

"All of us face a variety of risks to our health as we go about our day-to-day lives. Indoor air pollution is one risk that you can do something about." US EPA

Exposures

'Indoor Air' Issue

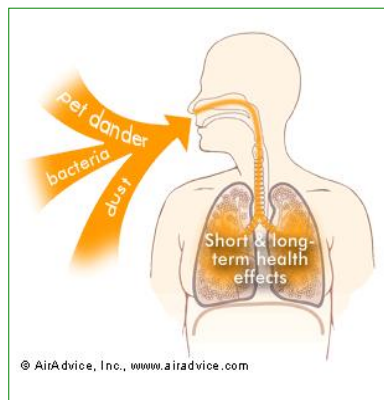
The Government of Canada encourages homeowners to undertake energy efficiency improvements on their homes, which will increase the energy savings and greenhouse gas reductions. Air tight homes however still need proper ventilation to circulate fresh air and to dissipate indoor air pollution, odors and moisture.

As we spend 80% of our time indoors, indoor air quality (IAQ) should be of concern to all. Poor IAQ can result in adverse health effects – especially for infants and children. This issue will discuss some indoor air quality issues and what we can do to reduce indoor air pollutants. Environmentally

preferable products have reduced impact on health and the environment over the life cycle of the product, when compared with competing products.

Health and environmental performance considerations include:

- reduced toxic hazardous substances
- the reduction of air polluting emissions (in production);
- energy and water use efficiency
- reduced waste
- encourage reuse and recycling
- the use of sustainable resources 1.



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1. <http://www.tpsgc-pwgsc.gc.ca/ecologisation-greening/achats-procurement/document/politique-policy-eng.pdf>
<http://www.ftc.gov/bcp/edu/pubs/consumer/general/gen02.pdf>

Green Cleaning

For cleaning products, the way to "green" your purchases is to rely on third party certification programs. Look for these logos: **EcoLogo** (also known as 'Environmental Choice'), founded in 1988 by the Government

of Canada. **Green Seal** is another independent, non profit organization with the mission of safe-guarding human health and the environment.

<http://www.ecologo.org/en/index.asp>
www.greenseal.org



continued page 2....

PEHSU

- Offers environmental health assessment
- Identifies and interprets appropriate diagnostic tests
- Provides medical management when necessary
- Raises awareness through provision of seminars, lectures and conferences

Radon: What is it and why you should know

Radon is a radioactive gas formed by the breakdown of uranium found in soil, rock and groundwater. It is colourless, odorless and tasteless. Radon escapes into air from the ground and follows the pressure gradient into houses through gaps, cracks and holes (utility) in the foundation. Radon has the potential to

accumulate to higher levels in basements and air tight homes. As radon decays it contaminates the air with radioactive particles. As we breathe, these become trapped in the lungs and could result in lung cancer over time. Smokers are at greater risk of developing lung cancer than non smokers and 10 - 20 times the risk when also

exposed to cigarette smoke.
<http://www.hc-sc.gc.ca/hl-vs/iyh-vsv/environ/radon-eng.php>
http://www.atsdr.cdc.gov/csem/radon/whos_at_risk.html

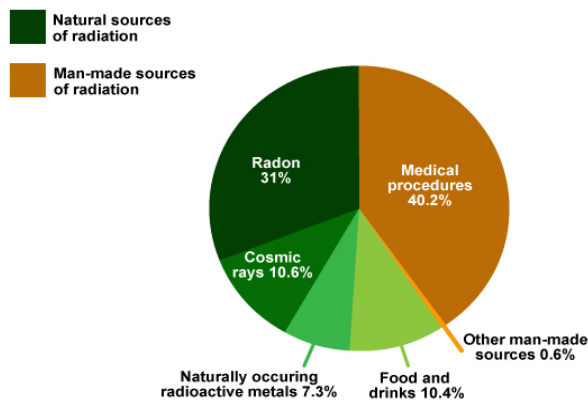
Obtain a radon detection kit from www.ab.lung.ca/site/radon

