

Indoor Air Quality

Toxins, often used interchangeably with poisons, are substances that can cause damage, illness and even death to organisms. More than 800 new chemicals enter the market every year, making it difficult for regulators to keep up. More than 100,000 synthetic, man-made chemicals are in use today. Approximately 23,000 have been exempted from safety studies because efforts have been concentrated on the screening of new chemicals. Many of the chemicals used by Canadians have never been formally assessed - or they have been poorly assessed – for the risks they may pose to environmental or human health. How these chemicals interact is an even bigger unknown.

Studies suggest that on a typical cleaning day, the concentration of chemicals in indoor air can be hundreds, even thousands of times higher than the outdoor air in the most polluted cities. In 2002, the Nature of Things reported that household indoor air pollution levels are often high enough to trigger an inspection by health and safety authorities in any workplace setting. Poor indoor air quality has been linked to both short-term and long-term effects including eye and throat irritation, allergies, childhood asthma, respiratory diseases, emphysema, chemical sensitivity in adults and cancer.

Since you and your family spend a lot of time in the home, the air needs to be safe to breathe. Smoke, pets, mould, paint, and household cleaners may all contribute to poor indoor air quality. Removing things that contribute to the problem is perhaps the easiest way to improve it. Ventilation and air circulation are also important factors in creating healthy indoor air. It is important to let fresh air in and contaminated air out.

Other chemicals, such as bleach, paint remover, and antifreeze, may pose a risk to your family if they are not properly contained. Even small amounts of these substances can harm a pet or child if ingested, or in some cases, if they are touched. The following section will discuss ways to remove toxins from the home, thereby helping to improve indoor air quality.

Sick Building Syndrome (SBS): used to describe situations in which building occupants experience acute health and comfort effects that appear to be linked to time spent in a building, but no specific illness or cause can be identified. The complaints may be localized in a particular room or zone, or may be widespread throughout the building (Source: [US EPA](#)).

Factors that Affect Indoor Air Quality

The indoor air quality of a home is determined by the number and type of pollutant sources, the homes ventilation system, and the interior air-flow.

Off-gassing

Off-gassing (the release of toxic chemicals and carcinogens from products such as paint, carpet, glued building materials, et cetera). “New car smell” is the off-gassing of many toxic substances.

Sources of Common Indoor Pollutants

- Off gassing from building materials, finishes (paints, stains, etc) and furniture.
- Incomplete combustion in heating systems and other equipment
- Mould
- Gas appliances
- Carpet
- Insulation
- Paint
- Caulking
- Adhesives, glues, resins
- Solvents
- Soil treatments & pesticides
- Wallpaper
- Durable press fabrics
- Fireplaces
- Wet or moist structure
- Fireproofing (aka fire retardants)
- Dry cleaning (contains perc)

FACT

“Chemicals have replaced bacteria and viruses as the main threat to health. The diseases we are beginning to see as the major causes of death in the latter part of (the 1900’s) and into the 21st century are diseases of chemical origin.”

- Dr. Dick Irwin, toxicologist.

THE CHECKLIST

Question	Comment	Positive Action
<p>Do you use “conventional” store bought cleaning products to clean your home?</p>	<p>Many cleaning products contain harmful and caustic chemicals, many of which release volatile organic compounds (VOCs). All purpose cleaners, for example, usually contain ammonia. Ammonia fumes can irritate the eyes and lungs. Chemicals from cleaning products are released into the air immediately upon use, or gradually during storage. There are a lot of air friendly cleaning products that are effective and won't harm your health or the environment.</p>	<p>Purchase natural and non-toxic cleaning products. Visit www.lesstoxicguide.ca for a list of the best products for various jobs.</p> <p>Make your own non-poisonous cleaners:</p> <ul style="list-style-type: none"> • Use baking soda and water, or a little borax on a damp cloth, as an effective scouring powder for bathtubs, sinks, and toilets. • Pour vinegar into the toilet and let stand overnight. Vinegar is an effective disinfectant, and, in combination with baking soda, keeps your drains clean. • Use vinegar to clean the grout between bathroom tiles. <p>For more information check out Green Calgary's Green Cleaning Guide.</p>
<p>Do you dry clean clothes, drapes, et cetera?</p>	<p>Dry cleaning uses PERC (perchloroethylene), a poison that is a suspected carcinogen and which is acutely toxic to fish and wildlife. PERC off-gases into your home and vehicle, negatively impacting the air quality and affecting your health.</p>	<ul style="list-style-type: none"> • Avoid the dry cleaners. <p>Prevention is the best. Look for clothes that do not require dry cleaning. Also note that many clothes that say “dry clean” or “dry clean only” are safely washed in cold water with a gentle, natural soap.</p> <ul style="list-style-type: none"> • If you must use a drycleaner consider a hydrocarbon cleaner. Although this method isn't the most environmentally friendly method, it is better than perc.

