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The Magazine for Moisture Prevention and Remediation
May-July 2006
Volume 3 | Issue 3

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Architects On Alert

How Better Blueprints Can Address Water Intrusion

ALSO INSIDE:

8 WAYS TO GROW MOLD IN YOUR HOTEL

THE PROS AND CONS OF DRY ICE BLASTING

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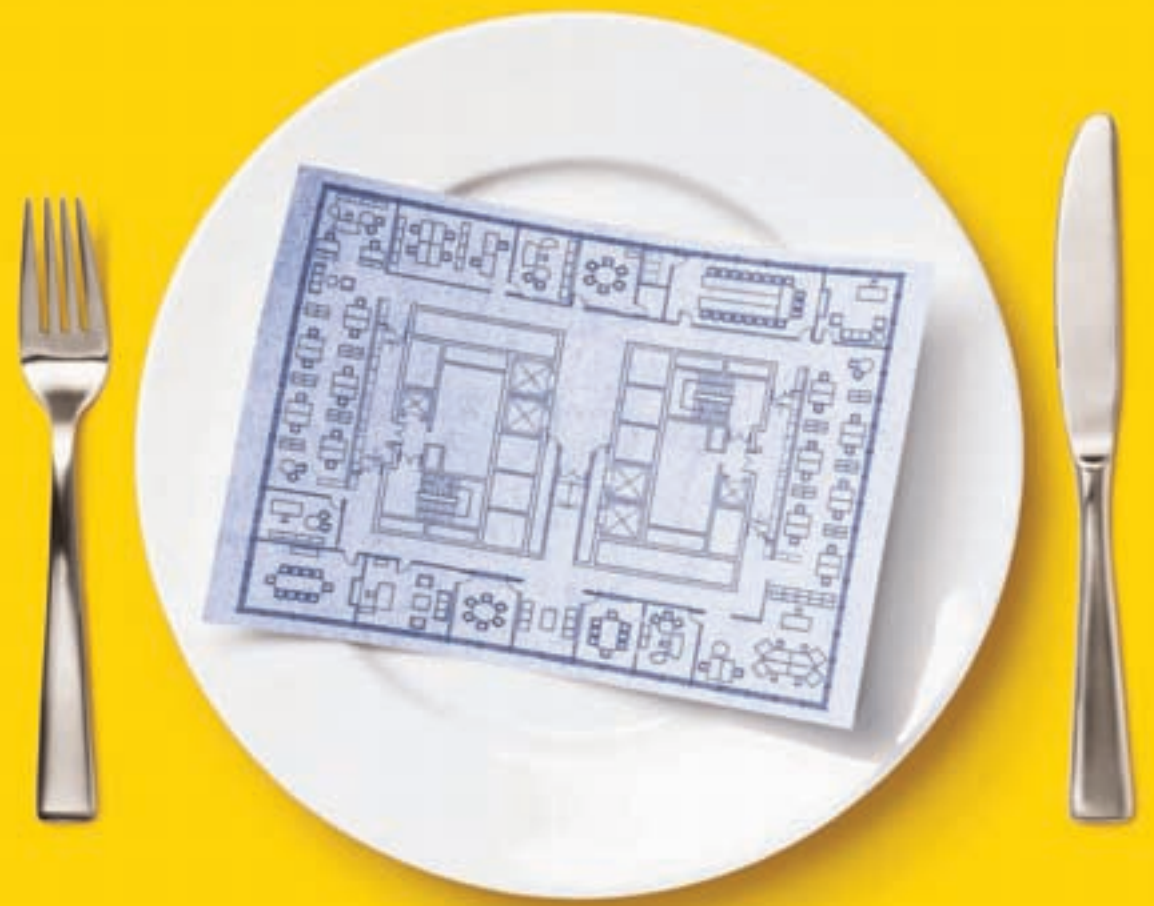
1. Most walls inside buildings are made of paper-faced drywall.

2. Mold eats paper.



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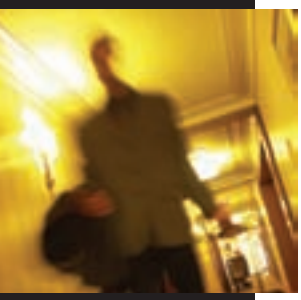
Contents

On the cover

Experts say that architects share responsibility with builders and contractors for keeping moisture from damaging a building. Proactive designs are the first step to preventing mold growth.

features



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After Check-In, Check Out the Mold

Unlike most of my friends and coworkers, the travel that is required with this job has not yet gotten old for me. I enjoy hitting the road for work. Half of the appeal, of course, is getting the opportunity to explore some fun cities on the job. But when I'm too tired to make it out of the hotel at the end of the day, the unique hotels sometimes offer their own appeal. Whether it's as exciting as a particularly beautiful pool or a jazz band playing beneath dim lounge lights—or as silly as the rubber ducky sitting on the edge of the tub—I'm always on the lookout for that little something that reminds me of why it's fun to be on the road.

However, my enthusiasm was brought in check somewhat by a forum on mold at AIHce 2005 that has stuck with me. A member of the audience asked the forum members whether they felt that hotels have improved on mold prevention. Harriet Burge, director of aerobiology at EMLab, offered her opinion that nothing has changed in how hotels handle mold—and the shake of her head suggested that was not positive. Another forum member, building scientist Terry Brennan of Camroden Associates, joked that he always takes apart the air handlers to inspect when he checks in. The audience laughed and nodded around me. And although Brennan encouragingly stated that he sees some movement in the industry toward better designs, my suspicions were set. Later in that same conference, I had the pleasure of hearing Roger Morse, president and technical director of Morse Zehnter Associates, give a presentation on why hotels are particularly susceptible to mold growth (*See Morse's article on the topic on page 28*), even less encouraging to a frequent traveler.

I frequently think about that conference and how it tempered my reaction to check in time at the hotel du jour. Just recently I found myself more captivated by the black spots upon the wallpaper in my hotel bathroom than with the view outside the balcony.

However, some hotels seem to be addressing mold. A company called Pure Solutions is marketing a process by which it overhauls a hotel room to remove all traces of mold and other allergens. The process involves cleaning and disinfecting the air handling unit, installing an electronic air purifier, replacing the beddings with mold-proof and waterproof bed linens and even using an ozone shock treatment to kill any mold or bacteria in the room. Similarly, the Chicago Hilton O'Hare last year completed renovations to several rooms to make them "allergen-free," according to the hotel's web site.

Still—is it too much to expect that every hotel room be free of mold? Or are the fun perks, like a great view and a rubber ducky, supposed to hide the black spots on the shower ceiling?

Megan Headley
Editor, **Moldmag**

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The Architect or the Contractor—

Who Is Responsible for Successful Waterproofing?

By **Colin Murphy** and **Lonnie Haughton**. **Murphy** is a founder and managing partner of Exterior Research & Design LLC in Seattle. **Haughton** is a construction consultant for Richard Avelar & Associates in Oakland, Calif.

Who is responsible for ensuring a successful waterproofing design—the architect or the contractor? Obviously, this is a broad question that ignores the wide range of design, specification and/or management responsibilities carried out by architects throughout North America. Yet, this simplistic query highlights a theme that recurs constantly during the construction defects litigation resulting from ineffective weatherproofing:

- The contractor blames the architect's minimal detailing.
- The architect argues that the contractor is the construction expert responsible for implementing the project's 'design intent.'
- The contractor responds that he/she bid the project per the architect's minimal details and specifications and that the project's funding limits prevented any upgrades to this design.
- The architect then asserts that no matter how tight the funding he/she certainly would have approved a written change order for improved flashing or waterproofing if the expert contractor had only emphasized its importance.

At this point, both parties may storm out of the meeting.

In many cases, both the architect and contractor must share a varying degree of responsibility for failed waterproofing. The contractor should have sufficient understanding of flashing and waterproofing methodology to be able to evaluate the adequacy of the architect's details and specifications. In very general terms, his failure to provide written notice of an inadequate design and his continuation of the work constitutes an acceptance of responsibility for ensuring satisfactory performance of the building envelope. Yet Section 106.3 of the International Building Code (IBC) burdens the architect with the primary level of design responsibility: "The construction documents shall provide details of the exterior wall envelope as required, including flashings, intersections of dissimilar materials, corners, end details, control joints, intersections and roof, eaves or parapets, means of drainage, water-resistive membrane and details around opening."

> "In many cases, both the architect and contractor must share a varying degree of responsibility for failed waterproofing."

The IBC tasks the designer to produce a comprehensive set of project-specific details for successful weatherproofing of the building envelope. For most projects, this mandate cannot be fulfilled simply by copying a generic set of details and/or providing guide specifications published by a manufacturer or trade association. Even the comprehensive standards and details published by the nation's most respected industry organizations cannot be blindly substituted for the project-specific design review prescribed by the IBC.

A Few Practice Examples

Consider, for example, the comprehensive *Stucco Resource Guide* published in Seattle by the Northwest Wall and Ceiling Bureau. It is not uncommon for Pacific Northwest architects to simply specify that the stucco application must comply with NWCB standards and details; however, this action begs the question of who is responsible for project-specific detailing of unusual building transitions not addressed within the *Stucco Resource Guide*. The architect? The contractor? Should we just leave such decisions to the whims of the stucco applicators up on the scaffolding?

In 2005, for multi-unit residential buildings only, the Washington State legislature answered these questions of overall responsibility for the weatherproofing design. Consistent with the intent of Section 106.3 of the IBC, House Bill 1848 requires that the construction drawings submitted to the local building official must include a complete packet of waterproofing details "that have been stamped by a licensed engineer or architect." Further, the project architect or engineer must submit a written statement confirming that in his/her "professional judgment" these submitted details and specifications are appropriate to fully "waterproof, weatherproof and otherwise protect the building or its components from water or moisture intrusion …"

In addition, HB 1848 requires that, during construction of multi-unit residential buildings, there must be "independent periodic review of the building enclosure" by a "qualified building enclosure inspector" who "may not be an employee, officer or director, nor have any pecuniary interest in the declarant, developer, association or any party providing services or materials for the project, or any of their respective affiliates, except that the qualified inspector

may be the architect or engineer who approved the building enclose design documents or the architect or engineer of record."

In essence, the Washington State legislature has decreed that the building contractor who consistently complies with the project's waterproofing and flashing details (as stamped by a licensed architect or engineer) and any supplemental course-of-construction guidance provided by the required independent inspector will not be the prime target if leakage and mold problems later occur.

In our experience, there are many architects and engineers who are well qualified to evaluate, detail and specify even the most complex flashing, cladding and roof covering systems. Similarly, there are many contractors whose roofing and waterproofing skills and dedication to quality construction are exemplary. Nonetheless, most architects, engineers and contractors are not roofing or waterproofing experts. For building professionals in those many states and jurisdictions where there is not a strong delineation of who is responsible for the building envelope design, we offer the following guidance that can greatly reduce their risks of becoming fully embroiled in leakage and mold litigation:

Defining Weatherproofing Protection

The first step for all parties is to identify who is the 'responsible professional in charge' of the building's weatherproofing design. For most projects, the sensible course of action for the owner and architect is to hire an independent waterproofing design professional to review (and often supplement) the architect's original details *and* to carry out representative inspections of the construction. If the building envelope later fails, it is the waterproofing design professional who has the huge target on his/her back—not the architect.

To ensure a successful waterproofing design, it is important to identify the professional in charge of that aspect—the architect, the builder or waterproofing consultant.

For contractors, there are two critical steps they can take to protect themselves. First, fully implement the building envelope design that has been specified and detailed by the architect. If such weatherproofing specifications and details are found to be incomplete, always request written guidance from the designer. Time after time, we see projects where a well-intentioned contractor, worried about keeping the project on schedule, decided to simply "fix" an insufficient waterproofing design. By this simple action, he not only is taking responsibility for the long-term effectiveness of that "fix," but is also informing future attorneys that he is a skilled waterproofing professional willing to accept a great deal of responsibility for the effectiveness of the entire waterproofing design.

Secondly, keep a written daily log. In particular, summarize all discussions and verbal directives from the owner, architect and other design professionals. Often, it is simply the contractor's poor recordkeeping that allows the opposing parties to make him the scapegoat for bad decisions made by others. This daily log need not be lengthy; it simply needs to document the day-to-day actions by others that affect the project's weatherproofing design and its course of construction. In addition, the contractor must save these records, even if they are nothing more than ragged slips of paper stored in shoeboxes at the back of a closet. Far too often, project records are thrown away prior to the end of the period when a construction defects claim can be initiated. This hastiness can prove to be a very costly error.

In summary, when a building leaks, typically everyone involved with its design and construction gets sued. Eventually, the biggest losers are those who keep the worst records and those who by their actions or inaction became responsible for the performance of the as-built weatherproofing design. The best interests of all parties are served by hiring a waterproofing professional to accept the mantle of responsibility imposed by the IBC. m

Acing the Test

How the Right Field Test Can Prevent Water Penetration

Larry Livermore is the technical standards manager of the American Architectural Manufacturers Association.

