What can take a “non-issue” and turn a $30,000 job into a $100,000 liability? Fear, and the new fear among building owners, is a fear of molds and bacteria.

Just ask AWCI President Mikel Poellinger of Poellinger Inc., La Crosse, Wis. After his company completed a $30,000 fireproofing job on three rooms of a Minnesota school, the owner wanted Poellinger to cover the cost of a $100,000 “fix” to a possible mold and bacteria problem. Poellinger immediately called his lawyer and W.R. Grace & Co., the manufacturer and supplier of the fireproofing materials.

Between June 29, 2000, and July 15, 2000, workers from Poellinger applied W.R. Grace’s Monokote® MK-6 fireproofing to the ceiling joists of three rooms and a hallway, totaling about 5,000 square feet, in La Crescent High School in La Crescent, Minn. They used a total of 300 bags of material and 3,300 gallons of water, or 11 gallons for each bag, and applied the fireproofing in one room at a time.

Afterward, the school principal noticed mold growing on the walls and asked the Institute for Environmental Assessment, an environmental consultant that was working on site on asbestos abatement, to test the fireproofing for mold. On Aug. 2, the consultant took samples from the still-moist fireproofing and sent them to a laboratory in New Jersey for analysis.

Michael Sheahen, regional man-
ager for W.R. Grace & Co., said he was “surprised that people zeroed in on the fireproofing first.”

Monokote is a cellulose material that has been treated with a fungicide that stays active even after the material dries. If, because of water infiltration, for example, the material should become wet again, the fungicide would kick in to kill any mold spores that tried to colonize the fireproofing.

When the results came back, at first glance they seemed to validate Sheahen’s confidence. They showed very low levels of mold, but they also showed high levels of bacteria, including gram negative bacteria. In a written report, IEA told school officials that “Gram negative bacteria produce endotoxins (contained in their cell wall) that have been associated with sick building syndrome symptoms such as upper respiratory irritation and flu-like symptoms.”

The mention of bacteria “scared the hell out of the school,” said Poellinger, and that’s when the architect began talking about a $100,000 fix. Even before they had the written report, “they had gotten bids for removing the material and installing fire dampers,” he said. They wanted to start work the next day. Poellinger’s attorney got them to put it off a day so they could get an expert from Grace to look at the site.

After that, the two sides might as well have been speaking different languages.

William Dempster, technical services manager for Grace Fire Protection Products, arrived and conducted his own tests. Pointing to previous mold problems at the school—standing water along exterior walls and in toilers and sink drain—he argued that the school itself was the likely source of the mold and bacteria, not the fireproofing material. And, as for those bacteria, they need moisture to stay alive, said Dempster. So, since an IEA inspection on Aug. 17 found the material dry, the bacteria were no longer a problem.

Randy Still, regional manager for IEA, said in a telephone interview that the source of the contamination was never the issue. “Bacteria are everywhere . . . and mold is not uncommon,” he said, but it is the contractor’s job to “control the environment and affect a quick curing process.”

That didn’t happen. “The material was wet for a long period of time, and bacteria like very wet, saturated conditions.”

Conditions Didn’t Matter

By all accounts, conditions when applying the fireproofing were less than ideal. Rainy weather preceded the start of the job, and the ambient humidity was very high throughout the installation period. But none of that mattered, because Poellinger was constrained by the project schedule. Functioning schools, after all, are notorious for the limited time they have in which to squeeze in a renovation or a retrofit. They generally want construction done by the time teachers have to report back to prepare their classrooms.

Making matters worse was the very limited ventilation in the areas to be sprayed. Each room had two 16-inch square windows that had to be closed at night for security reasons.

Like every other experienced contractor, Poellinger Inc., which has been in business since 1957,
understands that it is important to have dry conditions when applying fire-proofing. They set up three dehumidifiers in the room where the Monokote was being applied, and each humidifier is capable of removing 30 to 60 gallons of water every 12 hours, Poellinger said.

Yet, the school board insisted that Poellinger was responsible for the mold growth, since the contractor was supposed to control the environment. Ultimately, Poellinger absorbed the $10,500 cost of having an abatement company clean up the mold and mildew under negative pressure.

