House Detectives: Nose for Trouble

Breaking the mould

TRACY HANES PHOTO

Canine sleuth Quincy sniffs out mould problems in houses

Many ways to improve indoor air quality, ***by Tracy Hanes***

When Rorie McIntosh was concerned his house might be making him and his family sick, Frank Haverkate arrived on the scene with two steel suitcases full of high-tech equipment and his most valued tool of all: Quincy.

A two-year-old yellow lab, Quincy is the first and only mould detection dog in Canada. Since September, she's been on the job for Haverkate and Associates, a Toronto-area indoor environmental testing and consulting company that specializes in mould growth in residential and commercial buildings.

Haverkate is the only microbial investigator in Canada, certified by the American Indoor Air Quality Council, and one of four registered mould remediators in Ontario.

Shortly before the September, 2002 closing of their new home in Whitby, McIntosh and his wife Alison noticed most ceilings had pink streaks. He was concerned it was mould and was worried about the health risks it posed to his young daughter and then-pregnant wife.

McIntosh had his lawyer contact the builder and, by the time the family took possession of their house, some, but not all, of the ceilings had been fixed.

After they moved in, a worker was sent to spray the ceiling several times with a solution which dripped, staining the family's clothing and soaking carpets. The builder replaced the carpets months later at McIntosh's insistence.

TONY BOCK/TORONTO STAR PHOTO

Frank Haverkate and his mould detector dog, Quincy, do a sweep of Haverkate's home, above. Right, Haverkate and Quincy meet Whitby homeowner Rorie McIntosh.

McIntosh pressed the builder for almost a year about what the ceiling problem was and how it was treated. He eventually received a letter from the company that supplied the ceiling finishing materials.

The letter explained that a pink discolouration on textured sprayed ceilings is "mildew" formation due to slow or poor drying conditions. (Haverkate says mould is commonly referred to as mildew, but mildew is actually a type of mould found only on plants.)

It recommended treating the problem with a solution of one part chlorine bleach to five parts water, and the builder said it followed that direction. But McIntosh says the worker did not wear protective wear or ask the family to leave the home while the spraying was being done.

More than a year later, McIntosh was plagued by a lingering cough and his infant son often suffered skin rashes, so he was worried that the mould and its treatment had created air-quality problems.

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House Detectives

Nosing out mould

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He contacted The Star, which put him in touch with Haverkate.

"In this kind of scenario, we don't know what the problem is, so we look at possible pollutants," says Haverkate. "Rorie was coughing a lot and that could have been medical or environmental."

Haverkate says mould is a huge issue in houses about 20 years old, since that's when houses were being built tighter but weren't properly ventilated.

New houses can also have mould issues, because they are being built so rapidly that materials such as wooden studs are not dried out properly.

Surprisingly, older houses may not have serious problems, since many of the materials used to build them don't foster mould growth.

Haverkate ran a gamut of tests on the McIntosh house, including checks of temperature and relative humidity and levels of sewer gases, carbon monoxide, carbon dioxide, volatile organic compounds, mould and radioactive building material.. Many of Haverkate's tools look like props in sci-fi movies, like his laser particle scan, Geiger counter and a thermal imaging camera that scans surfaces and displays temperature changes (moist areas show up as dark blue or black).

But all the high-tech wizardry has nothing on Quincy. The dog was trained in Florida at the same academy that trains arson, bomb and drug-sniffing dogs. Haverkate had to take part in some intensive training with Quincy before he was allowed to bring the former humane society ward home. "The academy loves humane society dogs," says Haverkate. "They like the dogs that are too hyper. These dogs need something to do."

Wearing her blue "Mould Detection K-9" coat, Quincy sprang into action, sniffing along the perimeter of rooms as Haverkate urged her to "seek." When she detects mould, she sits or lies down.

Haverkate rewards her with food. He says she can pinpoint the exact location of mould growth inside a wall or floor, which is difficult, if not impossible, with air testing alone. What she can't detect is how large the mould growth is, so some sampling is usually required.

In the McIntosh home, Quincy found mould under the dishwasher and fridge, in a few spots in the carpet and under some furniture pieces. None of these posed any health risk.

But the basement yielded some mould "hot spots," based on follow-up lab tests. The bleach-soaked carpet, which had been removed from the main floor was stored there, and cardboard boxes were sitting on the cold concrete floor.

Haverkate recommended that the old carpet be removed carefully after sealing it in plastic to contain any mould spores. (Bleaching kills the mould but the spores still pose a risk if inhaled.)

The cardboard boxes should be replaced by plastic bins. When all test results were returned, Haverkate determined the ceiling spray did not cause residual environmental issues. However, there are two problems with the house's indoor air quality, which can be easily remedied.

The house had extremely low humidity readings. Haverkate says while high humidity can cause mould growth, levels that are too low can cause a variety of respiratory and sinus problems.

He advised McIntosh to use a temperature and relative humidity meter frequently to monitor levels on each floor. In winter, the levels should be 30 to 40 per cent and, in warmer months, 50 to 55 per cent.

McIntosh could increase the levels by using a humidifier, preferably a flow-through type.

The other problem is high dust levels, especially of microscopic particles that can settle deep into the lungs.

Haverkate recommended the home's inexpensive furnace filter be replaced with a 3M Filtrete pleated insert. And the old filter had not been replaced since June, 2003 — filters should be changed every three months.

Haverkate also suggested McIntosh invest in a central HEPA filtration system to filter out microscopic particles. He said most portable vacuum cleaners, even those with HEPA filters, do not effectively remove dust particles and can, in fact, pollute the air. A central vac is ideal, but a less costly solution is Miele's portable HEPA vacuum (model 528S), which does remove the particles, says Haverkate.

