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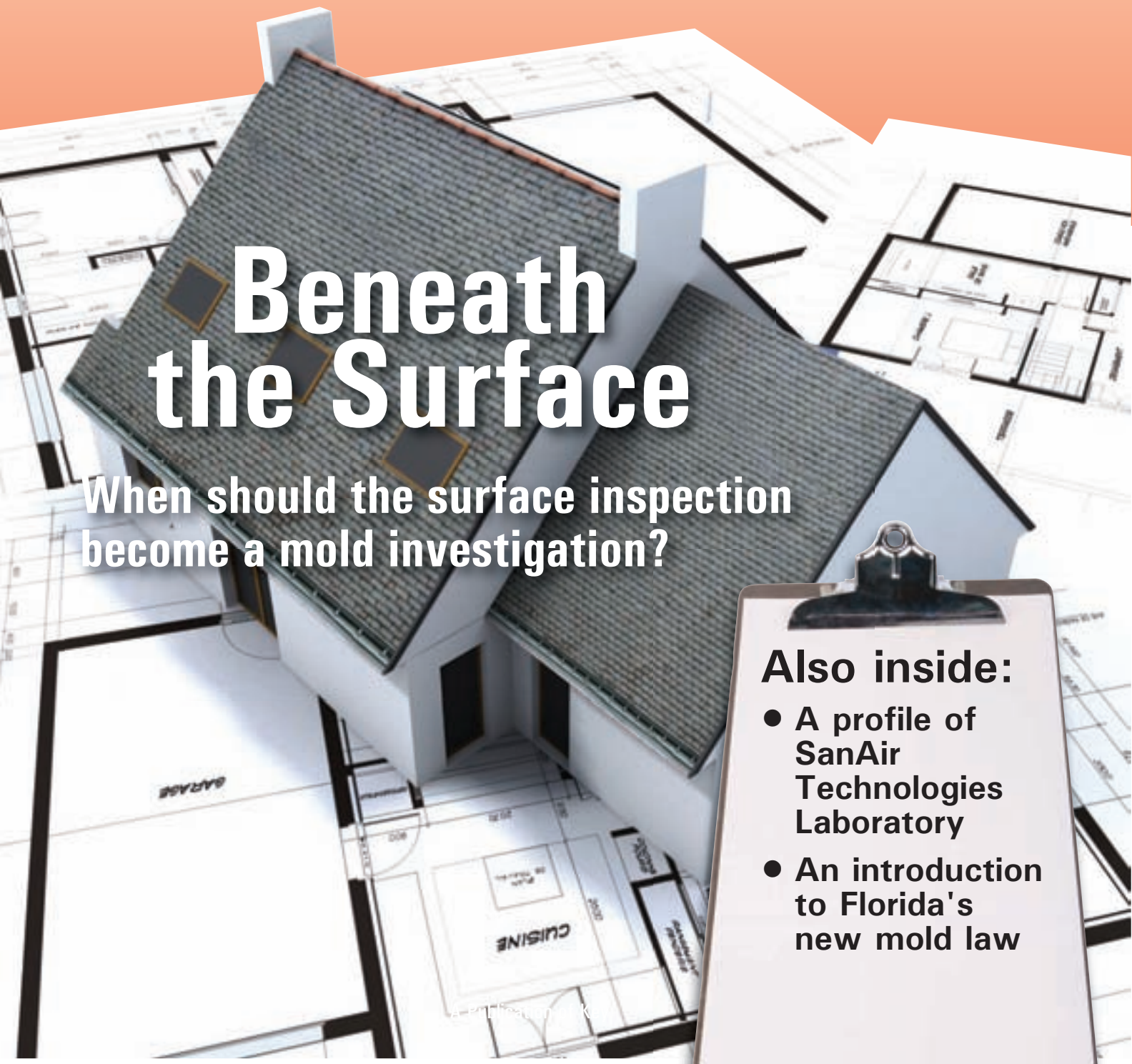
The Magazine for Moisture Prevention and Remediation
July-August 2007
Volume 4 | Issue 4



Beneath the Surface

When should the surface inspection become a mold investigation?

Also inside:

- A profile of SanAir Technologies Laboratory
- An introduction to Florida's new mold law

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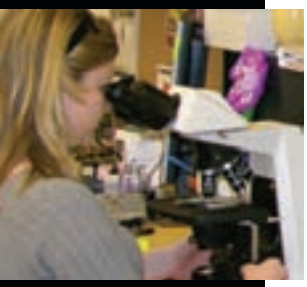

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When to Sample:
John Keene, technical director of SanAir Technologies Laboratory, offers his answer to the question about when it is appropriate to test for mold.

Insurance Watch:
Water damage and disaster restoration companies exhibiting at the Claims Conference and Insurance Services Expo in Orlando, Fla., found ways to inform the insurance industry about their mold remediation businesses.

On the cover

A home inspector's surface investigation could leave major mold problems undiscovered. This leaves some mold pros asking when the surface glance should become an invasive mold inspection. For answers, turn to page 16.
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remediation

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Line in the Sand

For this issue of **Moldmag**, I worked to answer a question I had been asked many times over the past several months by a number of different mold inspectors: Is there any way to teach home inspectors enough about mold that they don't scare homebuyers with false alarms (*see "Drawing the Line" on page 16)*? Or is there a way to keep them from addressing mold at all? I was entertained with several horror stories about "the home inspector who cried mold"—mold which upon closer inspection by a mold professional turned out to be decaying kraft paper or chimney soot or just a shadow in the rafters, depending on the storyteller.

In doing my research for this story, I contacted home inspectors and mold inspectors. But in some cases, I found that the home inspectors had branched into mold work and that many mold inspectors had gotten their start as home inspectors. This is an indication of how closely these fields are tied. Home inspectors look at many of the areas that become problem areas for mold, but they typically address surface problems and while mold can be laying in wait upon the window sill or peeking out around the bathroom baseboard, it's also not always so immediately identifiable.

As more than one person suggested, a home inspector can be compared to a general practitioner (GP), while calling in the mold inspector is like visiting a specialist. The GP may be able to get a sense that something is wrong with the patient, but it's up the specialist to perform tests to discover the real problem and its significance. The goal is to keep the GP from sending the patient running away in fear before the specialist can determine that those headaches are really a result of minor dehydration, not of a massive tumor.

It's been said that a little bit of knowledge can be dangerous. It may come down to a matter of continuing to educate people—consumers, home inspectors and the real estate industry at large—about mold problems so as to limit the confusion. Or, as one mold remediator told me when contacted for his opinion on the new Florida building inspection law (*see Regulation Review on page 25*), perhaps it's necessary to educate the building industry about the proper techniques for preventing water intrusion and other common problems so home inspections aren't necessary. (Okay, maybe not.)

The new Florida law brings up an entirely different distinction than that of home and mold inspector. The new law prevents a mold professional from inspecting a building upon which they've performed a remediation within the last year, and vice versa, preventing mold professionals from remediating a building upon which they've recently performed an inspection. It's a question that the mold industry has been asking itself for some time. Can the home or building owner really be secure in accepting the judgment—from the professional they just paid big bucks to inspect and who has volunteered their services to remediate?

So what do you think? Send your thoughts to me at mheadley@moldmag.com and we'll aim to further address these topics in future issues.

Megan Headley
*Editor, **Moldmag***

Caring for Hospitals

Operable Windows Can Improve Hospital Health

John Lewis is the technical director for the American Architectural Manufacturers Association. Mr. Lewis' opinions are solely his own and not necessarily those of this magazine.

There is increasing publicity about patient safety in hospitals, including the spread of infections due to bacteria and mold. While overhauling procedures is a fruitful approach to curing this problem, a few innovative administrators are looking beyond process analysis to consider aspects of the physical facility. The idea is to incorporate a wide range of pioneering design concepts to help staffers do their jobs and to provide patients with a more healthy environment that promotes healing.

Reducing Condensation

While condensation on windows and walls can be an issue in any building, hospitals require special attention to condensation prevention techniques, since moisture provides fertile ground for growth of molds and bacteria that could be dangerous to people with compromised immune systems.

The amount of moisture in the air is expressed as relative humidity (RH), which is dependent on temperature. In general, the warmer the air, the more moisture it can hold. Indoors, when water vapor in the air comes into contact with glass or framing or any surface whose temperature falls below the dew point; condensation will form.

An effective way of controlling condensation is to control the indoor RH through a well-designed HVAC system or by opening windows and doors when outdoor conditions allow.

"By optimizing thermal control, including humidity control, there are documented improvements in occupant health, including improved respiratory function and reduced mold and mildew growth," states the *Green Guide for Health Care* (GGHC), a voluntary, best-practices self-assessment tool kit that provides a point system leading to project registration. "This is particularly important in hospitals, where patients are likely to have suppressed immune systems or other illnesses that make them more vulnerable to poor indoor environmental conditions."

> "By optimizing thermal control, including humidity control, there are documented improvements in occupant health, including improved respiratory function and reduced mold and mildew growth."
>
> —Green Guide for Health Care

But, in cold weather when doors and windows must be shut (and because the RH level is typically high in hospitals), improving the condensation resistance factor (CRF) of windows and curtainwall installations (based upon AAMA 1503-98, *Voluntary Test Method for Thermal Transmittance and Condensation Resistance of Windows, Doors and Glazed Wall Sections*) is crucial. Reducing the amount of condensation on the glass and framing systems helps to lower the probability of mold and bacteria growth. The higher the CRF, the more efficiently the units resist condensing moisture from the air. It turns out that some of the same measures that improve energy performance also can improve condensation resistance. These measures include thermally improved framing and warm-edge technology.

Thermally Improved Framing

For institutional applications such as hospitals, aluminum has long been the framing material of choice due to its inherent structural strength and relatively light weight. Aluminum's natural property of high thermal conductivity (i.e., high U-factor) has been largely overcome by thermal barrier technology, variants of which include "poured and de-bridged" barriers, thermoplastic inserts, neoprene gaskets or structural silicone separations.

Warm-Edge Technology

This is the current frontier of energy-efficient and condensation-resistant design and development. The traditional spacer—the material that separates and retains the two or three sheets of glass, or interior films, around the edges of an insulating glass unit—is made of metal for reasons of strength, durability and light weight. However, metal spacers conduct heat, so the edges of the glass tend to lose more heat than the center of the glass and are thus typically the areas first to show condensation.