<p>Are air fresheners used in the house?</p>	<p>Air fresheners do not get rid of odours, they simply mask them. Many contain chemicals that cause symptoms like headaches, rashes, dizziness, migraines, asthmas attacks and more. Many are suspected carcinogens and hormone disrupters. A large number of studies are surfacing, warning people of the health risks associated with synthetic air “fresheners”, including room sprays, plug-in deodorizers, odor neutralizers, air sanitizers and aromatherapy candles.</p>	<ul style="list-style-type: none"> • Removing the source of the odour. Proper ventilation is essential. For short-term solutions, try using an open box of baking soda. This is especially effective in the fridge. • Vapourizing pure, organic essential oils is also effective but this should be kept to a minimum, as children and people with respiratory sensitivities may still be affected.
<p>Do you use antibacterial products (hand soaps, dish soap, etc.)?</p>	<p>Triclosan - an EPA-regulated pesticide – is used in many household products, including hand wash, sponges, cutting boards, and more. It is used to kill bacteria, but it will not protect against the various viruses that cause the common cold or flu. It has been found in breast milk; it is toxic to aquatic organisms; and can degrade into dioxin.</p>	<p>Use regular soap. For more information visit: http://www.watoxics.org/homes-andgardens/factsheets/antimicrobials/</p>
<p>Have you ever looked at the labels of the personal care products (deodorants, shampoos, shaving creams, etc.) you use?</p>	<p>A large number of personal care products contain chemicals that have never been formally assessed – or that have been poorly assessed – for the risks they may post to environmental or human health.</p>	<ul style="list-style-type: none"> • Inform yourself about safe personal care products. A fantastic site, developed by the Environmental Health Association of Nova Scotia, gives a great overview of the toxins to watch out for, while recommending the best products in a number of qualities. Click here to have a look at the comprehensive Guide to Less Toxic Products. Alternatively, Skin Deep has a cosmetics safety database that helps individuals find the safest personal care products.

<p>Do you have a properly functioning vacuum system/cleaner?</p>	<p>The finest particles, those that cannot be seen with the naked eye, are among the most dangerous to your health. Exposure to these air borne particles can cause serious health effects. Central vacuum systems that effectively exhaust to the outdoors are best. Vacuum cleaners with HEPA filters can also be effective but the filtering is only as good as the seal.</p>	<ul style="list-style-type: none"> • Inspect your vacuum system/cleaner. Replace it if necessary.
<p>Are there musty/mildewy odours in the home? Is there water damage in the home?</p>	<p>Mould is a potentially serious health hazard. There are more than 100,000 species of mould and some are highly toxic. If you discover mould, care should be taken to deal with it.</p>	<ul style="list-style-type: none"> • Deal with mould issues before they worsen. This may require the work of a professional but is well worth the investment. • You may clean up mould in the home, as long as the area affected is smaller than 3 square metres. Gloves, eye protection and an N95 dust mask (one that blocks mould spores) should be worn. For more information click here. (Source Canada Mortgage and Housing Corporation).
<p>Do you have chemical products, cleaners, et cetera piling up under sinks, in the garage, etc that could be disposed of?</p>	<p>Each year in Canada, thousands of children and pets are poisoned by household chemicals, including household cleaners, paints, pesticides, etc. Most of these poisonings are completely avoidable.</p>	<ul style="list-style-type: none"> • Take unwanted/unneeded household chemicals to one of six fire halls in Calgary for proper disposal. See 'Household Chemicals' in Green Calgary's Reuse and Recycling Guide.
<p>Are you planning to do any painting, or any other renovations?</p>	<p>Volatile organic compounds (VOCs) are emitted as gases from a variety of solids or liquids. VOCs are associated with many short- and long-term adverse health effects. The concentration of many VOCs is consistently higher indoors (up to ten times higher) than outdoors. VOCs emit from thousands of products, including paints and lacquers, cleaning supplies, pesticides, building materials and furnishings, office equipment, carbonless copy paper, correction fluids, glues, adhesives, permanent markers, et cetera. Source: US EPA</p>	<ul style="list-style-type: none"> • Look for low or no VOC paints and building products. A comprehensive list of suppliers is listed in Green Calgary's Green Building and Renovation Guide.

