



PUBLIC AWARENESS
ABOUT THE
POTENTIAL IMPACT
ON THEIR HEALTH
IS GROWING

By Pat McDermott

mouldy house

In the basement of a newly constructed home, mould is growing — big, blotchy black patches of it, under the plastic vapour barrier covering the wall insulation.

Waterproofing contractor Angelo Garaci, who has been called in on this job, says there's no quick fix. "The problem isn't leakage," he explains.

As the owner of Toronto firm **Watertite** Waterproofers, Garaci usually deals with defects ranging from foundation cracks to rodholes that pop and leak.

"But now we're seeing new homes where there are huge amounts of condensation behind the upper layer in that

first four to five feet of bundled insulation and vapour barrier extending down from the ceiling," he says. "Invariably this turns into mould and mildew."

Like a black tide that rose in the U.S. and is rolling slowly northward, the issue of mould will soon engulf Canadian homebuilders as well. Mould, of course, is not a new problem. What is new is the public's awareness of the problem, and its potential impact on health.

The owners of the home being inspected by **Watertite**, for example, are living in dread. "They're worried about their health and the health of their children, and they're angry," says Garaci.

And when people are angry — when problems can't be fixed to their satisfaction and their health or finances are involved — they sue. In May 2002, a groundbreaking case, *Bonnes vs. Bishop*, found in favour of the owners of a 14-year-old home in the Bracebridge, Ontario, area that was affected by mould. The mould was caused by water that entered the structure by way of the crawl spaces. The lawsuit was based, not on actual health problems, but on the homeowners' concern about possible long-term health problems that might arise from the presence of mould. When the judgment went against the contractor who built the home, he

Dampness inside homes is producing breeding grounds for mould and fungus as pictured here

was ordered to demolish and rebuild it.

So far, the amount of legal action is minor in Canada compared to the U.S. where, according to a recent report by CNN, 11,000 lawsuits related to mould were initiated in the first nine months of 2002. Nonetheless, it appears mould is an issue that is not going to go away. It may be that, as in the U.S., new legislation will be developed to deal with the problem. Proactive steps are being taken in Canada by the national and regional homebuilder and construction associations to study mould to make sure they have a

say in any legislation. This foresight contrasts with the situation in the U.S. where the National Association of Home Builders was caught largely off-guard when congressman John Conyers introduced his far-reaching "Toxic Mold Safety and Protection Act," with provisions that may have some serious repercussions for U.S. builders.

Like the nasty organism itself, the mould issue is spreading. For example, it may very well affect your insurance. The Insurance Bureau of Canada is currently recommending "advisory wording" that its members can use to protect themselves against the new liability represented by mould. The net result is that the next business insurance policy you get may specifically exclude claims for damages caused by mould or fungus, or that you'll have to pay extra for this type of coverage.

Perhaps the surest sign that mould should be taken seriously is the degree of interest the legal profession has shown in the matter. The number of seminars on mould litigation organized by organi-

zations that serve the profession, such as the Canadian Institute, makes it clear that lawyers sniff a new business opportunity.

"In the U.S. this is an area that's really active for the legal community," says Rick Shaban of Toronto law firm Borden, Ladner, Gervais. Shaban sits on a Canadian Construction Association task

U.S. home builders were caught off guard by new far-reaching laws

force on mould that was set up in early 2002. "So much attention is being focused on this subject, the prudent builder really needs to take measures to prevent any potential problems," he advises.

So, exactly what sort of measures should the homebuilder take? Even for those who consider mould a non-issue, because they consistently employ good homebuilding practices and have never experienced a mould-related complaint, it's a good idea to document those homebuilding practices and maintain a checklist to show they have been observed on a house-by-house basis. Should a lawsuit ever arise — as it can even a decade or more later — lawyers agree this type of documentation can provide proof the builder took due precautions during the construction process.