Additional Considerations

In addition to these "passive" solutions to condensation control, "active" solutions, such as local heating of the glazing and framing through ducted air, fin tube or panel radiators or electric trace heating, may be used as well. A new facility for St. Joseph Hospital of West Bend, Wis., recognizing that window blinds are a known breeding ground for germs, took the additional step of specifying windows that enclose the blinds within the glass. Heating vents placed above the windows further reduce the condensation that can let germs thrive. m

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The Four D's

Integrating the D's in Building Envelope Design

Colin Murphy is the founder and managing partner of Trinity | ERD in Seattle. **Lonnie Haughton** is a construction codes and standards consultant with Richard Avelar & Associates in Oakland, Calif. Mr. Murphy's and Mr. Haughton's opinions are solely their own and not necessarily those of this magazine.

In 1999, Canadian consultants Don Hazledon and Paul Morris published a seminal paper describing "The Four D's" of weathertight building envelope design: deflection, drainage, drying and durability (or decay resistance). Every building envelope assembly represents a unique integration of the four D's by a designer who selects from widely varying materials and systems in response to external parameters that include budgetary limitations, aesthetic considerations, fire resistance, structural loads, local climate data and interior moisture loads.

Some designs can be successful even if the architect emphasizes only one of the four D's. Consider, for example, a building with a very wide roof or deck overhang that shelters an exterior wall from virtually all rainfall. This emphasis on rainfall deflection allows the architect to specify a wall assembly with reduced drainage, drying and durability performance.

On the other hand, some designs fail because one or more of the four D's has been sacrificed unduly. That's what happened with the well-publicized failures of barrier exterior insulation finish system (EIFS) assemblies. They failed due to the lack of any provisions for drainage of incidental leakage through the surface barrier of the insulated cladding assembly. In this case, not having flashings and building paper or housewrap can result in a level of moisture accumulation that eventually overwhelms the limited durability of the underlying sheathing and framing materials.

The owner is replacing the original aluminum windows (above right) with new metal-clad wood windows (above left). Note the severe deterioration in the redwood shakes.

Over the past 80 years the most dramatic (and perhaps least recognized) modification to typical exterior wall designs may have been the extreme reduction in drying performance brought about by the use of interior vapor barriers, wall cavity insulation and panelized sheathing. In our society's quest for energy efficiency, our well-insulated and airtight exterior walls no longer are heated from the interior during winter months. In addition, excess moisture that may accumulate within some of our exterior siding and cladding systems often no longer has a secondary drying route into the building interior. This usually is due to the presence of vapor-retarding materials intended to block the outward movement of interior heat and/or moisture.

Upgrading the D's

As a result of these reductions in drying performance, it's necessary for exterior wall designers to upgrade the efficiency of at least one of the remaining three D's: deflection, drainage and durability. As an example, let's consider the photographs of a home constructed in 1952 in a Northern California locale with an average annual rainfall exceeding 40 inches.

The owner is replacing the original small single-paned aluminum casement windows with larger double-paned, double-hung windows (*photo at left*). The severe deterioration of the original old-growth redwood shakes required total replacement at this weather-exposed elevation. It also is important to note that, while the redwood shakes had been attached to one layer of #30 felt, no effort had been made to flash the original aluminum windows.

However, in the photo to the right, we see that, despite the extensive decay of the redwood shakes, there is absolutely no water damage at the wood sheathing or framing. To understand this phenomenon, we need to evaluate the four D's of the original wall design:

- **Deflection**: the relatively small roof overhang provided only a fair degree of rainfall deflection.
- **Drainage**: the failure to install a gutter at the roof and the lack of any flashing at the original windows represents poor drainage performance.
- **Drying**: the exterior wall has no insulation, no interior vapor retarder and numerous open spaces between the wood sheathing boards. As a result, the design provides excellent drying performance from both the interior (during wet winter months) and the exterior (during the dry summer season).
- **Durability**: the old-growth redwood shakes exhibited good durability, as evidenced by their overall survival for more than 50 years in a wet climate below a gutter-less roof. In addition, the heavily built window frames, which were manufactured in the post-World War II era when aluminum was plentiful and cheap, continued to provide exceptional durability.

Despite poor drainage and only fair deflection properties, the assembly provided more than 50 years of complete weather-resistive performance primarily because of continual drying at the back side of the durable redwood shakes that covered the wall.

Considering the potential long-term financial savings that could accrue from lower wintertime energy bills, would it be wise to stuff batt insulation into this wall assembly? Only if we counteract the new wall assembly's reduced drying properties with significant improvements to its deflection and/or drainage performance.

Removal of the deteriorated redwood shakes reveals no water damage at the wood board sheathing or stud framing.

Balancing the D's

In the case of the Northern California home, the owner opted to improve drainage performance by installing a gutter at the roof overhang and an integrated flashing assembly at each new window. Upon review of the excellent condition of the original wood sheathing and framing, the owner also decided to forego any effort to insulate the wall. He didn't attempt to lower his wintertime energy bills out of fear that the wall's reduced drying performance could lead to moisture infiltration, decay and mold growth. The owner also decided not to heed the local building inspector's recommendation to re-sheath the wall with plywood to increase the structure's ability to resist earthquakes.

Modern designers and builders do not have the option of ignoring local energy or structural codes to maintain good drying performance. In addition, some common exterior wall products, such as paper-faced gypsum sheathing, do not exhibit a high degree of moisture- or mold-resistive durability. Therefore, to offset these reductions in two key aspects of the four D's, good designers and builders recognize that they must increase their focus on the deflection and/or drainage properties of the wall design. It is our experience that most cases of mold and moisture damage at the roof or exterior walls can be traced back to a lack of attention by the designer or the builder to the four D's of modern building envelope design.

BARRIERS AND MEMBRANES

Viper Keeps Out Vapor

Insulation Solutions Inc. in East Peoria, Ill., has introduced Viper™, a triple-ply, extrusion-coated, virgin polyethylene membrane designed to act as a vapor and moisture barrier beneath concrete slab.

Viper comes in three different thicknesses—6.5-, 10- and 16-mil. All three thicknesses exceed ASTM "Class A" requirements. Viper VaporCheck also is designed to resist tears and punctures.

www.insulationsolutions.com

DrySpacer Provides Moisture Management

Moisture Management LLC in Chaska, Minn., offers DrySpacer™ for ventilation control material. DrySpacer offers continuous vapor transfer and maximizes the drying process for interior and exterior surfaces.

The three-dimensional polyethylene membrane forms a two-sided ventilation network. The membrane has dimpled studs, giving it its structured design. The channels between the dimples form a continuous airspace for ventilation of the insulated wall cavity. Vertical air passages and pockets on the exterior surface provide ventilation of the structural wall sheathing.

www.dryspacer.com

Benjamin Obdyke Combines Rainscreen and Housewrap

Home Slicker® 10 Plus Typar® from Benjamin Obdyke Inc. in Horsham, Pa., combines a rainscreen system component and premium-grade housewrap in one product.

Part of a residential sidewall assembly, the product creates a pressure-equalized air space immediately behind exterior cladding and employs a water-resistive barrier to eliminate moisture created by wind-driven rain and interior vapor. With its patented three-dimensional nylon matrix bonded to Typar, it manages water entry by allowing it to enter and exit, and also drains away bulk water. It also speeds drying of moisture that accumulates in the interior wall assembly by moving air in a convective fashion throughout the cavity.

In addition, the product meets changing building code requirements in Canada.

www.benjaminobdyke.com

ROOFING UNDERLAYMENT

Keep Slip-Ups Down with Water-Resistant Underlayment

Grace Construction Products in Cambridge, Mass., has introduced its high-performance Tri-Flex® Xtreme™ synthetic roofing underlayment.

The company's Traction XT™ skid-resistant coating helps boots grip the surface when wet or dry. In addition to its water-shedding capabilities, the product also offers great tensile strength and offers more coverage than traditional felt. The durable underlayment can be left exposed to the elements for up to six months without rotting, cracking or drying out.

www.GraceAtHome.com

PLYWOOD

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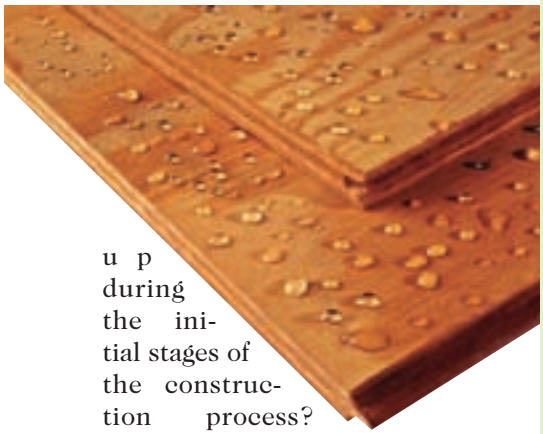
Looking to protect sub-floors before the roof and exterior wall go up during the initial stages of the construction process? Plytanium® DryPly™ plywood, from Georgia-Pacific Wood Products LLC in Atlanta features a water-repellant coating that the company says helps protect against rain- and moisture-related problems during the normal construction cycle.



For added security, the company is offering a 100-percent Builder Satisfaction Guarantee against delamination, edge swell and joint sanding.

➡ **www.dryply.com**

Supress Plywood Stamps Out Mold

Supress sound-engineered anti-mold plywood (SEP-AM) from Supress Products LLC in San Rafael, Calif., provides noise and vibration absorption, effectively eliminating sound pollution in new structures and existing floors, walls and ceilings while suppressing mold growth anywhere on the panels.

Available in 4- by 8-foot panels, the plywood provides mold suppression in accordance with ASTM D 3273, sound absorption per STC 61-70 and impact isolation in accordance with IIC 51-74, as well as vibration absorption. SEP-AM is non-toxic and biodegradable, and the suppressive features are not affected by the exposure to the UV rays in sunlight. It cuts and installs as regular plywood or OSB.

➡ **www.supressproducts.com**

SILLS AND FLASHING

Gorilla Gets Help from New Tape and Flashing

Denver-based Johns Manville's new line of housewrap tape and flashings are formulated specifically to adhere to the company's Gorilla Wrap housewrap.

