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Environmental Permitting Guidance The Large Combustion Plants Directive

for the Environmental Permitting (England and Wales)
Regulations 2010

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Llywodraeth Cynulliad Cymru
Welsh Assembly Government



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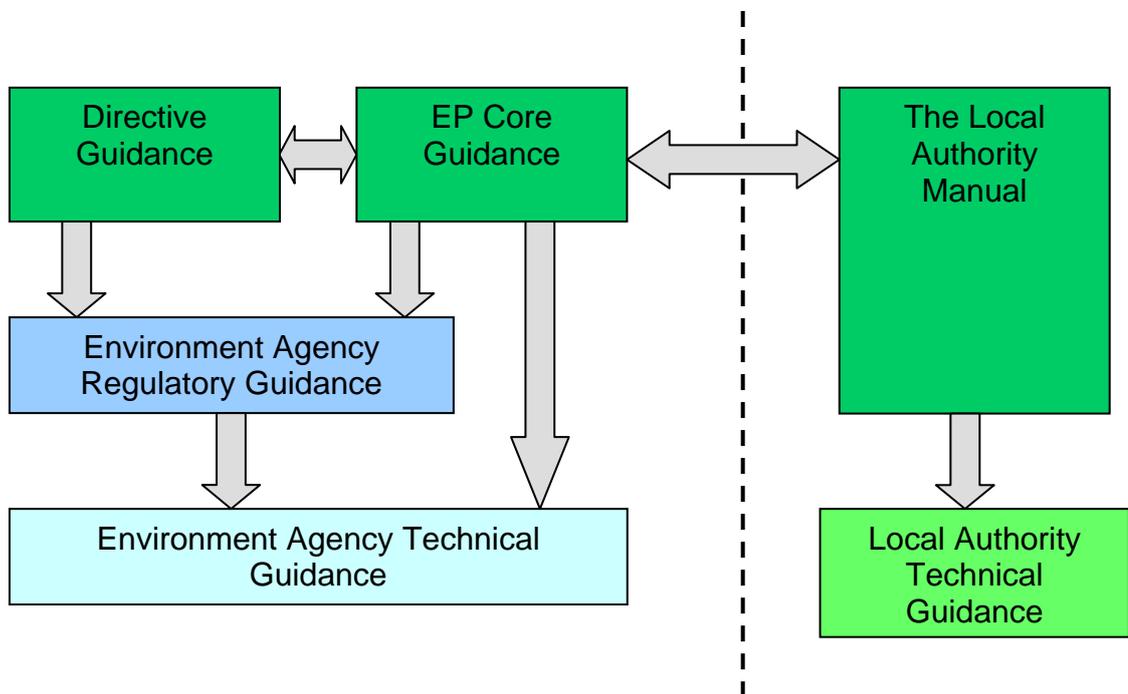
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1. Summary

About this guidance

- 1.1. This guidance is aimed at helping readers understand the European Community (EC) Directive 2001/80/EC on the limitation of emissions of certain pollutants into the air from large combustion plants (the LCPD), insofar as it relates to installations in England and Wales.
- 1.2. This guidance is being published to help those regulating and operating Large Combustion Plants (LCP), but it will also be of interest to others concerned with LCPs. The guidance sets out the views of the Secretary of State for the Environment, Food and Rural Affairs (Defra) and the Welsh Assembly Government (WAG) on how the permitting requirements of the LCPD should be applied and how particular terms should be interpreted. However, only the national or European Courts can give a definitive interpretation of the legislation.
- 1.3. This guidance is part of a series of documents which accompany the Environmental Permitting (England and Wales) Regulations 2010 SI 2010 No.675 (the Regulations) ¹.

Figure 1. Illustration of guidance relationships.



- 1.4. The series consists of the Environmental Permitting Core Guidance², which describes the general permitting and compliance requirements, and guidance on each of the European Directives implemented through the

¹ Available at www.defra.gov.uk/environment/policy/permits/guidance.htm

² *ibid.*

regime³. Separate guidance is available for local authority regulation under the regime⁴. This is illustrated in Figure 1.

- 1.5. This guide should be read in conjunction with the Environmental Permitting Core Guidance. Where other Directives apply, then reference should be made to the relevant guidance. In particular, reference should be made to the Guidance on Part A installations, since all LCPs are also Part A (1) installations. Regulatory and technical guidance prepared by the Environment Agency is also available⁵.
- 1.6. To ensure this guidance is current and up to date, from time to time this guidance will be updated. Where made, revisions can be found in the 'Revision of Guidance' section at the front of the document.
- 1.7. This guidance document is compliant with the Code of Practice on Guidance on Regulation⁶. If you feel this guidance breaches the code, or notice any inaccuracies within the guidance, please contact the EPP team at: eppadministrator@defra.gsi.gov.uk

