E Key Facts No. 5 Air Pollution

Principal statutes and statutory instruments

Environmental Permitting (England and Wales) Regulations 2010 (SI2010/675)	Establishes need for an Environmental Permit (See e key facts No. 2). Processes subject to control under the new regime are subject to a permit to operate an installation and must use Best Available Techniques (BAT) to avoid releases to air, and other media or where not possible to minimise and render harmless. Emission limit values included in permits for main air polluting substances.
Environment Act 1995, Part IV and the Air Quality Regulations 2000	s.82 requires every local authority to assess air quality in its area against air quality standards and objectives. Where such standards are unlikely to be achieved by the relevant date, the authority must designate the area in question as an *air quality management area*. A written action plan must then be prepared showing what measures the authority will take in pursuit of the achievement of the standards/objectives by the relevant date.
Air Quality Standards Regulations 2007 (SI2007/64)	In pursuit of the above, these Regulations specify air quality standards for zones throughout the UK. Standards may be either *air quality limit values,target values ot long-term objective levels* and for each standard there are *dates* by which SoS must ensure that the prescribed standard is attained. Local authority Air Quality Management Plans / Improvement Plans should specify the measures required to achieve the levels prescribed.
Clean Air Act 1993, Part I and Part II	Prohibits emission of *dark smoke* from chimneys (s.1), or dark smoke from the burning of any matter at industrial or trade premises (s.2) unless from an activity exempted under the *Clean Air (Emission of Dark Smoke)(Exemptions) Regulations 1969 (SI1969/1263)*. There are limited defences. The *Dark Smoke (Permitted Periods) Regulations 1958(SI 1958/498)* sets out periods when dark smoke for a chimney is allowed under specified conditions of operation. Processes subject to an environmental permit under Schedule 1 (IPPC installations) or APC are excluded from control (s.41). There are proactive controls over emissions of grit, dust and smoke from industrial boilers and furnaces. Owners must notify the local authority before a new furnace is installed (s.4) and grit and dust arrestment devices must be fitted to furnaces burning more than 45.4 kgs of solid matter or 366.4 kw or more for any liquid or gaseous matter per hour (s.6) and in such cases occupiers may be required by notice to make measurements of emissions and the occupiers must gain approval for the height of the chimney serving the furnace from the local authority (s.14 and s.15). Upon receipt of a notification in respect of a proposed chimney height, the local authority must reply within 28 days otherwise the application is deemed to have been approved without condition. Limits on the emission of grit and dust are set out in the *Clean Air (Emission of Grit and Dust from Furnaces) Regulations 1971(SI 1971/162).*
Control of Asbestos in the Air Regulations 1990 (SI 1990/556)	Specifies a limit of 0.1 mg/l of asbestos fibres in air discharged from processes involving asbestos. Also specify that any activities involving demolition or removal of asbestos do not cause significant environmental pollution.

Criminal penalties

Clean Air Act 1993, Part I and Part II	Offence for an occupier of a premises to: ➢ Emit dark smoke from a non-domestic chimney in contravention of s.1 ➢ Fail to notify a local authority of the installation of a non-domestic furnace or install a furnace which is incapable for burning without emission of smoke. ➢ Emit grit and dust in excess of statutory limits. ➢ Operate a furnace without the benefit of arrestment plant approved by the local authority. Above offences carry a maximum fine on summary conviction not exceeding £5,000. Further it is an offence to ➢ Emit dark smoke from industrial or trade premises due to burning of material (other than from a chimney). Above offence carries a fine not exceeding £20,000 on summary conviction.

What are the national air quality standards?

The *Air Quality Standards Regulations 2007* prescribe limit, target and long-term objective levels relating to the quality of ambient air in terms restricting the levels of substances that may be present. For ozone and *** there are also prescribed alert thresholds, exceedance of which requires the SoS to make information available to Health Authorities. The standards below are taken into account by local authorities in assessing air quality and in designating *air quality management area* and by the Authorities and the SoS in preparing *Improvment Plans.*