Fenestration products and the walls into which they are installed are designed to resist water penetration to certain levels, depending on their performance class. In the real world, however, there can be problems with the fenestration product itself, the installation techniques used, the perimeter seal or the various components used in the wall system—any or all of which can lead to water penetration.

When properly applied, field testing can be a useful way to verify the actual installed performance of fenestration products.

Test methods for different circumstances are spelled out in ASTM and AAMA standards and specifications, including AAMA 502-02 *Voluntary Specification for Field Testing of Windows and Sliding Glass Doors*.

Testing Before Installation

The recognized field test method for verifying air infiltration and water penetration resistance of newly installed operable windows and doors is AAMA 502-02. AAMA 502-02 describes two test methods, both of which require the use of a sealed test chamber, which is typically applied to the interior side of the door or window.

The chamber's interior is evacuated to establish a specified pressure differential across the product that simulates wind pressure. Water is then applied against the outside surface of the window from a calibrated spray rack. In Method A, only the product itself is tested, while method B tests the complete assembly, including the installation, by using a larger test chamber attached to the rough opening members (*for more on this test, see January-February 2006* **Moldmag**, *page 8*).

Performing the tests as soon as practical on the job site can be beneficial in determining if manufacturing, installation and/or perimeter sealing problems are present before the project is completed. Depending on the test method chosen, access to the windows for proper testing must be provided before the openings are finished with drywall, etc.

When applying AAMA 502-02, or relying on the results of such testing, manufacturers, contractors and inspectors should especially take note of the following:

- AAMA 502-02 is intended for use with newly-installed operable windows and doors. AAMA 501.2-03, which uses a simple hose nozzle test, does not yield valid results in these applications.
- AAMA 502-02 requires that all testing must be performed by an AAMA-accredited testing laboratory. This ensures that the laboratory has the staff, training, experience and calibrated instruments and equipment to properly perform field testing. To ensure the lab is accredited, ask to see their certificate of accreditation.

Older Installations Need Testing Too

Note that AAMA 502-02 originally was not intended for testing old, existing window installations. However, a recognized forensic test method has become increasingly desirable for use in identifying the source of water penetration that has already occurred in an occupied building. Work is proceeding under AAMA's newly appointed forensic field testing task group to revise AAMA 502-02. The objective is to clarify the standard's use in verifying the water penetration resistance of newly installed products, and to better define the process for a proper forensic investigation of a building to determine the cause of water penetration.

"The test pressures used for field testing often do not correlate with in-service site environmental conditions," noted task group chairperson Scott Warner of Architectural Testing Inc. in York, Pa. "It is erroneous to assume that the door or window is the cause of the leakage because it does not satisfy a product certification which is based on a laboratory test environment."

The revised test method is expected to reference ASTM E 2128 *Standard Guide for Evaluating Water Leakage of Building Walls*. This latter test method is of particular importance in cases where water penetration is evident and the source is unknown.

The test method will be similar to that already prescribed for newly installed products, but will include specific differences in preparation and data interpretation. It will also take into consideration the actual weather conditions of the project site prior to testing, as they may have contributed to the instance of water penetration. The intent of the new test method will be to consider the wall to be a system, encompassing its exterior and interior finishes, fenestration, structural components and components for maintaining the building interior environment. m

Resources

AAMA documents may be obtained online at www.aamanet.org.

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Verdict for the Defendant

Beating the Mold Claim at Trial

Article written by **J. Nick Badgerow** and **Kelly A. Campbell**. Both practice law at Spencer Fane Britt & Browne LLP in Kansas City.

Despite the publicity surrounding an increase in the number of claims asserting damage and injury from mold infestation, those claims can be defeated at trial. Our previous columns have documented the publicity coming from a few high-profile cases, and the manner in which that publicity has fueled an increase in the number of claims filed. However, that publicity does not make mold claims any easier for the plaintiff, once they reach trial—if they do reach trial. Indeed, much of the publicity about mold cases relates to cases filed, or settlements paid, rather than to actual jury verdicts awarded.

The message in this column is that mold trials can be won by the defendant, if proper preparation and a proper presentation are made.

Preparation

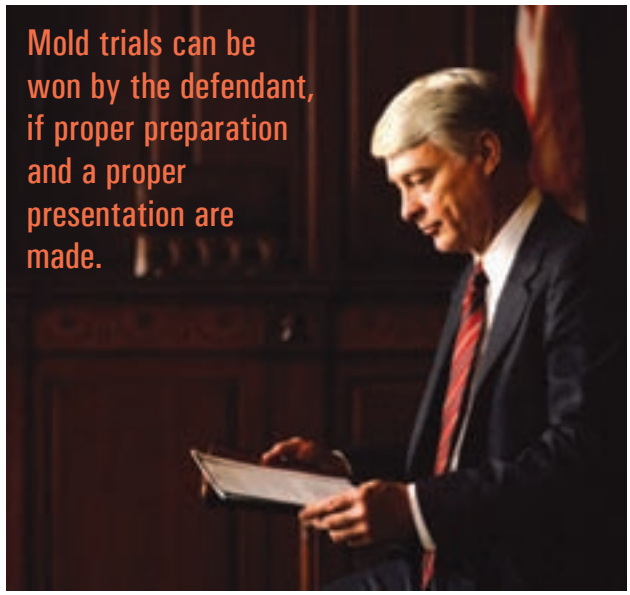
Trials in court, and particularly jury trials, are all about preparation. A lot of hard work and late nights go into the preparation of a trial presentation, in order to make it appear calm and effortless. As noted in prior articles, many factors taken care of early in a mold case can have a significant impact on the trial. These include the following:

1. Get involved early. Do a thorough investigation of the facts, documenting what is there, photographing and testing the evidence, and talking to witnesses while their memories are fresh and before their allegiances change. Retain a reputable mold testing expert to take samples and to make tests, before things change and deteriorate.

2. Preserve the evidence. Locate and retain any relevant components, such as doors, windows and frames. Keep that evidence in a clean, dry, secure location.

3. Be proactive. Do not wait for the homeowner or other claimant to request information or demand a settlement. Once you learn of a potential claim, get out in the field and talk to people.

4. Be friendly. Sometimes, a little early public relations can go a long way towards discouraging a lawsuit. At the least, the jury will likely see such efforts in a positive light, assuming you make it clear that any proposal is not based on any perception of liability or fault, but is a charitable reaction to a person or family who claims to be in distress. If there are damaged components—or even if there are not—consider offering to replace your components with new ones. Then, if the leaks continue, the problem was not with your components.



Presentation

At the trial, the defendant should:

1. Have an explanation. Like the general public community from which they are drawn, juries like certainty. They would rather decide between two explanations than to hear one party make a claim and the other merely to deny it. Even if your components did not cause the leak which led to the (alleged) mold, find and present evidence of how the moisture did get into the house.

2. Be considerate. In spite of your skepticism about plaintiffs' claims, both as to liability and damages, it is better not to be harsh, cruel or critical. Again, jurors as people do not like that. And the fact that you replaced the windows for free, even in the absence of a defect, will show you to be considerate, and thereby entitled to the benefit of the doubt.

3. Be thorough. Rather than ignoring or dismissing plaintiffs' experts, be detailed and incisive in your cross-examination. Demonstrate the absence of any real science to support the expert's opinion. Challenge the testing, and the assumptions on which the conclusions are based. Present your own mold expert to show the lack of credibility in the plaintiffs' presentation.

4. Be scientific. Present medical testimony which dissects the plaintiffs' medical history. Show how genetics and/or a history of smoking, asthma, working with and around dust, chemicals, pets or other animals, and other sources of lung irritants are more likely the cause of plaintiffs' complaints. m

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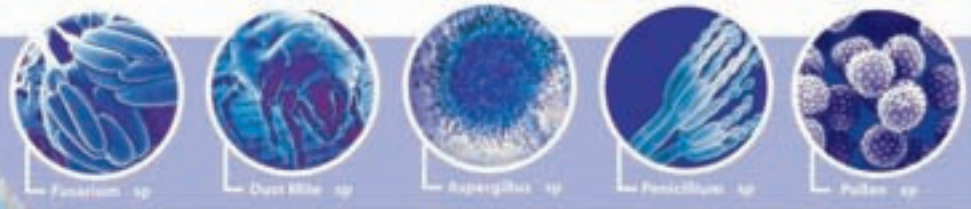

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ASSOCIATIONS

Responsible Solutions to Mold Coalition Launched

The Responsible Solutions to Mold Coalition (RSMC) has been formed as an industry-wide coalition to communicate accurate information to both the construction industry and homeowners about how to control moisture and thereby control mold in commercial and residential construction. The coalition has been formed through a grant from USG Corp., a Fortune 500 company that manufactures a variety of building products.

RSMC will undertake the following activities:

- Maintain a web site that will serve as a clearinghouse for information on how to prevent mold—www.responsiblemoldsolutions.org;
- Publish a brochure with accurate information on the systems approach to mold control;
- Host industry forums in which RSMC will bring together experts to talk about effective new solutions to fighting mold;
- Participate in demonstration projects in which these solutions are applied to fighting mold in a variety of settings;

RSMC aims to become a clearinghouse for reliable information on mold for consumers and construction professionals.

- Publish articles on this important subject; and
- Participate in industry trade shows to broaden the awareness of RSMC and recruit additional members.

"While five years ago there was a dearth of information on moisture and mold control, just the opposite is true today," said Frank Nunes of the International Institute for Lath and Plaster. "If anything, the industry suffers from too much information that needs to be evaluated."

"Everyone connected with the building industry has a stake in making sure effective solutions are embraced in solving this important problem," said Robert Daniels, director Emeritus of the Tile Council of North America. "First and foremost, consumers and business owners will be more satisfied with their homes and buildings, builders can avoid expensive callbacks, warranty claims and even litigation, and the financial community can be assured of the long-term security of the investment it underwrites."

"The only way to control moisture and therefore mold is through good building design and construction practices combined with ongoing maintenance," said Donald Mueller, vice president of research and development for USG Corp.

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MERGERS AND ACQUISITIONS

Braco Window Cleaning Acquires Fog B Gone

Crystal Clear Window Works (CCWW) of Nashville has announced that Braco Window Cleaning Service Inc. of Nashville has concluded the acquisition of Fog B Gone, a CCWW authorized franchise. This move will allow Braco to offer customers a unique moisture-removing service for windows.

Braco Window Cleaning Service will now be removing moisture from insulating window units under the Fog B Gone brand.

Launched in January of 2005 by Marie and Frank Kopich, Fog B Gone was the first American company to sign a contract with CCWW. The process they use to purge moisture from between thermal pane windows restores a sealed unit's clarity, protects against damage and permanently recovers insulating R-value, according to information from CCWW.

"At Braco, we've become the largest window cleaning company in the Tri-State by offering dependable service to customers," said Andrew Kreidenweis, Braco president. "Now, we can clean between thermal pane glass, while eliminating the most common moisture problems in windows. We are very excited that we are the only company in the region that will provide a 'green' solution to fixing foggy windows."

Braco will be providing the service under the Fog B Gone brand. All technicians are receiving extensive training at Crystal Clear Window Works new Nashville headquarters, and will be accredited with patented techniques needed to offer the service.

Keep costly water damage away from your structures with the

WPS™ WATER PROTECTION SYSTEM

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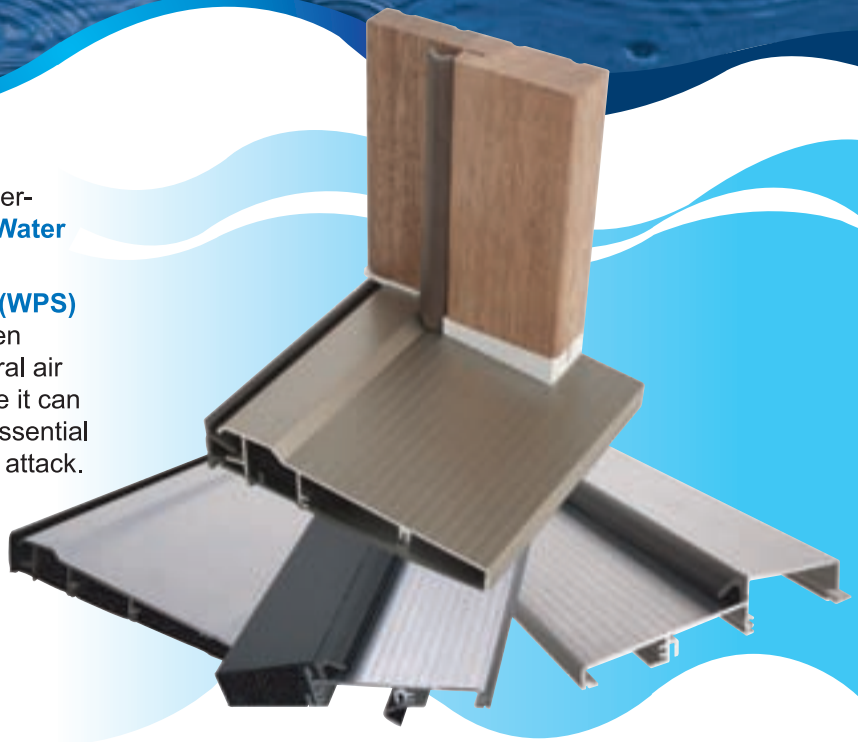

Protect your buildings — and your budget — from water-related service callbacks with Pemko's breakthrough **Water Protection System!**

The precision-engineered **Water Protection System (WPS)** proactively protects door openings against storm-driven precipitation. The **WPS** design harnesses wind's natural air pressure to redirect water away from entryways before it can collect and cause damage. Your structure — and its essential components — remain completely safe from moisture attack.

