

Date

May 2009

Issue:

2.5 Particulate Monitoring

KIC Position

- All monitoring should be of the best quality available, using the best methods available
- Maximum community consultation should be undertaken when establishing the monitoring regime.
- KIC considers that particulate monitoring is essential
- PM10 monitoring has been in place for several years on the KIA and complies with regulatory guidelines
- KIC acknowledges there is a body of science that PM2.5 particulates are a potential health concern.
- Monitoring to determine a source or type of particulates would be more effective than generic monitoring

Background

Particulate Matter (PM) is measured in microns and is rated according to size. PM2.5 therefore refers to fine particles which are at least 2.5 microns in size. PM10 refers to particles which are 10 microns in size. A micron is one thousandth of a millimetre.

Fine particulate matter (ranging from PM2.5 to PM10) primarily comes from car, truck, bus and off-road vehicle exhausts and operations that involve the burning of fuels such as wood, heating oil or coal and natural sources such bush fires.

Because fine particles can be carried long distances from their source, events such as bushfires can raise fine particle concentrations hundreds of miles from the event.

PM 2.5 is also produced by common indoor activities such as smoking, cooking (e.g., frying, sautéing, and broiling), burning candles or oil lamps, and operating fireplaces and fuel-burning space heaters (e.g., kerosene heaters).

Perth air particulate monitoring currently lists wood heaters and bushfires as the major reason for levels exceeding guidelines in the metropolitan area.

In 1998, the Australian National Environment Protection Measure (NEPM) for Ambient Air Quality specified the "desired environmental outcome of this measure is ambient air quality that allows for the adequate protection of human health and wellbeing".

In recent years, this major focus on human health effects has been specifically targeted at particulate matter.

Considerable epidemiological evidence has established a link between particulate matter pollution and human health.¹

Concern was initially directed at PM₁₀, (particulate matter with an aerodynamic diameter of 10 microns or smaller), but more recent work has implicated the fine particulate matter with an aerodynamic diameter of at least 2.5 microns (PM_{2.5}).²

The health effects of air pollutants are determined by the cumulative dose that an individual inhales. The dose itself depends on a number of variables, one of which is the concentration of particles.

Although greatest concern is directed at particulate matter, high levels of any of the 'criteria pollutants' cause air to be considered polluted.

Western Australian regulators are satisfied current evidence means there is no cause for concern about current emissions from industry in the KIA.

If the issue of particulate monitoring in the Kwinana area is to determine the level of industrial emission, then the monitoring should be industry substance specific rather than generic.

This would provide the community with more precise information about the air quality of the KIA as well as comparative information between the overall amount of particulates in the air and that which is specifically emitted by industry.

References

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- *Draft - A guideline for the development and implementation of a dust management program* WA Department of Environment and Conservation, May 2008
- Dockery, DW, Pope, CA, Xu, X, Spengler, JD, Ware, JH, Fay, MA, Ferris, BG, and Speizer, FE, "An association between air pollution and mortality in six U.S. cities", *New England Journal of Medicine*, Issue 329, 1993
- Schwartz, J, Dockery, DW and Neas LM: "Is daily mortality associated specifically with fine particles?" *Journal of the Air Waste Management Assoc*, No. 46, 1996.

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¹ Dockery, DW, Pope, CA, Xu, X, Spengler, JD, Ware, JH, Fay, MA, Ferris, BG, and Speizer, FE 1993, "An association between air pollution and mortality in six U.S. cities", *New England Journal of Medicine*, 329:1753-1759.

² Schwartz, J, Dockery, DW and Neas LM 1996, "Is daily mortality associated specifically with fine particles?" *J. Air Waste Management Assoc*, 46:927-939.