"Control the moisture and you've controlled the problem," advises engineer and building materials specialist Dale Kerr, of Kerr and Associates, Jackson's Point, Ontario. "Of course, this is not nearly so simple as it sounds," she adds. Kerr points out a particularly thorny problem for many builders: making sure the materials that go into each home are dry and free of moisture. "Wood used in new home construction, for example, is not supposed to have any more than 19 per cent moisture, but

Moisture from inside the home is trapped in the attic and leads to damp conditions



PHOTO COURTESY CANAM BUILDING ENVELOPE SPECIALISTS INC

Roof is wet around warmth of furnace vent in background. Elsewhere, frost burns are visible—these are sources that lead to mould.



I'm sure most does."

Kerr explains that the microorganisms that create mould thrive on cellulose. In today's tighter, better-insulated homes, she says, wood and other cellulose-based products that go in wet often stay wet, providing the perfect breeding place for fungus. "For example, drywall paper that's moist is one of the best places for mould to grow, usually on the side that's hidden inside the wall," she says.

"If you don't dry out a structure to less than 20 per cent moisture content, you will have microbial growth," claims Matt Lozecki, of Commercial Drying Technologies International (CDTI) in Hamilton. Lozecki reasons that it's cheaper for builders to pay \$400 to \$800 per home to dry a house, than deal with the headaches and costs that can ensue from using wet materials. "The certification we give will also save on insurance," he adds. In the U.S., where CDTI also operates, this view is definitely gaining adherents.

So certain is Lozecki that drying of homes and commercial structures is going to be big business that CDTI is developing a franchise operation to open offices across Canada. A second company run by the Lozecki family,

Environmental Solutions International, is currently constructing a mould remediation training centre.

"We will be training for the three types of certification required by U.S. insurance companies in order to do remediation work for home insurance claims related to mould," Lozecki explains. The new accreditations, again providing further

Fallon, vice president of Cosella Dörken Products in Beamsville.

"In homes with HRVs (heat recovery ventilators), considerable water is pulled through the slab, due to the drier air above the concrete and the wetter soil below, and this tends to increase the moisture draw through the concrete over time," he explains.

Wet areas in today's tight, better-insulated homes provide a perfect breeding ground for fungus

evidence of the booming industry that mould is spawning, include Water Loss Restoration Technician (WRT); Applied Structural Drying (ASD); and Water Loss Specialist (WLS).

Homebuilders looking to sidestep mould issues will also pay particular attention to the two areas where moisture problems are most common: the basement and the roof. In Ontario, the use of foundation wrap has been widely accepted by builders. However, there still are some who, looking to save a buck or two, use tar or omit waterproofing precautions altogether. This penny-pinching strategy leaves them open to mould-related claims for damages months or years later.

And then there are some builders who are going to the opposite extreme, and creating a total "building envelope" that encompasses the bottom of the house as well as the sides and top. "We're seeing more custom builders install our foundation wrap under the slab as well as around the foundations," says Tom

The roof is another problem spot for moisture, not because of leaks as might be expected, but because of the moist, warm air from a well-insulated house getting into a cooler attic. According to Tony Woods, of Canam Building Envelope Specialists, a Mississauga-based remediation firm, the trouble starts when airborne moisture condenses on the underside of the roof.

"We're seeing mould on the underside of the deck even in two-year-old houses," says Woods. "It's green, black, white and unhealthy, and it rots the joists and can become a structural problem."

The reason for excessive moisture collecting in the attic is too many air-paths leading to the roof from the house below. Woods has a long list of locations that need effective air blockage. "Plumbing stacks, for example, are a round peg in a square hole. Often they're stuffed with mineral fibre insulation—we call it filter glass because it doesn't have any air stopping power."

Information

USEFUL WEB SITES WITH MORE INFORMATION ON MOULD:

www.watertite.ca

www.canambuildingenvelope.com

www.drying-technologies.com

www.deltams.com

www.healthyspace.ca

www.mold-help.org

www.awci.org

www.radonseal.com

www.gov.mb.ca/gs/memo/undermold

www.cmhc-schl.gc.ca

Expert at the Building and Renovation Forum

MANY PERVASIVE PROBLEMS IN THE INDUSTRY

Other items include improperly hooked up or vented exhaust fans, and wall stud spaces left open above dropped ceilings. Woods has a special hate for pot lights — “they’re leaky as hell and anything but sealed.” In one home in Rosedale, Toronto, Canam easily identified the reason why moist air was getting into the attic — 24 pot lights provided a ready pathway for the passage of warm air to the roof.