³ Available at www.defra.gov.uk/environment/policy/permits/guidance.htm

⁴ Available at www.defra.gov.uk/environment/quality/pollution/ppc/localauth/pubs/guidance/manuals.htm

⁵ Available at www.environment-agency.gov.uk/epr

⁶ See Environmental Permitting Guidance and Glossary Chapter 3 (www.defra.gov.uk/environment/policy/permits/guidance.htm)

2. Introduction

The Large Combustion Plant Directive

- 2.1. The aim of the LCPD is the regulation of emissions to air from large combustion plants (LCPs). The emissions regulated are sulphur dioxide (SO₂), nitrogen oxides (NO_x) and dust (particulate matter). These pollutants are known to damage human health and contribute to acid deposition, which acidifies soils and freshwater bodies, damages plants and aquatic habitats, and corrodes building materials.
- 2.2. In the UK, operators of existing LCPs first licensed before 1 July 1987 have been given⁷ the option of meeting LCPD requirements either by accepting the concentration-based emission limit values (ELVs) specified in the LCPD, by participating in the UK mass emission based National Emission Reduction Plan (NERP) or by accepting the limited hours derogation by which the LCP is opted-out of the requirements of the ELV or NERP.
- 2.3. The LCPD requirements for the NERP are partly applied by separate Regulations⁸ (the NERP Regulations) and partly applied by Schedule 15 to the Environmental Permitting Regulations. Guidance on these requirements is available within the NERP itself and in updates to the plan⁹. Guidance prepared by the Environment Agency in conjunction with SEPA and DoE(NI) on the NERP is also available¹⁰.
- 2.4. Schedule 15 to the Regulations (reproduced in this document as Annex 1) sets out the relevant requirements from the LCPD.
- 2.5. Chapter 3 of this guidance sets out the scope of the LCPD. Chapter 4 describes the requirements of the Directive which will be delivered through environmental permits and sets out how the Regulations transpose the relevant parts of the Directive.
- 2.6. A copy of the Large Combustion Plants Directive is provided in Annex 2.
- 2.7. A separate glossary of terms is available¹¹. The glossary briefly explains the meaning of many words, phrases and acronyms used in the Regulations and Directives.

⁷ The option closed on 3 February 2006.

⁸ The Large Combustion Plants (National Emissions Reduction Plan) Regulations 2007 SI 2007/2325

⁹ Available at www.defra.gov.uk/environment/quality/air/airquality/eu-int/eu-directives/lcpd/index.htm

¹⁰ Available at www.environment-agency.gov.uk/epr

¹¹ Available at www.defra.gov.uk/environment/policy/permits/guidance.htm

3. Scope of the Directive

- 3.1. The Large Combustion Plants Directive (LCPD) (2001/80/EC) applies to combustion plants with a rated thermal input of 50 MW or more (Article 1). Plants covered include power stations, petroleum refineries, steelworks, and other industrial processes burning solid, liquid, or gaseous fuel.
- 3.2. These activities are listed in Schedule 1, Part 2, Chapter 1 to the Regulations, and the IPPC Directive (Directive 2008/1/EC) requirements are applicable to these combustion activities.

What is a combustion plant?

- 3.3. The meaning of combustion plant is defined in Article 2(7) of the LCPD. However, the European Commission stated in late 2005 that the definition must be implemented on the basis of the common stack understanding of combustion plant. This means that plants whose waste gases are discharged, or could reasonably be discharged, through a common stack, should be considered as a single Large Combustion Plant for the purposes of the LCPD.
- 3.4. When a group of boilers discharge their waste gases through a common stack, that group of boilers should be interpreted as the combustion plant. When only one boiler vents through one stack, the combustion plant should be interpreted as that boiler.
- 3.5. The definition applies 'irrespective of the type of fuel used (solid, liquid or gaseous)' but the definition of fuel in Article 2(6) excludes fuel which is waste covered by the Waste Incineration Directive (see the Guidance on the Waste Incineration Directive)¹².

Standby generators and supplementary firing

- 3.6. A stand-by generator (SBG) includes those generators used as back-up equipment or for the purpose of boosting performance (e.g. in cases of breakdown, malfunction, etc).
- 3.7. A supplementary firing apparatus (SFA) includes any appliances used to boost performance of a plant.
- 3.8. Neither of the definitions above shall include any apparatus being used in the normal operation of the plant.
- 3.9. Although the appliances are used for different purposes, the interpretation below is equally applicable to each of those cases. If the stand-by generator or supplementary firing apparatus is part of the combustion plant, and could be used at the same time as the rest of the plant, then its

¹² Available at www.defra.gov.uk/environment/policy/permits/guidance.htm

rated thermal input should be included in the total rated thermal input (or capacity) of the plant.