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- **Water Penetration Test E 547 2.9 psf/.56" wc/140Pa (passed 4.1 psf/.80"wc/200 Pa)**

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COATINGS

Siamons International Introduces Concrobium to the U.S. Market

Siamons International of Toronto has announced the U.S. availability of a new product to help combat mold problems throughout homes, schools, offices and institutions. Concrobium Mold Control™ is a new EPA-registered product designed to offer professionals a safe and effective way to stop mold. Concrobium dries on surfaces to create an invisible antimicrobial shield that inhibits and prevents mold and eliminates musty odors. Comprised entirely of FDA-approved food additives, Concrobium Mold Control contains no bleach, ammonia, alcohol or other dangerous chemicals.

Concrobium is odorless, colorless and is safe for use on almost any surface. It can even be fogged to treat an entire room or an inaccessible space. The company says the product can be used during construction or renovation projects to make building materials mold-resistant.

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SEALANTS

Kor-Chem Features Disinfectants in New Catalog

Klean Shield™, an EPA-registered disinfectant and antimicrobial coating from Atlanta-based Kor-Chem Inc., is a ready-to-use, water-borne coating that inhibits the growth of bacteria, fungi, mold, mildew and algae by using the latest technology in antimicrobial science.

The semi-permanent coating leaves an invisible microbiostatic layer that prevents deterioration, odor and staining caused by microorganisms. According to company information, the product is effective at disinfecting and preventing the growth of odor-producing organisms in HVAC systems. The coating encapsulates and neutralizes microorganisms already present on substrates and prevents the growth of new organisms. The non-toxic and solvent-free formulation makes it environmentally safe. Klean Shield is approved for use on air filters and air conditioners, carpets, roofing materials, stone and more.

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Moistop Sealant Compatible with Most Materials

To prevent water leaks, windows must be installed with a sealant that is compatible with the entire window system. Moistop Sealant, from the Fortifiber Building Systems Group™ of Reno, Nev., is a polyurethane sealant that was designed to meet that goal. It is compatible with virtually all building materials. It delivers strong adhesion, compatibility, durability and moisture resistance to prevent water leaks and expensive callbacks, according to the company.

The company says the sealant is tough enough to repair torn vapor barriers, but smooth enough to take paint in visible application areas. In addition, it exceeds ASTM C-920 and AAMA 808.3-92 (Exterior Perimeter Sealing Compounds) standards.

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SILLS AND FLASHING

Pemko Protects Entryways from Water

The Water Protection System (WPS) sill patented baffle system, from Pemko Manufacturing Inc. of Ventura, Calif., efficiently channels water away from entryways. The sill surpasses ADA/WDMA/CSA Standards and is warrantied to remain leak-proof, rot-proof and maintenance-free, according to the company.

The sill's patent-pending pressure equalization technology uses the wind's natural pressure to redirect water before it can collect and cause costly damage. As rainwater accumulates near the door opening, it collects the water on the underside of the door. The wind's natural air pressure forces the water collected in the pan system under the sill, where specially designed redirection chambers route the water back out to the front side of the sill and away from the doorway.

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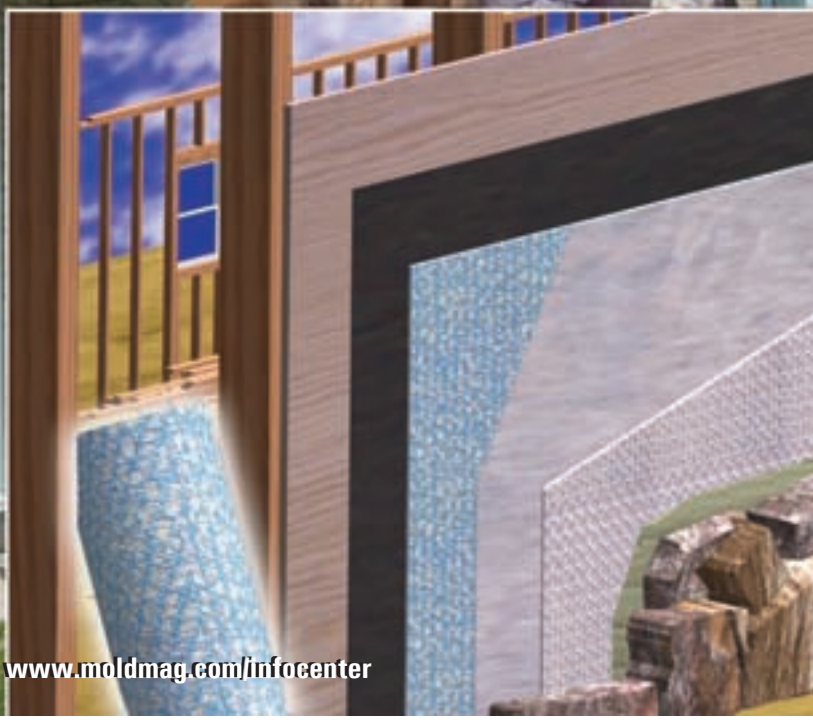
Mortairvent®, by Advanced Building Products, is a mortar deflection/ventilation mat recommended when building with manufactured stone, stucco, EIFS, and various other masonry construction materials. The blue polypropylene mesh creates a drainage plane, while the permeable gray filter fabric in **Mortairvent®** allows moisture, but not mortar, through, keeping the drainage plane clear. This simple concept was designed to protect your home and family from mold spores, and other moisture related issues, that will develop and propagate when moisture is trapped with nowhere to go.

For more information please visit our website at www.advancedflashing.com



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Chubb Introduces Personal Flood Insurance, Restorer Network

The Chubb Group of Insurance Companies, based in Warren. N.J., has introduced a Personal Flood Insurance plan to help homeowners protect their homes and possessions. The policy provides broader coverage than what is currently available through the National Flood Insurance Program (NFIP), according to information from Chubb. The new policy is initially available in Arizona, Colorado and Illinois, with introduction in additional states planned throughout 2006.

The Chubb policy can provide up to $15 million in property coverage, including home and possessions, compared to a maximum of $250,000 for homes and $100,000 for contents through the NFIP. The policy also pays replacement costs to repair or rebuild a home and replace its contents and $7,500 of automatic coverage for additional living expenses for displaced policyholders. For added protection, the policy offers an option to purchase an additional $100,000 of this coverage.

Chubb has partnered with South Pasadena, Calif.-based WNC First Insurance Services to manage its new flood insurance product.

In addition, Chubb has announced that it has established a preferred vendor network of restoration specialists to help homeowners mitigate and repair damage to their homes caused by water. Paul Davis Restoration, headquartered in Jacksonville, Fla., and Disaster Kleenup International, based in Bensenville, Ill., have been added to the insurance provider's vendor network. Upon request, Chubb may refer policyholders to either firm for mitigation and restoration services. The firms, which have more than 70 years of combined experience in mitigation, restoration and reconstruction services, warranty their work.

The mitigation firms can respond within hours after a water-damage claim is filed. Certified technicians work to stabilize the water damage and immediately begin the drying process to help reduce the severity of the loss. The goal is to minimize disruption and quickly return the home to its pre-loss condition.

IAQA Announces New Insurance Program for Mold Industry

The unified Indoor Air Quality Association (IAQA), American Indoor Air Quality Council (AmIAQ) and Indoor Environmental Standards Organization (IESO) have announced a new insurance program for their members. Partnered with Legends Environmental Insurance Services and other insurance industry brokerages, the new insurance program is now available to both consultants and contractors who meet association membership, training and certification prerequisites.

The program opens up access to insurance for those members who perform 100 percent mold work, according to information from IAQA. It includes general liability, pollution liability (when applicable) and errors and omissions insurance for consultants, remediators, restorers and inspectors. Insurance is available from several different top A-rated insurance companies depending on the kind of work the company performs and the type of coverage it is seeking. Certification through the AmIAQ is required for program eligibility, although current members of IAQA and IESO may also be eligible for this program.

"Since having insurance is often a prerequisite to being able to get larger contracts, this new program should help open many business opportunities for IAQA members that perhaps had previously struggled with obtaining appropriate and affordable insurance," said Glenn Fellman, executive director of IAQA.

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MoistureFree Warranty Introduced

Moisture Warranty Corp. (MWC) of Charlotte, N.C., a moisture warranty company geared toward protecting residential properties from moisture intrusion, has announced a new MoistureFree Warranty for commercial properties.

The commercial warranty, available for terms up to five years and $1 million of coverage, is offered nationwide for most exterior cladding systems, both new and existing construction. Backed by Western Pacific Mutual Insurance Company, a company rated A+ by A.M. Best, the coverage is both renewable and transferable. According to information from MWC, warranty pricing varies based on the associated risk of the property.

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IICRC S500 Standard Receives ANSI Approval

The Institute for Inspection, Cleaning and Restoration Certification (IICRC) has announced that the IICRC S500 *Standard and Reference Guide for Professional Water Damage Restoration* has been accredited by the American National Standards Institute (ANSI). According to the IICRC, the acceptance of the S500 marks the first ANSI-accredited standard in the cleaning and restoration industry.

"We are pleased to complete this part of the process. It wasn't always easy, but the benefit of increasing the credibility and integrity of the cleaning and restoration industry makes it well worth it in the end," said Carey Vermeulen, president of the IICRC.

The IICRC S500 was written to provide practical standards for water damage restoration and to provide a foundation for basic principles of proper restoration practices, according to information from IICRC. According to information from the institute, additional sections have been added to the updated 2006 edition of the S500 that have not been included previously. These areas include: building and material science, psychrometry by definition, psychrometry and the science of drying, limitations complexities complications and conflicts, structural restoration, HVAC, contents evaluation restoration and remediation, and large or catastrophic restoration.

IICRC's guidance for mold remediation is currently undergoing preparation for its submission to ANSI later this year.

According to Howard Wolf, S520 chairperson, more than 200 volunteers from the industry spent nearly three years contributing to these new chapters and updating the document in its entirety. Approximately 200 people were involved in a peer review that generated more than 1,600 comments, which were reviewed one-by-one by the document committee. Input was given by doctors of public health, medical doctors, PhDs, certified industrial hygienists and many others, but primarily by water damage restoration professionals.

"The majority of people who use this are going to be restorers, so we thought the majority of people who wrote it should be restorers," said Wolf.

The IICRC S520 *Standard and Reference Guide for Professional Mold Remediation* is now undergoing edits. Wolf expects that it will be submitted to ANSI in November.

"It's just now starting the gauntlet of what S500 went through," said Wolf.

Changes to ASHRAE Standard 62.1 Ventilation Rates Proposed

Ventilation requirements for high-rise residential buildings are among the three changes being proposed to ANSI/ASHRAE Standard 62.1-2004, *Ventilation for Acceptable Indoor Air Quality* from the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE).

Addendum 62.1h would add requirements for high-rise residential buildings to the standard's ventilation rate table. These ventilation rates are somewhat higher than the residential rates included in ANSI/ASHRAE Standard 62.2, *Ventilation and Acceptable Indoor Air Quality in Low-Rise Residential Buildings*, according to Dennis Stanke, chair of the Standard 62.1 committee.

"Standard 62.2 bases its rates on the assumption that infiltration always provides some ventilation and on the requirement that each dwelling unit includes operable windows for supplemental ventilation," he said. "The Standard 62.1 rates, on the other hand, assume that ventilation requirements are independent of infiltration and operable windows."

For example, the required mechanical ventilation rate for a two-bedroom apartment or condo could double compared to Standard 62.1-2001. Stanke noted that increased outside air rates can mean more outside air conditioning tons, especially in humid climates.

Addendum 62.1e would add an informative appendix that summarizes the requirements for documentation found throughout the standard.

"Reducing communication failures reduces building ventilation and indoor air quality problems," Stanke said.

Addendum 62.1f would change the purpose and scope of the standard to make them more consistent with its body. The standard retains its dual goals of providing indoor air quality acceptable to human occupants that minimizes the potential for adverse health effects.

Single-family houses or multiple-family buildings with three or fewer stories, are now covered by Standard 62.2.

INDUSTRY NEWS

Mold Web Course Now Available from EPA

The U.S. Environmental Protection Agency (EPA) has developed a new mold web course, available at www.epa.gov/mold, which contains information on mold prevention and remediation. This course was designed primarily for environmental and public health professionals, although it is also recommended for building managers, custodians, remediators, contractors and other professionals who respond to mold problems.

