

Particulate matter and outdoor air pollution

Air quality is determined by the level of pollutants in the air. Air quality is affected by the types and amount of pollutants released into the air, weather conditions like wind speed, precipitation (rain and snow) and temperature. Topography, such as local mountains can also affect air quality.

The levels of pollutants in the air can vary greatly from one location to the next and from 1 hour to the next. Several pollutants are measured at outdoor monitoring stations in the province and compared against standards and guidelines.

What is particle pollution?

Particulate matter (PM) refers to small solid or liquid particles floating in the air. These particles can be made up of different substances like carbon, sulphur, nitrogen and metal compounds.

Generally, smaller particles are thought to be more harmful to health than larger particles. Small particles can move deeper into the respiratory tract, including the lungs. For this reason, fine particles that have diameters less than 2.5 micrometers (PM_{2.5}) are linked to more serious health effects than larger particles. PM_{2.5} is about one-eighth the diameter of a human hair.

PM₁₀ includes fine particles as well as coarse particles that range in size from 2.5 to 10 micrometers in diameter. The coarse particles tend to stay in the upper parts of our respiratory tract, such as the nose and throat.

What causes particle pollution?

Particulate matter can be produced from burning materials, road dust, construction and agriculture.

One of the largest sources of particulate matter in B.C. is residential wood burning. Wood smoke may come from residential sources such as a fireplace or wood stove in a home, all open burning of vegetative matter or backyard burning.

Other sources of particulate matter include forest fires, certain industries, furnaces, tobacco smoke and all mobile vehicles, especially those with diesel engines.

The harmful effects of tobacco smoke are well known. As a result, many B.C. municipalities have placed restrictions on smoking in public places.

How dangerous is particle pollution?

Particulate matter is considered the air pollutant of greatest concern to the health of the B.C. population. Research has shown that exposure to PM can lead to increased days lost from work or school, emergency room visits, hospital stays and deaths.

Both short and long-term exposures to PM can lead to the worsening of heart and lung disease. It can also cause premature (early) death, particularly among people who have a higher risk of being affected by particle pollution.

Those most likely to be affected by particle pollution include:

- Children

- Older adults
- Those with heart or lung disease, such as asthma and chronic obstructive pulmonary disease (COPD)

How can we reduce particle pollution?

We can reduce the levels of particulate matter pollution by reducing the amount of particulate matter produced through smoke and by reducing vehicle emissions.

Reduce the amount of particulate matter produced through smoke:

- Stop smoking; if you do smoke, do not smoke indoors
- Mulch garden refuse instead of burning it
- Limit the use of fireplaces and wood stoves. When using these appliances, make sure that wood is burned properly. Use wood that is well seasoned instead of wet or green. Stoves should also meet CSA (Canadian Standards Association) or EPA (Environmental Protection Agency) emission standards
- Switch to cleaner burning appliances. For example, pellet stoves produce less particulate matter than traditional wood stoves
- Take action to reduce wildfires. Practice safe backyard burning and careful use of campfires

For more information, see [HealthLinkBC File #65c Indoor air quality \(IAQ\): Combustion by-products](#).

Reduce vehicle emissions and increase fuel efficiency:

- Diesel vehicles, including trucks, are a key source of fine particles. Reduce diesel emissions by replacing older engines with newer and cleaner engines
- Walk, cycle, take public transit and carpool whenever possible
- Pay attention to recommended maintenance schedules for your vehicle

For more information

For more information on particulate matter and your health, visit the following:

- B.C. Ministry of Environment – BC Air Quality www2.gov.bc.ca/gov/content/environment/air-land-water/air
- The Lung Association www.lung.ca/lung-health/air-quality-0



BC Centre for Disease Control
An agency of the Provincial Health Services Authority