Air Quality CONSULTANTS

Relationship between the UK Air Quality Objectives and Occupational Air Quality Standards

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1 Introduction

1.1 The UK Government's air quality objectives provide protection for members of the public who are not at their place of work. A separate system is in place to protect employees within their workplaces. With a focus on short-term exposure to nitrogen dioxide, this note explains how the objectives were derived, and why they do not apply to workplace exposure.

2 Air Quality Standards and Objectives

2.1 The air quality objectives are set by the UK Government on the basis of defined air quality standards. The standards are set as concentrations below which effects are unlikely even in sensitive population groups and are based purely upon the scientific and medical evidence of the effects of an individual pollutant. The objectives then set out the extent to which the UK Government expects the standards to be achieved by a certain date; taking account of economic efficiency, practicability, technical feasibility and timescale.

2.2 The standard for 1-hour mean nitrogen dioxide concentrations was first proposed by Defra's Expert Panel on Air Quality Standards (EPAQS), who's remit was to:

"give advice on non-occupational ambient air quality standards, with particular reference to the levels of airborne pollutants at which no or minimal effects on human health are likely to occur, taking account of the best available evidence"[1] (emphasis added).

2.3 When setting the objective[2], Defra took account of EPAQs's recommendations. It was also influenced by the limit value set in European Commission's First Air Quality Daughter Directive[3]. This Directive made clear that it applied to:

"outdoor air in the tropo-sphere, excluding work places".

2.4 The limit values set in the first Daughter Directive have since been consolidated into the 2008 Ambient air quality Directive[3]. This also makes it clear that:

"Compliance with the limit values directed at the protection of human health shall not be assessed … on factory premises or at industrial installations to which all relevant provisions concerning health and safety at work apply"

[1] http://webarchive.nationalarchives.gov.uk/20060715141954/http:/www.defra.gov.uk/environment/airquality/aqs/index.htm
[2] The Air Quality Strategy for England, Scotland, Wales and Northern Ireland 1999 Consultation Document para 179.
[3] http://ec.europa.eu/environment/air/quality/legislation/existing_leg.htm

2.5 The objectives are prescribed within the Air Quality (England) Regulations, 2000, Statutory Instrument 928 (2000) and the Air Quality (England) (Amendment) Regulations 2002, Statutory Instrument 3043 (2002)[4]. The former specifies that the objectives apply:

"at locations which are situated outside of buildings or other natural or man-made structures, above or below ground, and where members of the public are regularly present" (emphasis added).

2.6 In its technical guidance for local authorities, Defra[5] gives some examples of where the objectives should, and should not, apply. With respect to annual mean concentrations, this states that the objectives should not generally apply at:

"*Building façades of offices or other places of work where members of the public do not have regular access*";

Having made clear in this sentence that the term 'members of the public' precludes people at their places of work, Defra's guidance goes on to explain that the 1-hour mean objective also does not apply at:

"Kerbside sites where the public would not be expected to have regular access."[6]

2.7 It is thus clear that the air quality objectives do not, and were never intended to, apply in places of work where there is no access by members of the public[7]. Protection within the workplace is provided through occupational health and safety legislation.

3 Occupational Air Quality Standards

3.1 The Control of Substances Hazardous to Health (COSHH) Regulations 2002 put a requirement on employers to control any substances present in the workplace which could be hazardous to health. The Workplace Exposure Limits (WELs) for use with the COSHH regulations are set by the UK Health and Safety Executive in its EH40 document[8]. The WELs take account of the European Directives on safety and health at work[9]. EH40 does not include a WEL for nitrogen dioxide, but occupational exposure standards and guidelines for nitrogen dioxide have been set elsewhere internationally, and these are set out in Table 1. These values range from almost 10 times to almost 100 times the 200 $\mu g/m^3$ 1-hour objective.

4 Equivalent regulations exist for the devolved administrations.

5 http://laqm.defra.gov.uk/documents/LAQM-TG16-April-16-v1.pdf

6 The author of this section of Defra's guidance was consulted whilst drafting this note and agrees with this interpretation.

7 The objectives do apply at places of work where there is regular access by members of the public, for example a shop.

8 http://www.hse.gov.uk/pubns/priced/eh40.pdf

9 https://osha.europa.eu/en/safety-and-health-legislation/european-directives

Table 1: Summary of Workplace Exposure Standards and Guidelines for Nitrogen Dioxide (µg/m^3)

Averaging Period	US Department of Labour Occupational Health and Safety Administration[10]	German MAK Commission[11]	American Council of Governmental Industrial Hygienists[12]	US National Institute for Occupational Safety and Health[13]
5 mins	-	19,130	-	-
15 mins	-	-	9,565	1,913
8 hrs	-	9,565	5,739	-
Ceiling	9,565	-	-	-

The numbers have been converted from rounded numbers in the original documents in parts per million (ppm) to µg/m^3, without any further rounding.

[10] https://www.osha.gov/

[11] http://www.dfg.de/en/dfg_profile/statutory_bodies/senate/health_hazards/

[12] http://www.acgih.org/

[13] http://www.cdc.gov/niosh/?