

All Stuffed Up

Poor Indoor Air Quality Can Lead to Sick Buildings, but There Are Cures for What Ails

By JACLYN C. STEVENSON

Mold, bacteria, skin cells, dirt ... these are the things we're breathing in varying levels every day. The picture may appear grim, but the prognosis may not be as bad as we think — and further, remedies to make indoor air quality a little better are available, starting as simply as a run down the hall with a dust mop.

It's called stachybotrys, and by some accounts, it's the stuff of horror movies. Dubbed 'toxic,' 'black,' or 'killer' mold, stachybotrys has been the subject of frightening news reports concerning deathly ill children, businessmen with major memory loss, and families fleeing their homes with nothing but the clothes on their backs after discovering the greenish-black substance in their walls or floors.

Bruce Tease, senior environmental scientist with Environmental Compliance Services (ECS) in Agawam, said he's heard those accounts and doesn't doubt their validity. However, he does caution that these are extreme cases involving substances detrimental to indoor air quality, or IAQ, and one reason why the term 'sick buildings' has become part of the lexicon, prompting employers, building owners, and property managers across the country to perk up



Bruce Tease of ECS in Agawam says indoor air quality is becoming a more prevalent issue in the workplace.

their ears in hopes of finding a solution.

"The media has created a hysteria around black mold without providing a lot of education," said Tease. "It's a very uncommon occurrence to have an IAQ problem affect everyone in the building. Usually, it's a couple of people, and everyone automatically thinks it will lead back to mold."

"But even finding black mold doesn't mean you have a toxic mold problem," he added. "Plus, people are allergic to a lot of different things."

Still, Tease said there is one positive side effect to mold panic — it's bringing IAQ to the forefront of more people's minds.

That, in turn, gives environmental professionals an opportunity to break down the lingo and the myths, and to offer some solutions for healthier work and living environments.

The Towering Infirmary

First, said Tease, 'sick building' is a term that often strikes an unnecessary level of fear in the hearts of many people. But it is a very real phenomenon.

"Sick-building syndrome refers to a situation in which the majority of people in a building are exhibiting the same kind of response, regardless of a genetic predisposition such as an existing allergy," he explained, noting that this generally translates to

more than 20% of a building's occupants experiencing the same or similar problems.

That can be a hard statistic to pin down, because the EPA does not mandate any specific regulations or safety levels for IAQ. But it does offer a series of guidelines geared toward specific groups such as builders, public officials, school administrators, facilities managers, and others that are helping to shed a little light on what can be construed as sick-building syndrome, and what can't.

These include plans such as I-BEAM (Indoor Air Quality Building Education and Assessment Model), a guidance tool designed for use by building professionals and others interested in IAQ in commercial buildings; and BASE, the Building Assessment, Survey, and Evaluation study, which collected data from 100 randomly selected office buildings in the U.S. to create a set of basic statistics regarding HVAC features, pollutant concentrations, and occupant symptoms. The database is aimed at researchers, scientists, building professionals, public-health officials and policy makers, while the Building Air Quality Action Plan (BAQ) was drafted to meet the needs of building owners and managers looking for an easy-to-understand path for taking their building from current conditions and practices to the successful IAQ management practices. The BAQ Action Plan follows eight steps, and includes a 100-item checklist to get started.

Christine Arruda, a certified indoor environmental consultant with the environmental consultancy firm O'Reilly, Talbot, and Okun Associates in Springfield, said she tends to focus more on these types of basic guidelines

when first entering a property, rather than on the possibility of a pervasive case of sick-building syndrome.

"In fact, I'll go so far as to avoid the terminology altogether," she said. "It sounds so scary, and people tend to look at it in the wrong way — as a lot of people having symptoms equating to the building making them sick, when really, often it's a case of many people with varied symptoms without an associated cause."

Among the types of irritants that make a property suspect of sick-building syndrome are organic substances such as mold, bacteria, or pests, non-living particulates such as dust and dirt, and chemicals either used or produced in the workplace that can affect overall air quality. Sometimes, said Arruda, this means that a group of people exhibiting allergic symptoms are experiencing very different reactions to different things, and this doesn't constitute a sick building by strict definition.

