

## What Does this Dashboard Show Me?

- The Dashboard displays results from the three air monitoring stations at the Coast Guard, Lennon Drive and the Environment Park, South Townsville.
- Both the Hi-Vol samples and the Dust Deposition samples are sent away to an independent laboratory for analysis, therefore the graphs show the latest available results which have been returned from the laboratory.
- The table shows the type of equipment installed at each site; the dates that the equipment was active during the period; and also indicates if there were any problems with the equipment or samples i.e. if the data availability is less than 100% there was an issue.
- The results are shown in graphical format. All the graphs include an air quality objective shown as a red line. The Hi-Volume air quality objectives are stated in the *Environmental Protection (Air) Policy 2008*. Dust objectives are not stated in Queensland legislation. However, the Department of Environment and Heritage Protection recommends that a daily deposition rate of 120 mg/m<sup>2</sup>/day be used to assess dust nuisance and the World Health Organisation indicates that lead dust fallout levels between 250 and 750 µg/ m<sup>2</sup>/day are associated with a slight increase in blood lead levels.
- Results below the red line on the graphs show that the levels are below the objective.

## Units of Measurement

Hi-Vol TSP Concentration units = micrograms per cubic metre per 24 hour period.

Hi-Vol Lead Concentration units = micrograms per cubic metre per 24 hour period.

Dust Deposition Total Insoluble Matter Concentration units = micrograms per square metre per day.

Dust Deposition Lead Concentration units = micrograms per square metre per day.

Rolling annual average = the moving average of the previous 11 results and the current result.

## Air quality Objectives.

Parameter	Air Quality Performance Objective	Guideline
PM <sub>10</sub>	50 µg/m <sup>3</sup> (average over 24-hours which may be exceeded a maximum of 5 days per calendar year)	NEPM and EPP Air
	20 µg/m <sup>3</sup> (annual average)	WHO
TSP	90 µg/m <sup>3</sup> (average over 1 year)	EPP Air
	80 µg/m <sup>3</sup> (average over 24 hours)	DEHP Air impacts Guideline
Lead and compounds (measured as the total metal content in TSP)	0.5 µg/m <sup>3</sup> (average over 1 year)	NEPM and EPP Air
Dust – insoluble solids	120 mg/m <sup>2</sup> /day (or 3.65 g/m <sup>2</sup> /month)	No specified guidelines. DEHP accepted limit for justifiable complaints about nuisance dustfall
Dust – Lead	250 to 750 µg/m <sup>2</sup> /day (averaged over a 12-month period)	WHO

## What are particles?

Airborne particles are sometimes referred to as 'particulate matter' or 'PM'. They include dust, dirt, soot, smoke, and liquid droplets. Some particles are large enough or dark enough to be seen as soot or smoke, while others are so small they can only be detected individually with a microscope.

Some particles are emitted directly into the air from a variety of sources that are either natural or related to human activity. Natural sources include bushfires, dust storms, pollens and sea spray. Those related to human activity include motor vehicle emissions, industrial processes (e.g. electricity generation, incinerators and stone crushing), unpaved roads and woodheaters.

Particles can be classified on the basis of their size, referred to as their 'aerodynamic diameter'. 'Coarse particles' are those between 10 and 2.5 micrometres ( $\mu\text{m}$ ) in diameter; 'fine particles' are smaller than 2.5  $\mu\text{m}$ ; and 'ultrafine particles' are smaller than 0.1  $\mu\text{m}$ . For comparison, the diameter of a human hair is 70  $\mu\text{m}$  and this is seven times the diameter of the largest 'coarse particles'.

Particles can also be classified according to their chemical composition. The toxicity of particles is often dependent on their size and chemical composition.