- 3.10.** Standby generators or supplementary firing apparatus will therefore fall within the scope of the LCPD if the following three requirements are met.
- (i) Do such items (SBG or SFA) form part of the combustion plant?
The answer will be yes if in the case of existing plants they form part or assist in the operation of the boiler. In the case of new plants, the answer will be yes, if they vent through a common stack (single flue) with the other units.
 - (ii) What is the 'potential' thermal input of the plant, including the SBGs or SFAs? If equal to or exceeding 50 MW_{Th}, it will fall within the definition in Article 1 (subject to the following paragraph).
 - (iii) Are the SBGs or SFAs merely substituting other parts or operating in addition to all those parts, for example, to boost performance?
There will be circumstances in which standby generators are simply there as back up generators and they will not be used in normal circumstances but only in the case of an emergency or breakdown of other equipment. If the units are used in all cases to substitute existing parts, then, they will use-up the allocation of that part they are substituting for aggregation purposes and their rated thermal input will not be counted towards calculation of the total. However, if the SBGs or SFAs parts are used to boost performance in certain cases (as well as at times substituting), they will need to be counted towards the total calculation of the rated thermal input.

Exclusions from the definition of combustion plant

- 3.11.** Article 2(7) of the LCPD lists a number of exclusions from the definition of combustion plant:
- plants powered by diesel, petrol and gas engines;
 - plants in which the products of combustion are used for the direct heating, drying, or any other treatment of objects or materials e.g. reheating furnaces, furnaces for heat treatment;
 - post-combustion plants, i.e. any technical apparatus designed to purify the waste gases by combustion which is not operated as an independent combustion plant;
 - facilities for the regeneration of catalytic cracking catalysts;
 - facilities for the conversion of hydrogen sulphide into sulphur;
 - reactors used in the chemicals industry;
 - coke battery furnaces;
 - cowpers;

- any technical apparatus used in the propulsion of a vehicle, ship or aircraft;
- gas turbines used in offshore platforms; and
- gas turbines licensed before 27 November 2002 or which in the view of the competent authority are the subject of a full request for a licence before 27 November 2002 provided that the plant is put into operation no later than 27 November 2003 without prejudice to Article 7(1) and Annexes VIII(A) and (B).

Gas turbines

3.12. Gas turbines which are permitted or the subject of a full request for a licence before 27 November 2002, are excluded from the main requirements of the LCPD. However, they are still subject to Article 7(1) and Annexes VIII(A) and (B). The reference to a licence in Article 2(7)(j) would include a construction licence. This is because combustion plants covered by the Directive must be either new plants or existing plants, and these are defined in Article 2(9) and (10) by reference to the date of a plant's original construction or operating licence. To qualify for exclusion, such a gas turbine must have been put into operation before 27 November 2003.

Gas Turbines – Supplementary firing

3.13. If gas turbines are used as part of the supplementary firing process, the following factors will apply in deciding whether that process falls within the definition of combustion plant for the purposes of the LCPD.

3.14. If the gas turbines were licensed before 27 November 2002:

- these turbines will not be taken into account for the purposes of calculating the thermal input of the plant;
- and if the boilers need the supplementary thermal input of the gas turbines in order to reach the 50 MW_{Th} threshold and since gas turbines are not included for the purposes of the calculation, the boilers may not fall within the thermal input requirements for the purposes of the LCPD. If the boiler alone cannot reach the 50 MW_{Th} threshold it will not constitute a combustion plant. Alternatively, if the boiler is a combustion plant it will be necessary to work out a system to estimate what emissions are originated from the boiler alone (since the gas turbine emissions should not be taken into account for the purposes of the LCPD). This will need to be decided by the regulator.

3.15. If the gas turbines are licensed after 27 November 2002 these gas turbines will fall within the scope of the LCPD if:

- they comply with the requirements of the definition of combustion plant in Article 2(7) of the LCPD; and

- their thermal input is equal to or exceeds 50 MWTh; or
- although they do not reach the 50 MWTh threshold alone, they form part of a combustion plant that does. In this case, both the boiler and the turbine will form part of the combustion plant and all emissions will be taken into account for the purposes of the LCPD. The LCPD will apply to emissions from gas turbines subject to the provisions in Annex VI(A) and (B).

Existing and new combustion plant

3.16. LCPD plants are separated into three groups based on the date they were first permitted:

- new-new combustion plants: licensed after 27 November 2002 (if put into operation before 27 November 2003);
- new combustion plants: licensed between 1 July 1987 and 27 November 2002; and
- existing combustion plants: licensed prior to 1 July 1987

In these definitions licensed means the original construction licence or in the absence of such procedure the operating licence.

3.17. The importance of these distinctions occurs in the compliance options available to the combustion plants. These are summarised in the following paragraphs, but see also [chapter 4](#).