The course is based on EPA's voluntary guidance document *Mold Remediation in Schools and Commercial Buildings*. It covers basic issues related to moisture and mold control, and is illustrated with photos showing moisture and mold situations in the field. The knowledge tests are designed to highlight and reinforce important points in the course. It also includes an image library with photos and text available for educational purposes.

This course is free and available to everyone. EPA will not provide a certificate, certification, or any other credential for viewing the course—it is for informational purposes only. However, other organizations may choose to offer continuing education credits for completion of the course.

KUDOS

Atmospheric Glow Technologies Attacks Mold in Schools

Atmospheric Glow Technologies Inc. of Knoxville, Tenn., donated the use of its PlasmaAire™ TriClean Max to an East Tennessee school system that had been experiencing mold contamination.

PlasmaAire patented technology is designed to remove and destroy airborne contaminants such as mold, bacteria and odor-causing volatile organic compounds (VOCs). According to information from the company, the TriClean Max operates without releasing harmful levels of ozone into the room.

INDUSTRY NEWS

Growth Opportunities Strong for Antimicrobial Coatings Markets

Research by market consultant Frost and Sullivan has found that the U.S. antimicrobial coatings markets earned revenues of $175.4 million in 2005, and is expected to reach $558.7 million by 2012. The company predicts that the market will grow due to the increasing need to address microbial growth in healthcare facilities, as well as other end application markets such as HVAC equipment markets and mold remediation markets.

Antimicrobial Coatings Markets Revenues Forecast

2005	2012
$175.4 million	$558.7 million

Source: Frost and Sullivan

The need for antimicrobial coatings in healthcare facilities is expected to lead to a strong market for the product.

The need to arrest microbe growth in applications such as hospitals, day care centers and indoor environments positively impacts the growth of the antimicrobial coatings market for the United States. The increasing knowledge and familiarity about the advantages of antimicrobial coatings protection is also favoring the growth of the market, according to a news release from Frost and Sullivan.

"An increasing pressure to resist the hospital-acquired infection rates is expected to play a crucial role in the growth of this market in the medical domain with its usage in wound dressings and catheters," said research analyst Rajesh Varadarajan. "Antimicrobial coatings are increasingly seen to ensure good indoor air quality with their presence in HVAC equipments and in mold remediation."

The report says that false claims made by some companies and reluctance to adopt new technology by others could impede the growth of the antimicrobial coatings market. The market for antimicrobials also suffers from lack of awareness among end users of benefits associated with antimicrobial coatings.

The consultant suggests that antimicrobial coatings suppliers undertake initiatives to educate and spread awareness about the product as well its benefits. Companies will have to focus on research and development activities to create competitive products which would, in turn, boost market growth and eliminate product differentiation. The study suggests antimicrobial coating suppliers should offer extended product lines that provide a broad-spectrum application reach in healthcare facilities.

A brochure on the subject is available from Frost and Sullivan.

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The PlasmaAire TriClean Max was used to lower mold levels in this classroom at Valley View Elementary.

Once the surface mold was removed, "we simply rolled the TriClean into the room and turned it on," said Ron Domitrovic, an AGT engineer. AGT is having the air quality independently tested before and after the use of its PlasmaAire product.

COMPANY NEWS

PDG Environmental Awarded $8.6 Million in New Contracts

PDG Environmental Inc., headquartered in Pittsburgh, Pa., a provider of environmental remediation and specialty contracting services, has announced that it has been awarded a number of contracts worth, in aggregate, $8.6 million for mold remediation, reconstruction, asbestos abatement and related services in its Pittsburgh, Los Angeles, Dallas and Tampa offices. The largest of the projects, for $1.8 million, is for restoration of a federal government facility in New Orleans damaged by Hurricane Katrina. The projects, including industrial sites, apartment complexes, government facilities and institutions of higher learning are expected to be completed during the second and third quarters of fiscal 2006. m

Classifieds

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DRY ICE SYSTEMS

New Dry Ice Equipment Introduced

Chicago-based Triventek has introduced the new Triblast-2 dry ice blaster for mold remediation.

The Triblast-2 allows users to vary the dry ice power from 65 to 265 pounds per hour with its exchangeable airlock plates. According to information from the company, the unit's single hose design concentrates cleaning power. It is supplemented by a new range of nozzles designed to cater to the factory engineer who has limited compressed air volume available. A choice of blast hoses is offered in addition to the standard silicone.

The dry ice blasting equipment features a fully-enclosed, robust stainless steel case. A large, insulated hopper helps to minimize refill time. It also features a simplified control panel and conveniently small size and weight.

The blaster can use a range of pellets from 0.07 to 0.16 inches, including the industry-standard 0.12-inch cleaning pellet.

Larger users of dry ice can make their own dry ice on site using the company's Pelletizer, which is capable of producing 100 pounds per hour when and where it's wanted.

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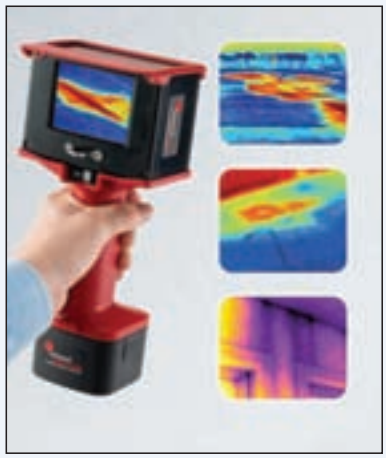
THERMAL CAMERAS

IR Camera Has Mold in its Sights



Plymouth, Minn.-based Infrared Solutions' IR-InSight® XS and XST (Extra Sensitive) rugged and affordable portable thermal imagers detect the smallest temperature variations and instantly locate leak sources in walls, roofs and flashing, without cutting. According to the company, they are the first infrared cameras built specifically for the building sciences industry.

These one-button "point and shoot" cameras store up to 150 images, feature a 30-bit color display and have the highest thermal sensitivity of any IR cameras in its class, according to the company. The XST model also offers on-screen center point radiometry. Both models include SightView™ Pro software for analyzing images and generating professional reports.

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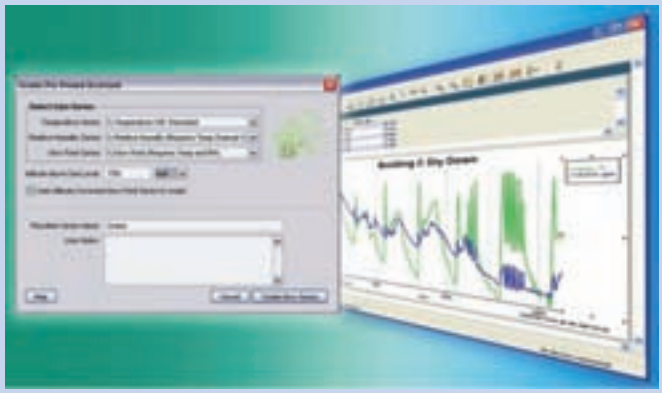
SOFTWARE

New Software Tool Available from Onset

Onset Computer Corp. of Bourne, Mass., a supplier of battery-powered data loggers, has introduced a new software tool designed to make it quick and easy for water damage, restoration and mold professionals to calculate Grains Per Pound or the mass of moisture contained within the air.

The new Grains Per Pound Assistant, which is a plug-in software module to Onset's HOBOware® software, makes it easy for users to document building dry-down and restoration projects by converting temperature and relative humidity data collected with HOBO® data loggers into Grains Per Pound data. According to information from the company, the converted data can then be submitted to insurance companies to validate the dry-down process.



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CASSETTES

Allegro Industries Offers Multi-Mold™ Cassette

The M2 Multi-Mold cassette from Allegro Industries of Garden Grove, Calif., is a patent-pending, two-sided disposable air sampling cassette for indoor air quality sampling and analysis. The cassette provides three sampling options for field personnel: each cassette can be used to collect two different samples, two identical samples concurrently or one sample while using the other side as a control.

The M2 cassette is also the very first of its kind for laboratory personnel. It provides one-time preparation for two samples, pre-printed traverse marks on the collection side for standardized counting, and side-by-side comparison of the samples under the microscope.

Operating in accordance with fluid/air dynamic principals, the M2 utilizes standard pump and calibration equipment. The cassette can be used for home or commercial inspection and restoration and remediation.

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TEST EQUIPMENT

New Psychrometer Series Available from Extech

Extech Instruments, a supplier of test and measurement equipment for the industrial marketplace, has announced the availability of its

new series of psychrometers for differential measurements. The series includes 3 models: RH300, RH350 and RH401.

Designed for HVAC/R, mold prevention/remediation and plant maintenance applications, the psychrometers feature simultaneous viewing of wet bulb, dew point, relative humidity and air temperature. Model RH401 incorporates a non-contact infrared thermometer to calculate the surface temperature-dew point differential.

Each psychrometer features a large backlit LCD to provide an easily readable display of switchable temperature units (Fahrenheit or Centigrade) with 0.1-degree resolution. In addition, minimum, maximum and average readings—with date and time—can be easily recalled on the LCD. Each psychrometer includes protected sensors and built-in memory that can store up to 99 data points. All meters can also be field-calibrated using kit-supplied calibration bottles. A built-in RS-232 interface utilizing Windows® Hyperterminal software allows downloading data to a PC for subsequent analysis.

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Predator 1200 Unleashed by Abatement Technologies

Suwanee, Ga.-based Abatement Technologies has introduced its newest PAS technology, the Predator 1200.

The new, portable air scrubber features 4-speed operation with 1,000 CFM peak airflow and a low amperage draw. According to information from the company, the lightweight machine's rotational molded cabinet is virtually indestructible and comes with a lifetime warranty. In addition, the cabinet material is impregnated with an EPA-registered microbial growth inhibitor. Up to 3 units can be daisy-chained on one 115-volt/15-amp circuit, and it can be used for vertical or horizontal operation.

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Detailing Mold-Free Designs

Architects on Alert

Megan Headley is the editor of Mold and Moisture Management. **Samantha Carpenter** is a contributing editor.

Architects carry a lot of responsibility for creating a building, but not all design professionals are convinced they carry the responsibility for keeping moisture out of their structures.

Steve Norwood, AIA, chief architect for the Colorado office of Ian Mackinlay Architecture, does a lot of consulting about building envelope and, as a consequence, sees a lot of mold problems that perhaps could have been prevented. He's not convinced that most architects know that mold problems often can occur as a result of a design flaw.

"I would say most architects perceive it as a construction defect problem," he says.

Sometimes, he adds, the building owner isn't aware of the potential for moisture intrusion problems, so he or she won't retain an architect to provide the full services that will help prevent a moisture problem at a later date.

"A lot of times … certain design elements of the building are not addressed," Norwood says.

Larry Black, an architect, developer and builder with Black, Corley & Owens of Benton, Ark., adds that builders and architects both carry responsibility for keeping buildings dry.

"There can be problems with the design that can contribute to mold and there can be problems on the construction site that can contribute to it," says Black.

Part of the problem, according to William B. Rose, a research architect at the Building Research Council-School of Architecture, University of Illinois at Urbana-Champaign, is that students of architecture are not taught specif-

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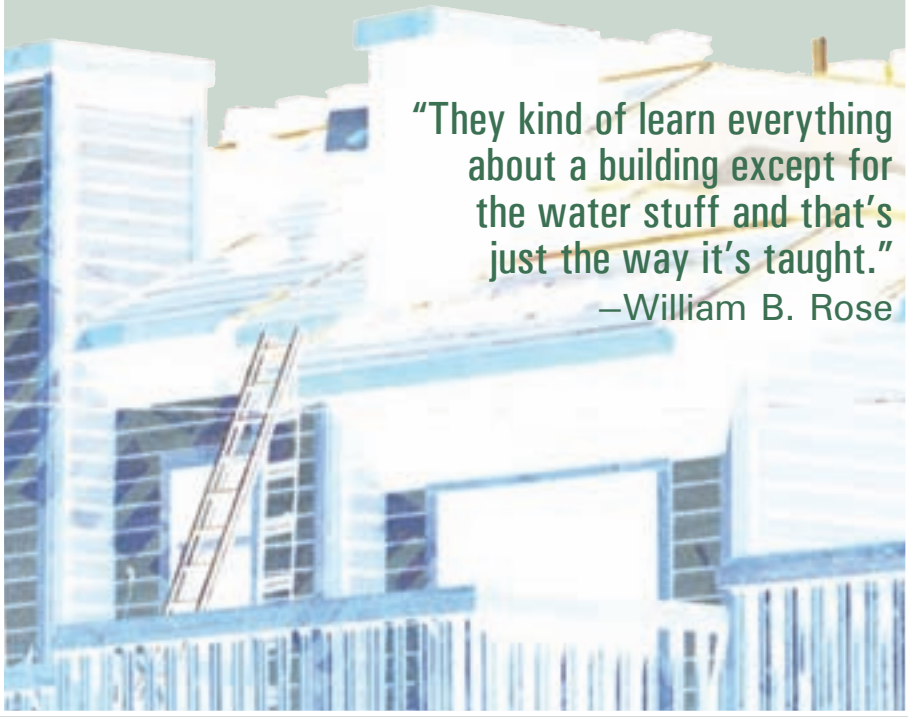
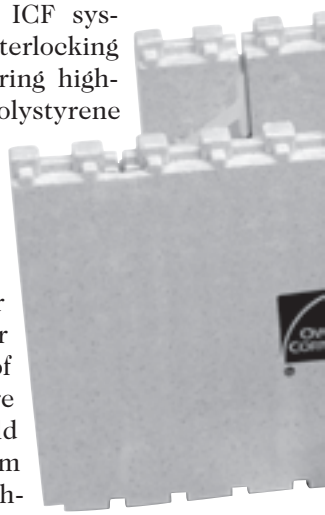


"They kind of learn everything about a building except for the water stuff and that's just the way it's taught."
—William B. Rose

INSULATED CONCRETE FORMS

Lab Confirms Owens Corning ICF Resists Mold

Owens Corning, headquartered in Toledo, Ohio, has introduced its mold-resistant Fold-Form® insulating concrete form (ICF).