Substance +	Air quality limit values	Air quality attainment date
Benzene	5 µg/m3 or less as a running annual mean	1/1/10
Carbon monoxide	10 mg/m3 or less as a running 8 hour mean	
Lead	0.5 µg/m3 or less as an annual mean	
Nitrogen dioxide and Nitrogen oxides	200 µg/m^3 or less of NO_2 as an hourly mean not to be exceeded > 18 times a year 40 µg/m^3 or less of NO_2 as an annual mean 30 µg/m^3 or less of NOx as an annual mean for protection of vegetation	1/1/10 1/1/10
PM_{10} ++	50 µg/m^3 or less as a 24 hour mean not be exceeded > 35 times a year 40 µg/m^3 or less as an annual mean	
Sulphur dioxide	125µg/m^3 or less as a 24 hour mean not to be exceeded > 3 times a year 350 µg/m^3 or less as an hourly mean not to be exceeded > 24 times a year 20 µg/m^3 or less over a calendar year and Winter (1/10 to 31/03)	
Substance +	**Air quality target values**	**Air quality attainment date**
Arsenic *	6 ng/m^3	31/12/12
Benzo(a)pyrene *	1 ng/m^3	31/12/12
Cadmium *	5 ng/m^3	31/12/12
Nickel *	20 ng/m^3	31/12/12
Ozone +++	120 µg/m^3 as an 8 hour running mean not to be exceeded > 25 days per year averaged over 3 years 18,000 µg/m^3.h as a AOT40 May-July for protection of vegetation 180 µg/m^3 as a 1 hour mean as population information threshold 240 µg/m^3 as a 1hour mean as population warning threshold	2010 2010
Substance +	**Long-term objectives**	**Air quality attainment date**
Ozone +++	120 µg/m^3 6,000 µg/m^3.h as an AOT 40 May-July for protection of vegetation	
Substance +	**Alert thresholds**	**Air quality attainment date**
Nitrogen dioxide	400 µg/m^3 over 3 consecutive hours	
Sulphur dioxide	500 µg/m^3 over 3 consecutive hours	
Ozone +++	180 µg/m^3 as a 1 hour mean as population information threshold 240 µg/m^3 as a 1hour mean as population warning threshold	

\+ All quantities expressed at a standardised volume at 293K and a pressure of 101.3 kPa.

++ Particulate matter which passes through a size selective inlet with a 50% efficiency cut-off at 10 µm aerodynamic diameter.

+++ Statutory standards established by the Ozone Monitoring and Information Regulations 1994 (SI 1994/440).

* Target values for total content of the relevant pollutant in the PM_{10} fraction averaged over a calendar year

What exempt materials can be burnt on industrial bonfires?

The Clean Air (Emissions of Dark Smoke)(Exemptions) Regulations 1969 conditionally exempt the burning of specified materials providing that:

- there is no other reasonably safe and practicable method of disposing of the matter;
- the burning is carried out in such a way as to minimise the emission of dark smoke; and
- the burning is carried out under the direct and continuous supervision of the occupier of the premises or a person authorised to act on their behalf.

Specified materials are as follows:

1. Timber and any other waste matter (other than natural or synthetic rubber) from demolition of a building or clearance of a site in connection with any building operation or work of engineering construction. Waste Management Licensing may apply if more than 10 tonnes is burnt in any 24 hour period (see e key facts No.2 and No. 4).	2. Carcasses of animals or poultry which have died or been slaughtered because of diseases. If the burning is supervised by an inspector under the Diseases of Animals Act 1950, the conditions above do not apply although the official would be expected to seek to minimise emission of dark smoke.
3. Waste explosive matter and matter contaminated by explosives as defined under the Explosives Act 1875.	4. Matter burnt in connection with research into causes or control of fire or for training in fire-fighting.
5. Tar, pitch, asphalt or other matter burnt in connection with the preparation and laying of any surface or which is burnt off a surface to allow resurfacing.	6. Containers which are contaminated by any pesticide or by any toxic substance used for veterinary or agricultural purposes. Waste Management Licensing may apply for non-agricultural wastes (see e key facts No.2 and No. 4). Burning in an incinerator may require a permit under the Pollution Prevention and Control Act 1999 (See e key facts No. 17).

Definitions.

Grit - solid particles > 75 µm diameter

Dust – small solid particles between 1 – 75 µm diameter

Fume – airborne solid matter < 1.0 μm diameter.
Dark smoke – smoke assessed against standard shadings known as the Ringelman chart. Dark smoke is equivalent to Shade 2 on the chart which ranges from 0 (clear) to 4 (black).

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