Glossary of Air Quality Terms

Air Quality Action Plan (AQAP)

When a Local Authority has set up an Air Quality Management Area, (AQMA), it must produce an action plan setting out the measures it intends to take in pursuit of the Air Quality Objectives in the designated area

Air Quality Management Area (AQMA)

If a Local Authority identifies any locations within its boundaries where the Air Quality Objectives are not likely to be achieved, it must declare the area as an Air Quality Management Area (AQMA). The area may encompass just one or two streets, or it could be much bigger. The Local Authority is subsequently required to put together a plan to improve air quality in that area - a Local Air Quality Action Plan.

Air Quality Objectives

The Air Quality Objectives are policy targets generally expressed as a maximum ambient concentration to be achieved, either without exception or with a permitted number of exceedances, within a specified timescale. The objectives are set out in the UK Government's Air Quality Strategy for the key air pollutants.

Air Quality Standards

Air Quality Standards are the concentrations of pollutants in the atmosphere which can broadly be taken to achieve a certain level of environmental quality. The standards are based on assessment of the effects of each pollutant on human health, including the effects on sensitive sub-groups.

Air Quality Strategy

The Air Quality Strategy for England, Scotland, Wales and Northern Ireland describes the plans drawn up by the Government and the Devolved Administrations to improve and protect ambient air quality in the UK in the medium-term. The Strategy sets objectives for the main air pollutants to protect health. Performance against these objectives is monitored where people regularly spend time and might be exposed to air pollution.

Annual mean

The annual mean is the average concentration of a pollutant measured over one year. This is normally for a calendar year, but some species are reported for the period April to March, which is known as a pollution year. This period avoids splitting a winter season between two years, which is useful for pollutants that have higher concentrations during the winter months.

Automatic Monitoring

Monitoring is usually termed "automatic" or "continuous" if it produces real-time measurements of pollutant concentrations. Automatic fixed point monitoring methods exist for a number of pollutants, providing high resolution data averaged over very short time periods. Bata Attenuation Mass Analyser (BAM), Tapered Element Oscillating Microbalance (TEOM) and Filter Dynamics Measurement System (FDMS) instruments are all automatic monitors.

COMEAP

Committee on the Medical Effects of Air Pollutants, COMEAP is an Advisory Committee of independent experts that provides advice to Government Departments and Agencies on all matters concerning the potential toxicity and effects upon health of air pollutants.

Diffusion Tube Samplers

Passive diffusion tube samplers collect nitrogen dioxide and other pollutants by molecular diffusion along an inert tube to an efficient chemical absorbent. After exposure for a known time, the absorbent material is chemically analysed and the concentration calculated.

Dispersion Model

A dispersion model is a means of calculating air pollution concentrations using information about the pollutant emissions and the nature of the atmosphere. In the action of operating a factory, driving a car, or heating a house, a number of pollutants are released into the atmosphere. The amount of pollutant emitted can be determined from knowledge of the process or actual measurements. Air Quality Objectives are set in terms of concentration values, not emission rates. In order to assess whether an emission is likely to result in an exceedance of a prescribed objective, it is necessary to know the ground level concentrations which may arise at distances from the source. This is the purpose of a dispersion model.

Emission Factor

An emission factor gives the relationship between the amount of a pollutant produced and the amount of raw material processed or burnt. For example, for mobile sources, the emission factor is given in terms of the relationship between the amount of a pollutant that is produced and the number of vehicle miles travelled. By using the emission factor of a pollutant and specific data regarding quantities of materials used by a given source, it is possible to compute emissions for the source. This approach is used in preparing an emissions inventory.

Exceedance

An exceedance defines a period of time during which the concentration of a pollutant is greater than, or equal to, the appropriate air quality criteria. For Air Quality

Standards, an exceedance is a concentration greater than the standard value. For air pollution bandings, an exceedance is a concentration greater than, or equal to, the upper band threshold.

Local Air Quality Management

The Local Air Quality Management (LAQM) process requires Local Authorities to periodically review and assess the current and future quality of air in their areas. A Local Authority must designate an Air Quality Management Area (AQMA) if any of the Air Quality Objectives set out in the regulations are not likely to be met over a relevant time period.

Micrograms per cubic metre (µg/m^3)

A measure of concentration in terms of mass per unit volume. A concentration of 1 µg/m^3 means that one cubic metre of air, contains one microgram (10-6 grams) of pollutant.

Oxides of Nitrogen (NO_X)

Combustion processes emit a mixture of nitrogen oxides (NO_X), primarily nitric oxide (NO) which is quickly oxidised in the atmosphere to nitrogen dioxide (NO_2). Nitrogen dioxide has a variety of environmental and health impacts. It is a respiratory irritant which may exacerbate asthma and possibly increase susceptibility to infections. In the presence of sunlight, it reacts with hydrocarbons to produce photochemical pollutants such as ozone. NO2 can be further oxidised in air to acidic gases, which contribute towards the generation of acid rain.

Particulate matter (PM)

Airborne PM includes a wide range of particle sizes and different chemical constituents. It consists of both primary components, which are emitted directly into the atmosphere, and secondary components, which are formed within the atmosphere as a result of chemical reactions. Of greatest concern to public health are the particles small enough to be inhaled into the deepest parts of the lung. Air Quality Objectives are in place for the protection of human health for PM_{10} and $PM_{2.5}$ – particles of less than 10 and 2.5 micrometres in diameter, respectively.