

# Clean and Healthy Air

FOR GLADSTONE

FACT SHEET

## particulates

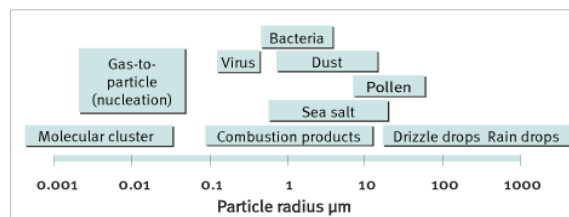
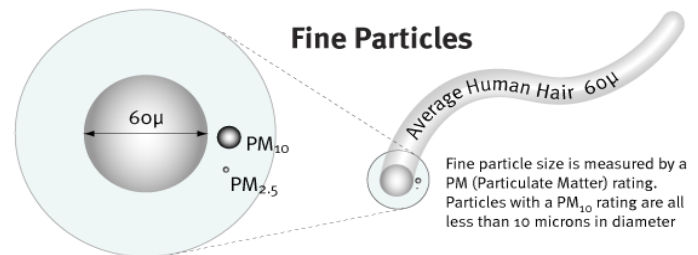
### What are particulates?

Unlike gases, particulates are solids or droplets of liquid suspended in the air by virtue of their small size. Visible as hazes over cities or regions, particulates vary in size, shape and chemical composition and are found everywhere in the atmosphere.

Classified by their size measured as 'mass median aerodynamic diameter', particulates include:

- visibility reducing particulates
- total suspended particulates (TSP)
- PM<sub>10</sub> – particulates with diameters of 10 micrometres or less
- PM<sub>2.5</sub> – particulates with diameters of 2.5 micrometres or less
- PM<sub>1</sub> – particulates with diameters 1 micrometre or less (also known as ultrafine particulates)

A micrometre ( $\mu\text{m}$ ) is one millionth of a metre (an average strand of human hair is 60  $\mu\text{m}$  in diameter). Large particulates tend to settle out of the air quicker and rain also helps to clear the air.



### What are the sources of particulates?

Airborne particulates are produced both naturally (as bush fires, dust storms, pollens and sea sprays) and as a result of human activity. Particulates emitted through human actions include:

- the burning of fossil fuels, especially diesel-powered vehicles.
- activities such as lawn mowing and the use of wood stoves.
- industrial processes such as bulk material handling, refineries, cement works and fossil fuel power plants.

Particulates emitted by combustion processes are generally less than 2.5 micrometres, while those from non-combustion processes such as wind blown dusts and soils, road dust and construction activity are relatively large and generally greater than 2.5 micrometres.

### How can particulates affect our health?

PM<sub>10</sub> are sufficiently small to penetrate the large airways of the lungs, while PM<sub>2.5</sub> could accumulate in the smaller airways of the lungs.

Various studies have linked particulate matter to a range of health effects including aggravation of asthma and increased risk for heart attacks.

While the respiratory tract can deal adequately with normal airborne particle loads without any long-term effect, excessive concentrations or exposure times or the chemical nature of the particulates may cause concern.

## Measuring particulates in Gladstone

EPA monitoring of PM10 concentrations at Clinton, South Gladstone and Targinie has shown particulate levels in the ambient (outdoor) air in Gladstone to be less than 50µg/m<sup>3</sup> per 24hrs in recent years, except during periods of dust storms and grass fires.

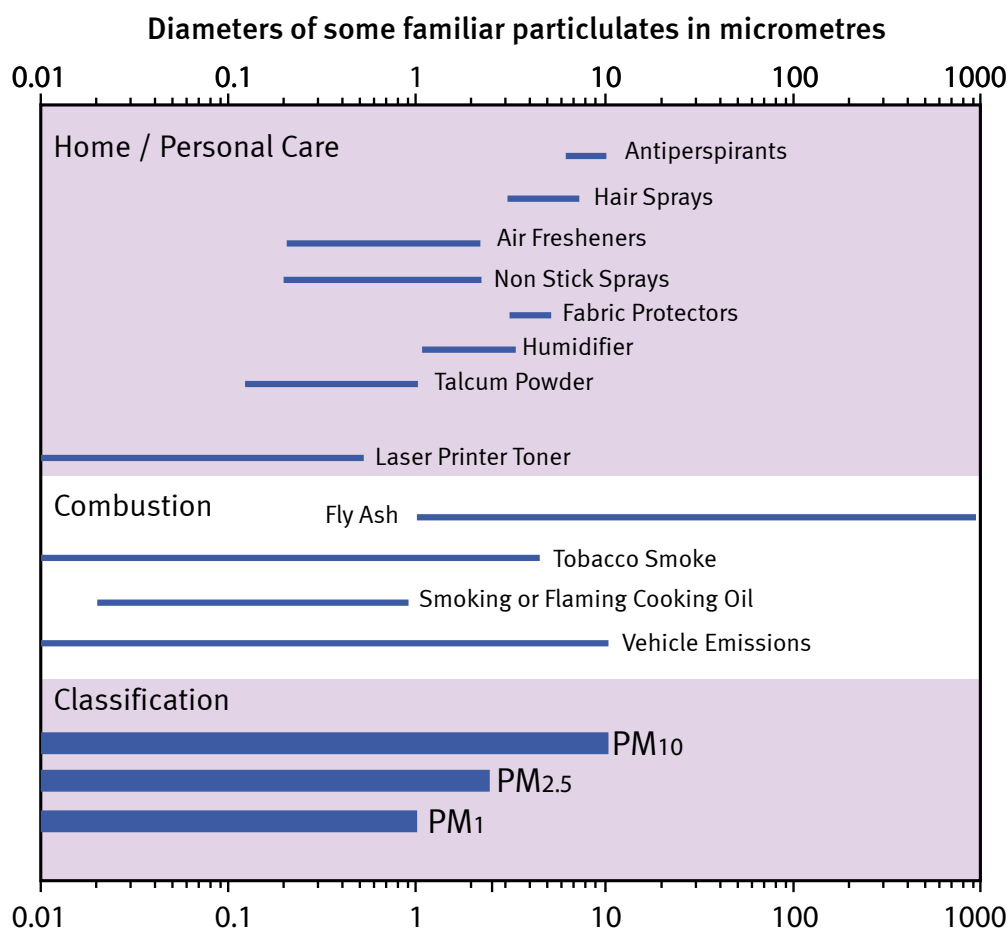
The expanded air monitoring program being implemented as part of the Clean and Healthy Air for Gladstone project will include monitoring of both PM10 and PM2.5

The national standard (Ambient Air NEPM) for PM10 is 50µg/m<sup>3</sup> over a 24hr period and 25µg/m<sup>3</sup> for PM2.5.

Notes: µg/m<sup>3</sup> is a measure of concentration expressed as “millionths of a gram per cubic metre”

## Ultrafine particulates

With few studies into the human health effects of ultrafines (particulates under 1 micrometre) and no existing ambient air quality standards anywhere in the world for particulates of this size, the assessment of health risks associated with ultrafines in Gladstone will be limited. However, expanding monitoring at South Gladstone to include ultrafines will provide valuable data for health risk assessment when techniques become available in the future.



## For more information

Visit [www.epa.qld.gov.au/gladstone](http://www.epa.qld.gov.au/gladstone) for more information on the Clean and Healthy Air for Gladstone Project and for links to live air data and other air quality information.