Seal-It™ tape consists of a single-coated polyester film with an aggressive, tacky acrylic adhesive that creates durable seams and seals. It features a serrated edge for easy tear.

The Seal-It flashing line includes straight and flexible flashing. The self adhering products form a permanent waterproofing air and vapor seal around doors and windows. According to the company, Seal-It flashing is the only flashing to pass hurricane-level windblown rain tests. The flashing can be installed and left exposed for 120 days without UV degradation.

When used in combination with Gorilla Wrap, a non-perforated, nonwoven polymeric housewrap material, Seal-It makes Gorilla Wrap even more stable and strong by creating a weather-resistant air and vapor barrier system with ultra-low air infiltration.

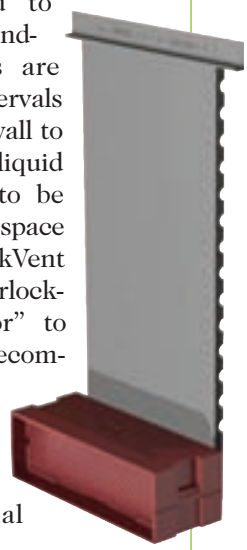
➡ **www.jm.com/builder**

MASONRY

Masonry Innovations Ventilates Brick

Masonry Innovations in Pittsboro, Ind., offers BrickVent, a moisture control system designed to prevent mold, spalling/cracking and efflorescence in masonry.

The BrickVent moisture control system comprises a series of brick-sized vents colored to blend with the surrounding wall. The units are placed at regular intervals at the bottom of the wall to drain water in its liquid form and allow air to be drawn through the space behind the brick. BrickVent also features an interlocking "mortar deflector" to keep the unit from becoming clogged.



It can be used for both new and existing brick homes, as well as commercial buildings.

➡ **www.masonryinnovations.com**

CONSTRUCTION NEWS

Showcase Home Puts Mold Safety on Display

The first-of-its-kind Mold Safe Model Home (MSMH) has been completed. The 3,000-square-foot two-story home in Chesterfield, N.H., on the shores of Spofford Lake, built by Courtlan Construction, incorporates mold-resistant building practices and building materials.

"Until recently, the idea of creating a Mold Safe Model Home was simply not feasible," says Charles Perry, principal of Environmental Assurance Group, a lending and real estate consulting firm spearheading the project. "We are partnering with many manufacturers, designers, architects and the financial community to keep mold infestation out of our most important asset—our home."

The building products were chosen primarily for mold resistance, but energy efficiency and durability were also taken into account. Products recommended for use to resist mold depend on the geographic location and climate of the region. The New England region can have extremes with summers reaching nearly 100 degrees and with winters hitting -20 degrees. Since the MSMH location is lakeside, the structure will be subject to heavy amounts of moisture along with a wide seasonal humidity range. The installation of these products has been closely monitored.

The project is sponsored by Partnership for Advancing Technology in Housing (PATH), CertainTeed, Georgia-Pacific, Typar, American Mold Guard, Benjamin Obdyke Residential Roof and Wall Programs, Bonneville Windows and Doors, Bosch Appliances, Tamaccio Architects, Waste Water Alternatives Inc. and Western Red Cedar Lumber Association.

➡ **www.pathnet.org**

FrameGuard® Wins 2007 Green Building Award

Among the winners of Green Building Awards presented by the National Association of Home Builders (NAHB) at its annual NAHB Green Building Conference was FrameGuard® mold-resistant wood, developed by Arch Wood Protection Inc. in Smyrna, Ga. It was the only building product to be selected.

The 2007 Green Building Award honored one winner in each of 14 categories. FrameGuard wood was chosen as Green Product Marketing Project of the Year, the only category focused on building products. Other categories covered green homes, developments and activities.

In addition, FrameGuard has been added to the GreenSpec® Directory, a listing of environmentally preferable building products compiled by BuildingGreen Inc., publishers of *Environmental Building News*.

➡ **www.frameguardwood.com**

KUDOS

Quality Built® Achieves ISO Certification

San Diego-based Quality Built®, a third-party consulting firm that helps builders reduce construction defects including risks of water damage, announced that it is the first such organization to receive ISO-9001:2000 registration of its quality assurance management system after a year of compliance training by its in-house quality management team.

The International Organization for Standardization (ISO) is an internationally recognized standards-setting body. Beth Michaelis, Quality Built's president, spearheaded the year-long compliance effort and worked closely with each department.

According to Michaelis, Quality Built's next focus is to assist its more than 2,000 builder clients with their own ISO certification programs.

➡ **www.qualitybuilt.com**

American Mold Guard Partners With Habitat for Humanity

American Mold Guard Inc. (AMG), headquartered in San Juan Capistrano, Calif., donated its mold prevention services to Habit for Humanity of Visalia and Tulare County, Calif., to protect nine new homes from mold infestation. The company announced plans to donate its services for eight additional new single-family dwellings constructed in 2007.

American Mold Guard has donated its services to Habitat for

Humanity since 2005.

"As we continue to build more houses, Habitat for Humanity is also looking at the environment and looking for better ways to build sustainable and affordable homes," says Betsy Murphy, executive director of Habitat for Humanity of Tulare County. "Our partnership with AMG has helped us to build a safer home for our families."

www.americanmoldguard.com

ASSOCIATIONS

Organizations Collaborate to Provide IAQ Guidance

Six organizations related to the built environment are collaborating to provide indoor air quality (IAQ) design guidance for the industry.

The collaborative will develop a book and professional development course that will describe an integrated process for achieving improved IAQ in all elements of a building.

Participating organizations are the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), the American Institute of Architects, the Building Owners and Managers Association, the U.S. Environmental Protection Agency (EPA), the Sheet Metal and Air Conditioning Contractors' National Association and the U.S. Green Building Council. The groups recently formalized the collaboration through a memorandum of understanding.

"The book and course will give guidance to designers and builders so that buildings may be constructed, operated and maintained to improve IAQ without constraining the building function or the comfort and productivity of the occupants," says Andrew Persily, chair of the steering committee overseeing the project.

Last year, ASHRAE was awarded a $510,000 three-year cooperative agreement with the EPA to develop the *Advanced Indoor Air Quality (IAQ) Design Guide for Non-Residential Buildings*. The book will assist building professionals in implementing high-performance designs and improving building IAQ performance in a broad range of buildings. The book is expected to be published in April 2009 and followed later in the year by the course.

ASFE Publishes Mold Standard of Care Survey Report

In researching how geoprofessional, environmental and civil engineering firms and individuals prevented mold problems between 1998 and 2003, the Associated Soil and Foundation Engineers (ASFE) found that the industry standard of care was "to not consider mold at all, or to make it clear that mold issues were specifically excluded from consideration." This is according to a new mold standard of care survey report, *The Geotechnical Engineering and Environmental Services Standards of Care with Respect to Mold Potentials, 1998-2003,* which was undertaken to understand the industry standard of care to help protect member firms in mold-related litigation.

The not-for-profit association found that many of its members had reported that they are or have been named defendants in lawsuits filed by individuals and organizations that claim to have been damaged by mold. Typically, the plaintiffs allege that these firms and individuals were negligent because they caused or failed to prevent infiltration of the water and moisture that led to mold growth.

The report asks what geotechnical and environmental engineering firms should have been doing about mold potentials during the late 1990s and early 2000s. ASFE investigated the industry standard of care between January 1, 1998 and December 31, 2003. ASFE's professional practice committee led the effort, employing a two-phase approach. During the first phase the committee issued a questionnaire to members of ASFE and the California Geotechnical Engineers Association and evaluated their responses. During the second phase the committee collected typical proposals for geotechnical engineering and environmental evaluation services issued during the study period, along with copies of the corresponding reports. Committee members reviewed each proposal and report for any mention of mold.

The committee discovered that during the six-year period studied, member firms did not consider mold issues. According to the report's summary, "As such, depending on local practices at a given time, it would appear that geotechnical engineers' and environmental consultants who did not consider mold potentials complied fully with the standard of care prevailing at the time."

www.asfe.org

New Moisture Management Association Hosts Symposium

The National Association of Moisture Management Professionals (NAMMP) held a symposium May 18, 2007, at the Palm Springs Convention Center in Palm Springs, Calif., to introduce its moisture management standards. The event included attendees from the real estate, home inspection and building industries and representatives from

continued on page 13

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Gov. Arnold Schwarzenegger's office.

During the meeting, speakers introduced standards for moisture/mold testing and remediation and information on how to include these standards in a normal home inspection. An industry-driven task force discussed how to head off problems experienced from Hurricane Katrina, Rita and other disasters. The association also presented a demonstration of preventative moisture evaluations by industry leaders. Regulatory agencies discussed ways to prevent health and litigation problems.

Also on the agenda was the introduction of a new moisture/mold education program for the general public to be taught in the nation's community college system. NAMMP has partnered with Partnership for Environmental Technology Education and the American Association of Community Colleges to deliver a new educational program for the general public that will be taught through colleges.

NAMMP was organized to develop and promote national standards for moisture/mold issues and inspection and remediation moisture/mold procedures for the benefit of consumers, insurance companies, mortgage bankers, realtors and others.

The new association was formed at the start of the year, according to Dennis Ragain, treasurer of NAMMP and president and chief executive officer of Healthy World Environmental in Salem, Ore.

"[NAMMP] was the result of two summits that were held last year," says Ragain. "Prevention was the name of the game."

The summits, sponsored by Professional Insurance Agents (PIA) Western Alliance (*See January-February 2006 **Moldmag**, page 14*) brought together members of various disciplines to build awareness within the insurance industry and among realtors, contractors and lenders that preventative steps can be taken to reduce their exposure to losses resulting from moisture damage.

According to information from the organization, NAMMP's goals are to:

- Become the primary source of moisture management education for insurance companies, mortgage bankers and the general public;
- Establish comprehensive training and certification programs for remediators to understand moisture management and proper remediation protocols;
- Establish continuing education and certificate of completion programs for all interested organizations and associations;
- Establish protocols and standards for the moisture management industry;
- Promote high standards of practice and ethics in the association;
- Maintain a database of certified companies and individuals for utilization by strategic partners;
- Promote association programs and member services to potential customers; and
- Develop a Disaster Task Force and a Science Advisory Board.

www.nammp.net

Briefly ...

