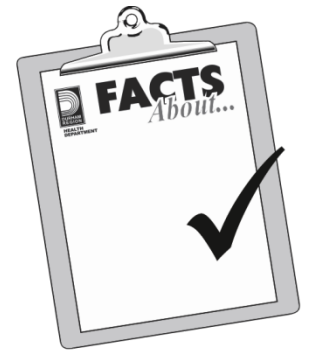




FACTS

About...



HEALTH DEPARTMENT



Particulate Matter

What is particulate matter?

Particulate matter is a general term used to describe airborne particles of different diameters that remain suspended in air. It is composed of mixtures of solids, liquids, organic and inorganic substances that can vary depending on location, season, weather and other factors. Airborne particulate matter can include aerosols, smoke, fumes, dust, ash and pollen.

Particulate matter is characterized according to its diameter. The coarse fraction includes particles with aerodynamic diameter greater than 2.5 micrometres (μm). The fine fraction includes particles smaller than 2.5 μm ($\text{PM}_{2.5}$). Total suspended particulate (TSP) refers to the total concentration of particulate matter in the air, covering the entire aerosol size range.

What are sources of particulate matter?

Particulate matter can come from natural and human-made sources. Examples of natural sources include windblown dust from erosion, forest fires and volcanoes. Examples of human-made sources, which make up the majority of particulate matter in our air, include vehicle emissions, industrial emissions, power generation, and residential fireplaces and wood stoves.

Residential and transportation sectors are the greatest contributors of fine particulate matter in Ontario, with residential contributing 39% and transportation contributing 19%. Another significant source of fine particulate matter is transboundary air pollution. During periods of elevated $\text{PM}_{2.5}$ in Ontario, it is estimated that approximately 50% of the ambient air concentration comes from across the border.

Particulate matter in the coarse fraction comes from different sources than the fine fraction. Larger particles can be generated from construction and demolition, road and soil dust, agriculture, and plant and animal material.

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How can particulate matter affect my health?

Particulate matter small enough to be inhaled has the greatest potential to affect human health. This includes particles that have aerodynamic diameters that are 10 μm or less (PM_{10}). The smaller the particle, the better able they are to evade the body's defenses and penetrate deep into the lungs. Inhalable particulate matter has been associated with aggravation of asthma, respiratory symptoms and an increase in hospital admissions.

For long-term effects such as mortality and cancer, $\text{PM}_{2.5}$ has been shown to be a stronger risk factor than PM_{10} . $\text{PM}_{2.5}$ was evaluated by the International Agency for Research on Cancer (a specialized agency of the World Health Organization) and classified as carcinogenic to humans (group 1). The basis of this classification was evidence that showed an increasing risk of lung cancer with increasing exposure to particulate matter and air pollution.

Who is most susceptible to the effects of particulate matter?

One's risk of experiencing adverse health effects from exposure to particulate matter depends on their age, personal health, the levels and types of pollutants in the air, and how long they are exposed. Generally, children, the elderly and people with pre-existing medical conditions such as asthma, lung and heart disease are most susceptible to the effects of particulate matter.

How can I reduce my exposure to particulate matter?

$\text{PM}_{2.5}$ is one of the main components of smog. It is one of the indicators used to communicate health risk from air pollution in Ontario's Air Quality Health Index (AQHI). One way to reduce your exposure to particulate matter and air pollution is to check the local AQHI and plan outdoor activities using the information in the forecasts.

For example, during periods of poor air quality (high numerical AQHI), reduce or reschedule strenuous outdoor activities and stay away from areas with lots of vehicle traffic. People who are more susceptible to air pollution may wish to stay indoors until the forecast improves (or until AQHI goes below 7). More tips on how to reduce exposure to air pollution can be found on the AQHI website.

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For more information

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More information can be obtained from:

Ontario Ministry of the Environment, Conservation and Parks

Fine Particulate Matter

<http://www.airqualityontario.com/science/pollutants/particulates.php>

Air Quality Health Index (AQHI)

<http://www.airqualityontario.com/aqhi/index.php>

World Health Organization

Health Effects of Particulate Matter

http://www.euro.who.int/_data/assets/pdf_file/0006/189051/Health-effects-of-particulate-matter-final-Eng.pdf

International Agency for Research on Cancer

Press Release No 221: IARC: Outdoor air pollution a leading environmental cause of cancer deaths

https://www.iarc.fr/en/media-centre/iarcnews/pdf/pr221_E.pdf

Durham Region Health Department, Environmental Help Line

905-723-3818 ext. 2188 or 1-888-777-9613

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For more information

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