Do you have a range hood over the stove?	Proper ventilation for cooking appliances is very important to indoor air quality, especially for gas ranges. Ideally, the range hood would exhaust to the outdoors, rather than simply recirculate and filter the cooking fumes.	• Inspect the functioning of the fan by placing a sheet of paper to it. Have a look to see if the fan exhausts outdoors or if it simply recirculates the air.
Do you have exhaust fans in the bathrooms to expel moist air to the outdoors?	Again, exhaust fans take moist air and VOCs from the bathroom and expel them to the outdoors. This will prevent moisture build up that could lead to mould problems and poor indoor air quality.	• Inspect the functioning of the fan and get in the habit of using it while showering.
Does your clothes dryer vent to the outdoors?	Dryers should have a duct that carries moisture and VOCs from the dryer, expelling them to the outdoors. This will prevent moisture build up that could lead to mould problems and poor indoor air quality.	• Make sure that the dryer vents outside. Ideally, a tight fitting dryer vent hood would be used to keep the cold air out. These cost \$15 – \$20 but can save a lot in the way of heating.
Have you had your furnace ducts cleaned lately?	Properly cleaned heating and cooling systems function more efficiently, while reducing airborne particles and allergens.	• Consider having your ducts cleaned. See ‘Duct Cleaning’ in the Yellow Pages.

OTHER CONSIDERATIONS

A Note on Radon

Radon is a colourless, odourless radioactive gas that occurs naturally in our environment. It is a product of the natural radioactive decay of uranium found as a trace element in most rocks, soil and water. It's presence in your home can pose a serious risk to your family's health. It is present in low levels throughout the earth's crust and unless you test for it, there is no way of knowing how much is present.

Natural Resources Canada: http://gsc.nrcan.gc.ca/gamma/radon_e.php

Health Canada: http://www.hc-sc.gc.ca/ewh-semt/radiation/radon/faq_fq-eng.php

National Safety Council (US): <http://www.nsc.org/resources/issues/radon/index.aspx>

Environmental Protection Agency (US EPA): <http://www.epa.gov/iaq/radon/index.html>

Radiation Safety Institute of Canada: <http://www.radiationsafety.ca/HomeRadonMonitor.htm>

Canada Mortgage and Housing Corporation: [https://www03.cmhcschl.](https://www03.cmhcschl.gc.ca/b2c/b2c/init.do?language=en&shop=Z01EN&areaID=0000000016&productID=00000001600000000036)

[gc.ca/b2c/b2c/init.do?language=en&shop=Z01EN&areaID=0000000016&productID=00000001600000000036](https://www03.cmhcschl.gc.ca/b2c/b2c/init.do?language=en&shop=Z01EN&areaID=0000000016&productID=00000001600000000036)

ADDITIONAL RESOURCES

Environmental Defense's Toxic Nation (www.toxicnation.ca) - Toxic Nation shows how you are being polluted. It outlines what can be done to keep pollution out of you and all Canadians.

Environmental Working Group (www.ewg.org): comprehensive information on avoiding toxic chemicals in food, cosmetics, personal care products and other household products.

Guide to Less Toxic Products (www.lesstoxicguide.ca) - A Canadian site dedicated to providing information about the health risks of commonly used products, how to identify less toxic alternative for things like personal care, household cleaning, baby care and pest control.

Skin Deep (www.cosmeticsdatabase.com): a safety guide to cosmetics and personal care products.
Washington Toxics Coalition (www.watoxics.org): a comprehensive website with information regarding 'safer products', 'healthy homes & gardens', 'sustainable agriculture', and more.

Companies Offering Indoor Air Quality Testing in Calgary

AirVironment Canada (www.airvironment.com): 403-295-8144

Alberta Toxic Mould (www.iaqalberta.ca): 403-243-2999

JAD Environmental Services Inc: 403-616-2182

Medallion Healthy Homes of Calgary Inc (www.medallioncanada.com): 403-936-5026

Mould Dogs Inc (www.moulddogs.ca): 403-287-7823

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809 Fourth Ave SW, Calgary, AB T2P 0K5

Phone: [403] 230 1443

Fax: [403] 398 0605

info@greencalgary.org

www.greencalgary.org