METROLINK

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A16.1 Ambient Air Quality Standards

Contents

List of Abbreviations

Abbreviations	Meaning
AEI	Average Exposure Indicator
NO_2	Nitrogen Dioxide
NO_x	Oxides of Nitrogen
PM_{10}	Particular matter of an aerodynamic diameter of equal or less than 10 micrometres
$PM_{2.5}$	Particular matter of an aerodynamic diameter of equal or less than 2.5 micrometres
SO_2	Sulphur Dioxide
WHO	World Health Organisation

1. Ambient Air Standards

National standards for ambient air pollutants in Ireland have generally ensued from Council Directives enacted in the European Union (EU), and previously the European Community (EC) and European Economic Community (EEC).

The initial interest in ambient air pollution legislation in the EU dates from the early 1980s and was in response to the most serious pollutant problems at that time. In response to the problem of acid rain, sulphur dioxide, and later nitrogen dioxide, were both the focus of EU legislation. Linked to the acid rain problem was urban smog associated with fuel burning for space heating purposes. Also apparent at this time were the problems caused by leaded petrol and EU legislation was introduced to deal with this problem in the early 1980s.

In recent years the EU has focused on defining a basis strategy across the EU in relation to ambient air quality. In 1996, a Framework Directive, Council Directive 96/62/EC, on ambient air quality assessment and management was enacted. The aims of the Directive are fourfold. Firstly, the Directive's aim is to establish objectives for ambient air quality designed to avoid harmful effects to health. Secondly, the Directive aims to assess ambient air quality on the basis of common methods and criteria throughout the EU. Thirdly, it is aimed to make information on air quality available to the public via alert thresholds and fourthly, it aims to maintain air quality where it is good and improve it in other cases.

As part of these measures to improve air quality, the European Commission has adopted proposals for daughter legislation under Directive 96/62/EC. The first of these directives to be enacted, Council Directive 1999/30/EC relating to limit values for sulphur dioxide, was passed into Irish Law as S.I. No 271 of 2002 (Air Quality Standards Regulations 2002) and has set limit values which came into operation on 17 June 2002. The Air Quality Standards Regulations 2002 detail margins of tolerance, which are trigger levels for certain types of action in the period leading to the attainment date. The margin of tolerance is defined in Council Directive 2008/50/EC as a concentration which is higher than the limit value when legislation comes into force. It decreases to meet the limit value by the attainment date. The margin of tolerance varies from 60% for lead, to 30% for 24-hour limit value for PM_{10}, 40% for the hourly and annual limit value for NO_2 and 26% for hourly SO_2 limit values. The margin of tolerance commenced from June 2002 and started to reduce from 1 January 2003 and does so every 12 months by equal annual percentages to reach 0% by the attainment date. A second daughter directive, Council Directive 2000/69/EC, details limit values for both carbon monoxide and benzene in ambient air. This has also been passed into Irish Law under the Air Quality Standards Regulations 2002.

Council Directive 2008/50/EC on ambient air quality and cleaner air for Europe was published on 11 June 2008. This directive combines the previous Air Quality Framework Directive and its subsequent daughter directives. This has also been passed into Irish Law under the Air Quality Standards Regulations 2011 (S.I. 180 of 2011). With regards to existing ambient air quality standards, it is not proposed to modify the standards but to strengthen existing provisions to ensure that non-compliances are removed. Provisions were also made for the inclusion of new ambient limit values relating to $PM_{2.5}$. The approach for $PM_{2.5}$ is to establish a target value of 25µg/m^3 as an annual average (to be attained everywhere by 2010) and a limit value of 25µg/m^3, as an annual average (to be attained everywhere by 2018), coupled with a target to reduce human exposure generally to $PM_{2.5}$ between 2010 and 2020. This exposure reduction target will range from 0% (for $PM_{2.5}$ concentrations of less than 8.5µg/m^3 to 20% of the average exposure indicator (AEI) for concentrations of between 18 - 22µg/m^3). Where the AEI is currently greater than 22 µg/m^3 all appropriate measures should be employed to reduce this level to 18µg/m^3 by 2020. The AEI is based on measurements taken in urban background locations averaged over a three year period from 2008-2010 and again from 2018-2020. Additionally, an exposure concentration obligation of 20µg/m^3 has been set to be complied with by 2018, again based on the AEI.

Although the EU Air Quality Limit Values are the basis of legislation, other thresholds outlined by the EU Directives are used as triggers for particular actions. The Alert Threshold is defined in Council Directive 2008/50/EC as '*a level beyond which there is a risk to human health from brief exposure and at which immediate steps shall be taken as laid down in Directive 2008/50/EC*'. These steps include undertaking to ensure that the necessary steps are taken to inform the public (e.g. by means of radio, television and the press).

The Upper Assessment Threshold is defined in Council Directive 2008/50/EC as a concentration above which air quality measurement is mandatory. Data from measurement may be supplemented by information from other sources, including air quality modelling.

An annual average limit for both NO_x (NO and NO_2) is applicable for the protection of vegetation in highly rural areas away from major sources of NO_x such as large conurbations, factories and high road vehicle activity such as a dual carriageway or motorway. Annex III of EU Directive 2008/50/EC identifies that monitoring to demonstrate compliance with the NO_X limit for the protection of vegetation should be carried out distances greater than:

- 5 km from the nearest motorway or dual carriageway
- 5 km from the nearest major industrial installation
- 20 km from a major urban conurbation.

As a guideline, a monitoring station should be indicative of approximately 1000km^2 of surrounding area.

Under the terms of the EU Framework Directive on Ambient Air Quality (96/62/EC), geographical areas within member states have been classified in terms of zones. The zones have been defined in order to meet the criteria for air quality monitoring, assessment and management as described in the Framework Directive and Daughter Directives. Zone A is defined as Dublin and its environs, Zone B is defined as Cork City, Zone C is defined as 23 urban areas with a population greater than 15,000 and Zone D is defined as the remainder of the country. The Zones were defined based on among other things, population and existing ambient air quality.

Council Directive 96/62/EC on ambient air quality and assessment has been adopted into Irish Legislation (the Ambient Air Quality Assessment and Management Regulations S.I. No. 33 of 1999). These regulations designated the Environmental Protection Agency (EPA) as the competent authority responsible for the implementation of the Directive and for assessing ambient air quality in Ireland. Other commonly referenced ambient air quality standards include the World Health Organisation (WHO). The WHO guidelines differ from air quality standards in that they are primarily set to protect public health from the effects of air pollution. Air quality standards, however, are air quality guidelines recommended by governments, for which additional factors, such as socio-economic factors, may be considered.