

Air Pollution & Your Health

Clean air is something we all need.

It is vital to healthy living and a healthy environment.



Canadian Public Health Association

What is air pollution?

Air is a mixture of gases surrounding the Earth. These gases create the atmosphere that allows life to flourish. Clean air consists of 21% oxygen and 78% nitrogen by volume, and traces of other gases such as argon, carbon dioxide (CO₂) and water vapour.

Every day, the average adult breathes about 15,000 to 20,000 litres of air. Both indoor and outdoor air contain chemical and biological gases, droplets and particles, some of which are harmful to people and animals and damaging to plants. **Air pollution** is the term that describes any harmful gases or particles in the air.

Canada's air quality is affected by pollutants, which include ground-level ozone (O₃), particulate matter (PM), sulphur dioxide (SO₂), carbon monoxide (CO), nitrogen oxides (NOx), volatile organic compounds (VOCs), hydrogen sulphide (H₂S), sulphates and nitrates. Additional air pollutants include toxic metals (lead, mercury, manganese, arsenic and nickel), benzene, formaldehyde, polychlorinated biphenyl (PCB), dioxins, and other chemicals.

Air pollution can affect both urban and rural areas. Although natural emissions from forest fires and wind-blown dust from soil and volcanoes contribute to air pollution, human activities release far more pollutants into the environment. Canada's largest sources of air pollution are power plants, industries and vehicle emissions. While emission controls have improved in Canada over the last 20 years, a growing demand for power and the use of cars have increased the consumption of fossil fuels (gasoline, oil, natural gas, coal). Some other causes of air pollution are burning of wood, pesticides and toxic household products.

Where smoking is still permitted indoors, tobacco smoke is the most important single source of indoor air pollution.

What about greenhouse gases and climate change?

Greenhouse gases (GHGs) are gases in the atmosphere that trap heat from the sun. Naturally occurring GHGs include water vapour, ozone (O₃), carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O). Without them, the Earth's average temperature would be too cold to support life. While these naturally occurring gases make life possible, a serious concern today is "climate change", which is caused by increased levels of some of these gases in the atmosphere. Higher concentrations of GHGs cause the Earth's average surface temperature to rise, leading to "global warming".

What is Smog?

Smog is another type of pollution which occurs mostly in urban settings. It refers to the mix of nitrogen oxides (NOx) and volatile organic compounds (VOCs) just above the Earth's surface, which form ground-level ozone in the presence of sunlight. Human activity is responsible for the increase in ground-level ozone in recent years. About 95 per cent of NOx from human activity comes from the burning of gasoline, coal, gas and oil in motor vehicles, homes, industries and power plants. VOCs come mainly from gasoline combustion and from the evaporation of liquid fuels and solvents.

Air pollution and climate change are intrinsically linked. Smog pollutants and GHGs are often emitted from the same tailpipes and industrial smokestacks. Taking steps to reduce air pollution also helps slow global warming.

What is indoor air pollution?

Most people are aware that outdoor air pollution can damage their health, but fewer realize that indoor air pollution can also contribute to ill health. Studies by Health Canada, the U.S. Environmental Protection Agency (EPA) and other agencies show that levels of indoor pollutants may be even higher

than outdoor levels. Since most people spend as much as 90% of their time indoors, indoor air pollution is a real concern.

Problems with indoor air quality are caused by a range of factors including tobacco smoke, pets, carpets, building materials, furniture, cleaning products, pesticides, printing and copying machines, gas appliances, allergens, moulds, bacteria, viruses, radon and lead. Reduced natural ventilation, too much humidity and the use of chemicals can lead to unhealthy air and affect health and well-being.

What are the health effects of air pollution?

Air pollution can affect health in many ways:

- irritation of eyes, nose and throat;
- wheezing, coughing and breathing difficulties;
- worsening of existing lung and heart problems;
- increased risk of heart attack; and
- in especially sensitive people, may even result in premature death.