The Fold-Form ICF system is made of interlocking form blocks featuring high-grade expanded polystyrene insulation. The blocks are pre-assembled with Fold-Form's folding spacer ties. Universal corner kits provide for quick assembly of corners. Forms are available to build concrete walls from 4 inches to 16 inch-

FLOORING

Dura-MED™ Flooring Provides Barrier to Mold

American Biltrite, a manufacturer of commercial and residential flooring, has introduced its Dura-MED flooring product for the healthcare industry as a mold-resistant barrier.

According to information from the company Dura-MED is heat- and pressure-cured with sulfur to create a dense, even surface. This treatment allows the product to repel dirt and stains, and builds an impermeable barrier to mold and mildew, liquid contaminates and bacteria.

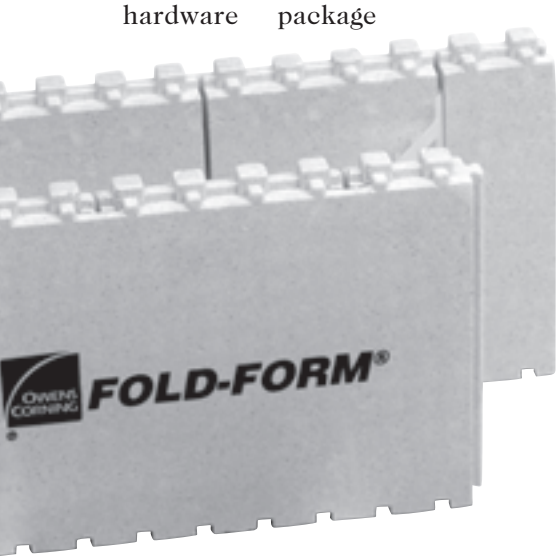
The product's rubber component absorbs noise to remove unwanted distractions; Dura-

Special Products Section for Architects

A dry design is critical, but specifying moisture- and mold-resistant products can also help keep the rain on the outside of a building where it belongs. Below are just some of the products that may help keep your designs dry.

es thick, and each full block is 1-foot high and 4 feet wide.

The smooth concrete wall insures maximum structural strength and can accommodate all codes for steel reinforcing. Unique hardware package allow installers to assemble a wide variety of shapes including curved walls, brick ledges and offsets.



According to information from the company, a national laboratory has confirmed that the expanded polystyrene insulation in its Fold-Form insulating concrete form (ICF) does not support the growth of Aspergillus versicolor, Aspergillus niger and Stachybotrys chartarum, common strains of household mold.

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DEHUMIDIFIER

E-Z Breath Circulates Healthy Indoor Air

EZ Breathe of Macedonia, Ohio, is offering a new hybrid ventilation technology, the E-Z Breathe™ ventilation system.

The E-Z Breathe unit functions as a high-end dehumidifier and air purifier. According to the company, it expels stale, polluted air and provides a whole-house air exchange six to 10 times each day. Unlike most dehumidifiers that recirculate the same air, the E-Z Breathe unit replenishes the home with dry, clean air on a continuous basis. According to the company, the product features maintenance-free convenience and a low operating cost.

Three installation options are available for a custom fit: in slabs and crawlspaces, in unfinished basement walls or even under drywall. The unit is said to be quiet, efficient and suitable for indoor spaces ranging from a small crawlspace to a 7,000-square-foot home or building.

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continued on page 25

MED's pattern imitates carpet to create a familiar comforting setting; its homogenous surface allows rehabilitating patients to safely move their feet while it also provides grip for stability; and its color palette features soothing organic tones to stimulate relaxation. The product also features a clay filler that suppresses smoke and flame development.

The compound forms a sensitive floor base for healthcare personnel to stand comfortably for extended periods of time as well as creates a quiet work environment by eliminating excess noise.

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ically how to prevent moisture intrusion.

"They kind of learn everything about a building except for the water stuff and that's just the way it's taught," says Rose.

He adds, "For one thing, architects understand what they can draw. Water is perfectly white in its state as snow, it's perfectly transparent as water and it's perfectly invisible in its vapor state. So they don't know how to draw it."

And according to Rose, it's unlikely that students of architecture will begin focusing on water intrusion as part of their curriculum.

"A [potential] court case will ride on whether what the architects did at the design stage is what other architects in their area do," says Rose. "Then the contractor is obliged to do legally what the architect describes in the construction documents. If they deviate from that … they're at risk themselves. If a leak occurs in the building the question will be asked of the builder 'did you comply with the drawings?'"

Trouble Areas

Whether they design to protect against moisture or not, there are some areas where architects can expect to see moisture problems and should take care.

One critical design detail where Norwood sees numerous problems is at the confined rake edge, where the roof meets the building and slopes down toward the eaves. Norwood explains that the kick-out flashing is supposed to direct water away from the wall. Another major problem area he sees is at the seals around windows.

"In terms of the design, it's really where all the joints are," he says.

The biggest problem area for Rose is a house's crawlspace.

"Almost all the excessive wetness I've seen in houses has been on crawlspaces," says Rose.

Black agrees.

"Crawlspaces have problems due to too much moisture getting into them and not enough ventilation being provided. That is an area that has been debated for a while."

He says that the studies he has read have indicated that in the South, it's better to seal the crawlspace, insulate the perimeter and offer some conditioning in the space.

"I have one concern about that," Black says. "Over the years, we've encountered when a crawlspace is in the side of the hill, you can get a lot of moisture coming up from the ground. I have some reservations about whether it's a good idea to seal the crawlspace in those situations."

Product Protection

Can moisture-resistant products help architects keep the water out?

"I think they can be helpful," Norwood admits. He adds, "The real key is controlling water in its various forms."

"In my opinion, moisture management isn't a product selection problem," says Rose.

But he is quick to add that if an architect is thinking about preventing moisture intrusion at the product selection stage, there's trouble ahead.

"You're really managing moisture," says Rose. "If you're saying here's where the water is and here's where I want it to go and now I'm going to put it there, the word 'barrier' doesn't come in. We're not [providing a] defense."

Maybe water-resistant products shouldn't be relied upon to correct a water intrusion problem, but there are products that some architects see as potential problems. For both Norwood and Black, exterior insulation and finish systems (EIFS) are among the troublemakers.

"I would say the most severe situations we come across are with EIFS," says Norwood.

He says the problems start when EIFS is put on wood frame buildings.

"The water gets behind the EIFS and the building can't dry out because it's not as permeable."

"There have been some problems nationwide with that, and they are being addressed by the manufacturers," Black says. "The problem has

continued on page 26

AIA Preview

The Architects Institute of America (AIA) will be holding its 2006 National Convention and Design Exposition June 8-10 in Los Angeles. The convention will offer attendees a chance to learn about products and designs available to make more mold-resistant buildings. More than 750 companies are participating in this year's expo, with more than 195,000 square feet of new products, technology and services for the entire building community.

Attendees should also make plans to attend the seminars, particularly Friday afternoon's (4:00-5:30 p.m.) session "Preventing Moisture in Building Envelopes," presented by Joseph J. Godfryt, AIA, and Richard A. Weber, SE, of Wiss, Janney, Elstner Associates Inc. Several sessions on all three days will discuss potential risks that architects will face and how to be prepared to meet them.

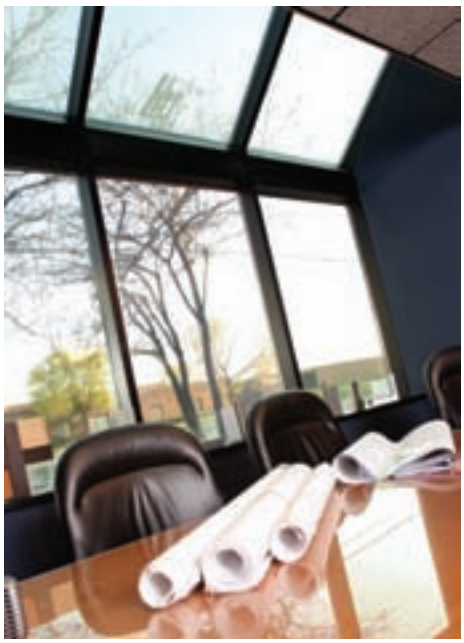
Show Hours

Thursday, June 8	9:30 a.m.–5 p.m.
Friday, June 9	9:30 a.m.–5 p.m.
Saturday, June 10	9:30 a.m.–2 p.m.

DOORS AND WINDOWS

EGP Turns on the Heat

Engineered Glass Products (EGP) of Chicago has introduced its Thermique™ Hot Glass Technology™ to architectural windows, which the company says could help prevent condensation.



Heated glass towel warmers and heated shelves for food service industries were among the first commercial products to take advantage of Thermique technology, but the company is now adapting the technology for architectural windows. According to EGP chief executive officer Mike Hobbs, the comfort factor provided by the heated windows is its biggest advantage right now, but the company is researching additional benefits—including the potential for energy savings and the prevention of condensation and mold growth.

The heat in the glass is generated by a transparent metal oxide coating put onto the glass during fabrication. The coating is connected to specifically designed buss bars within the laminated or insulating unit, which are in turn wired to the wall-mounted Thermique controller. When the controller provides electricity, the coating heats up uniformly across the entire glass surface. At full power, the heated windows reach a uniform temperature of 105° Fahrenheit.

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HVAC

Lennox Introduces Whole-House Dehumidification System

Responding to increasing consumer demand for whole-house solutions to common challenges such as mold, mildew, dust mites and bacteria, Lennox Industries of Richardson, Texas, has introduced Humiditrol®, a fully integrated whole-house dehumidification system.

The Humiditrol whole-home dehumidifier system installs in the home's existing duct system, eliminating the need for substantial space. Designed to operate with the company's SignatureStat™ thermostat, and easily integrated with new Lennox®-brand cooling products using environmentally friendly R410A refrigerant and any variable-speed Lennox furnace or air handler, Humiditrol effectively and efficiently controls humidity levels throughout the home. It is capable of removing as much as three times more moisture than conventional dehumidifiers, while consuming less energy and without negatively impacting temperature, according to information from the company.

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Liberty Twintilt Double-Hung Features Design Enhancements

Pollard Windows Inc. of Burlington, Ontario, has released to the U.S. market its enhanced second-generation

Liberty Twintilt double-hung window with improvements designed to elevate performance, reliability, functionality and beauty.

Suitable for both new construction and renovation projects, the Liberty Twintilt double-hung window works on traditional and contemporary homes. Features of the design include a new watershed sill that aids in repelling moisture away from the frame; a split-finish jamb liner that complements exterior color and interior finish; a color-matched screen bar; upgraded durable color-matched metal tilt latches and locks; and a low-profile, quiet sash lock. A triple-seal pile weather-strip replaces the rubber strips for an ultra-smooth

continued on page 26

Architects on Alert continued

been when there is not a system for removing moisture that gets behind the system."

"There were some problems with residential construction," says Kent Stumpe, director of communications for EIFS manufacturer Degussa Wall Systems Inc. "Our company requires moisture drainage and management in the systems that we use."

Stumpe added, "There were never that many problems with commercial construction because there's a lot more jobsite management, and an architect involved."

According to Stumpe, before EIFS water intrusion problems were noted, the company had offered a water management system but hadn't found much interest. They now offer ten "water management EIFS" as well as the traditional "barrier EIFS."

Black adds, "All of the manufacturers have developed systems that provide a drainage mechanism."

Rose sees challenges coming from the use of vapor barriers.

"We're learning that the water actually comes from the outside and the vapor barrier is a terrible thing," he says.

"If I've got polyethylene on the inside of the building and I pour a bucket of water into the cavity, then it can't dry to the inside, it can only dry to the outside," Rose explains. "You say, 'well we're not sloshing buckets of water into our building cavities,' but that begs the question, what is the design quantity of water from the outside that gets into our building cavities?"

He gives two answers to that question: "either zero or non-zero."

"If you assume that all exterior rainwater management is perfect … then you can continue to believe that the moisture load comes from the inside of the building. But we know that the water that causes the problem comes from the outside of the building so maybe we need to be yanking this polyethylene so the buildings can dry out," says Rose.

"Moisture from the outside gets into a wall cavity and the vapor retarder traps it, leading to problems," says Tom Newton of CertainTeed.

