Balancing Environmental Benefit and Health Impact of Building Materials" and Stephany Mason, PhD, will be presenting "The Significance of Component Emissions Testing to Predicted Air Concentrations - The Effects of Scaling" at the Air and Waste Management Association Conference

"Indoor Environmental Quality - Problems, Research, and Solutions", to be held **July 17th - 19th** in Research Triangle, NC.

Marilyn Black Designated 2005 Environmental Champion

Marilyn Black, PhD, AQS founder and CEO, received the Environmental Champion designation for 2005 as a foremost expert on characterizing indoor air pollution and its sources by *EnvironDesign Journal*. Dr. Black has more than 20 years of experience researching indoor air pollution and human health effects, mold growth in buildings, and the impact of indoor furnishings on indoor pollutant levels. Dr. Black and AQS have received many industry and community awards, including the National IAQ Company of the Year, National IAQ Research Award, Most Innovative Technology Award for Georgia and Ford Motor Company's Public Service Award for their work in the protection of human health.

Dr. Elliott Horner Serves as International Expert on Aspergillus Mold

Dr. Horner, Director of Microbiology at AQS, was among key scientists selected to present their discoveries at the 2nd Advances Against Aspergillosis (AAA) international conference, held in February in Athens, Greece. Dr. Horner, who also serves as a principal consultant with AQS' building consulting group, discussed *Aspergillus* and the environment, focusing on what works when cleaning up an *Aspergillus* contamination in indoor spaces. The invitation to participate in this influential international workshop affirms that Dr. Horner is on the cutting edge of the arts and sciences of researching, diagnosing, resolving and preventing indoor mold growth and moisture problems.

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