Arch Chemicals Inc. in Norwalk, Conn., has purchased the remaining 51 percent of its Koppers-Arch joint venture in Australia from Koppers Holdings Inc., its joint venture partner. The business produces and markets a full line of wood preservative products tailored for the wood processing and forestry industries in Australia, New Zealand, South Africa, Asia and the Pacific Islands.

www.archchemicals.com m

HEALTH

Studies Confirm Impact of Dampness and Mold

A paper to be published in the journal *Indoor Air* uses data on dampness prevalence to estimate that 21 percent of current asthma cases in the United States are attributable to dampness and mold exposure. The paper, by David Mudarri of the U.S. Environmental Protection Agency (EPA) and William J. Fisk of the U.S. Department of Energy's Lawrence Berkeley National Laboratory (LBNL), published in June, uses results of an earlier paper plus additional data on dampness to quantify the public health risks and economic consequences in the United States from building dampness and mold.

The earlier article, by Fisk, Quanhong Lei-Gomez and Mark J. Mendell, all from LBNL, concludes that building dampness and mold raise the risk of a variety of respiratory and asthma-related health outcomes by 30 to 50 percent compared to dry buildings.

"Our analysis does not prove that dampness and mold cause these health effects," says Fisk. "However, the consistent and relatively strong associations of dampness with adverse health effects strongly suggest causation by dampness-related [pollutant] exposures."

The LBNL paper provides quantitative estimates of the increased risks of having current asthma, being diagnosed with asthma and having related health effects when people live in homes with visible dampness or mold problems. These estimates are based on a statistical analysis of a large number of previously published studies.

The second paper, by Mudarri and Fisk, used the LBNL paper to draw its conclusions.

"Of the 21.8 million people reported to have asthma in the United States, approximately 4.6 million cases are estimated to be attributable to dampness and mold exposure in the home," says the EPA paper. In addition, this paper estimates that "the national annual cost of asthma that is attributable to dampness and mold exposure in the home is $3.5 billion."

The paper also summarizes the evidence of adverse health effects from dampness and mold in offices and schools and suggests that exposure to dampness and mold in those venues appear to have similar health impacts on those exposed.

Mudarri and Fisk suggest that "a significant community response" is warranted given the size of the population affected and the large economic costs. Suggested preventative and corrective actions include:

- better moisture control during the building's design;
- moisture control practices during construction; and
- improved preventive maintenance of existing buildings to include a comprehensive moisture control program including control of water intrusions from outside, plumbing leaks, condensation and humidity control and other causes of moisture accumulation or mold growth.

The EPA paper's results are based on the analyses of studies of this health issue cited in a 2004 report released by the Institute of Medicine (IOM) of the National Academy of Sciences and more recently published studies. The IOM report, which is considered the current consensus of the U.S. scientific community, concluded that excessive indoor dampness is a public health problem but did not offer any overall quantitative assessment.

➡ **www.lbl.gov**

BUILDING SCIENCE

Study Examines Development of Mold Guidelines

Amid growing public concern about mold contamination of homes and the associated health effects, a new study is recommending policy approaches for controlling mold in homes that could be used on local and nationwide bases. The study by Felicia Wu, Tom Biksey and Meryl H. Karol, was published in the July 15 issue of *Environmental Science and Technology*. It compares policies for regulation of mold with those previously developed to regulate two other contaminants in the indoor environment: radon and lead.

While federal, state and local agencies have policies and regulations concerning radon and lead, few state or local policies have been developed for mold and no federal agency has Congressional authority to regulate or develop indoor mold policy, the study points out.

Based on lessons from radon and lead, the researchers recommend policy approaches for controlling indoor mold that rely on building and housing codes, maintenance and rehabilitation regulations, home marketing incentives and public education on moisture and mold control.

"While it is not yet feasible to develop standards and regulations for acceptable mold levels in the home, guidelines and policies can be developed at the federal, state and local levels to control moisture and mold in homes," the report states.

➡ **http://pubs.acs.org/cgi-bin/sample.cgi/esthag/asap/html/es0620585.html**

Researchers Find Gene-Governing Toxin Production in Mold

Scientists have found a gene that seems to control the ability of Aspergillus fumigatus to make poison, according to a new study. A team of researchers led by Nancy P. Keller, a biologist from the University of Wisconsin-Madison, reported the finding in the journal *Public Library of Science Pathogens*.

Like many fungi, Aspergillus fumigatus makes a variety of poisons, presumably to give the microbe a competitive advantage in the environments it inhabits. In humans with suppressed immune systems, the mold can cause a number of diseases with mortality rates of 60 percent or more.

"The infection can be treated, but not easily," Keller says. "Once an immunocompromised individual gets any fungal disease, it's pretty hard to treat, and the treatments themselves are often toxic. There is a 60- to 90-percent mortality rate with invasive aspergillosis."

Knowing how the fungus makes its chemical arsenal is important and opens an avenue to devising novel treatments that can disarm the pathogen before it does its dirty work.

In fungi, there are typically many genes at work making toxins and other chemical metabolites. The genes tend to be clustered in groups on the organism's genome. In Aspergillus fumigatus, there are as many as 22 such gene groupings. How those groups of genes are triggered and governed, however, has been a mystery. But now Keller's group has found that a key gene, known as LaeA, controls at least half of those toxin-producing gene clusters, suggesting there may be a way to modulate the virulence of the deadly microbe.

The LaeA gene, Keller believes, directs the mold's toxin-producing genes, which, in the right host, can be fatal. Finding a way to regulate the activity of LaeA might provide a novel target for new therapies to treat Aspergillus fumigatus infection.

"The gene is not expressed all the time, which means there must be a signal that says 'turn me on,'" Keller says.

Removing the gene from the equation, she says, may cripple the microbe's ability to infect and sicken people.

"The loss of LaeA results in a great decrease in the repertoire of secondary metabolites, which appears to impact the infection process," making the gene an ideal prospect for new ways to fight infection.

The new work was supported by grants from the National Institutes of Health.

www.wisc.edu

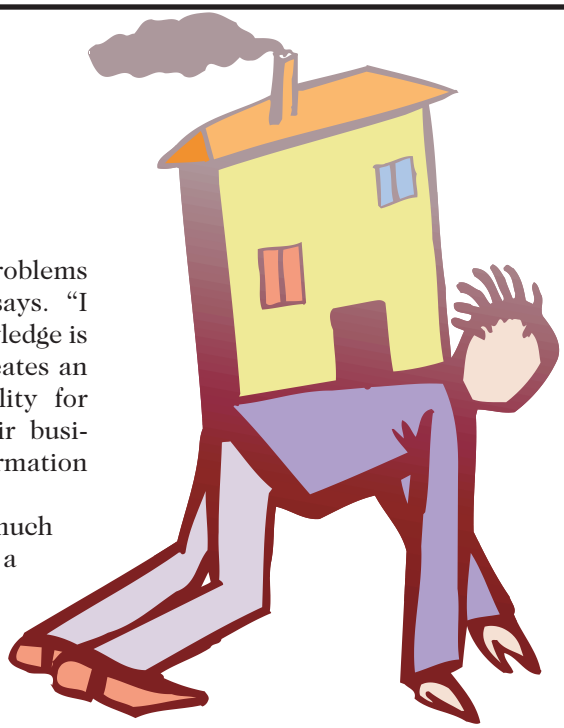
Drawing the Line

Are Home Inspectors Taking On Too Much When They Tackle Mold?

by Megan Headley

Buying a home can be near the top of the list of stressful events that occurs during a person's lifetime. The stress is more than doubled, though, for individuals who discover mold hidden within the walls of their new purchase. It's a discovery that can leave homeowners asking whether it's the home inspector's responsibility to find hidden mold before the purchase is completed.

Some home inspectors are, in fact, adding mold problems to their list of basic inspection requirements. And that's a discovery that has left many mold inspectors and remediators asking if home inspectors are over-diversifying when they attempt to address mold.



Taking On Too Much

A basic home inspection can take the inspector from the roof to the crawlspace and from electrical systems to plumbing, and everything in between.

"There are hundreds of things that we look for in just a standard home inspection," says Frank Lesh, president of the American Society of Home Inspectors (ASHI). "ASHI has tried to be careful not to keep expanding what we do."

With that in mind, can home inspectors really take on the educational demands of mold inspection in addition to their existing demands?

"I have difficulty in keeping up with everything that's going on in the mold industry," says Mike Smith, president of The Mold Hunter Inc. in Denver, N.C. "My problem is that I think [home inspectors are] trying to be too diversified in getting over into the mold business and they're really doing a disservice to the mold inspection side of things."

With mold inspection a growing industry of its own, some mold inspectors are concerned that home inspectors might be learning "just enough" about mold to add to their profit source, but not enough to truly benefit their clients.

"It's a vast amount of experience and training … just in testing alone to know how to deal with it," says Larry Schwartz, CIEC, founder and chief executive officer of Safestart Environmental in Buffalo Grove, Ill. He adds, "There's a lot of equipment to do this job right."

Simply "dabbling" in mold identification can create more problems than solutions, Schwartz says. "I think in general a little knowledge is dangerous and I think it creates an incredible amount of liability for [home inspectors] and their businesses to try and give information [on mold]."

Smith adds, "There's so much misinformation, we spend a whole day stamping out problems before we get to address the real problem."

In addition, home inspectors generally focus on what they can see, whereas many mold problems cannot be seen without some type of invasive investigation.

"Most inspectors only do inspections on readily visible items," says William Schaefer, CCIE, of Chief Home Inspections LLC in Castle Rock, Colo.

> "Home inspectors are already looking at things the mold inspectors are looking at—they're just not looking at them in the same way as mold inspectors."
>
> —Dennis Ragain, National Association of Moisture Management Professionals

In fact, Schaefer says many disagreements arise because homeowners overlook the fact that the home inspection is not an invasive practice. Schaefer recalls a case where a house he inspected turned out to have a mold problem behind the refrigerator. The realtor and homeowner argued that Schaefer should have taken the kickplate off the refrigerator to inspect the hidden area.