“No easy fix is possible when the home wasn’t sealed up properly in the first place,” Woods adds. “Extra vents aren’t helpful and can actually make things worse.” Beside stopping up air

the homeowners themselves can be responsible for the mould problem

paths, his remediation strategies include installing good ventilation systems — exhaust fans with high CFM output to ensure prompt removal of damp air, and top quality HRVs.

It’s a final twist of irony that, despite everything a builder may do to ensure a healthy home, the inhabitants themselves can be responsible for the mould problem. Our experts point out that, even in homes where ventilation is good, heavy moisture loading from such activities as excessive use of showers and boiling pots can still create the conditions for mould and fungus to grow. Woods recalls one such situation: “In this case, there were 19 people in a three bedroom house. After we installed new ventilation and all but three moved out, the problem disappeared.”

Pat McDermot is a Toronto-based freelance writer.

Understanding mould and why it is becoming an issue will help every builder in the future, so it is one of the topics on the agenda for the Ontario Building and Renovation Forum in Toronto on January 15 and 16.

The guest speaker is renown expert, **Joe Lstiburek** of the Building Science Corporation, a Boston-based consulting firm. He will talk about how mould develops and what we know of its health affects.

A lot of the blame lies with the industry, he insists. Today’s homes have more insulation than vapour barriers and the trend is using moisture sensitive materials like paper-faced gypsum and particle board rather than traditional materials like brick.

“We’re thumbing our noses at the physics of nature,” he claims, adding that there are two sides to a wall — inside and outside. With a tight barrier, one will stay damp and become a breeding ground for mould. For example, any home with air conditioning should not have plastic vapour barriers.

“Since mould decomposes dead organic material it can grow on wood, the paper facing on gypsum board (drywall) and other materials made from wood. Mould can also digest some synthetic materials such as adhesives, pastes and paints,” Lstiburek says.

While mould cannot get nutrients from inorganic material such as concrete, glass and metal, it can grow on the dirt present on these surfaces.

“Mould can grow by extension of hyphae that are like tiny root hairs. In this way, a small colony of mould can expand to cover many square feet of material,” Lstiburek explains.

Mould can also make spores that are like very small seeds and can survive conditions that are too sunny, hot, cold, dry or wet for mould to grow. When spores are released they can be carried by air or water to new locations and find a damp surface that has food and oxygen available.

So why do builders need to know anything about mould?

“Too much mould can affect our health. In addition, mould can damage or destroy

building materials such as the wood or gypsum board in our homes,” he responds.

Exposure to mould can affect susceptible people, he said adding that if a person has asthma, exposure to mould can cause an asthma attack or make their chronic asthma get worse.

Lstiburek adds that moulds sometimes make powerful chemicals called mycotoxins, which can make people sick.

“Presently we do not know all that much about the health effects of most mycotoxins on humans. Most of what we know about mycotoxins comes from exposure of farm animals to mouldy grain or hay,” Lstiburek says.

The bottom-line, however, is that homeowners want to know if they have a mould problem. Investigators want to find out where the mould is. Insurance companies want to know if the mould has been cleaned up. Doctors want to know if there has been exposure to mould.

“If you see mould or you smell mould you have mould. You do not need to test for mould if you see it or smell it. Knowing the type of mould does not change the way you respond. All mould should be treated the same way. It should be removed without exposing people to lots of mould spores or fragments and the underlying moisture problem causing the mould should be fixed.”

For the new home builder, Lstiburek cautions that the purpose of a building enclosure is to contain conditioned air and keep outside air from entering. He says the following concept is one that escapes many in the construction industry: You cannot enclose air with a sieve. Nor can you condition a sieve.

There are many pervasive problems in the construction industry that directly lead to indoor air-quality problems.

While many of these design flaws — poor drainage, leaky envelopes, and construction materials that fail to shed water — are not the typical design concerns, they can result in problems with mould down the line, he suggests.