McIntosh was relieved to hear there are no big health risks in the home.

"I was a little surprised, but it was good news," he says. "And we're already acting on Frank's recommendations. We've changed the furnace filter, we're getting a new vacuum and we're going to get a humidifier. Indoor air quality is not an issue that comes up much, even though we spend so much time in our homes. This was a real eye-opener."

Haverkate's assessments start about $650 and can run up to $2,200, depending on the amount of laboratory sampling required.

For information, call 905-882-2202 or click on www.moulddog.ca.

Haverkate will also be at the National Home Show April 9 to 18 at the National Trade Centre, booth 2606.

TRACY HANES PHOTO

Quincy lies down to indicate she's located mould under the McIntosh sink.

Breathing easier

To improve your indoor air quality:

★ Keep your home's relative humidity between 30 and 40 per cent in winter and 50 to 55 per cent in warmer months. (When buying a humidifier, choose a flow-through metal grate model, not a drum type).

★ Use a good quality, pleated furnace filter. Replace the filter every three months.

★ Consider a central HEPA filtration system to filter out microscopic dust particles.

★ Many vacuums are air polluters. A central vacuum system is great or Miele's Model 528S portable vacuum is one of the few portable HEPA vacs on the market which will effectively remove the particles.

★ Avoid using broadloom or carpets that can't be removed. Carpets cannot be cleaned effectively and steam cleaning can lead to mould growth, if the moisture isn't completely removed.

★ Have your furnace ducts cleaned every one to four years.

Air-quality terminology

SEWER GASES: A mixture of chemicals formed through the decay of household and industrial waste. May contain hydrogen sulphide, ammonia, methane, sulphur dioxide, chlorine, industrial solvents and gasoline. Can cause explosion and fire and toxic health effects.

Health effects: eye and respiratory tract irritation, nervousness, dizziness, nausea, headaches and drowsiness. In high concentrations, it can cause poisoning, loss of consciousness and death.

CARBON MONOXIDE: By-product of incomplete combustion. Can come from incorrectly vented furnaces, dryers and water heaters. Some varnishes and paint removers containing methylene chloride can also emit it when applied indoors.

Health effects: when inhaled, displaces oxygen in the blood stream, leading to hypoxia. Severe exposure can cause brain damage or death.

CARBON DIOXIDE: Bi-product of people and pets' breathing. High levels indicate poor ventilation.

Health effects: Minor headaches, tiredness, irritability and inability to concentrate.

HOUSEHOLD DUST: Made up of skin, dander, dust mites, fabric fibres, pollen, mould spores and building materials.

Health effects: Skin rashes, respiratory effects and asthma to lung cancer, depending on the particulate inhaled or ingested.

VOLATILE ORGANIC COMPOUNDS: Caused by chemical off-gassing or chemical gases in indoor air. For example, many products such as plywood, chip board, particle board, drywall, carpet padding, paint, treated fabrics and furniture can give off formaldehyde gas.

Can be pervasive in homes up to 10 years old. Paints, solvents, dry cleaning, pesticides, sealants, glues, carpets and household cleaning products can also emit VOCs, as well as gas, wood and oil fuel if furnaces/fireplaces have poor air flow.

Health effects: Blurred vision, headaches, nausea, coughing, burning eyes, sinus irritation, skin rashes, respiratory illnesses, concentration difficulties.

FUNGI (MOULD): Will grow in wet building materials and contaminated air conditioning systems. Other conditions that support mould growth include roof leaks, foundation cracks, plumbing leaks, appliance overflows and high relative humidity. It will also grow in insulation, drywall, carpet, drywall, wallpaper, fabrics and dust if conditions are right.

Health effects: There are toxic and non-toxic varieties of mould. Some cause allergic reactions, which can include sneezing, watery eyes, coughing, shortness of breath, dizziness lethargy, fever, digestive problems, joint problems, lung damage, deafness, cancer and even death. Children, the elderly and those with compromised immune systems are particularly susceptible.

RADIOACTIVE BUILDING MATERIAL: Can be found in household items such as smoke detectors, jewellery and porcelain dinner plates, and in building materials such as gypsum board, granite, slate and concrete containing radioactive materials.

Health effects: Excessive exposure can cause leukemia or other cancers.

RADON: A naturally occurring, colourless, odourless gas that comes out of the ground, seeps into basements and moves upstairs.

Found in rocks and soil containing uranium, graphite, granite, shale, phosphate and pitchblende. Radon decays into radioactive elements known as radon daughters, which float in the air attached to dust particles. When breathed in, the particles stick to the surface of bronchial air passages.

Health effects: Second only to smoking as a cause of lung cancer.

SOURCE: HAVERKATE & ASSOCIATES

Dealing with mould

★ Topical mould growth from condensation around windows or on bathroom tiles can be cleaned up. Avoid bleaches or chemical biocides. Use water with white vinegar, borax and or dish detergent. Wipe the area with paper towels.

★ If the mould growth is on drywall, wood beams, carpeting, insulation, etc, have it tested to determine the type, quantity and toxic effects.

★ Disturb mould growth as little as possible. If mould is touched, scrubbed, dried out or otherwise disturbed, mould spores may aerosolize and became part of the breathable air, causing ingestion and inhalation of potentially toxic spores.

★ Avoid ripping up carpeting or destroying drywall showing mould growth until you know what you are dealing with. If wall cavities need to be opened for testing, this should be done by a qualified professional.

★ Never store paper, cardboard, wood or fabrics on a concrete floor.