"We only inspect things that are readily accessible," Schaefer responded. "There's only one thing we do take off … the electrical panel. That is acceptable."

Coming Into The Industry

But is this branching out really a problem for potential homebuyers? Home inspectors respond that they already take on related services in addition to the basic home inspection services.

"A lot of guys do it [mold inspection] as an ancillary service. Like we do radon testing, or pest control or septic," Lesh says.

Mold inspection is simply one more way to grow a home inspection business.

"I think it's prudent for [home inspectors]; I think it would allow them to make money in the business," Schaefer says.

Schaefer, an IESO-certified CRMI and CIE, says that the home inspector's responsibilities should include any indoor air quality issue, not just mold.

According to Dennis Ragain, treasurer for the National Association of Moisture Management Professionals (NAMMP) and president and chief executive officer of Healthy World Environmental in Salem, Ore., home

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Drawing the Line

continued from page 17

inspectors already look for some of the problems that can lead to mold.

"It's kind of a natural progression, I think," Ragain says. "Home inspectors are already looking at things the mold inspectors are looking at—they're just not looking at them in the same way as mold inspectors."

Alan August, president and owner of Midwest Inspection Services in Wheaton, Ill., agrees.

"If we see it, it just simply goes without saying that it should be pointed out because of obvious issues with it, no matter how small or large it is," August says. He points out mold whether it's a spot in a dirty shower or spores growing across an attic.

"For sure, virtually, [most home inspectors] do address moisture intrusion and I find that some address mold, at the minimum of saying 'There's visual mold,' or 'I think there's mold,'" Schwartz says. "Most of them, for sure, address moisture issues, and that's part of the protocol of ASHI. ASHI recommends that if they see [mold] and it's there, there's an obligation to point it out."

Lesh explains that the search for moisture intrusion problems is part of the inspection process.

"We have to report on any water intrusion that comes in that could relate to or become a serious problem," Lesh says. "We talk to our guys about identifying what the problem is. The first thing we do is identify."

The next step, Lesh says, is to explain the possible consequences of the problem.

Bringing In The Mold Professional

If a potential mold problem is found, the home inspector might recommend that the homeowner contact a mold inspector—who would then decide whether to recommend remediation.

August explains that, in a typical inspection, he recommends the homeowner contact a professional qualified to fix any problem he finds—including mold.

> "My problem is that ... I think [home inspectors are] trying to be too diversified in getting over into the mold business and they're really doing a disservice to the mold inspection side of things."
>
> —Mike Smith, The Mold Hunter Inc.

"Along the same lines, if I see that there's a problem that involves a typical standard that's not been followed—like a loose wire, exposed junction box, an exposed wire—I would recommend to have this further evaluated and inspected by a qualified technician," August says.

"If there is a discovery, you would hire a specialist to do the sampling," Schaefer says.

Home inspectors who pursue mold inspection certification can cut out the middle step by performing a mold inspection, should the homeowner so desire.

August, who is also a certified residential mold inspector, adds that when he sees visual evidence of possible mold contamination, he is sure to address it in his home inspection report.

"If I see visual evidence of possible mold contamination in the form of surface growth I would point this out almost immediately to the homeowner and recommend that they consider a further inspection or further evaluation by a certified mold inspector," August says. "I may offer my services at that point or not—it just matters how the reception is coming along. Some people totally freak out … others say, oh, okay, we'll handle it."

Schwartz says he thinks home inspectors should address mold problems if they suspect there could be an issue—such as when they see that a house has a history of water intrusion—even if mold isn't visible. Also, if a buyer's tolerance is such that mold would prove to be a big problem, an intensive inspection might be advisable. In those cases, Schwartz says, pointing out mold can be a helpful service—but that's where home inspectors should draw the line.

"I don't think they should get into the nuts and bolts of how to remediate or treat it," Schwartz says.

Lesh adds that ASHI advises home inspectors to refer the homeowner to a specialist—but if they are trained to handle mold there is no problem with offering their services.

"That goes beyond the ASHI standards," Lesh says, "but what we emphasize to our guys is that almost all of these problems tie into the home itself … we want to identify the causes."

Avoiding Liability

Still, many home inspectors turn away from checking mold, knowing how often the words "mold" and "lawsuit" are linked together in the news.

"A lot of them [home inspectors] are told it's a liability, so they don't want to learn anything about it,"

Schaefer says. He adds, "They don't want to take on the mold issue, because that takes a little more classroom training."

Schaefer has a basis for comparison since he does both home and mold inspections.

"The liability is higher," Schaefer says of the mold work.

Lesh, however, says inspectors face numerous liability issues in their line of work anyway, and there are ways to avoid specific liability issues.

"If we have a crack in a foundation we report there's a crack," Lesh says. "Now where do we draw the line on whether this is a structural problem or not a structural problem? We have to be careful … so what we do say is 'there's a crack, it's big, we recommend you have a structural engineer evaluate this.' Same thing with mold."

August agrees that for home inspectors sticking to a basic inspection (without testing for mold) liability shouldn't be a concern.

"We're not [liable], per the protocol that's used for a typical home inspections we are not required to point out mold contamination," August says.

Schaefer uses a contract that says his services are for a visual inspection only. Taking payment acknowledges agreeing with contract, Schaefer says. Due to problems in the past, he's changed his policy to not do an inspection until he has the signed contracts. For time-sensitive cases, he'll do the mold inspection but won't release the information until the contract is returned.

Megan Headley is the editor of Moldmag.

Should Mold Inspections Be Standard On Real Estate Transactions?

In New York, the debate may be ending about whether home inspectors should add mold inspections to their list of duties, as a new bill would require a state-certified mold inspector to be involved on every real estate transaction.

New York S1752, sponsored by Senator John Sabini, would require that "before the sale or lease of real property a mold inspection be conducted by a state-certified mold inspector and, within a reasonable time prior to the effective date of the purchase or lease, the seller or lessor shall clearly and accurately disclose to the purchaser or lessee the results of the inspection required under this section."

Under the bill, every contract for the sale or lease of a home will have to contain a statement signed by both parties acknowledging the result of the mold inspection.

"To have a specific requirement to inspect for mold—it's not a bad idea in some areas, but typically if you have a home inspection the home inspector will identify if you've got mold," says Frank Lesh, president of the American Society of Home Inspectors (ASHI).

"As a matter of course, I don't think we need that on everything," says Larry Schwartz, CIEC, founder and chief executive officer of Safestart Environmental in Buffalo Grove, Ill. He adds, "Even though it would be nice if they did."

William Schaefer, CCIE, of Chief Home Inspections LLC in Castle Rock, Colo., doesn't think a mold inspection is necessary on every real estate transaction either.

"Not all houses would have a water intrusion problem," Schaefer says. "I think it's more prudent to say, 'If there are suspect water problems in the house …' That might warrant doing some indoor air quality sampling or mold sampling."

Schaeffer says it all comes down to what the client wants.

Schwartz agrees that mold testing should be performed only when specific conditions warrant it: such as if a home has a history of water intrusion problems or flooding, or if the buyer's risk tolerance is such that testing is a necessity.

However, Alan August, president and owner of Midwest Inspection Services in Wheaton, Ill., says that mold inspections should "without question" be part of the home inspection. He says that it is an area where home inspectors should become involved—so long as they are certified.

"They need to go through the class and certification process and become familiar with the … protocol for inspecting mold, and air quality for that matter, too," August says.

Lesh explains that the search for moisture intrusion problems is part of the home inspection process anyway.

"First of all, what we talk about is moisture intrusion," Lesh says. "Without that, you're not going to get mold." m

Behind Lab Doors

by Megan Headley

SanAir microscopy supervisor Holly Smith counts and identifies the mold spores present in a sample.

One might say that the process of testing for mold is mere art when compared to the exacting science of reading the mold sample. The lab can't offer interpretations of what mold counts mean or guidance on to how to remove mold, yet without the lab, mold inspections might very well come to a standstill. The sample can prove an inspector's hypothesis or confirm that a remediation is complete.

There's a lot riding on the accuracy of that sample, and the people at SanAir Technologies Laboratory in Powhatan, Va., know it.

In the Beginning

With a degree in science and a background in running businesses, Thomas McGlynn had plenty of experience in both before SanAir came along. In 1988 he founded Scientific Testing Laboratories (STL), a lab that conducts alcohol and drug testing for corporations, with a strong market share in the criminal justice system. In 2002 McGlynn started "a small mold/fungi lab" as an off-branch of STL.

In November 2005 Kroll Laboratory Specialists Inc., a substance abuse testing company, purchased STL's criminal justice lab. Kroll wasn't interested in the mold lab, which left SanAir looking for a new home. The company moved in February 2006 to a 6,000-square-foot office in Powhatan County, Va., just outside of Richmond. There, the team of 15 employees, including lab technicians, microbiologists and essential office staff, have room to focus on biological samples, including mold. With excess of $2 million in annual sales, the company now also has room for future growth.

The Cutting Edge

At home in their new facility, SanAir's technicians have gained some cutting-edge technology. In February, the lab added DNA sequencing technology to its traditional scientific methods of identifying molds and bacteria. DNA sequencing utilizes advances in

There's More Moldmag "Only Online"

To read SanAir technical director John Keene's advice on when it is appropriate to test for mold, visit www.moldmag.com and click on Only Online to read When to Sample?

A Testing Lab's Focus on Mold

Having just moved the company to a new office, SanAir chairman Thomas McGlynn says further expansion is still "about two, three years away right now." In the meantime, McGlynn says, the company is focusing "on how can we keep improving."

molecular biology to enable accurate identification of microorganisms at the species level. It works by isolating and matching specific genes to known genetic sequences to determine a match.

"Our research revealed a need for objective technology to meet the growing problems posed by harmful microorganisms," McGlynn says. "We invested in DNA sequencing as a way to meet the growing demand for precise detection of hazards in public places."

Claire Macdonald, laboratory director, adds that the DNA sequencing has been most useful for work on bacteria, but also has applications for fungi.

"We're using it predominantly for Legionella work right now, but we have had instances where a client has sent us viable air cultures to look for a specific species," Macdonald says. "Sometimes they want a preliminary call; they're only interested in sequencing for a species identification if, for example, Aspergillus is present."

