

## Rooms to breathe

globeandmail.com

Fri 04 Jan 2008

Section: Realestate

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In an attempt to make homes less drafty and inefficient, some newer homes are built to be air-tight. This may lower the energy bill, but the lists of things that can cause health problems via the air we breathe in our homes is long and scary.

The kitchen cabinetry in designer Eric Tomas' recent renovation project is formaldehyde-free particleboard.

If that doesn't sound very hip and trendy, consider how very un-hip the sound of coughing and wheezing is. As a LEED (Leadership in Energy and Environmental Design)-accredited designer, Mr. Tomas, 33, helps clients avoid the pitfalls of **indoor air pollution**.

"A lot of the products we use to build and furnish our homes contain pollutants," he says. "One solution is to source materials that are low in known toxins such as formaldehyde. So many things like cabinets, engineered wood joists, floors and carpeting are potentially full of volatile organic compounds that can cause health problems. There are products such as formaldehyde-free particle board, but it's hard for the consumer to wade through everything to find them."

**Indoor air pollution** is the new frontier in the quest for green, ecologically-responsible lifestyles and homes. Statistics for respiratory diseases such as asthma frighten, and there is always the spectre of cancer to scare the perfume right off our skin! Parents of young children and expectant parents are among the most strongly concerned.

Christian Gautier, trained in architecture in France, has both personal and professional interest in the matter. Having worked on the Biowall at Queen's University — an experimental solution to the problem of indoor pollution that uses a wall of plants to gobble up the toxins we humans put into our atmosphere — he's impressed by the logic of the approach and worried for society and his own family.

"Creating clean air by using plants is a nice solution," he says. "Of course it is all planned very carefully with the right natural light and the right plants, water source and wall position. The plants eat the pollution."

"**Indoor air pollution** is a big problem and there is nothing in the Ontario Building Code to address this problem," he says. "Some houses are sealed up tight with no proper ventilation. Pollution and mould can thrive in this atmosphere. I have three children myself, and the oldest, Thomas, 5, has some respiratory problems. I don't know if the problems are caused by pollution in the home, or whether he just is fragile naturally, but the issue concerns me."

The lists of things that can cause health problems via the air we breathe in our homes is long and scary. Simple stuff like the candles we burn, finishes like paints that contain leads and all those wood products glued together may be choking us. That beautiful new loveseat may be treated to make it stain resistant. There are VOCs, moulds and a host of lung-clogging particulates. What can be done?

"The big problem with green technology is always the issue of cost," Mr. Tomas says. "Clients think that if the government allows something to be used, it must be okay. If we suggest something else that is more costly, they often think we are being overly cautious."

"As well as using products that are safer, it's important to make sure a home is properly ventilated," Mr. Tomas says. "In Toronto, a lot of homes built in the 20's were done with such poor wall assemblies

that they are very leaky. Of course this causes them to be cold and drafty, but it does minimize the problems with indoor pollutants."

When the building industry caught on to this shortcoming, the response was to make homes air tight. The drafts and leaks stopped and some good fuel and energy consumption savings resulted, but the lack of proper ventilation created another pitfall. "In the 70's when houses were being built really, really tight, cases of 'sick building syndrome' started to crop up, where people were having symptoms like headaches and watering eyes," Mr. Tomas says. "The problem was that not enough fresh air was getting in."

So what can consumers do, if they are worried about the air quality in their home or in a home they are considering purchasing? Will a building inspection do the trick?

"Purchasers in today's hot market often have to mitigate the inspection condition to make their offers more favourable in a bidding situation," Anne Lok of Homelife/Realty One in Toronto says. And in any case, a standard building inspection is unlikely to deal with air quality. It may be necessary to call in experts in air quality.

A company such as Sick Building Solutions in Toronto has specialized meters and other equipment and will visit to check out whatever pollutants are suspected. "People call us when they are thinking of buying or selling," SBS president Art Robinson says. "We get calls when people are concerned about issues like asthma. Our equipment is very sophisticated and can measure many different aspects of a home's air. As far as VOCs go, there is a library of 20, 000 that we can look for. We condense it all down into a report for our customer.

"The fee depends on how in-depth our investigation will be — each house and each case is different, says Mr. Robinson. "The cost could be about \$425, plus lab fees."

Since heating and air conditioning companies are in the business of keeping our air at a comfortable temperature, calling on them could also make sense. In the case of Atlas Air Climatecare in Toronto, they have a clever device aptly called the Canary. This device, the size of a Blackberry, will be placed in three different rooms for one day at a time and will produce a report on the air quality it finds. "We launched this product in September and we are now doing five houses a week with it," company representative Roger Grochmal says. "It gives the homeowner a list of recommendations. In about a quarter of the homes we see, the air gets a clean bill of health. Other times things like high levels of particles will be detected.

"Too much humidity can be causing problems — even structural problems," says Mr. Grochmal. "Very often a good solution is to improve the ventilation."

The latest gold standard for improved ventilation is a heat recovery ventilator, or HRV. This is basically a box with a fan which allows air from the house to escape, and fresh air to replace it. The really nifty thing is that the incoming air will be heated by the air it is replacing, producing fresh air without drafts.

"It's very onerous for the consumer to educate himself or herself about these issues," Mr. Tomas says. "I personally believe the government should be leading in these issues. In my own home, which I am renovating with my partner Alcia Yurichuk, we used all lead free paints.

"This is an older house and we have had it super insulated," Mr. Tomas says. "An energy audit will tell how the insulation is performing, and indicate if the house is too air tight, but since we still have the old windows, that is probably not the case. I will do whatever I need to do to make sure the air quality is not compromised. It's tricky for me to discern the best solutions, and I am a professional: it will be harder for you. The Ontario Building Code is limping behind."

"I want to become trained myself to do air quality testing in retrofit situations," Mr. Gauthier says.  
"Europe is ahead of North America in these matters because our system is to have fresh air coming into a dwelling from the top and the bottom. An audit for air quality will be a very valuable tool."

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