



Looking up at the sky, we would never guess that our atmosphere contains between **one and three billion tons** of dust and other particles at any given time. Wind assists in keeping this **dust airborne**, but gravity wins most of the time, forcing the **dust particles** earthward, proving the old adage: “what goes up, must come down.”

Dust comes from many **different sources**. Some, like the byproducts of the combustion of fossil fuels, are man-made. Others come from natural sources – like sea-spray blowing off the ocean, or dust blowing in from the desert. Dust comprises inorganic matter, such as sand particles, as well as a large amount of organic matter, including pollen, spores, moulds and viruses. These minute particles, ranging in size from around 100 micro metres (μm) to a few nanometres (nm), invade our airspace every day, a part of life that we aren't even aware of, except when we dust the furniture!



Dust Definitions

Aerodynamic diameter – the diameter of a spherical particle that has a density of 1g/cm^3 and which has the same terminal settling velocity as the particle of interest.

Atmospheric dust – Dust that is in the atmosphere.

Brownian Motion – The continual random movement, due to molecular agitation, of fine particles suspended in a gas or a liquid.

d50 – In a sample of dust, the d50 diameter is the diameter above which fifty percent of the particles are larger and below which fifty percent of the particles are smaller.

Dry deposition – The collection of precipitant dust during periods with no rainfall.

Export bucket – The export bucket can be the North, South, East, or West bucket that is closest to the dust sources. When the wind blows over the dust source towards the sampling location then the export bucket is open and dust from the dust source is collected in the bucket.

Fugitive dust – Dust that is not emitted from a point source that can be easily defined such as stacks. Sources are open fields, travel ways, stockpiles, and process-buildings.

Meteorology – the earth science dealing with phenomena of the atmosphere (especially weather).

Occult deposition – Increasing particle size due to moisture that results in deposition due to increased mass of particles.

PM2.5 – Sampling of atmospheric dust where the aerodynamic d50 diameter is 2.5 µm.

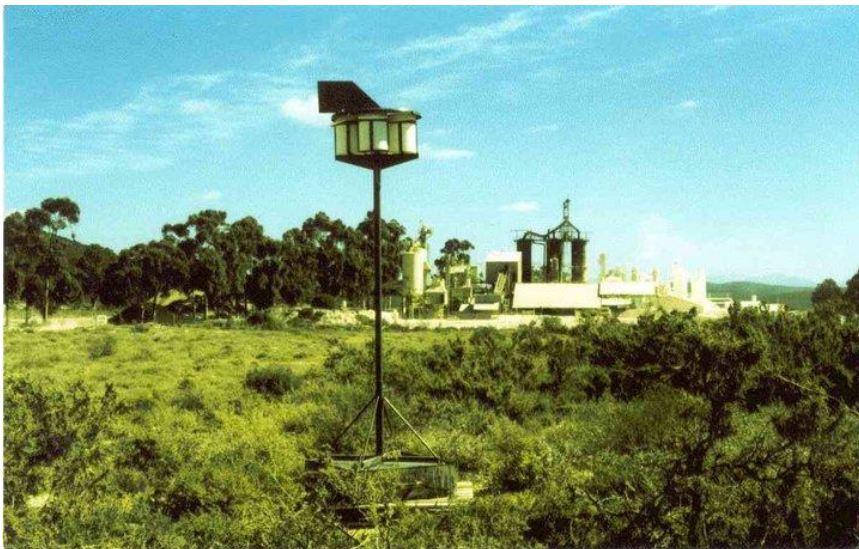
PM10 – Sampling of atmospheric dust where the aerodynamic d50 diameter is 10 µm.

Precipitant dust – Any particulate matter that has an aerodynamic diameter below 100 µm.

Total deposition – The sum of wet and dry deposition. Occult deposition is also included.

Wet deposition – The collection of precipitant dust and any soluble substances in the rainwater during periods of rainfall.

RSPM – Respirable Suspended Particulate Matter – Those particles that have a diameter of 10 microns or less (PM10) are inhalable into the lungs and can cause adverse health effects.



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