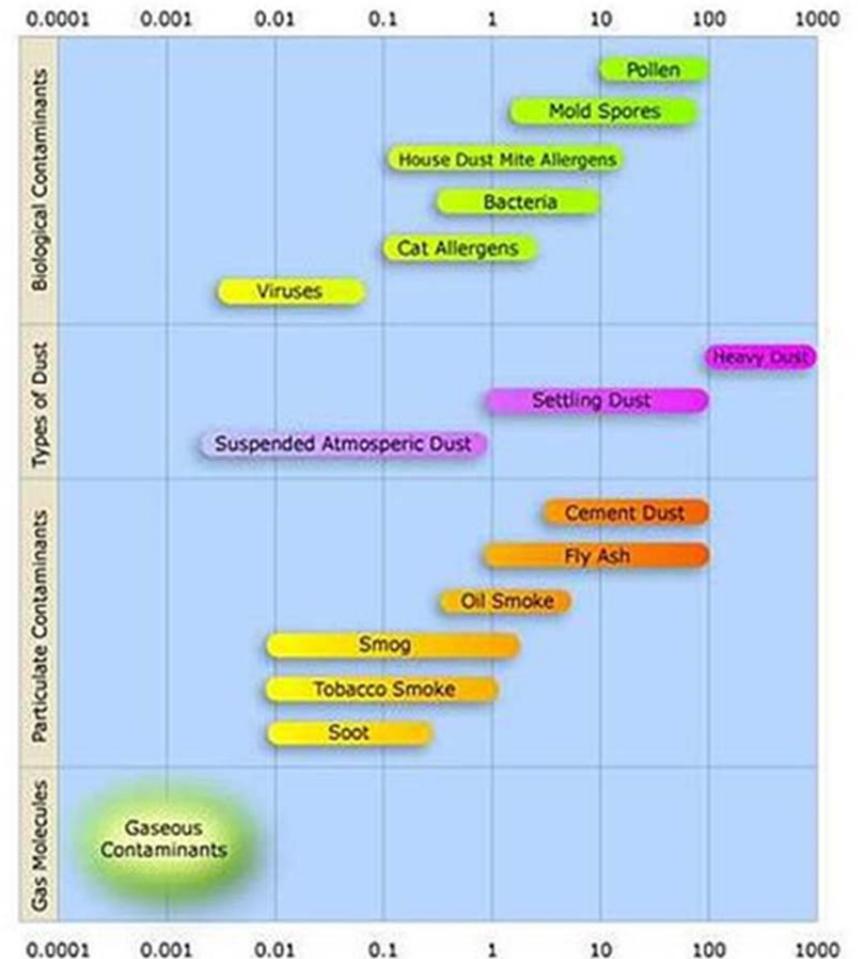
## Definitions

Dust Deposition = Dust Deposition Gauges passively collect dustfall over a month from the surrounding air, with subsequent laboratory analysis performed to evaluate the composition of the deposited dust and its metal/metalloid composition.

Hi-Vol = High Volume Samplers collect samples of dust on filters over a 24-hour period every six days, with subsequent laboratory analysis performed to evaluate the composition of deposited dust and speciation of metal/metalloid components.

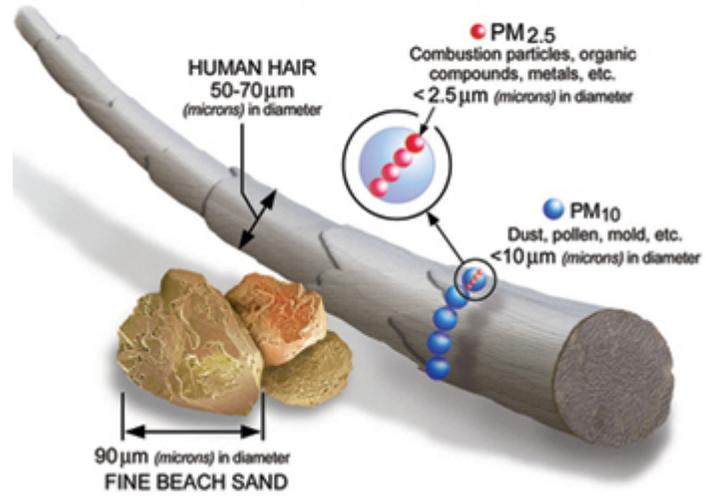
TSP = Total Suspended Particulates – measure of the mass concentration of particulate matter (airborne particles or aerosols) which are less than 100 micrometres in diameter, that are suspended in air. These particulates can be filtered out in the nose and throat.

PM10 = Particulate Matter 10 micrometres or less in diameter. These particulates, often known as respirable particles can penetrate the bronchioles of alveoli in lungs.