New technology like the DNA sequencing aims to increase a laboratory's accuracy. Strict quality control procedures do the same.

Quality Control in the Lab

Like other labs certified by the American Industrial Hygiene Association (AIHA), SanAir follows strict procedures for quality control amongst other laboratories and within its own facility.

In accordance with its AIHA certification, SanAir is required to do samples for AIHA's Environmental Microbiology Proficiency Analytical Testing (EMPAT) performance evaluation program. The association sends out samples in February, June and October to participating laboratories, who then identify the genus and species and return the results to the organization.

"AIHA requires that all labs participate in a round-robin program; it's a slide-exchange program where you work with two or three other labs," Macdonald says. "We'll get samples in and analyze them, give the results to whoever originally started that round and then pass the samples on to the next lab, with the goal of obtaining a comparison of the participants. It helps not only with quality-control within your own lab, but also to see how the industry is doing as a whole."

Macdonald says mold professionals have the ability to perform their own type of quality control, by using different laboratories for some cases.

"We have had cases in the past where clients have said to us 'I want you to send these slides back to me,' especially when the client has thought that the job might be important for them or that it might go into litigation," Macdonald says. "We comply and send the samples back, and the client may send them to another lab for additional analysis and comparison."

SanAir also closely watches quality control within its lab.

"There's rereading of slides," Macdonald says. "A certain percentage gets reread and then compared to make sure that everyone is within the same range."

SanAir technical director John Keene says that analysts are examined every month to make sure they're within a certain range. New analysts are also checked frequently to ensure accuracy. The goal is for analysts' readings to be indistinguishable from one another.

The reason for such scrutinized quality control, of course, is the exacting nature of the work and the unavoidable possibility of human error. However, the key is really minimizing through careful scrutiny. McGlynn acknowledges that errors do happen. When that occurs, he says, the important thing is to tell the client right away.

"We try to do things right," he says. "A lot of folks say 'Well, ignore it because it's meaningless' or anything else, and we don't think that way at all."

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Behind Lab Doors

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SanAir adopted the DNA sequencer genetic analyzer to precisely identify mold and bacteria. According to Thomas McGlynn, chairman, "The result is a process that is highly sophisticated, sensitive and thorough compared with more traditional testing procedures."

Still Growing

Macdonald sees the company's latest acquisition, its DNA sequencing equipment, as a step in the direction of a trend toward increasing accuracy.

"Right now I think that DNA is the big thing in the industry," she says. "I think there's always going to be the need for people to sit down and read the air cassettes because people will need those results. But insofar as getting more detailed results or an analysis tailored specifically to their needs for a particular job, I think that the DNA technology is going to change things in many different ways, especially with identification and speciation. The manufacturers are constantly improving the technology and making it faster—now you don't necessarily have to wait for cultures to grow."

Macdonald says she has also noticed an industry trend toward speedy results.

"When I first started in this industry there was a big push to do more of the viable cultures," she says. "We received a large number of viable air samples, swabs for culture and things of that nature. Recently the trend has turned towards wanting faster turnaround times, so the inspectors go with air cassettes because you can get essentially same-day results, whereas cultures for fungi take a minimum of five days, with an average of seven to ten days for completion."

Like other areas of the mold industry, new technology for laboratories seems to be ever on the horizon.

"I think that the technology is really getting pushed in this industry because it's grown so much and many people see it as the big thing going on right now," Macdonald says.

While technology is always up and coming, in the SanAir lab, accuracy is still primarily the responsibility of the technicians reading the slides.

"A lot of it boils down to having a lot of good people with a lot of knowledge," says McGlynn. m

Getting to Work With Mold Inspectors

When a mold sample first reaches SanAir Technologies Laboratory in Powhatan, Va., the rush begins to make sure samples are organized by the time they need to be returned.

"The first thing that we look for is the turnaround time request," says Claire Macdonald, laboratory director. "In this industry, some people need their results basically yesterday. You get the samples in, and the client needs the results ASAP."

After samples are organized, Macdonald checks to make sure everything lines up with the chain of custody as samples are entered into the system. Once the "rush work" is done, the analysts begin poring over the slides beneath their microscopes, counting the individual spores that they see and noting their characteristics for identification.

In addition to quick turnaround times, reports are an area where customer service comes into play. While the lab isn't able to draw conclusions from the data, mold professionals look for clear, easy to understand reports.

When working on a report, Macdonald first enters in all of the information provided by the client.

"It clearly gives you numbers and it gives you comparisons," adds SanAir technical director Dr. John Keene. "You come up with a report that provides as much information as you can give based on what you're working on and the next thing is for the customer to really understand it."

Understanding the reports is an area where some mold professionals meet confusion and look to the lab for help.

"We'll go over the report with our client, comparing the inside samples to the outside sample(s)," Macdonald says. "We give them the information that they need so that they can give their clients the best information they can."

While the lab technicians are willing to go over the results with their customers, they caution that they can't provide any analysis of the results.

"We don't know where it was taken, we don't know how it was taken, and we don't know what the conditions were in the facility," Keene says. "We try to provide the client with information that is useful for them to make their decisions, but they have to make the decisions."

SanAir also has a policy not to discuss report results with their customer's customer.

"We do not discuss any information with our client's client because of liability concerns," Macdonald says. "People are more at ease when they hear things directly from the lab, but we have to tell them that we can't do that.

Megan Headley is the editor of **Moldmag**.

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WSHB Report Spots Trends in Mold Bodily Injury Litigation

Mold may not be "the next asbestos" when it comes to litigation, but it's not a trend that will soon disappear either, according to a report from Wood, Smith, Henning & Berman (WSHB). The firm released its mold personal injury litigation update to answer the question frequently posed to its attorneys about whether "the number of mold cases is increasing or whether this is a dying breed of litigation."

According to the report authored by Steve Henning and Patrick Schoenburg, both partners in the firm, mold claims began receiving significant attention about five years ago, and many people were predicting millions in claims to be won by plaintiffs of personal injury suits. "A combination of successful defense strategies in litigated cases, the drafting of mold exclusions in insurance policies and the inherent difficulties plaintiffs have in proving their cases have limited the scope of this problem," the report states.

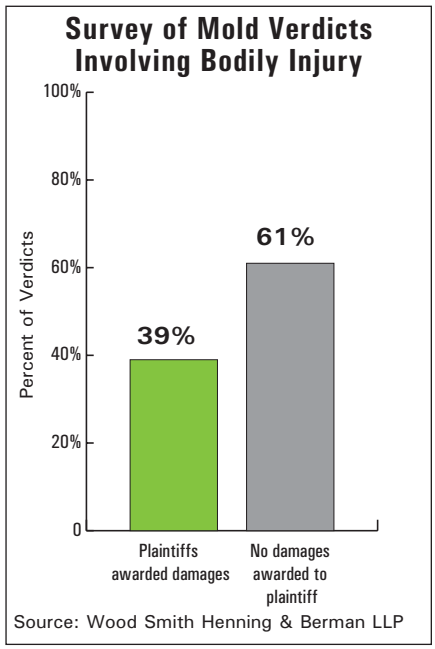
The report finds that the science in regard to "toxic" mold favors defendants. Defendants now have a significant body of literature to call from stating that there is insufficient scientific evidence of the toxic effects of mold to support many personal injury mold claims. These studies have prevented many of the more serious injury claims from ever reaching a jury.

"Only by demonstrating that molds release toxins in sufficient quantities can plaintiffs prove that mold is responsible for brain damage, cancer and similar conditions," the report states.

Due to this, the authors predict that most plaintiffs' attorneys will limit their cases to claims of asthma and allergy, which have greater scientific credibility than toxic mold claims. This will decrease the potential value of the claims, but increase the likelihood of some recovery. The authors also state that it is unlikely that medical science will change enough in the next several years to significantly impact mold claims. The same issues that make each mold claim unique—the hundreds of thousands of species of different molds, the varying circumstances of exposure and the different injuries that are involved—limit the ability of scientists to perform comprehensive studies.

In addition, although there have been attempts to expand the scope of potential defendants in mold cases, the target defendants remain those with interests in real property and construction. Mold claims focus on residential and commercial landlords, homebuilders and their contractors. The authors warn that these industries need to remain vigilant in responding to water damage and mold claims.

The report also warns defendants not to assume that every mold case is the same and that personal injury rewards will not be granted to plaintiffs. This is a mistake, the report says, since mold cases are by definition singular. "Assuming that every mold personal injury case will be limited to claims of allergy and asthma can be costly." As recently as 2005, defendants in the Gorman case paid close to $20 million to a Los Angeles family whose son allegedly suffered brain damage as a result of mold exposure. Experienced counsel still needs to quickly establish the nature of plaintiffs' injuries and use proven techniques to prevent claims of toxic injury from reaching a jury.



In a national survey, the firm had also found that the majority of mold personal injury cases are tried in California. The lawyers expect that the number of mold cases being filed in California has stabilized and may decrease, while more cases will be filed in other jurisdictions that lack a history of these claims. Each of these areas are likely to experience a repeat of what occurred in California—early publicity and success by plaintiffs will cause an increase in filings, which will drop off once defendants begin employing the techniques and strategies that have proven successful in other states.

WSHB has been litigating mold bodily injury cases and reporting the results for almost a decade. The firm says it has taken more of these cases to verdict than any other firm in the country, and its clients have never been ordered to pay personal injury damages.

→ **www.wshblaw.com**

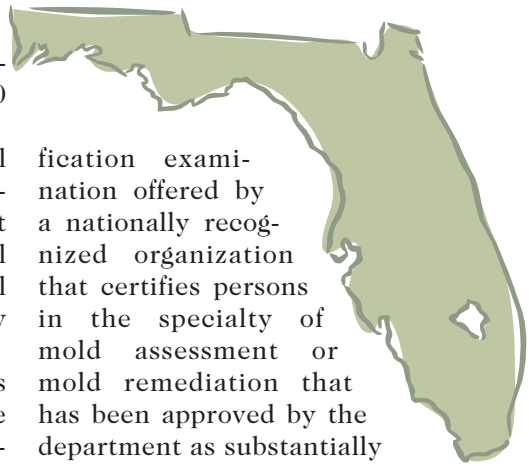
Florida Governor Signs Mold Inspection and Remediation Law

Florida Gov. Charlie Crist has signed into law a bill regulating building inspection professionals, a category which includes mold remediators and assessors. The bill will take full effect July 1, 2010.