This is a problem the manufacturer has heard before, leading to new designs from manufacturers, allowing moisture to escape.

"That's why we introduced MemBrain, to reduce the problems caused by using polyethylene as a vapor retarder," says Newton. "MemBrain changes its perm rating allowing the moisture to escape to the inside where the home's heating and cooling system can handle it."

Black feels that more manufacturers are responding to moisture-intrusion problems with attention to installation.

"They [manufacturers] have tightened up on their requirements in the field. They are making sure that windows and doors have proper sealants and flashings are installed properly," says Black.

Finding A Way Out for Water

For architects, the way to prevent moisture intrusion may be to manage the water by directing it where it is wanted—away from the interior of the building.

"The issue is really keeping the water out and managing water vapor," says Norwood.

"What I encourage architects to do is to 1) decide where the water is supposed to go and 2) put it there. And architects, they don't do that and they won't do that; nobody wants to say here's where the water should go and that's too bad. We really need to be making some design decisions about water," says Rose. "Up till now water has been thought of as a nuisance and that has to change."

gliding operation that makes the window easy to lift and tilt for ventilation or cleaning. The glazing cavity was increased in depth to further reduce condensation and offer energy efficiency.

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Tecton Introduces Fiberglass Entry Door

Tecton Products LLC introduced what it says is the first residential fiberglass entry door framing system. Tecton has designed a mold-resistant, maintenance-free, clean line doorframe that it says compliments a wide array of door slabs.

"Thanks to our patented Durion acrylic finish and our structural fiberglass core, these doorframes will retain the crisp look of freshly painted wood for years to come," says president John Jambois.

According to information from the company, the frame is resistant to mold and insects, and it won't warp since fiberglass is temperature stable.

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PANELS

NICHIHA "FINISHES" ITS FIBER CEMENT PANELS

Nichiha, based in the U.S. in Norcross, Ga., is now offering a 15-year limited warranty on the factory applied finish on its fiber cement panels.

With the addition of the new finish the moisture-, rot- and termite-resistant and low-maintenance fiber cement siding panels are now guaranteed to not peel, blister or wrinkle, and not lose a significant amount of the product's original color, pattern or appearance.

Users can choose from a variety of textures with seven stone, three brick and two lap panel options in more than 25 colors. The panels can be installed over any number of substrates, including standard wood framing, brick, mason and concrete, insulated panels or metal framing. Panels are ship lapped on four sides so no sealant or caulk is necessary, and installed using the company's clip installation system. The system creates a pocket of air between the panels and the substrate, reducing the potential for moisture build-up. No exposed fasteners means a clean, attractive look for any application.

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GYPSUM

HUMITEK KEEPS INTERIORS DRY

Chicago-based United States Gypsum Co.'s SHEETROCK® Brand HUMITEK® gypsum panels utilize a proprietary technology that its manufacturer says keeps them moisture- and mold-resistant from front to back. The HUMITEK product line is designed specifically for use in interior areas. The panels feature tapered edges for easy finishing, they score and snap quickly, and they require no special handling or installation procedures. In addition, they are UL classified for fire resistance (Type X), surface burning characteristics and non-combustibility. They are available in ½- and ⅝-inch thicknesses and in 8-, 10- and 12-foot lengths.

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CEILING

PARKLAND PLASTICS INTRODUCES SPECTRATILE™

Parkland Plastics of Middlebury, Ind., has introduced SpectraTile as a completely waterproof lay-in ceiling tile guaranteed to never be stained by water. Extruded from foam PVC, these plastic panels eliminate the problems traditional fiber-based ceiling tiles have with water absorption, mold, crumbling and replacement issues, according to a company news release. The company boasts that the tiles will never discolor, swell, bow or rot and the non-porous surface will not harbor bacteria. In addition it can be easily washed or wiped clean.

In addition to being Class A flame spread, the company asserts that SpectraTile meets the requirements of the National Fire Protection Agency's Life Safety Code.

The white waterproof ceiling panels are available in three embossed designs or a simple, smooth surface. The 2-by-2-foot or 2-by-4-foot tiles fit into most grid systems.

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Unwanted Guest

What Makes Some Hotels Susceptible to Mold Growth?

Roger Morse, AIA, is the president and technical director of Morse Zehnter Associates, an architectural engineering and environmental consulting firm. **Gordon Brandon** is senior project manager of Morse Zehnter Associates.

What makes some hotels susceptible to mold growth? The method and quality of construction, the choice of building envelope materials and HVAC system, maintenance practices and the hotel's location or climatic region—can all play a roll. Keep in mind that mold growth is the result of a water problem. The mold problem cannot be solved until the water problem is identified and corrected.

The mold question may be best answered by describing the analytical process of identifying the sources of moisture and mold growth in hotels.

Check-in Investigation

Mold growth in hotels generally can be analyzed by collecting data from three sources: a history of complaints and water problems; a visual inspection of the hotel premises; and measurements of the moisture levels of building surfaces as well as relative humidity.

Guest complaints and maintenance history can provide valuable insight into past moisture problems, such as flooding, leaking or other moisture intrusion. Interview hotel associates or ask to review the hotel records for this information.

Next, conduct a walk-around physical inspection of the premises, looking for visible mold growth, active leaks, damp surfaces, staining or other evidence of water damage. Musty odors or the odor of decay will also signal the presence of mold.

Take moisture measurements on interior surfaces using a moisture meter. This usually is done in a "seek and measure" procedure. A moisture meter will provide relative measurements that can be used to map out the wet areas on surfaces throughout the hotel.

Also, measure the relative humidity. High relative humidity can support mold growth and may be indicative of a hidden moisture problem. Note the pressure differentials to see if humid outside air is being driven into the exterior wall cavities.

When taking moisture measurements, be aware that seasonality can affect moisture readings. Measurement problems can occur in summer in moderate or northern climates when temperatures and humidity are high. If hot, humid outside air can enter wall cavities, it can cause mold growth. If your investigation must be done during the winter, conditions may be milder and drier outside than when the problem first began, causing the wet area to dry and the mold to become dormant. This would indicate that humidity and air filtration are the causes of the moisture problems.

If moisture measurements are not helpful, you must rely on visible signs of mold and water damage to determine the problem areas.

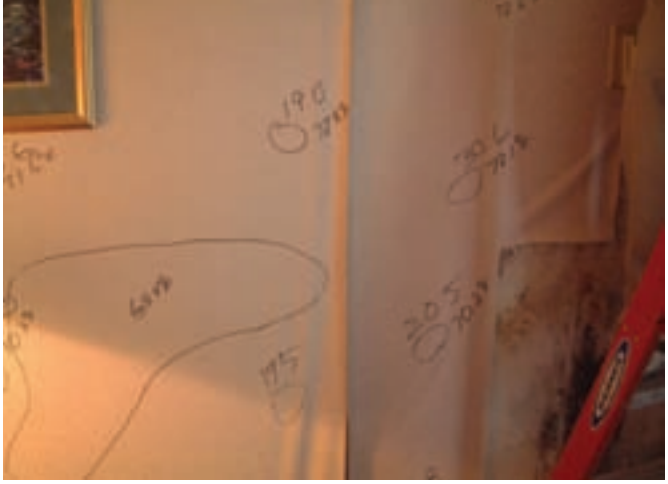
Typical Problem Areas

Building envelope construction varies in the different climatic regions, so there are many different types of wall construction. For purposes of this article, a wall will typically be considered to be made up of several components, including a weather barrier (or rain screen), drainage space, drainage plane, air barrier and vapor retarder. Each of these can become a trouble area.

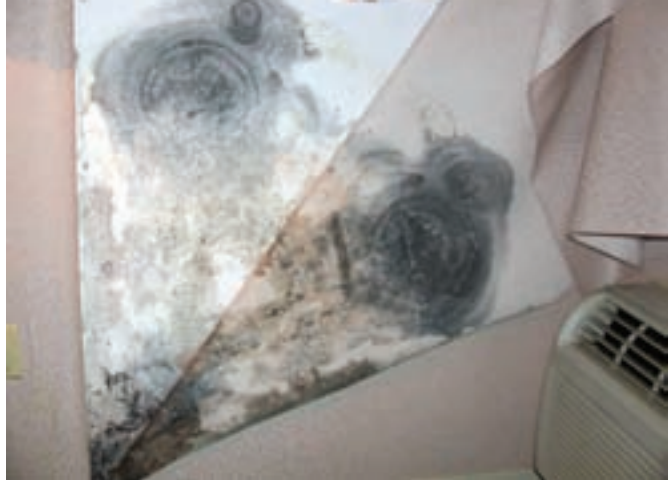
The following checklist of items reflects the process of identifying the sources of moisture and mold growth in hotels. This type of investigation would be typical for any hotel in any climatic region.

Problem 1: Defective rain screen. The rain screen needs to stop the bulk of water impacting the building wall during rain storms. Look for failed caulking, holes or cracks in the rain screen. Water problems can result when architects rely on high performance caulking compound to keep buildings dry, rather than on proper detailing. Correct installation of caulk is frequently a problem in new construction and maintenance work. Also check for window leaks and improper flashing around doors and windows.

Problem 2: No drainage plane. A wall should have a drainage plane to



A moisture meter can be used to map out wet wall areas; a first step toward mapping out a hotel's solution to moisture problems.



Without a vapor barrier on the exterior of the wall, the area behind vinyl wallcoverings can become a favorite hiding place for mold.

intercept water that gets through the rain screen and a drainage space to allow the water to run down to the flashing. The flashing, in turn, carries the water back to the exterior of the wall. If there is no water-resistant layer for the drainage plane, water will be able to enter the wall assembly. If the water cannot drain out—such as through weep holes in brick construction—it may pool inside the wall and cause a wet condition at the base of the wall. Visible efflorescence on brickwork is one sign of this problem.

Problem 3: No air barrier. Hot, humid air must be kept out of the wall assembly. This is accomplished with an air barrier. There should be an air barrier on both the inside and outside of an exterior wall. Discontinuities in the air barrier, such as gaps between sheets of gypsum sheathing, will also allow moisture-laden air into the wall assembly.

Problem 4: Unintended ventilation. Pathways through the building envelope that allow unconditioned outside air into the building or into building assemblies are referred to as unintended ventilation. An example of this is air passage through holes in an air barrier being drawn into a wall around a bathroom. The bathroom may be at a negative pressure due to its exhaust fan. The hot, humid air admitted through this unintended ventilation path impacts the inside surfaces of the wall cavity that have been cooled by the air conditioning. This results in condensation and moisture inside the wall cavity and, eventually, mold growth. Holes for wiring or the open tops of stud walls, combined with inadequate air barriers, can be the cause of unintended ventilation.

Problem 5: Misplaced vapor retarder. Materials that retard the free flow of water vapor through a wall can lead to problems. The rule of thumb is that a vapor retarder should be located on the warm side of the wall. This puts it on the inside of the wall in Northern areas and on the outside of the wall in Southern areas of the country. The problem is that, for much of the country, the warm and cool sides of the wall change from summer to winter. A typical problem encountered in the South is the use of vinyl wall covering, which traps water vapor in the mold food of the wallpaper paste and the paper face on drywall.

"When taking **moisture measurements**, be aware that **seasonality** can affect **moisture readings.**"

Problem 6: Air conditioning unit. If the air conditioning unit chills wall surfaces below the dew point, moisture will develop, typically inside the wall cavity.

Problem 7: Exhaust fans. Many times exhaust fans in hotels run all the time, while air conditioning is operating only when the room is occupied. This draws hot humid air into the room during unoccupied periods. The result is that all surfaces and finishes become moisture saturated. When the air conditioning comes on, the humid air is chilled and condensation forms, further wetting these surfaces.

Problem 8: Ventilation of hallways. Hallways in hotels are frequently ventilated with outside air. This air is drawn into the guest rooms by the operating bathroom exhaust fans. This can result in very moist conditions and subjects the corridor walls to the same air flow and vapor drive problems experienced by exterior walls. The difference is that these interior walls typically are constructed simply of drywall and are very susceptible to moisture damage and mold growth. This situation can only be corrected by conditioning the air that is used to ventilate the hallway.

Conclusion

Identifying the causes of mold growth in hotels can be a challenging task. Having conducted the inspection and analysis, the investigator will be able to determine the root causes of the moisture problems that caused the mold to flourish and recommend corrective actions.

If the hotel has experienced significant mold growth, its continued operation (not to mention its reputation) may have already been jeopardized. Addressing the root causes of mold growth can prevent mold from reoccurring and allow the hotel to re-achieve healthy occupancy levels. m

Breaking the Ice

Remediators Consider the Pros and Cons of Dry Ice Blasting

Some people might say that the use of dry ice as a cleaning tool is a work in progress. It has been evolving since the 1970s when Lockheed Martin coatings engineer Calvin Fong discovered that propelling pellets of frozen carbon dioxide—which warms up from -109° to about -78° Fahrenheit as it strikes a surface—at aircraft could be an efficient way to strip primer.

Today dry ice blasting has become another tool for the removal of mold. While its advantages—notably its speed, thoroughness and ability to reach difficult-to-access areas—are persuasive, the technology requires a big commitment from interested remediators.