Mitigation Methods:

- **increase ventilation indoors**
- **seal cracks, gaps in foundation**
- **consider Active Soil Depressurization (ASD)**
<http://www.neha-nrpp.org>

Sources of radiation exposure for an average adult Canadian

http://www.cnsccsn.gc.ca/eng/pdfs/Fact_Sheets/Radon%20Fact%20Sheet_e.pdf



Radon Continued...page 3

...Green cleaning continued from page 1



The Lung Association has a fact sheet on “**Air Friendly Household Products**” and advises whenever possible, *use non toxic products*. Buy in small quantities and dispose unused portions at your local eco center. When using any

hazardous toxic compound, ventilate the area well by opening windows or doors. Store hazardous products where even the most ambitious toddler can not find them.

http://www.lung.ca/resources/healthy_home_audit.pdf



Mixing Cleaning Products =

Chlorine bleach is a common cleaning and disinfectant agent found in many homes. The active ingredient in bleach is *sodium hypochlorite*. When mixed with ammonia, the combination gives off toxic **chloramine** gas. When mixed with an acid, the combination gives off **chlorine gas**. Chlorine gas plus water combine to make **hydrochloric acid** and **hypochlorous acid**.

Ammonia is found in:

- some glass cleaners
- litter boxes/diaper pails
- some household paints

Acidic products include:

- vinegar and some -
 - glass cleaners, dishwasher detergents, toilet bowl & drain cleaners, lime/calcium/rust removers, brick and concrete cleaners
- <http://www.epa.gov/kidshometour/products/bleach.htm>
http://www.health.state.ny.us/environmental/emergency/chemical_terrorism/chlorine_tech.htm

Health Effects

+ **Ammonia** = cough, short of breath, nausea wheezing, eye nose, throat irritation, pneumonia, fluid in lungs

Bleach

+ **Acid** = cough, short of breath, nausea, wheezing, eye/ nose/ throat irritation, pneumonia / fluid in lungs

+ **Acid + water** = burns to skin, eyes, nose, throat, mouth and lungs

<http://emedicine.medscape.com/article/820779-overview>

Indoor Air Assessment for Home, School and Office

You are able to recognize threats to indoor air quality and respiratory health by considering the following:

* **Chemical contaminants**

1. Bi-products of combustion: smoking, gas or wood fireplace, gas appliances, exhaust in attached garage (CO, CO₂, NO₂)

2. Formaldehyde: pressed wood products including plywood, particleboard, hardwood, upholstery, perma-

press textiles, carpet/tile glue.

3. Volatile organic compounds:

nail polish/remover, aerosol sprays, paints, cleaners and disinfectants, dry cleaning, air fresheners, hobby supplies

4. Heavy metals: old paint dust, soil and dust from outdoors carried on footwear

* **Biological contaminants**

1. These are alive or originate from living things: human viruses/bacteria, pets, dust mites, mould, pests

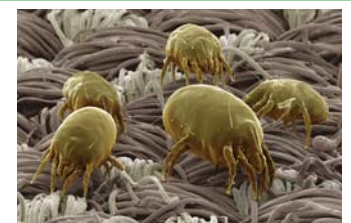
(insects or rodents)

Maintaining clean air involves:

A. Source Control: reduce use or presence of contaminants,

B. Adequate ventilation: open windows and doors (briefly, even in winter), use kitchen and bathroom fans

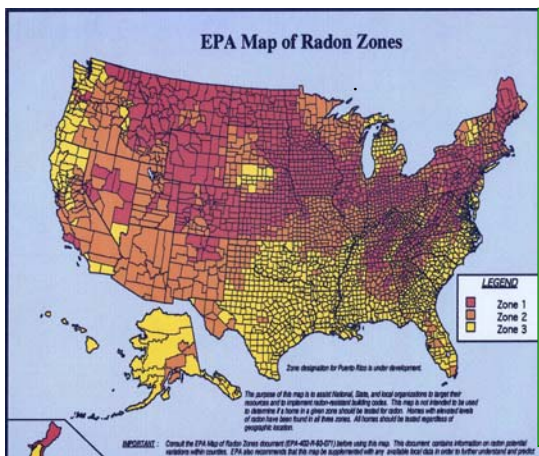
C. Vigilant dusting and vacuuming: picks up particular material on carpets, hardwood etc