Senate Bill 2234, which was signed into law on June 27, defines mold remediation as "the removal, cleaning, sanitizing, demolition, or other treatment, including preventive activities, of mold or mold-contaminated matter of greater than 10 square feet."

Mold remediators in the state will be required to take a licensure examination provided by the Department of Business and Professional Regulation. The department will review and approve courses of study to prepare applicants for the test.

Applicants will be certified "as qualified for a license" if they take the examination and pass "a certification examination offered by a nationally recognized organization that certifies persons in the specialty of mold assessment or mold remediation that has been approved by the department as substantially equivalent to the requirements of this part."



The law prohibits mold assessors or remediators from performing mold remediation on a structure which they've inspected within the last 12 months. Neither remediators nor inspectors can accept "compensation, inducement or reward" for the referral of business from one another.

Richard Smith, president of Atlantic Coast Microbial Services in Palm Coast, Fla., says he is "absolutely for" the new law. He adds, "I'm all for it. In fact, I think it's too lenient."

"It's going to greatly impact the consumers," Smith says. "You have a lot of people out there … the two-hour wonders that can take an online course … and all of a sudden they're certified mold investigators."

One remediator in Vero Beach, Fla., who asked to remain anonymous disagreed with the way in which the bill provides for a separation between mold remediators and inspectors.

"There is no inherent conflict of interest for a person who does a good job and then recommends his own company among others," he said. "It's assuming the worst in all of us, and I completely disagree with that."

ASHRAE Updates Standards

The American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) updated its ventilation standard to include key changes impacting ventilation system designers and their designs. ANSI/ASHRAE Standard 62.1-2007, *Ventilation for Acceptable Indoor Air Quality*, sets minimum ventilation rates and other requirements for commercial and institutional buildings.

The new standard clarifies how designers must analyze mechanical cooling systems to help limit space relative humidity (RH). In the past, the standard required a design analysis at specified load conditions, in an effort to demonstrate that a given design approach in a given climate could successfully limit space RH to 65 percent or less.

"Those load conditions could be confusing and difficult to establish," says Dennis Stanke, committee chair. "The new requirements include a specific easy-to-establish load condition. Each system must be analyzed to check its dehumidification performance at this challenging condition to help designers make system configuration and control choices that reduce the likelihood of high-humidity problems in buildings."

In addition, the International Code Council has approved an ASHRAE proposal to incorporate the prescriptive ventilation rate procedure from ANSI/ASHRAE Standard 62.1-2004 in the International Mechanical Code (IMC). The code establishes minimum regulations adopted and implemented by federal, state and local government agencies for mechanical systems in new buildings. Previous ventilation criteria in the IMC were based on ASHRAE Standard 62-1989.

ASHRAE has also made available the 2007 version of its residential indoor air quality standard. ANSI/ASHRAE Standard 62.2-2007 defines the roles of and minimum requirements for mechanical and natural ventilation systems and the building envelope intended to provide acceptable indoor air quality in low-rise residential buildings. Changes to the standard from the 2004 version include application of exceptions based on climate map zones vs. degree-day based, making it easier to apply the standard; inclusion of a new technology of condensing dryers that do not have an exhaust flow like traditional dryers; and a change in requirements for testing and rating ventilation fans.

www.ashrae.org

MERGERS AND ACQUISITIONS

EMLab Parent Co. Acquires Aerotech P&K

Environmental Microbiology Laboratory Inc. (EMLab™) and Aerotech P&K have joined forces to form EMLab P&K.

In January, H.I.G. Capital—owner of TestAmerica, the parent company of EMLab—acquired Severn Trent Laboratories Inc. The Severn Trent laboratory network includes Aerotech P&K Microbiology Services. H.I.G. Capital is a private equity company based in Miami.

The newly formed EMLab P&K will continue to perform mold, asbestos and bacteriology analysis.

www.emlabpk.com

COMPANY NEWS

Mycometer Subsidiary Founded in Florida

Mycometer ApS of Copenhagen, Denmark, has established a U.S.-based subsidiary, Mycometer Inc. in Tampa, Fla. This move was made to address the needs of the expanding client base with a dedicated sales, marketing and service organization.

Until now, Mycometer has been represented by a sole distributorship in the United States through Dr. David Krause of Indoor Air Solutions Inc. Dr. Krause will continue as a member of the board of directors. Lisa Rogers, former commercial vice president of Scepter Industries, has been named president of the subsidiary.

www.mycometer.com

Rotobrush Unveils New Hands-On Training Laboratory

Rotobrush® International LLC in Grapevine, Texas, opened a new training laboratory in the first quarter of 2007. The new lab offers hands-on stations that replicate different scenarios found in the field. The facility features a unique job site feel, specially designed to mimic real rooms.

A new 3,600-square-foot training facility provides Rotobrush with room to teach air duct cleaning using hands-on stations.

Students each use the equipment in different scenarios and interact with instructors and other air duct cleaners from around the U.S. and other countries.

www.rotobrush.com

SAFETY

NIOSH STUDIES FACES TO DESIGN BETTER RESPIRATORS

To accommodate a changing population of respirator users, the National Institute for Occupational Safety and Health (NIOSH) is updating its database of facial configurations to design respirators to fit a wide variety of facial types.

"The American workforce is changing—it's becoming more diverse. It's becoming a workforce of not just white males as it was typically decades ago but a workforce of older workers, younger workers, women and different ethnic and racial groups," says Fred Blosser, public affairs officer for NIOSH. "What that means for respirator fit … the configurations of the average face are changing. The current face masks designs are essentially based on determining the facial configuration of the average worker based on studies that were done decades ago, and NIOSH is looking at what needs to be done to update that."

Under current regulations from the Occupational Safety and Health Administration (OSHA), all respirators in the workplace have to be NIOSH-certified. OSHA regulations require employers to provide respirators to their employees that are fit-tested.

"What our research will do, we hope, is to give manufacturers a database to gear their face mask design toward a more diverse workforce so it will be easier then for employers to find a face mask that will fit the individual worker," Blosser says.

The database that is currently used by respirator manufacturers stems from research done by the Air Force.

www.cdc.gov/niosh/npptl/topics/respirators

ASSOCIATIONS

IAQA Members Protest AmIAQ Study Guide

The American Indoor Air Quality Council (AmIAQ) announced plans to release a study guide for its certification testing on its website. The guide will consist of certification examination reference sources—including the exact page numbers to study. In May the Indoor Air Quality Association (IAQA) sent to its members a call to action protesting the release, a call which has resulted in nearly 300 signatures on at least one petition of the act.

According to IAQA's call to action, AmIAQ decided to release the page numbers in order to produce a sufficient number of students to allow the AmIAQ to remain viable.

"IAQA mistakenly assumed that the information contained in our study guides revealed our exam questions and answers; in reality, the study guides reference examination topics only—the publication of which is common in the certification industry," says Adam Andrews, assistant director of AmIAQ. "The IAQ Council's policy on study guides is compliant with consensus standards on educational testing published by the American Educational Research Association, the American Psychological Association and the National Council on Measurement in Education."

Andrews adds, "Exam questions and answers are nowhere revealed in any IAQ Council study guide. The Council *never* releases exam questions or answers to course providers or certification candidates."

However, according to IAQA's call to action, "disclosing the page numbers via the Internet is practically giving away the questions and answers to AmIAQ examinations."

IAQ's statement says that AmIAQ's action is in opposition to agreements made prior to the unification. The heads of AmIAQ, IAQA and the Indoor Environmental Standards Organization (IESO) agreed that IAQA's education committee would have exclusive access to the examination source references for certifications.

There is also concern from IAQA that the action "will result in lower quality training entities being associated with AmIAQ certification programs, thereby reducing the credibility of the AmIAQ and the value of its certifications."

In May, Wei Tang, Ph.D., lab director of QLab in Cherry Hill, N.J., and an IAQA member, circulated a petition to members of AmIAQ, IAQA and IESO in response to the decision to post the page numbers.

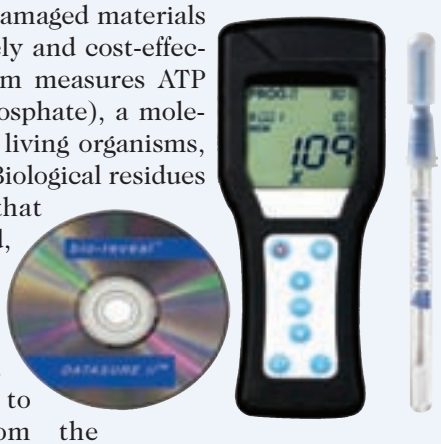
According to Tang's petition, "This will make it very easy for new certificate candidates to pass the certification exams without having to fully study and learn the material. This action will greatly diminish the value of AmIAQ certifications, and it has clearly broken the spirit of the unification agreement."

The page numbers have not yet been posted. AmIAQ and IAQA are still in discussions on the subject. m

TESTING DEVICES

Testing Device Reveals Signs of Mold

The bio-reveal real-time microbial detection system from BEM Corp. in St. Cloud, Minn., allows mold industry professionals to test for mold and bacteria contamination of water damaged materials quickly, accurately and cost-effectively. The system measures ATP (adenosine triphosphate), a molecule found in all living organisms, including mold. Biological residues contain ATP that can be detected, quantified and tracked using the bio-reveal real-time system.



According to information from the company, the system is cost-effective, easy-to-use and accurate. Results can be obtained within 15 seconds.

➡ **www.bio-reveal.com**

MycoMeter Mold Test Offers Immediate Results

The MycoMeter® test from MycoMeter ApS in Copenhagen, Denmark, allows mold inspectors and remediators to evaluate the effectiveness of a remediation onsite. Users may analyze up to 20 samples onsite in an hour. The meter can distinguish active mold growth from dormant spores and surfaces supporting fungal growth from surfaces with deposited fungal spores by the level of enzyme activity in each sample.

The test is based on fluorescence technology. According to information from the company, fluorescence occurs when a molecule emits visible light after absorbing UV light, a phenomenon that is used to detect and quantify a specific enzyme present in both mycelium and spores of mold.

