



Smog

What is smog?

Originally the term 'smog' meant a combination of smoke and fog, but it has recently come to refer to a combination of fine particulate matter and ground level ozone. Smog can also contain other harmful components such as nitrogen oxides, volatile organic compounds, sulphur dioxide and carbon monoxide. The colour of smog is determined by these suspended particles and is often brown or deep grey but can also be white.

Recent studies have shown that every major Canadian urban centre has levels of ground-level ozone high enough to pose a health risk. Not only is ozone a problem for humans, it is also known to damage vegetation and cause the deterioration of some natural and synthetic materials, including paints and dyes. Ozone is also a powerful greenhouse gas, which contributes to climate change.

What is ozone?

Ozone is a colorless and highly irritating gas that forms naturally when the precursor air pollutants, nitrogen oxide and volatile organic compounds (VOC), react with each other in the sunlight to produce ground-level ozone.

This happens most often over urban areas primarily on hot summer days but it can happen even in winter. Most Canadians in urban areas live where ground-level ozone may reach unacceptable levels during the summer months. Periods of high ozone can last several days and frequently occur when a stagnant air mass traps pollutants over a region.

The majority of nitrogen oxide gets into the air from the burning of fossil fuels (e.g. power plants, industry, homes and motor vehicles).

What is particulate matter?

Particulate matter refers to the solid or liquid (droplets of liquid) particles that are small enough to remain suspended in the air. Large or coarse particulate matter can be filtered by our noses and upper airways. We can easily expel these but not so with the smaller particles. Particles less than 3 microns can be deposited in the smaller airways and cannot be expelled by coughing. Although particles from 3 to 10 microns are too large to be deposited deep in our lungs, they are small enough to remain suspended in the atmosphere for days.

Why should we be concerned about smog?

Smog is known to aggravate asthma, precipitating or worsening an attack. Smog effects are not limited to the lungs alone, either. Normal responses may happen immediately or a few days after heavy exposure and include chest tightness, eye, nose and throat irritation, coughing and wheezing are common.



Healthy newborns are more susceptible to the effects of smog because they have smaller airways and they take in more proportionately more air at a faster rate. Children play outdoors more in the summer months when ozone levels are at their highest and they have narrower airways than do adults.

Some facts:

- Particulate matter is a problem in every region of Canada *all year round* and is not exclusive to urban areas
- Studies indicate that every major Canadian urban centre has levels of ambient particles high enough to pose a health risk.
- The Federal Government experts have suggest that smog related hospitalizations account for 6% of the respiratory admissions
- Ozone, which is know to inflame and then scar the lungs, can trigger or worsen asthma attacks
- In addition to its health impact, visibility is reduced when there are high smog levels.

What is the Air Quality Index?

The air quality index (AQI) measures the levels of smog in the air. If the AQI is in the *moderate* range, you should not exercise outdoors. If the AQI is in the *poor* range, you should avoid going outside. Environment Canada issues a *smog alert* when the AQI reaches a dangerous level – often on hot summer days during May to September (although it can still happen even in winter).

Tips to limit exposure to smog:

- Stay indoors on high smog days
- Exercise indoors or much later in the day if exercising outdoors
- Breathe through your nose if you are outside during high smog situations
- Monitor your asthma symptoms closely and talk to your doctor about having a written Asthma Action Plan that you can use if you start to have asthma symptoms.

For More Information

Visit Health Canada's "Health and Air Quality" website to find a wide range of information on related topics and activities on both outdoor and indoor air quality. If you live in Ontario, visit the Environment Ministry's air quality report Web site (link to <http://www.airqualityontario.com/>). Or contact the Asthma Society of Canada at 1-866-787-4050 or www.Asthma.ca.