

What are the common causes of Indoor Air Quality (IAQ) problems?

IAQ problems result from interactions between building materials and furnishings, activities within the building, climate, and building occupants. IAQ problems may arise from one or more of the following causes:

- Indoor environment - inadequate temperature, humidity, poor air circulation, ventilation system issues.
- Indoor air contaminants - chemicals, dusts, moulds or fungi, bacteria, gases, vapours, odours.
- Insufficient outdoor air intake.

3 MAIN TYPES OF AIR CONTAMINANTS

1. **Biological** pollutants from living organisms like:

- mould and fungi
- bacteria (such as legionella)
- house dust mites from carpets, fabric, foam cushions, etc.
- pollen and spores (known as aeroallergens)
- pet dander

2. **Chemical** pollutants are gases, vapours and particles like:

- nitrogen dioxide (NO₂)
- carbon monoxide (CO)
- formaldehyde
- lead
- asbestos
- ozone
- volatile organic compounds (VOCs) including chemicals from cleaning products, candles, perfumes, etc.
- dust or particles (particulate matter)
- tobacco smoke

3. **Radiological** pollutants are radioactive substances:

- radon



According to the Government of Canada, lead and lead compounds can enter the body by ingestion, inhalation, or absorption. The physical forms of lead that are most readily absorbed into the body (and hence the most dangerous) are lead-containing dusts, fumes, mists, and liquids and their vapours. Once absorbed into the bloodstream, lead circulates and approximately 95% of the lead that is stored in the body resides in the bone, from which it may be released back into the blood during aging, illness, periods of stress, or pregnancy. The rest of the stored lead resides in the brain, kidneys, liver, spleen, and teeth.

SOURCES: Government of Canada, CCOHS, Indoor Air Quality Assessment

What health symptoms are often linked to poor indoor air quality?

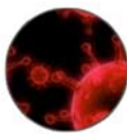
It is common for people to report one or more of the following symptoms:

- Dryness/irritation of the eyes, nose, throat, skin
- Headache
- Fatigue
- Shortness of breath
- Hypersensitivity and allergies
- Sinus congestion
- Coughing and sneezing
- Dizziness
- Nausea

People notice their symptoms after several hours in the area and feel better after they have left the building/home or when they have been away for a weekend or a vacation.



Bacteria



Viruses



Pollen



Cleaning Chemicals



Tobacco Smoke



Pet Dander



Environmental Pollutants

IMPROVING AIR QUALITY

The most effective way to reduce indoor air pollution is to remove/reduce the source of contamination. Consider removal or potential contamination of:

- Smoking – create a smoke-free environment
- Dampness, water leaks and mould
- Household appliances – have a qualified professional inspect yearly
- Garage activities – avoid idling (car, lawnmower)
- House cleaning – vacuum often with HEPA filter
- Ventilation improvements – use fans, open windows, keep vents clear and open
- Air filtration

RELATED GUIDELINES FOR IAQ

Currently there are no provincial or federal regulations in Canada that establish “safe” exposure limits for airborne contaminants that are typically found in commercial, residential or institutional settings. For provincially regulated industrial facilities in Ontario, Regulation 833/90, “Control of Exposure to Biological or Chemical Agents” (made under the Occupational Health & Safety Act) as amended by O. Reg. 419/10 establishes permissible exposure limits for a variety of chemical contaminants.

⇒ According to the Government of Canada, the following residential indoor guidelines or guidance have been developed for various contaminants. The recommended sampling time that this guideline is based on is shown in brackets:

Carbon Monoxide

- long-term exposure limit (24 hours): 11.5 mg/m³ (10 ppm)
- short-term exposure limit (1 hour): 28.6 mg/m³ (25 ppm)

Mould

- address any water damage in residences within 48 hours to prevent mould growth; and,
- address any visible or concealed mould growing in residential buildings

Radon

- exposure limit 200 Bq/m³ (becquerels per cubic meter)

NOTE: Becquerel (Bq) is the SI derived unit of radioactivity. One becquerel is defined as the activity of a quantity of radioactive material in which one nucleus decays per second.