3.18. New-new plants must comply with the ELVs in part B of Annexes III to VII when they start operating.

3.19. New plants had to comply with the ELVs in part A of Annexes III to VII as soon as the Directive was transposed¹³.

3.20. Existing combustion plants, however, have three potential compliance options applying from 1st January 2008:

- comply with the concentration-based ELVs for new plants;
- operate within the emissions trading scheme under the National Emissions Reduction Plan (NERP); or
- opt-out from compliance with the ELVs or from inclusion in the NERP by committing to limit operations to no more than 20,000 operational hours between 1 January 2008 and 31 December 2015.

¹³ See: The Large Combustion Plants (England and Wales) Regulations 2002 [now revoked]; The Large Combustion Plants (Scotland) Regulations 2002; The Large Combustion Plants Regulations (Northern Ireland) 2003.

4. Permitting Requirements

- 4.1. This chapter describes the Directive requirements that environmental permits for LCPs must deliver and how the Regulations apply these requirements.
- 4.2. Schedule 15, Paragraph 1 to the Regulations applies the requirements of the Schedule to every combustion plant to which the Directive applies (see [chapter 3](#) of this guidance).
- 4.3. Schedule 15, Paragraph 3(1) to the Regulations requires the regulator to exercise its relevant functions so as to comply with certain provisions of the Directive.
- 4.4. A regulator exercises a relevant function when it determines an application for the grant of a permit, when it makes a regulator-initiated variation of permit conditions or when it exercises enforcement powers in relation to a permit (regulation 9 and see chapters 5, 6 and 10 of the Environmental Permitting Core Guidance).
- 4.5. The provisions of the Directive, which are required to be secured by the regulator through environmental permitting and which are described in this chapter, are:
 - Emission limit values - Article 4(1), (2), (3)(a) and (4);
 - NERP – Article 4(3)(b) (to the extent that compliance is not ensured by the NERP Regulations);
 - Derogations from the Article 4 requirements - Article 5(1);
 - Combined heat and power - Article 6;
 - Breakdown or malfunction of abatement equipment - Article 7 (other than the requirements to report to the Commission);
 - Multi-firing units - Article 8;
 - Stacks - Article 9;
 - Changes to operation - Article 10;
 - Monitoring - Article 12;
 - Reporting of monitoring - Article 13; and
 - Compliance with emission limits - Article 14(1), 14(2) and 14(4).
- 4.6. The LCPD applies without prejudice to the IPPC Directive, meaning that any IPPC requirements which are additional to those of LCPD take precedence, notably the requirement for ELVs to be set on the basis of the

application of Best Available Techniques (BAT) (Article 9(3) of the IPPC Directive).

- 4.7. The Environment Agency is the regulator for large combustion plants because they are all Part A(1) installations under the Regulations (see regulation 32).

Emission limit values - Article 4(1) to 4(4)

- 4.8. These requirements depend on the 3 categories of plant (new-new, new and existing), described in chapter 3.

New plant – Article 4(1)

- 4.9. The Environment Agency should ensure that permits for new plants, contain conditions ensuring compliance with the emission limit values laid down in part A of Annexes III to VII in respect of sulphur dioxide, nitrogen oxides and dust (Article 4(1)).

New-New plant – Article 4(2)

- 4.10. The Environment Agency should ensure that permits for new plants, other than those covered by Article 4(1) (i.e. new-new plant), contain conditions ensuring compliance with the emission limit values laid down in part B of Annexes III to VII in respect of sulphur dioxide, nitrogen oxides and dust (Article 4(2)).

Existing plant – Article 4(3)

- 4.11. For existing plants which were not opted-out (see below), the Environment Agency had to ensure that by 1 January 2008 at the latest, significant emission reductions were achieved by taking appropriate measures to ensure that all licences for the operation of existing plants contain conditions relating to compliance with the emission limit values established for new plants referred to in Article 4(1) or are subject to the UK National Emission Reduction Plan (NERP). The UK NERP is only partly dealt with through the Regulations (Schedule 15, Paragraph 3(2)(b) and see paragraph 2.2 in the introduction to this guide).

Opted-out existing plant - Article 4(4)

- 4.12. Existing plants could have chosen to opt-out from compliance with the emission limit values or the NERP referred to in Article 4(3) provided they meet certain conditions.
- 4.13. The operator of an existing plant must have undertaken, in a written declaration submitted to the Environment Agency by 30 June 2004 at the latest, not to operate the plant for more than 20 000 operational hours starting from 1 January 2008 and ending no later than 31 December 2015, and to close no later than 31 December 2015.