It would be comforting to think that Poellinger’s problem is unusual, the product of an overzealous or incompetent environmental consultant. Sheahen suggested that is the case. “We have millions of bags of fireproofing installed in environments like this without a problem,” he said. Richard Eaton, project manager for Olympic Wall Systems, Inc., Minnetonka, Minn., agreed. “Maybe outside of urban areas they don’t see much of this stuff,” he guessed.

But that might just be an invitation to similar trouble. Indoor air quality has moved to the top of owners’ list of concerns, admitted Sheahen. And Georg Fischer, a specialist on indoor environments who works for the Indoor Air Unit division of the Minnesota Department of Health, said, “We’re getting an increased number of these mold and moisture calls regarding schools. We had several in last year, and it is growing, probably because there is more awareness.”

Trudy Smith, a project manager at Environmental Solutions, a St. Louis, Mo.-based consultant, said “disputes between contractors and schools [about mold] are very common.” Told about the dispute in La Crescent, she said her first thought was that the fireproofing created the moist conditions that grew the mold. “Clearly there were spores available [from] previous infestations,” she said, but the moisture from the fire-proofing gave them “a wonderful opportunity to grow marvelous colonies.”

The rule of thumb, she said, is that “if it is wet for more than 24 hours, you should tear it out and replace it.”

Fear of Mold

Sensational reports about “toxic schools’ in USA Today and CBS’s 48 Hours “have fueled the fear of mold. Local newspapers fan the fear with stories about “highly toxic mold Stachybotrys.”

It is well known that there are people who are allergic to molds, but, aside from that, there has been no direct evidence in the medical or public health literature of environmental exposure to Stachybotrys or any other mold causing anyone’s illness, according to a recent review article in Medscape by Dr. Daniel L. Sudakin, a Medical Toxicology Fellow at Veterans Administration Medical Center in Portland, Ore.

That is not to say that Stachybotrys or other molds aren’t hazardous. They can produce a type of toxin, called mycotoxin, that ample research demonstrates can make animals get sick when they eat it, but attempts to simulate airborne exposure in environmental conditions have failed to produce any significant symptoms in laboratory mice. Other research has shown that on some building materials, Stachybotrys does not produce mycotoxins and does not exhibit any toxicity, and that Stachybotrys spores are unlikely to become airborne. All of which led Sudakin to conclude that “the health risks from environmental exposure to Stachybotrys remain poorly defined.”

That doesn’t stop environmental consultants from urging costly solutions on building owners, often at the expense of contractors.

What Can You Do?

What about the bacteria? IEA Project Engineer Dean Rask agreed the drying of the fireproofing probably killed most of the bacteria, but added that “endotoxins will remain . . . and can still elicit reactions after bacteria die.”
Fearful school officials wanted to get rid of the endotoxins. They wanted the fireproofing torn out and replaced. Dempster suggested washing the surface of the fireproofing with a mild bleach solution and a strong oxidizer, such as hypochlorite, and then encapsulating in with a latex paint or an asbestos encapsulant.

Poellinger’s lawyer, Jeff George of Moen Sheehan, talked school officials into having IEA measure the level of endotoxins in the room air after the fireproofing dried. They determined that the endotoxin level was no more than one would expect to find in carpeting.

“Based on the fact that there was no control to compare the bacteria counts to begin with, we couldn't say if the amount in the wet material was high or low,” Fischer said. After talking with national experts, the health department concluded that when the fireproofing dried “the bacteria were dead and there was no need to do anything,” he said.

Furthermore, “we don’t worry about bacteria growing again with new moisture problem,” Fischer said. “The bacteria die off. It doesn't have spores . . . and since the material is not in an air plenum, it shouldn't be disturbed, so there is no route of exposure.”

In short, he said, “It turned out to be a non-issue.”

But it is not a non-issue to Poellinger. While the final settlement has not been reached, the company has already spent a considerable amount to cover the mold cleanup and attorney’s fees. And, “if we hadn’t pushed the issue and gotten the right people in, by the second day we would have had a $100,000 exposure,” he said.

How can contractors avoid this fate? Smith said they should invest in humidity meters, and pointed out that ASHRAE recommends keeping humidity below 60 percent to avoid mold and mildew growth. So, explain that to the building owner and/or the general contractor, and if they insist on you applying fireproofing even when the humidity is high, make a record of it and the humidity level.

About the Author
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