Individual reactions to air pollution depend on several factors, such as:

- level, type and combination of pollutants in the air;
- degree of exposure of individual (e.g., location, local sources of pollution, length of exposure);
- amount of pollutant in the air; and
- age, weight, activity level and health status of an individual.

Symptoms of exposure may persist for a number of days after a person is exposed to high pollution levels, or they may appear several days later. There is no known, safe level of air pollution. Even low levels of air pollution can have a negative effect on the health of vulnerable people, such as the elderly, children, and people with cardio-respiratory problems.

Who is affected by air pollution?

Air pollution affects everyone's health in different ways – both urban and rural dwellers – throughout the seasons. Negative health effects will increase as air pollution increases.

Some people may suffer long-term, cumulative effects.

- Seniors, children and people with lung and heart diseases are most affected. This includes people with heart conditions and those with asthma, emphysema, chronic bronchitis or allergies.
- Even healthy people may have more difficulty breathing on days when the air is highly polluted.

Health Canada estimates that every year several thousand Canadians die prematurely due to air pollution. The Ontario Medical Association estimates that every year tens of thousands of people in Ontario visit emergency rooms or are admitted to hospital as a result of exposure to smog.

Reduce your exposure to air pollution!

- **Take notice:** Refer to the local news and forecasts, your public health clinic, medical officer of health or ministry of health, for information about outdoor air quality and weather. High air pollution levels often happen on hot, humid summer days. This combination can be dangerous because it may lead to dehydration. Drink plenty of water on these days. Be aware of the quality of indoor air. Eliminate tobacco smoke, only use cleaning product chemicals in well-ventilated areas and clean up moulds in your home and workplace.
- **Time it right:** Reschedule strenuous outdoor activities and limit children's outdoor play on high pollution days. Avoid heavy traffic areas.
- **Take action:** To reduce air pollution levels, change your lifestyle. Drive less, use energy more efficiently at home and make wise choices as a consumer. Consider using clean, low-impact

renewable sources of energy in your home and cleaner fuels for your vehicles. Contact your local politicians at all levels of government to voice your concerns about air pollution.

Other actions for you to consider:

In transit

- Walk, cycle, car pool or use public transit instead of driving.
- If you do drive, keep your car properly tuned and reduce idling. Ten seconds of idling uses more fuel than restarting.
- Avoid rapid acceleration and drive at lower speed.
- If buying, renting or leasing a vehicle, choose one that is fuel-efficient.

At home

- Buy or make non-toxic alternatives for common household cleaners.
- Make sure no one smokes in your home.
- Look for alternatives to pesticides for lawns, gardens and indoor plants.
- Hang clothes to dry, and lower thermostats on hot water heaters and furnaces.
- Reduce your use of air conditioning.
- Avoid using gas-powered equipment, such as lawn mowers, on high pollution days.
- Work with your landlord or condominium association to conserve energy in your building.

Celebrate Clean Air Day:

June 2, 2004; June 8, 2005; June 7, 2006!

Clean Air Day (CAD) occurs the first Wednesday every June and is a celebration of environmentally friendly activities that promote clean air and good health. The Government of Canada proclaimed CAD as part of Canadian Environment Week to increase public awareness about air quality and climate change. CAD is a grassroots event built on community activities. It is a great time to join other Canadians in making choices that will create a cleaner, safer world now and for the future. Visit www.cleanairday.com.

For more information on air pollution, its health effects and what you can do to reduce air pollution, contact the following agencies:

Canada Mortgage and Housing Corporation
800-668-2642 www.cmhc.ca

Canadian Health Network
www.canadian-health-network.ca

Canadian Lung Association
888-566-LUNG www.lung.ca/cando

Canadian Public Health Association
www.cpha.ca/cleanair

Clean Air Day
819-994-5404 www.cleanairday.com

Environment Canada
800-668-6767 www.ec.gc.ca/air

Health Canada
613-957-1876 www.healthcanada.ca/air

**Office of Energy Efficiency,
Natural Resources Canada**
www.oeenrncan.gc.ca

Help make every day a Clean Air Day!

You can view / download this brochure and other resources at www.cpha.ca/cleanair

Canada