Remediation on Ice

For remediators already familiar with sandblasting or soda blasting, dry ice blasting isn't much different.

"I've looked into sponge blasting, dry ice, soda and lots of different methods, and have always been intrigued by dry ice," says Gary Gilman, chief executive officer of SteamMaster Carpet Cleaning and Restoration Inc. of Minturn, Colo. "We started thinking about adapting the dry ice to mold remediation to work in these confined areas where it was difficult to work with media residue [from soda blasting]."

So how exactly does it work?

According to information from equipment manufacturer RSG Technologies of Dover, N.H., there are three basic steps that make ice effective in cleaning mold. The first is energy transfer, which describes how the dry ice pellets are propelled out of a blasting gun against the contaminated surface, knocking off the mold. It's the impact that does most of the work, according to RSG.

Next comes what RSG calls the micro-thermal shock. According to the company, the temperature of the pellets is so low when they hit the surface, the contaminants crack and explode away from the surface.

"The temperature between the contaminate and the substrate is such that the contaminant becomes colder more quickly than the substrate underneath it, so once the dry ice cracks through the top of the contaminant it expands ... and pulls the contaminant off with it," explains Tina Moore, marketing assistant for Cold Jet.

The third step that RSG describes is gas pressure. Once the pellet hits the surface, it immediately explodes. As the pellet warms it converts to a carbon dioxide gas, which expands rapidly underneath the contaminant surface, forcing the contaminant off from behind, according to RSG.

"It cleans the surface without damaging the wood," says Morten Larsen, vice president of sales and marketing for Triventek, a blasting equipment manufacturer headquartered in the U.S. in Chicago.

The Big Investment

According to long-time blasters, there's been a lot to learn about dry ice blasting and a lot of room for error. They agree that just getting started is a major investment.

The basic necessary component is the dry ice blasting assembly, but it's just the beginning of what's required to do the job.

"It's very expensive getting geared up ... the different nozzles can cost $1,500 to $2,000 alone," says Gilman.

"It really is a major investment," agrees Matthew Sanders, president and founder of Ecostar Inc. of Northridge, Calif.

There are two basic blasting assemblies available: the single hose and dual hose systems. According to Moore, the single hose system is most suitable for the mold remediation market because it allows the ice to travel longer distances than the dual hose system. Contractors can work more than 100 feet away from the machine.

Sanders, who uses machinery from RSG, points out there are different types of hoses available. The first hose provided by RSG was metal—and heavy. Sanders says that the company has since switched to a lightweight silicone hose.

In addition, there are countless nozzle types for the hose.

Larsen says that using the right kind of nozzle is one key to cleaning the surface effectively. Some nozzles put out a large fan and some of them are more concentrated, according to Gilman. Nozzle extensions also come in handy in difficult to access areas.

Of course, as Sanders points out, "different manufacturers have different types of tools that come with the system," and different features as well. But with their blasting assembly in tow, remediators may find that they have a great deal of additional equipment to gather on their own.

"To find out you need that [other equipment] after the fact is kind of a letdown," says Sanders.

Gathering the Gear

To power the blasting assembly an air compressor is needed. Gilman and Sanders both use a diesel 185 CFM air compressor that's towed behind their vehicle.

Sanders says that after investing in the blasting assembly, many companies may be reluctant to immediately purchase an air compressor to run it. That means finding a unit to rent prior to every job.

Depending upon what blasting assembly the remediator is using, the heat put out by the compressor may be another problem.

"They supply really hot, wet air and that can also alter the integrity of your ice. Especially in a very hot, humid climate it's valuable to have an after cooler with your machine [between the compressor and the blasting assembly]," says Moore.

Mike Riggs, owner of Aqua-Dry in Ft. Walton Beach, Fla., can vouch for that. The moisture in the humid, Florida air would freeze in his blasting assembly, clogging the machine.

"Down here the temperature can be in the 90s, and you'll have a 90 percent relative humidity. The air compressor we use, it compresses the moisture in the air ... it took me a while to come up with an air drier and that way we didn't have to stop every 10 minutes," says Riggs.

There's also some additional personal protective equipment (PPE) required.

"It's a little different from the normal stuff you might use," says Gilman.

The main item that stands out is the need for supplied air, or at least well ventilated air.

Although carbon dioxide is not poisonous, it can deplete the oxygen level in the work area. When blasting in a small area without protection, technicians primarily breathe in the sublimated gas coming off of the treated surface.

Sanders recalls that on his first job with the equipment, all of his workers experienced fatigue and exhaustion, "because there was no air."

Blasting technicians seem to agree that for all of its difficulties, dry ice blasting is an effective mold remediation tool due to its speed, thoroughness and ability to reach tight areas.

Riggs says that he had an "I should have known better" moment when he first used the equipment in an enclosed area and became quickly fatigued.

"We had to engineer some controls to make sure we're getting plenty of air circulation," says Riggs.

Monitoring oxygen levels is important, unless supplied air is being used.

Because remediators are working with a material that's at a chilling -109° Fahrenheit when it goes into the blasting assembly, gloves are a must.

"You definitely need to wear gloves in dealing with dry ice," says Larsen. "If you stick your hand into dry ice it's like sticking your hands into fire."

"Guys need to be trained what it can do," Sanders adds.

He knows from his first experience with dry ice that if a pellet slips into a glove and you can feel it, you've already suffered a third-degree burn.

Sanders has also learned that ear protection is necessary. Sanders says that by the gun it's about a constant 80 decibels.

Then there's the dry ice itself.

"That's a whole nightmare in itself," says Sanders.

continued on page 32

Searching for Ice

Equipment manufacturers and dry ice distributors are working to improve the availability of ice, a major issue for some remediators.

"We've had a hell of a time getting good quality dry ice," says Sanders.

Being the most essential part of the system, if the ice is not available—or not fresh when it arrives—there's no work.

"Make sure that you talk to your ice distributor about getting good ice because that will affect the performance of your machine," says Moore.

Riggs says that he has no trouble obtaining the ice when he needs it. His secret is a reliable distributor.

"He comes from 400 miles away, but his price is hard to beat," says Riggs.

According to Larsen, it's gradually getting easier to obtain dry ice.

"The logistics of dry ice is getting better," says Larsen. "It's becoming more and more available."

Moore notes that Cold Jet customers are put in contact with reliable ice distributors. However, if the distributors are not close enough there may still be issues with the freshness of the ice.

The problem is that dry ice has a very short shelf life.

"It has to be immediately put into insulated containers and sealed really well," says Gilman. "It needs to be used really quickly because it will go bad very quickly."

According to Sanders, as the pellets age, they get fissures and cracks. After the pellets are a day old, Sander says, they go from clear and solid to white and cracked. At that point, they begin to break apart.

Larsen offers an effective comparison.

"If it's two or three days old it's kind of like using used sandpaper; you don't really get the same effect out of it," he says.

Sanders says that representatives at RSG are talking to regional dry ice manufacturers, working to get them in tune with the needs of the users. In addition, some companies are offering pelletizers, so that remediators can actually create their own dry ice pellets.

One of the benefits of dry ice blasting is said to be its ability to quickly clean difficult-to-access areas, such as attics and crawlspaces.

Getting the Hang of Dry Ice

Finding the necessary equipment might be more of a challenge than using it.

"Training's really not that big of an issue," says Moore.

She says that the units are really "kind of plug-and-play," and that the only area where training might be needed is when it comes to getting a handle on the aggression levels of the system.

"Cold Jet factory representatives came out and assisted us on our first job," says Gilman.

He says the representatives were helpful in showing them how to set up the equipment, but it was up to Gilman and his technicians to adapt the equipment to the task at hand.

Riggs had a similar experience with the Cold Jet representatives, who quickly showed him how to set up the equipment.

"It's pretty straightforward," says

Riggs. "I had to figure some of it out."

RSG provides a similar service for its customers.

"They [RSG] did go out of their way to try to teach us things that we would need, but even we discovered that there were things that were necessary that they didn't even know about," says Sanders.

Part of Larsen's job is traveling to visit potential customers to offer free demos on how to use the equipment.

"It's very important that the people who are using the machine know how to use it," says Larsen.

For the most part, using the dry ice system doesn't mean drastic changes to the job—remediators say that it just means the job will take less time.

"The only thing that's different, it makes us much more efficient," says Riggs.

Or since every remediation job is different—each with unique challenges—the same can be expected for jobs using blasting.

"Every blasting job is different. You can't just plug it and go," says Sanders.

Prior to purchasing his dry ice blasting system in 2003, Sanders used hand sanding, wire brushes and angle grinders to remove mold from building surfaces. Although he still uses the angle grinder on occasion for small jobs—or on days when the blasting assembly or ice isn't cooperating—Sanders is satisfied with his new technique.

"There is some talk that dry ice blasting is gentler to some items that we encounter during structural remediation," says Sanders.

He says that the grinders can mar tile, shred vapor barrier and rip through just about anything. He says the dry ice blasting is gentler on the structure, although it can still perforate building paper.

Set-up is only slightly different, these remediators report. With dry ice, it's the set-up that can be the time-intensive part of the job.

"With the grinders it's just plug them in and go; with the dry ice it takes 30 to 45 minutes to get it set up," says Sanders.

Containment as Usual

Aside from getting the blasting assembly in place, it's containment as usual.

"With mold specifically, the containment, the PPE that [remediators] have to wear and set up for is the exactly same," says Moore.

"We have to contain the work area, put up critical areas and our work area has to be under negative pressure. That keeps everything we're doing in that containment. We don't want to disperse outside that work area," says Riggs.

"[We put] protection throughout the house in traffic areas, and then set up containment," says Gilman. "We use rigid ducts to suck the air out and exhaust it out."

Sanders adds a list of cautions to put in place for homeowners who may be present while work occurs.

"You need to talk to the client, and inform them that there's going to be dry ice around, you've got to put up signs that say hearing protection required in this area, etc," he says.

Then it's down to business.

"If there's contamination ... we remove those materials, typically blasting the embedded mold that's impregnated into the wood," says Gilman. "Where there's dark staining in plywood or OSB or floor joists we typically will use the dry ice to clean the service of the sheathing in the attics or sub floor sheathings."

According to information from SteamMaster, the system is particularly effective where engineered roof or floor joists and decking are contaminated with mold. In a single pass, remediators can remove mold from multiple right-angled surfaces. The dry ice blasting system also provides access to areas that may otherwise be unreachable.

"There's a lot of places that when you're doing remediation that way [with wire brushes] the human hand simply can't reach," says Riggs.

"We can clean gaps of less than ½-inch," says Sanders.

Sanders notes that because the ice comes out at such high velocities, it's

Remediators recommend using supplied—or well-ventilated—air in tight work areas. As the dry ice pellets evaporate, carbon dioxide depletes the oxygen in the work area.

continued on page 34

important not to aim through gaps in the studs where the ice might perforate the building paper and actually shoot into the next room.

"When you use 3 mil pellets, they're sometimes too aggressive … because they can make holes or little dents in the wood," says Larsen.

Triventek offers a "crusher," which is installed near the gun and breaks the pellets down into a fine powder.

For these technicians, cleaning up after dry ice blasting has some advantages over other blasting methods.

"Dry ice evaporates, so you have no secondary clean-up to do," says Larsen.

"You clean up whatever you blast off the surface," adds Gilman.

"You have a lot of dust when you have soda blasting and you avoid that with dry ice blasting," says Larsen.

Sanders recalls that on a previous job his crew used 7,000 pounds of dry ice.

"You can imagine how long it would take to clean up 7,000 pounds of sand," he says.

Why Use Ice?

Despite its many challenges, once the system is up and running, remediators say the benefits are numerous when compared to how they used to remove mold growth.

For Sanders, the blasting equipment isn't as demanding as using a grinder all day.

"No one has ever put much consideration into ergonomic issues when it comes to handling a grinder for a whole day," he says. "Handling a grinder is like holding five roman candles at once … there's a lot of fatigue involved."

He switched to the dry ice after learning about it through trade publications and networking.

"We wanted to be able to provide a high level of cleaning to the client while keeping the cost down," says Sanders. "By moving to a faster system, we're able to fill recommendations put forth in IICRC S520 and keep the costs down."

"It's certainly more thorough, much more thorough; also much more efficient. It can access otherwise inaccessible areas, and there's no media residue," says Gilman.

"The best thing about it is the quality of the clean that you get … you're not going to get behind every nook and cranny with any other method like this," says Moore. "You don't miss anything with blasting."

"It's clean, it's efficient, it's easy to use," says Larsen.

Each of them agrees that speed is a big benefit of the system.

"What used to take us four or five

continued on page 36

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days now takes us two days," says Sanders.

"We're able to do square feet per minute instead of square inches per minute," says Riggs.

In addition to speed, Moore says, is "all of the great things that go along with that ... reducing labor costs, reducing displacement costs."

These are benefit for insurance companies as well as remediators.

"Tell the adjustor what it used to take us 10 days to do now takes us three, they're going to love you for it," says Sanders.

Larsen has also noticed a trend in the cost of the equipment.