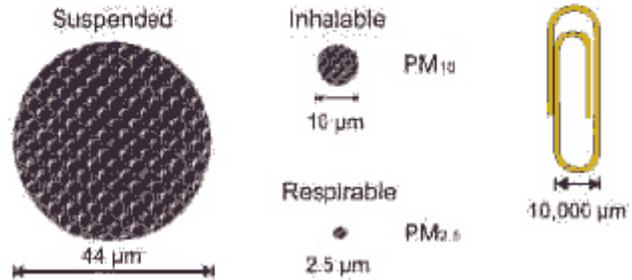


Other options for the graphic

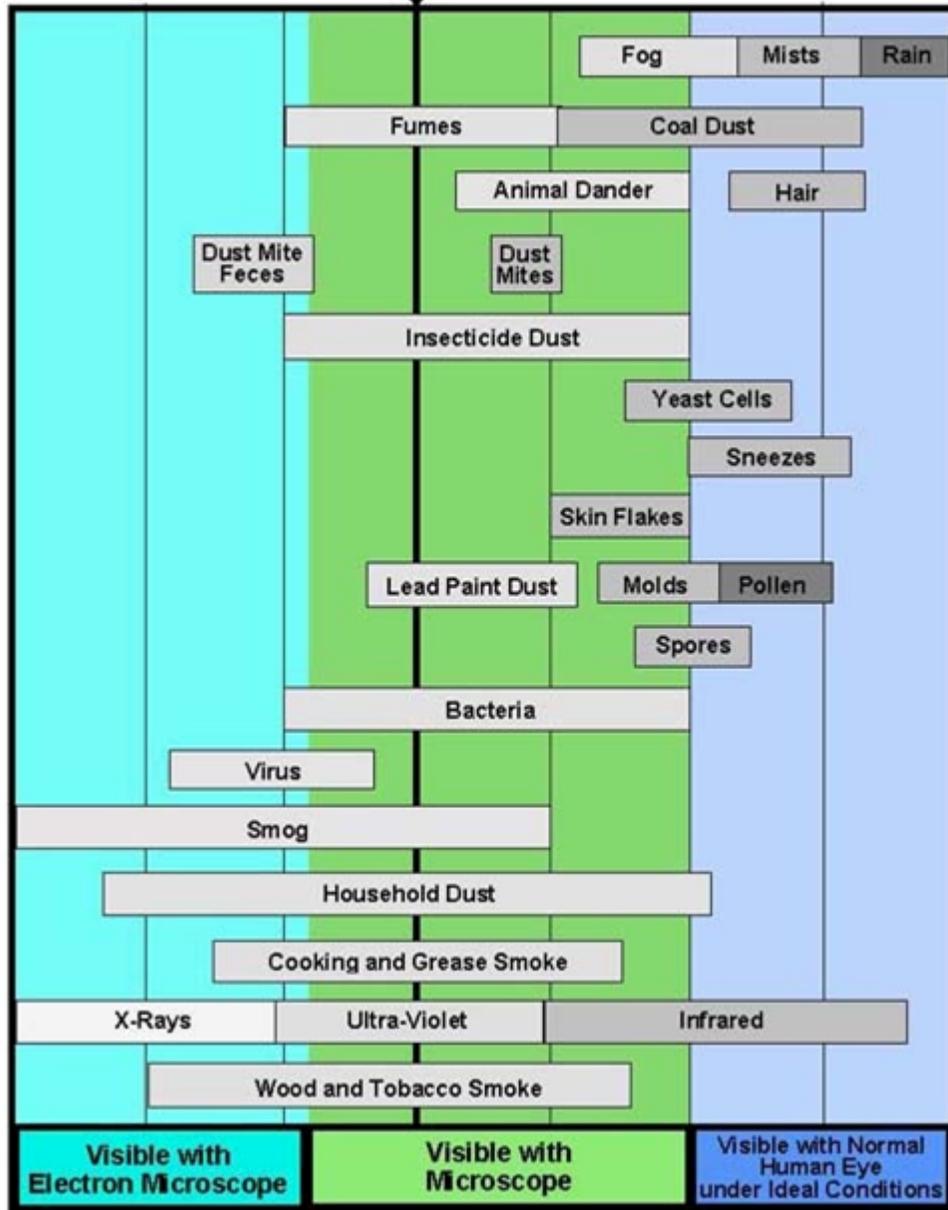
## Relative Size of Particulate Matter



## Particulate Matter Size Comparison



0.001 0.01 0.1 0.3 1.0 10.0 100 1,000



Another option for the chart