- 4.14.** If a declaration has been made, the operator is required to submit, each year to the Environment Agency, a record of the used and unused time allowed for the plant's remaining operational life.
- 4.15.** Start-up and shut-down periods should not be taken into account for the purposes of calculating the operational hours in the provisions mentioned above. The condition of the limited-life derogation in Article 4(4) is expressed in terms of the hours of operation of a combustion plant. Accordingly, the whole plant will be regarded as operating when any part of it operates (irrespective of the number of units¹⁴ forming part of that combustion plant). Otherwise, a plant would not be regarded as operating unless it was running at full capacity. Equally, the operation of any number of units simultaneously for 1 hour represents 1 hour of operation of the combustion plant as a whole.
- 4.16.** Where a combustion plant includes auxiliary boilers which are used to heat fuel oil so that it can be pumped, the auxiliary boilers are considered to be continuously in start-up for the purpose of calculating operational hours.
- 4.17.** Plants that opt for the Article 4(4) derogation which either use up their 20,000 operational hours, or seek to have the derogation disapplied before that point, cannot continue to operate as an existing plant. They may be allowed to continue to operate (or close and subsequently re-open) if they re-permit under new-new plant conditions (that is, plants permitted after 27 November 2002 as provided in Article 4(2) of the LCPD). Article 4(4) does not allow for a plant that has opted-out of the ELVs regime but not used up its 20,000 operational hours, to opt-back in as an existing plant subject to Article 4(3).

Derogations from the Article 4 requirements - Article 5

- 4.18.** In respect of new and existing plants, Article 5 contains a derogation from Annex III. Plants of a rated thermal input equal to or greater than 400MW, which do not operate more than the following number of hours a year (rolling average over a period of five years):

- until 31 December 2015; 2000 hours;
- from 1 January 2016; 1500 hours;

shall be subject to a limit value for sulphur dioxide emissions of 800 mg/Nm³

- 4.19.** There are also some derogations contained within the Annexes themselves, in particular:
- NBs at the end of Part A and Part B of Annex III;
 - Footnotes (2) and (3) to Part A of Annex VI; and
 - Footnotes (1) and (2) to Part A of Annex VII.

¹⁴ The term 'unit' refers to 'combustion unit'

Combined heat and power - Article 6

- 4.20.** In the case of new-new plants or substantial changes to other plants (see Article 10) the Environment Agency should ensure that the technical and economic feasibility of providing for the combined generation of heat and power is examined by the operator.
- 4.21.** Where this feasibility is confirmed, bearing in mind the market and the distribution situation, installations shall be developed accordingly.

Breakdown or malfunction of abatement equipment - Article 7

- 4.22.** The Environment Agency should ensure that permit conditions include provision for procedures relating to malfunction or breakdown of the abatement equipment (Article 7(1)). In case of a breakdown, the Environment Agency shall in particular require the operator to reduce or close down operations if a return to normal operation is not achieved within 24 hours, or to operate the plant using low polluting fuels.
- 4.23.** In any case, the Environment Agency shall be notified within 48 hours of such malfunction or breakdown. In no circumstances shall the cumulative duration of unabated operation in any twelve-month period exceed 120 hours. The Environment Agency may allow exceptions to the limits of 24 hours and 120 hours above in cases where:
- there is an overriding need to maintain energy supplies, or
 - the plant with the breakdown would be replaced for a limited period by another plant which would cause an overall increase in emissions.
- 4.24.** For combustion plants subject to LCPD ELVs or those opted-out under Article 4(4), the abatement equipment is considered to have malfunctioned when the combustion plant fails to comply with ELVs across the stack, due to the malfunction or breakdown of part or all of the abatement equipment.
- 4.25.** Breakdown is considered to have occurred where all the abatement equipped fitted to a combustion plant has broken down. However, abatement equipment not operating due to a previously agreed maintenance programme is excluded from the breakdown requirements.
- 4.26.** The term unabated operation means that the abatement equipment is not operating because it has broken down.
- 4.27.** The Environment Agency may allow a suspension for a maximum of six months from the obligation to comply with the emission limit values provided for in Article 4 for sulphur dioxide in respect of a plant which to this end normally uses low-sulphur fuel, in cases where the operator is unable to comply with these limit values because of an interruption in the supply of low-sulphur fuel resulting from a serious shortage (Article 7(2)). Where the Environment Agency allows such a suspension it must

immediately inform the Secretary of State or WAG (Schedule 15, Paragraph 3(3)(a) to the Regulations).

- 4.28.** The Environment Agency may allow a derogation from the obligation to comply with the emission limit values provided for in Article 4 in cases where a plant which normally uses only gaseous fuel, and which would otherwise need to be equipped with a waste gas purification facility, has to resort exceptionally, and for a period not exceeding 10 days except where there is an overriding need to maintain energy supplies, to the use of other fuels because of a sudden interruption in the supply of gas (Article 7(3)). The Environment Agency shall immediately inform the Secretary of State or WAG of each specific case as it arises (Schedule 15, Paragraph 3(3)(a) to the Regulations).

