COMMUNITY INFORMATION

BROOKLYN INDUSTRIAL ESTATE – DUST MONITORING PROGRAM

September 2009

EPA is undertaking a 10-month program monitoring dust in the Brooklyn area to obtain data about air quality.

The program has been developed in response to community concerns expressed about nuisance dust and potential health impacts of fine dust emanating from the Brooklyn industrial area. It is a scientific monitoring program to test dust concentrations in the air.

Dust in the air may be made up of particles from many different sources, including local industry. It should be possible in some cases to trace back the measured dust to a broad area. However, the program does not analyse the content of dust, so it will not be able to trace dust back to a specific industrial site.

WHAT IS IN DUST?

Dust, or particulate matter (PM), can be made up of many different things but is usually described as *material that is blown about in the air*. It is usually categorised into coarse particles (those found near unsealed roadways and dusty industries) and fine particles (such as those found in smoke and haze).

Particles can come from a number of different sources, including industry, motor vehicles, domestic wood heaters, waste burning and general windblown dust.

Coarse particles are bigger and tend to deposit closer to the source, whereas fine particles can be carried a long way, especially on a windy day.

Dust with particles that have a diameter of less than 10 micrometres (one micrometre is 1/1000 of a millimetre) is called PM_{10}. Particles of this size, if breathed in, are small enough to make their way into the lungs, affecting human health.

Depending on a range of factors, including degree of exposure and existing health, PM10 dust can aggravate existing respiratory and cardiovascular disease, decrease lung function, exacerbate asthma and alter the body's defence and lung-clearance mechanisms. Those most sensitive to PM_{10} dust include the elderly, children and people with existing respiratory or cardiovascular disease.

WHAT WILL BE MEASURED?

The Brooklyn dust nonitoring program will measure two aspects of dust particles in air:

- the concentrations of PM_{10} particles in the air compared to health standards
- the amount of total particles in the air (which gives a measure of nuisance dust).

Through the monitoring, EPA will measure the concentration of PM_{10} particles in the air and compare these with the national standard developed to protect human health (Air NEPM Standard of 50 $\mu g/m^3$ averaged over 24 hours).

The State Environment Protection Policy (Air Quality Management) defines nuisance dust in terms of total suspended particles, which is a measure of particle concentration in the air, including all particle sizes. In urban environments, PM_{10} measurements can be used to estimate total suspended pParticles, thus providing an indication of the level of nuisance dust.

The measurements from the test sites in Brooklyn will also be compared with EPA's air monitoring station at Footscray as a way to determine local industry contribution to dust.

ABOUT THE MONITORING PROCESS

The program measures particles in air (as PM_{10}) from three sites over a period of 10 months (from September 2009 to June 2010).

The program uses two types of continuous particle samplers and a wind sensor, giving results every five minutes.

Sites 1 and 2 – residential sites

These two sites will measure PM_{10} using DustTrak monitoring equipment.

Brooklyn

A residential site close to the Brooklyn industrial estate but far enough away from Geelong Road to reduce interference by traffic dust and exhaust emissions.

Yarraville

A residential site to monitor particles going into Yarraville and provide a comparative source of

readings during times of varying wind direction to assist in pinpointing dust particle sources.

Site 3 – Brooklyn.

This site will represent ambient conditions in Brooklyn. It will be well away from major roads, is well ventilated and surrounded by residents.

At this site PM_{10} will be measured by the TEOM method – the same instrument used throughout the rest of the EPA monitoring network for the purpose of comparing ambient particle concentrations with the NEPM standard.

A third DustTrak will also be set up next to the TEOM. It will provide a way to calibrate the DustTrak method against the established TEOM method. In this way, data from the residential sites can be processed to compare the results with the NEPM standard.

Wind speed and direction will be measured at this third site with the TEOM and at the DustTrak site in Yarraville.

Background PM_{10} data will also be sourced from the EPA monitoring site at Footscray, and further meteorology from both Footscray and Altona sites.

ANALYSING THE DATA

Monitoring data will be collected continuously. Summer will be the most important time to monitor, when soil is dry and dust is more likely to be a problem.

The combined information of particle concentration, wind speed and wind direction from up to three sites and at a resolution of five minutes provides EPA with a powerful data set to determine the extent of particle impacts in Brooklyn.

Wind speed and direction can be used for reverse trajectory analysis, which may help to identify the industrial sites responsible for pollution incidents. EPA, however, will not know how successful the monitoring program will be at identifying offending industries until data is collected and scrutinised.

A complete report will be developed following the completion of the monitoring, but interim data will be made available if major issues are identified.

USING THE DATA

EPA will receive regular data through the monitoring process, which can be used as evidence to industries in helping them understand the impact of their dust on the local environment and taking necessary action to ensure compliance with State environment protection policy (SEPP) standards.

EPA will also share the data with local government officers to enable them to take enforcement action when possible.

Data will be publicly available once the it has been subject to internal quality assurance. Also, the calibration between the two particle instrument methods may take some months to establish.

LIMITS OF THE MONITORING PROGRAM

The monitoring program measures the concentration of particles over time but does not determine what the particles are composed of. This would require different equipment using special filters that collect particles, which then undergo laboratory chemical analysis.

Preliminary analysis suggests particles from the local area are likely to be of mostly geological origin – such as dust from quarries, dirt roads or container storage areas that are unsealed.

The monitoring also has limitations in terms of the health data it can provide. Every individual has a unique level of personal health, and the effect of dust on an individual cannot be determined through this study. This monitoring program will therefore make simple comparison of measurements in Brooklyn and its surrounds against the health-based standard to judge the effect on a population as a whole, rather than an individual.

FURTHER INFORMATION

If you would like further information about the dust monitoring program or other programs to improve Brooklyn industry's environmental sustainability, contact EPA's Information Centre on 9695 2722.