Operator training is included with each purchase to certify operators in the analysis of samples.

➡ **www.mycometer.com**

CLEANERS AND DISINFECTANTS

Sostram Hunts Odors

The Sostram Corp. in Roswell, Ga., has introduced Odor Hunter™ Instant Odor Eliminator.

According to the company, Odor Hunter is not a masking agent or an enzymatic product. It features a mode of action that enables it to bond instantly with odor molecules to provide fast, broad-spectrum odor control. The product is effective against odors origi-

CONTENTS RESTORATION TOOLS

OMEGASONICS CLEANS UP WITH PRO 3600XW®

Omegasonics in Simi Valley, Calif., helps contractors restore building contents with Restoration Pro 3600XW®. The XW system combines a 36-inch tank length with a working width of 24 inches. The unit is portable for on-site restoration work and includes all-new stainless steel plumbing and a stainless steel countertop work area.

An external power adjust provides precise ultrasonic control while the digital timer allows for exact cleaning times to protect delicate items from extended exposure to ultrasound. A new low liquid level sensor protects heat elements from accidental damage.

Optional features include a dual-stage filtration system to filter out mold spores and gray water contamination as fine as one micron. Indirect cleaning tanks allow restoration professionals to clean smoke- and/or water-damaged items at the same time even with multiple chemistries.

➡ **www.omegasonics.com**

nating from many sources including mold and mildew and water and smoke damage.

The sprayable product is available as a concentrate or ready-to-use formulation in a variety of package sizes.

➡ **www.sostram.com**

TOOLS

Delmhorst Navigates Moldy Waters

Delmhorst Instrument Co. in Towaco, N.J., has released Navigator Pro, a moisture-mapping system specifically designed for the restoration professional. The moisture meter integrates pin and pin-less moisture measurements and a thermo-hygrometer into one fully featured meter.

Navigator Pro data-logging features include job grouping according to room and the ability to store readings by location within each room. Other features include full onscreen reading recall with date and time stamp, job grouping, infrared linkage to a PC or laptop and easy-to-navigate menu options. It incorporates a thermo-hygrometer that calculates grains per pound and dew point and measures temperature and relative humidity.

➡ **www.delmhorst.com**

AIR HANDLING UNITS

DRY AIR WITH HUMIDEX

Humidex Atlantic, a Long Island, N.Y.-based company, is offering mold restoration professionals a product that can provide a long-term solution for homes with mold problems. Humidex expels moist, contaminated air and replaces it naturally with fresh, warm, dry air from upper levels. The unit will raise the temperature, lower the relative humidity, improve circulation and dry out the structure, a process that reduces the conditions that foster mold growth. Humidex uses only 38 watts of power and does not have filters or buckets that require daily maintenance. It can reduce mold even in areas where it is not evident and provides a long-term solution for areas prone to mold growth.

Humidex is available through certified Humidex dealers and installers nationwide.

➡ **www.humidexatlantic.com**

DEHUMIDIFIERS AND DRYERS

DX-30-Ton Customized AC Provides Deep Dehumidification

The new DX-30-Ton product from Munters Moisture Control Services (MCS) in Glendale Heights, Ill., is a customized air conditioning unit that delivers temporary humidity control and cooling using refrigerant technology. The unit integrates a packaged refrigeration system and packaged electric heat to remove large amounts of water from the air at high temperatures and humidity levels efficiently.

The air conditioning unit can be installed quickly via its skid-mounted design and single-point power connection. It also is capable of running in stacked configuration, reducing the required site footprint. This unit is highly portable and can be delivered and set up in as little as 24 hours. Other features of the DX-30-Ton include: independent control of cooling and heating for deep dehumidification; flow rates of 6,000 nominal SCFM; and configurable air flow with outside air and return air connections.

➡ **www.munters.com**

More Questions Than Answers?

Colin Murphy's and Lonnie Haughton's Pop Quiz column (*See March/April 2007* ***Moldmag****, page 8*) leaves more questions open than answered:

This photo of gypsum sheathing was featured in the March/April 2007 Consultants Corner.

Photo exhibit of gypsum sheathing with surface mold from condensation assumes the wetting behind the paper passed through the sheathing. No information is given about the insulation used in the cavity wall behind. Is there a vapor barrier installed on the warm side? Is it well done? I feel the poor quality weather barrier, riddled with nails, admits cold air onto a warmed sheathing due to bulk air movement from the interior. Poor wall practices allow loss of control of desirable performance.

I continue to believe the roll sheet weather barrier concepts are poorly thought out, without any real understanding how far permeability is required, or even at all (without first knowing what other forces affect the wall). Bulk air movement or air leakage contributes far more to

This construction photo was featured in the March/April 2007 Wet Science.

raised moisture levels than water vapor movement. If we can't control air movement along with the dew point, all the talk about weather barriers and drainage weather barriers is just babble. The myths about the membrane drainage walls make for feel good rituals in wall design.

Sheet goods provide dead air in a sandwiched plane for trapped water from both wicking and condensation, and allow absorption to continue from there.

In Wet Science (*see March/April 2007* ***Moldmag****, page 27*) the photo showing the top of a window and an overhang meeting the wire lathe has two common deadly mistakes. What are they?

Karl Kardel
Principal
Karl Kardel Consultancy
Piedmont, Calif.

Blue Stain Responses Grow

Paul Cochrane's note to "Reader Rant" (*see March-April 2007* ***Moldmag****, page 6*) has some misleading information in it. He indicates in his response to a previous article (*see Mold Blame Game in the January-February 2007* ***Moldmag****, page 18*) that he accepts that spraying with bleach to kill mold is an acceptable practice, when it is not. The Environmental Protection Agency recommends using mild detergent and water solution as a far safer process for human use. He then goes on to talk about blue stain on wood as being a sap stain "caused by the growth of certain dark-colored fungi" ... and "fungi is mold." He needs to understand Fungi is a kingdom of living organisms which largely obtain their nutrition by the process of decomposition. Mold is but one type of fungi and many molds appear as blue stains on wood.

Richard E. Richards
Industrial Hygienist
Gunnison, Colo.

Might My Masonite Support Mold?

I have a question involving 34-year-old Masonite siding. It has not been painted, washed or serviced in any way, and there are some open blemishes on the factory finish. I feel there is a chance this product harbors mold behind it; Masonite will not comment on this possibility.

I cannot remove any section of the product for examination. I live in a community that cares for the outside problems, but I want to know what is going on behind this old, damaged product. The builder told [the homeowner's association] in 1973 that the product has a lifetime finish.

Could someone comment as to whether mold on this product is likely to grow mold? I need an experienced opinion.

Ellen M. Gaffney
Condominium owner
Rochester, N.Y.

Readers: Any tips or suggestions for Ms. Gaffney can be forwarded to mheadley@moldmag.com.

MARKETPLACE

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15	Carlisle Coating & Waterproofing	800/527-7092	972/4420076	www.carlisle-ccw.com
27	EZ Breathe	866/822-7328	330/468-3231	www.ezbreathe.com
34	Fluke Corp.	800/760-4523	425/446-5116	www.fluke.com
5	Foster Specialty Construction Brands Inc.	800/231-9541	800/942-6856	www.fosterproducts.com
12,13	Georgia-Pacific Corp.	800/284-5347	404/230-5624	www.gp.com
23	Insulation Solutions	866/698-6562	309/698-0065	www.insulationsolutions.com
C2	Sostram Corp.	770/587-9807	770/587-4437	www.mold-ram.com

Fifteen Minutes of Fame

We've noticed mold remediation and water damage restoration companies appearing in their local newspapers, and we're taking a moment to extend their recognition. While offering their valuable services to their community, these companies are promoting awareness of how consumers can prevent and treat water damage.

Restoration Pro Says You Too Can Prevent Water Damage

Restoration professional Michael Jones, owner of Willamette Valley Restoration in Coburg, Ore., told The *Register-Guard* that many of the messes he fixes are preventable.

Jones warned that some of the preventable problems he sees start out as maintenance issues but become real trouble. The classic example he mentioned was the exploding washing machine hose—often when the homeowner is out of town. He recommended installing a shutoff switch for the washing machine, to allow homeowners to quickly turn off water when not in use. He also advised homeowners to replace rubber hoses every three to five years, and check them regularly.

Jones also recommended watching for broken refrigerator supply lines and leaky water heaters, dishwashers and toilets. The article suggested installing water alarms in these problem areas.

San Diego Paper Profiles Restoration Contractors

The *Daily Transcript* sat down in April with J&M Keystone to learn how the restoration company and general contractor helps San Diego County residents.

Ron Martin, president and owner, told the paper that J&M started out as a small carpet service company, but soon saw the need to expand into restoration work. With 15 equipment trucks dispatched with 100 employees who live all over the county, the company guarantees a one-hour response time. The contractors noted that part of their service is the documentation of the damage. The contractors record the damage with photographs, videotape and thermal imaging.

"When the insurance company assigns an adjuster, by the time they look at the area, it looks a lot better," Garson told the paper.

Louisiana TV Station Informs Viewers About Mold

Louisiana TV station KATC didn't highlight the work of a particular mold remediation contractor, but perhaps they should have. A reporter tested the KATC newsroom and a Lafayette, La., home for mold as part of a "Safe Families Investigation."

The reporter used a swab to test air conditioning vents in both buildings. He also sampled dust in the carpet and took one air sample of the newsroom and of the kitchen in the home. The samples were taken to a microbiologist who pointed out penicillium, cladisporium and "a black mold."

According to the reporter, the house that had been professionally cleaned just the week before had more mold than the newsroom, but neither facility had "dangerous levels of mold."

"It wasn't visible during our tests, and crews couldn't smell it," the reporter said. "If you have a mold problem at your home or office, you'll notice it."

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Stopping mold before it starts is the way to go. MOLD-RAM makes it easy. This new EPA-registered product contains chlorothalonil, one of the world's most effective anti-fungal compounds. One application to new construction or existing structures provides long-term surface mold and mildew prevention. And for added convenience, MOLD-RAM can be tank-mixed with borate products used for termite control and wood decay. Don't get stopped by surface mold and mildew. Go with MOLD-RAM today.

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