Application of Article 7(3) of the LCPD to the use of standby fuel

- 4.29.** The use of standby fuel (i.e. fuel which is only used when the supply of the usual fuel has been interrupted) would be covered by either Article 7(2) or (3), where the specified conditions are met. Otherwise, the plant would have to comply with the ELVs applying to the fuel under the LCPD (assuming that the fuel is used to fire the plant).

The need to maintain energy supplies

- 4.30.** Where the Environment Agency must make a judgement under Article 7(1) or 7(3) as to whether there is an overriding need to maintain energy supplies, that judgement must be referred to Government (the Secretary of State or Welsh Assembly Government depending upon the location of the plant). The Environment Agency must follow any decision made by Government (Schedule 15, Paragraph 3(3)(c)).

Multi-firing units - Article 8

- 4.31.** Article 8 sets out specific requirements for multi-firing units.

Classification of the plant as a multi-fuel firing unit

- 4.32.** Whether or not the plant is classified as a multi-fuel firing unit will depend on the purpose of using the oil. If the oil contributes to the firing of the plant, then the plant will be regarded as a multi-fuel firing unit, regardless of the amount used.
- 4.33.** Article 2(8) of the LCPD defines a multi-fuel firing unit as: 'any combustion plant which may be fired simultaneously or alternately by two or more types of fuel'. Fuel is defined in Article 2(6) as: 'any solid, liquid or gaseous combustible material used to fire the combustion plant with the exception of waste covered by the Waste Incineration Directive.'
- 4.34.** The question is therefore whether the oil is used to fire the combustion plant. This is not defined in the LCPD. The use of the oil for the purpose of start-up and improved ignition of a combustion plant would fall into this category. There is no basis in the LCPD (in particular, Articles 2 or 8) for

implying that a de minimis threshold was intended. This is supported by the fact that the definition of fuel contains an express exception for waste, implying that an express exception would also be needed for any de minimis threshold.

- 4.35.** If the oil is used only for start-up, and to the extent that start-up periods will not be taken into account for the purposes of calculating the emission limit values under Article 14 of the LCPD, the emission limit values will be determined and measured as if the plant were not a multi-fuel firing unit. If on the other hand, the oil is used for purposes other than start-up, the classification of the plant as a multi-fuel firing unit will normally affect the way in which the emission limit values are determined and measured.

Emission limit values – Multi-fuel firing units

- 4.36.** In the case of plants with a multi-firing unit involving the simultaneous use of two or more fuels (Article 8(1)), the Environment Agency should set the emission limit values as follows:
- firstly, by taking the emission limit value relevant for each individual fuel and pollutant corresponding to the rated thermal input of the combustion plant as given in Annexes III to VII;
 - secondly, by determining fuel-weighted emission limit values, which are obtained by multiplying the above individual emission limit value by the thermal input delivered by each fuel, the product of multiplication being divided by the sum of the thermal inputs delivered by all fuels;
 - thirdly, by aggregating the fuel-weighted limit values.
- 4.37.** In multi-firing units using the distillation and conversion residues from crude-oil refining for own consumption, alone or with other fuels, the provisions for the fuel with the highest emission limit value (determinative fuel) shall apply, notwithstanding Article 8(1) above, if during the operation of the combustion plant the proportion contributed by that fuel to the sum of the thermal inputs delivered by all fuels is at least 50% (Article 8(2)).
- 4.38.** Where the proportion of the determinative fuel is lower than 50%, the emission limit value is determined on a pro rata basis of the heat input supplied by the individual fuels in relation to the sum of the thermal inputs delivered by all fuels as follows:
- firstly, by taking the emission limit value relevant for each individual fuel and pollutant corresponding to the rated heat input of the combustion plant as given in Annexes III to VII;

- secondly, by calculating the emission limit value of the determinative fuel (fuel with the highest emission limit value according to Annexes III to VII and, in the case of two fuels having the same emission limit value, the fuel with the higher thermal input); this value is obtained by multiplying the emission limit value laid down in Annexes III to VII for that fuel by a factor of two, and subtracting from this product the emission limit value of the fuel with the lowest emission limit value;
 - thirdly, by determining the fuel-weighted emission limit values, which are obtained by multiplying the calculated fuel emission limit value by the thermal input of the determinative fuel and the other individual emission limit values by the thermal input delivered by each fuel, the product of multiplication being divided by the sum of the thermal inputs delivered by all fuels;
 - fourthly, by aggregating the fuel-weighted emission limit values.
- 4.39.** Article 8(3) envisages that an aggregate emission limit value approach be taken rather than applying individual ELVs to individual plants within a refinery. The aggregate emission limit value approach would apply as follows, in all cases using in the calculation the appropriate standard conditions for the level of oxygen for the various fuels:
- for existing refineries: all existing plants within a refinery would have a collective average ELV for SO₂ of 1000 mg/Nm³, and all new-new plants within the refinery (i.e. any plants added to the refinery post 27 November 2002) would have a collective average ELV for SO₂ of 600 mg/Nm³;
 - for any new-new refineries (i.e. those put into operation post 27 November 2002): all plants within the refinery would have a collective average ELV for SO₂ of 600 mg/ Nm³;
 - the average rate of SO₂ emissions (i.e. the volume of SO₂ in waste gases) from existing plants within the refinery at any time must not exceed 1000 mg/ Nm³. Similarly, the average rate of SO₂ emissions from new plants within the refinery at any time must not exceed 600 mg/Nm³.
- 4.40.** In the case of plants with a multi-firing unit involving the alternative use of two or more fuels, the Environment Agency should apply the emission limit values set out in Annexes III to VII corresponding to each fuel (Article 8(4)).