"Just five years ago a blaster would cost about $25,000," he says. "Now you can get one for under $11,000."

It's still a major investment, but advancing technology means costs are going down.

The non-toxicity of the product is another plus.

"Out here in California people don't like chemicals ... they don't want them in their homes ..." says Sanders.

For these remediators, the results add to these benefits. Since SteamMaster purchased its dry ice blasting system, the firm has passed every post remediation verification test, according to information from the company.

Ecostar has had similar success.

"We haven't failed a surface sample yet," Sander says.

Dry Ice Age

Equipment manufacturers feel that more mold remediators are learning about dry ice blasting.

Moore says that nearly 40 percent of Cold Jet's customers are using the equipment they purchase purely for mold remediation.

"It is definitely becoming a big mold remediation tool," says Larsen.

Sanders agrees that awareness is growing.

"I think almost everybody's heard about it," he says. And yet, he adds, "Eighty percent of the people that know about, they're never going to get it."

He feels that dry ice blasting is not for every remediator because of the commitment it requires to performing an efficient cleaning, and exploring the equipment through trial and error.

"Most people who buy this system are going to be greatly disappointed at first," he says. "There is a learning curve involved, there is some additional equipment involved that no one talks about. But if contractors give it a chance they'll start to see the benefits. They won't see it right away."

The equipment is a huge investment with the potential for numerous

unexpected problems. Equipment manufacturers and dry ice distributors are still discovering areas for improvement. The initial set-up can be intensive and remediators are often dependent upon the delivery of dry ice. But the contractors who use it praise its advantages.

"If used correctly it can save a lot of time and money," says Sanders.

"Generally what happens is that our customers are switching to dry ice from whatever they were using before ... unless it's a very small project," says Moore.

"It's not going to be right for every remediation contractor, and it's not going to be right for every project," says Sanders. "It's going to have its little niche but I don't think it's going to be prevalent."

It may not be for everyone, but for remediators dedicated to a thorough cleaning system, it might be worth a look. m

Paper Reviews Evidence of Illness from Mold Exposure

An article in the February issue of the *Journal of Allergy and Clinical Immunology* set out to review information on scientifically documented mold-related disease, as well as the many other illnesses that have been hypothesized as health effects of mold. Researchers Robert K. Bush, MD, FAAAAI; Jay M. Portnoy, MD, FAAAAI; Andrew Saxon, MD, FAAAAI; Abba I. Terr, MD, FAAAAI; and Robert A. Wood, MD, reviewed information available on mold and its potential health effects and offered their interpretations of the

continued on page 40

A recent study refuted associations between mold and many illnesses, as well as "nonspecific complaints" for which inhaled mycotoxins are frequently said to be a cause.

NEW Mold Awareness Training Available
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Under contract from The Indoor Environments Division (IED) of the U.S. Environmental Protection Agency (EPA), the Environmental Education Foundation, with the support of the largest group of industry representatives ever assembled, has developed a New training program that focuses on a total risk management program for IAQ - Including Mold Management & Water Intrusion and the implementation of an Operations & Maintenance (O&M) Plan.

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continued

association between mold and attributed illness.

The researchers write that molds can cause illness through three specific mechanisms: the generation of a harmful immune response (allergies or hypersensitivity pneumonitis), direct infection by the organism and toxic-irritant effects from mold byproducts (or mycotoxins). For each mechanism, there is a specific illness that is the reaction.

However, the researchers note in their paper, in addition to accepted mold-related illnesses, new illnesses "characterized by the absence of objective evidence of disease" are being attributed to mold with increasing frequency.

As the paper says, when a toxic dose of mold is ingested there is a specific pattern of illness, depending on the type of mold. Therefore, the argument that the inhalation of mold mycotoxins will give rise to a wide array of "nonspecific complaints" isn't consistent with what is known to happen. The researchers conclude that the occurrence of mold-related toxicity from inhaled mycotoxins in nonoccupational settings is highly unlikely.

The paper also reviewed claims that that exposure to mold and its byproducts induces a state of immunodeficiency or autoimmunity, decreasing the body's ability to fight infection and disease. According to the researchers, at this time there is no good research available that can really support this claim. They concluded that exposure to mold does not result in a state of immunodeficiency, citing examples of individuals who have had intense occupational mold exposure and do not manifest findings of immunodeficiency.

The authors also concluded that exposure to mold that only occurs indoors is an "extremely unlikely" cause of hypersensitivity pneumonitis, an allergic disease frequently attributed to mold. However they add, mold exposure in occupations such as farming is a known cause of the uncommon disease.

The paper also reviews information on testing for mold-related diseases, as well as testing for mold in the environment. It concludes that sampling of both indoor and outdoor air for mold spores provides a measure of potential exposures and can be useful in certain clinical conditions, but it has many shortcomings. Bulk sampling of mold can't be used to assess exposure, the paper states, although it could be useful for other purposes. In addition, the researchers say that testing for airborne mycotoxins indoors can't be used to diagnose mold exposure.

While the authors concluded that issues regarding mold remediation was beyond the article's scope, they agreed that it must be addressed.

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MSU Researchers Show Stachybotrys Could Affect Sense of Smell

Michigan State University researchers have found that certain toxins produced by Stachybotrys chartarum are capable of killing nerve cells, essential for the sense of smell, in the nasal passages of mice.

The scientific study was presented at the Society of Toxicology annual meeting in March and published in *Environmental Health Perspectives*.

A study on mice has shown that stachybotrys may damage the ability to smell—perhaps linking mycotoxins to memory loss.

"This is the first animal study to really show that a toxin derived from the spores of black mold may cause significant damage in the nose and the frontal part of the brain involved in olfaction," said Jack Harkema, a University Distinguished Professor of pathobiology and diagnostic investigation and one of the MSU researchers.

According to the MSU researchers, these toxins found in Stachybotrys chartarum specifically killed olfactory sensory neurons in the nasal airways of exposed mice. These nasal neuronal cells are known to detect odors and send electrical signals to the parts of the brain that are necessary for the sense of smell, or olfaction.

In addition, they found that the mice that inhaled these fungal toxins developed, inflammation of the nasal passages. Mild inflammation also was detected in the part of the brain directly connected to the olfactory nerves.

"Are our noses more or less sensitive to this toxin, and other similar fungal toxins? This is really a crucial question yet to be answered. We also need to develop better ways of detecting these toxins in the contaminated air of water-damaged buildings, so that we can protect the public from toxic exposure," Harkema said.

He continued, "Also, it has been reported that there are neurological conditions in people who have inhabited mold-contaminated buildings or homes. They've claimed to suffer from memory loss or other neurological symptoms. As we all know, memory can be triggered by what we smell."


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—Mike Lanius, CIE, CMR, CMI

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The Hurricane Season Blues

As Colorful Mold Still Covers the Coast

The 2006 Atlantic hurricane season officially begins June 1, and experts are predicting another active season. However, news about Gulf Coast residents still dealing with the aftereffects of Hurricanes Katrina and Rita still occupies a big piece of the consumer press. Through the hurricane-related news about health, litigation and construction, information on mold creates a common theme.

Judge Joins the Fray of Katrina Lawsuits

U.S. District Judge Louis Guirola has joined the fray of Gulf Coast residents suing insurers for coverage of Katrina damage. According to the Associated Press, attorney Richard Scruggs is representing Guirola in his suit against Nationwide Mutual Insurance Co. for refusing to cover damage to his home in Long Beach, Miss.

In the suit, Guirola alleges that an adjuster who inspected his property attributed the damage to wind. However, Guirola alleged, Nationwide ignored the adjuster and blamed the damage on water, which it does not cover.

The judge decided several weeks ago to recuse himself from hearing Katrina-related insurance cases to avoid a conflict of interest, according to the article.

Study Debunks Katrina Cough

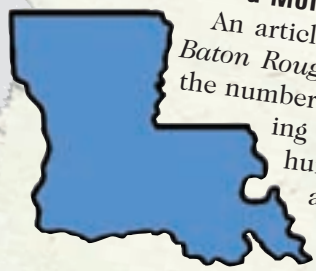
A new study from the Louisiana Department of Health and Hospitals says that "Katrina Cough" may not be the threat New Orleans residents and visitors have feared.

News reports have circulated about the general respiratory irritation prevalent in New Orleans where there is an increased presence of mold, dust and other particulates in the air. Alleged symptoms are similar to a cold, but with a persistent dry cough.

Using emergency room surveillance and population studies, researchers found no obvious trends that supported the existence of the syndrome.

The study states that "contrary to some perceptions, there is no increased proportion of respiratory conditions severe enough to cause consultations at emergency rooms. The proportions observed in New Orleans are similar to the national data."

Homes from a Mold More Resistant to Mold?



An article in the March 2006 *Greater Baton Rouge Business Report* says that the number of homes in need of rebuilding in Louisiana as a result of hurricane damage has provided an opportunity to experiment with building methods others than the traditional on-site, stick built method. Two dozen companies have approached Louisiana Economic Development with ideas for technologies that they believe will lead to quickly built, cost-effective—and perhaps mold-resistant—homes.

Many of the suggestions fall under the blanket term of "systems building," where parts of the home are mass-produced in a factory. Because many of these homes use framing materials such as fiberglass, steel or concrete, they prove to be more resistant to mold, wind, termites and fire, according to the article.

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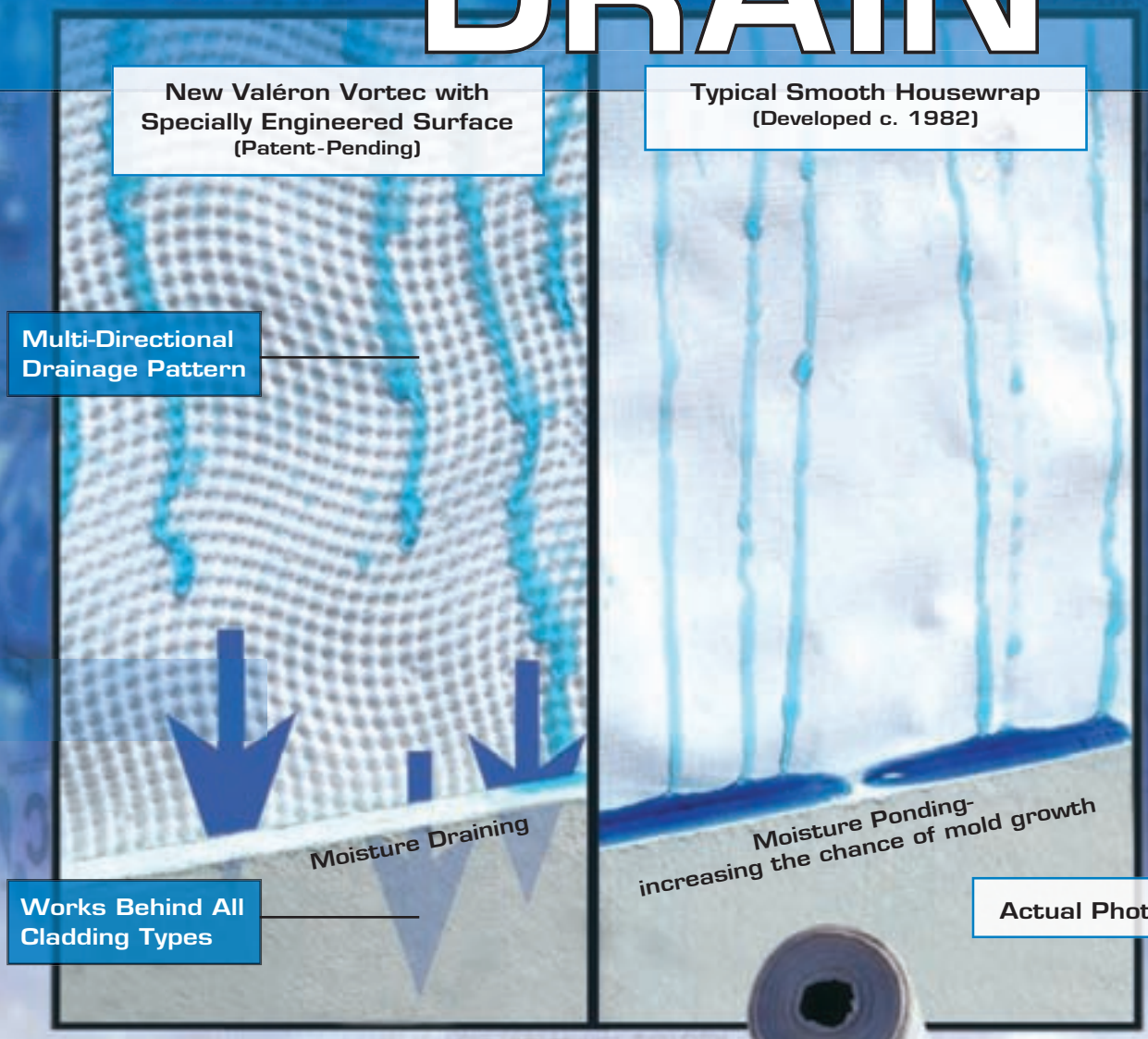

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