PM_{10} from Particle Board Caberboard Irvine -

Caberboard operated a small chipboard manufacturing process in Irvine, Scotland. Built in the 1960's the plant was within 100m of the nearest housing. The process involved chipping roundwood and wood waste, drying the chips in a direct fired rotary kiln and forming board through the addition of formaldehyde and a hydraulic press. By the early 1990's the process needed major upgrading to comply with new emission standards.

The main emission was the condensing plume from the dryer which was passed through a cyclone. The emissions from this source included particles (~500mg/m3) and wood resins liberated by the high temperature drying process. Other emission sources included formaldehyde from the press and fugitive emissions from external storage of wood waste used as a raw material.

An air quality study was conducted over a year measuring PM_{10}, TSP and formaldehyde at the nearest receptors. Meteorological parameters were recorded at a site nearby. Particles were collected using M-type high volume samplers and analysed using gravimetric determination and a scanning electron microscope to help confirm particle composition.

The annual mean PM10 levels were found to be significantly elevated around the works. A dispersion model (R91) was used to help select sampling locations and to interpret the results.

At the time of the study, the site was in a heavily industrialised area with a glasssworks and several ferrous and non-ferrous foundries within 1km of the study area. Coal-fired domestic space heating made a significant seasonal contribution to local air pollution. The study therefore needed to be carefully designed to enable an estimate of the contribution from other sources.

During the study Caberboard brought forward plans to expand production at the plant, and to upgrade pollution abatement. The current European abatement technology used in the industry was reviewed. The application to extend the plant was fiercely opposed by the local community.

The study concluded that the emissions from the proposed development would be capable of meeting the best practice TA Luft standards (the West German standard), and draft UK DoE PG emission limits, and that emissions from the process would be likely to comply with air quality standards. The application was approved by the local planning authority, but did not proceed for commercial reasons.

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