Stacks - Article 9

- 4.41.** Waste gases from combustion plants shall be discharged in a controlled fashion by means of a stack (Article 9).
- 4.42.** The Environment Agency should ensure that environmental permits set out the discharge conditions. The Environment Agency shall in particular

ensure that the stack height is calculated by the operator in such a way as to safeguard health and the environment.

Changes to operations - Article 10

- 4.43.** Where a combustion plant is extended by at least 50 MW, the emission limit values as set in part B of Annexes III to VII shall apply to the new part of the plant and shall be fixed in relation to the thermal capacity of the entire plant (Article 10). This provision shall not apply in the cases referred to in Article 8(2) and (3).
- 4.44.** Where the operator of a combustion plant is envisaging a substantial change, the emission limit values as set out in part B of Annexes III to VII in respect of sulphur dioxide, nitrogen oxides and dust shall apply.
- 4.45.** Substantial change is defined in Schedule 5, Part 1, Paragraph 5(5) to the Regulations and includes a change in operation which in itself meets the thresholds in Schedule 1, Part 2. In the case of combustion plant this threshold is a rated annual thermal output of 50 MW. Guidance on substantial change is available in chapter 4 of the Guidance on Part A Installations¹⁵.

Monitoring- Article 12

- 4.46.** The Environment Agency should include in the environmental permit provisions to ensure that the operator undertakes the monitoring of emissions, in accordance with Annex VIII(A), and of all other values required for the implementation of the LCPD (Article 12).
- 4.47.** Where it is necessary for the Environment Agency to undertake or commission monitoring it can require the operator to pay for the monitoring.

Reporting of monitoring - Article 13

- 4.48.** The Environment Agency shall include in the environmental permit, provisions to ensure that the operator informs it within specified time limits about:
- the results of the continuous measurements;
 - the checking of the measuring equipment;
 - the individual measurements; and
 - all other measurements carried out in order to assess compliance with the LCPD.

¹⁵ Available at www.defra.gov.uk/environment/policy/permits/guidance.htm

Compliance with emission limits - Article 14(1), 14(2) and 14(4)

- 4.49.** The Environment Agency should use the criteria set out in Article 14 for judging compliance with emission limit values.
- 4.50.** In the event of continuous measurements, the emission limit values set out in part A of Annexes III to VII shall be regarded as having been complied with if the evaluation of the results indicates, for operating hours within a calendar year, that:
- none of the calendar monthly mean values exceeds the emission limit values; and
 - in the case of:
 - sulphur dioxide and dust: 97% of all the 48 hourly mean values do not exceed 110% of the emission limit values;
 - nitrogen oxides: 95% of all the 48 hourly mean values do not exceed 110% of the emission limit values.
- 4.51.** The periods referred to in Article 7 as well as start-up and shut-down periods shall be disregarded.
- 4.52.** The Environment Agency should set out rules for determining compliance in cases where only discontinuous measurements or other appropriate procedures for determination are required. The emission limit values set out in Annexes III to VII shall be regarded as having been complied with if the results of each of the series of measurements or of the other procedures defined and determined according to the rules laid down by the Environment Agency do not exceed the emission limit values (Article 14(2)).
- 4.53.** For new-new plants the emission limit values shall be regarded, for operating hours within a calendar year, as complied with if:
- no validated daily average value exceeds the relevant figures set out in part B of Annexes III to VII; and
 - 95% of all the validated hourly average values over the year do not exceed 200% of the relevant figures set out in part B of Annexes III to VII.
- 4.54.** The validated average values are determined as set out in point A.6 of Annex VIII. The periods referred to in Article 7 as well as start up and shut down periods shall be disregarded (Article 14 (4)).

Annex 1 – Schedule 15 to the Environmental Permitting Regulations

SCHEDULE 15

Regulation 35(2)(i)

Large combustion plants

Application

1. This Schedule applies in relation to every combustion plant to which the Large Combustion Plants Directive applies by virtue of Article 1 of that Directive.