"A lot of times, we're called in to assess IAQ in varied sites, from commercial to industrial to residential. We see a whole host of symptoms, and sometimes we can find out what a cause may be. But more often, we find building constraints, either structurally or in terms of the type of occupancy, that we need to help the occupants work around to create healthier, more comfortable environments."

Pyramid Scheme

Indeed, there are a number of indoor-air-quality issues to address at varying levels in buildings of all shapes and sizes, and Tease offered a specific reason for this within certain properties — a new syndrome of sorts that he calls 'Egyptian Tomb.'

"Buildings prior to 1950 or 1960 rarely have problems unless there's a water leak," he said. "Buildings constructed after the 1970s are where we see the prob-

lems. Older buildings aren't getting sicker, but newer buildings sacrificed clean air in their design."

Tease explained that homes and buildings, including multi-office suites and high rises, built over the past three decades have followed a trend of 'tight construction' that can make the structure more durable in broad terms. However, this type of construction also limits the exchange of inside air with outdoor air.

"There's no way outside air can come in and dilute the dust, dirt in the carpets, fungi, chemicals, you name it — and all of this

"When it comes to mold, I can walk into any building and find it. There are situations where there is clear evidence of damage, but a lot of times, I don't think that's the problem."

starts to build up," he said. "The exchange of indoor air with outdoor air is the key. If the ratio is right, particulates won't build up and condense, and moisture can be controlled."

Both Tease and Arruda agreed that often, these problems can be remedied through solutions that are simpler than many might first think.

"A key thing in alleviating symptoms is ventilation, so that leads us directly to the HVAC system," said Arruda. "It's important for owners and managers to have an ongoing, thorough HVAC maintenance schedule, making sure that there are no obstructions, everything is clean and flowing properly, and the system is balanced throughout the building."

Tease added that there are even more proactive moves offices can take as a whole before HVAC concerns are addressed.

"Housekeeping, ventilation, and fixing leaks are the three things to address, and the solu-

tions are pretty simple," he said. "We tell people to make sure they schedule routine cleaning events in office areas, perhaps using a HEPA (high-efficiency particulate air) filter vacuum to remove fine particulates. Those can run \$500 to \$1,000, but they're great for people who have hypersensitivities to dust or mold spores, for instance. They can also be rented to help decide whether or not that step is even necessary."

Even more straightforward than a HEPA vacuum, though, is good old-fashioned dusting — a tactic Tease said he and other environmental specialists will

suggest early on when working with a client.

"Dusting is not a common practice in our society," he said. "But it's common sense for keeping an area free of fine particles. Air purifiers can also help."

To Have and to Mold

As IAQ becomes a more-prevalent concern, however, a bigger arsenal of proactive measures is being devised to allow for more accurate readings within a given building and help property owners and managers take action.

One such solution is IT-based, said Tease. Computer-driven tactics such as the 'Eclipse' program, now in development at ECS, can monitor various locations within a property and automatically generate reports based on predetermined acceptable levels.

It's being introduced to property managers now, especially those who manage multiple properties, as another option that can track IAQ and thus help identify

or avoid problems.

"IAQ is very hard to track otherwise," said Tease. "There could always be more than one needle in the haystack making people sick, and currently, it's the squeaky wheel that gets the grease."

Having plans in place to monitor IAQ, be they technology-based or otherwise, is also becoming a more noticeable aspect in new construction and renovation projects within many types of properties. Arruda said this speaks further to greater understanding of the importance of clean air in the home and workplace.

"Now," she said, "in terms of new construction, we're seeing better understanding leading to people making more proactive moves, and putting more thought into not just making the building look great, but also making sure occupants are going to be comfortable and able to perform their tasks."

"It's just the smart thing to do," she continued. "We can only imagine the costs to evaluate IAQ and upgrades to remedy problems; once they all add up, those numbers can be huge."

As for stachybotrys, Arruda agreed that the public may have a skewed view of this toxin, though she admits that it, too, is easy to find in large numbers.

"When it comes to mold, I can walk into any building and find it," she said. "There are situations where there is clear evidence of damage, but a lot of times, I don't think that's the problem."

The real issue, she said, is education — and the more individuals have, the easier they can breathe.

"Any IAQ program put in place should include an educational component," Arruda said. "This helps people regain the perspective that breathable buildings are better." ♦

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