Dust Mites

http://www.asthma.ca/corp/services/pdf/asthma_dust_mite_eng.pdf

Radon - continued



United States bordering Alberta have high levels of radon according to the EPA. Canadian radon action level = >200Bq/m³

http://www.epa.gov/radon/images/zonemapcolor_800.jpg

What do the colors mean?

Zone 1 counties have a predicted average indoor radon screening level greater than 148 Bq/m³ (**red zones**)

Zone 2 counties have a predicted average indoor radon screening level between 74 Bq/m³ and 148 Bq/m³ (**orange zones**)

Zone 3 counties have a predicted average indoor radon screening level less than 74 Bq/m³ (**yellow zones**)

Child Health Clinic
 Mother Rosalie Bldg
 16930- 87 Ave
 Edmonton, T5R 4H5

www.PEHSU.ca

For more information, comments or referrals please contact:
Pediatric Environmental Health Specialty Unit
Child Health Clinic, Misericordia Hospital
780 735-2443 or
lorie.grundy@albertahealthservices.ca

A Word about Carbon Monoxide

Most **CO detectors** are designed to give an alarm when CO levels reach a high level in a short time. Look for CSA approval on the CO detector you purchase.

Detectors can be located anywhere in your home but it is important to ensure you can hear the alarm when you are sleeping. For this reason, alarms are often located close to sleeping areas. Read the manufacturer's instructions for appropriate placement

Carbon monoxide (CO) is a by product of burning fuels used in and around the home - natural gas, gasoline, propane, oil, kerosene, wood, coal and charcoal. In winter when we turn on the furnace, use more hot water, "warm up" the car and stoke the fireplace, carbon monoxide is safely vented to the outside when appliances and chimneys are in good working order. However, if venting is interrupted either by blockages/damage in the chimney or vent pipes OR

due to a shortage of air to the burner, CO levels can rise to dangerous levels. Carbon Monoxide is an odorless, colourless gas. When inhaled, it combines with hemoglobin in the blood to form **carboxyhemoglobin (COHb)**. Once combined with hemoglobin, that hemoglobin is no longer available for transporting oxygen. CO toxicity levels are usually expressed in **airborne concentration levels (PPM) and duration of exposure.**

Symptoms vary depending on many factors but nausea, dizziness and headache are the hallmarks of CO poisoning.

What to do:

- **Have a qualified technician inspect and clean fuel burning appliances, chimneys and vents each year.**
- **Ensure adequate air for proper combustion to all appliances**
- **Never idle a vehicle or snowblower in a closed or attached garage**
- **Never use barbecues or kerosene heaters indoors**

http://www.cmhc-schl.gc.ca/en/co/maho/yohoyohe/inaiqu/inaiqu_002.cfm#footnotes#footnotes

Symptoms Associated With a Given Concentration of CO Over Time

PPM CO	Time	Symptoms
35	8 hours	Maximum exposure allowed by OSHA in the workplace over an eight hour period.
200	2-3 hours	Mild headache, fatigue, nausea and dizziness.
400	1-2 hours	Serious headache-other symptoms intensify. Life threatening after 3 hours.
800	45 minutes	Dizziness, nausea and convulsions. Unconscious within 2 hours. Death within 2-3 hours.
1600	20 minutes	Headache, dizziness and nausea. Death within 1 hour.
3200	5-10 minutes	Headache, dizziness and nausea. Death within 1 hour.
6400	1-2 minutes	Headache, dizziness and nausea. Death within 25-30 minutes.
12,800	1-3 minutes	Death

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