Interpretation

2.—(1) In this Schedule—

“combustion plant” has the meaning given in Article 2(7) of the Large Combustion Plants Directive;

“existing plant” has the meaning given in Article 2(10) of the Large Combustion Plants Directive; and

“the Large Combustion Plants Directive” means Directive 2001/80/EC of the European Parliament and of the Council on the limitation of emissions of certain pollutants into the air from large combustion plants^(a).

(2) When interpreting the Large Combustion Plants Directive for the purposes of this Schedule—

- (a) except where also defined in this paragraph, an expression that is defined in Part 1 of these Regulations has the meaning given in that Part;
- (b) the competent authority is—
 - (i) for the purposes of exercising a judgment of whether there is an overriding need to maintain energy supplies under Article 7(1) or (3) of the Large Combustion Plants Directive, the appropriate authority,
 - (ii) otherwise, the regulator;
- (c) the national emission reduction plan referred to in Article 4(6) of the Large Combustion Plants Directive is the emission plan, as amended from time to time, published under regulation 4(1) of the Large Combustion Plants (National Emission Reduction Plan)

(a) OJ No L 309, 27.11.2001, p 1. There is a relevant corrigendum, OJ No L 319, 23.11.2002, p 30.

Regulations 2007(a);

- (d) “emission” has the meaning given in the Large Combustion Plants Directive;
- (e) “licence” means environmental permit;
- (f) “permit” means environmental permit; and
- (g) in Article 4(4), ignore the words “and from their inclusion in the national emission reduction plan”.

Exercise of relevant functions

3.—(1) The regulator must exercise its relevant functions so as to ensure compliance with the following provisions of the Large Combustion Plants Directive—

- (a) Article 4(1), (2) and (4);
- (b) Article 5(1);
- (c) Article 6;
- (d) Article 7, except the last sentence of 7(2) and the last sentence of 7(3);
- (e) Article 8;
- (f) Article 9;
- (g) Article 10;
- (h) Article 12;
- (i) Article 13;
- (j) Article 14(1), (2) and (4).

(2) The regulator must—

- (a) exercise its relevant functions in relation to a regulated facility which—
 - (i) is an existing plant, and
 - (ii) elects to comply with the emission limit values established under Article 4(1) of the Large Combustion Plants Directive,
so as to ensure compliance with Article 4(3)(a) of that Directive; and
- (b) exercise its relevant functions in relation to a regulated facility which is included in the national emission reduction plan referred to in Article 4(6) of the Large Combustion Plants Directive so as to ensure compliance with Article 4(3)(b) of that Directive, to the extent that such compliance is not ensured by the Large Combustion Plants (National Emission Reduction Plan) Regulations 2007.

(3) The regulator must—

- (a) immediately inform the appropriate authority of any suspension under Article 7(2) or derogation under Article 7(3) of the Large Combustion Plants Directive;
- (b) immediately inform the appropriate authority if it considers that the appropriate authority must make a judgment of whether there is an overriding need to maintain energy supplies under Article 7(1) or (3) of the Large Combustion Plants Directive; and
- (c) exercise its relevant functions in relation to such a judgment in accordance with the decision of that authority.

(a) S.I. 2007/2325.

Annex 2 – Large Combustion Plant Directive

I

(Acts whose publication is obligatory)

**DIRECTIVE 2001/80/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL
of 23 October 2001**

on the limitation of emissions of certain pollutants into the air from large combustion plants

THE EUROPEAN PARLIAMENT AND THE COUNCIL OF THE EUROPEAN UNION,

Having regard to the Treaty establishing the European Community, and in particular Article 175(1) thereof,

Having regard to the proposal from the Commission ⁽¹⁾,

Having regard to the Opinion of the Economic and Social Committee ⁽²⁾,

Having consulted the Committee of the Regions,

Acting in accordance with the procedure laid down in Article 251 of the Treaty ⁽³⁾, in the light of the joint text approved by the Conciliation Committee on 2 August 2001,

Whereas:

(1) Council Directive 88/609/EEC of 24 November 1988 on the limitation of emissions of certain pollutants into the air from large combustion plants ⁽⁴⁾ has contributed to the reduction and control of atmospheric emissions from large combustion plants. It should be recast in the interests of clarity.

(2) The Fifth Environmental Action Programme ⁽⁵⁾ sets as objectives that the critical loads and levels of certain acidifying pollutants such as sulphur dioxide (SO₂) and nitrogen oxides (NO_x) should not be exceeded at any time and, as regards air quality, that all people should be effectively protected against recognised health risks from air pollution.

(3) All Member States have signed the Gothenburg Protocol of 1 December 1999 to the 1979 Convention of the United Nations Economic Commission for Europe (UNECE) on long-range transboundary air pollution to abate acidification, eutrophication and ground-level ozone, which includes, *inter alia*, commitments to reduce emissions of sulphur dioxide and oxides of nitrogen.

(4) The Commission has published a Communication on a Community strategy to combat acidification in which the revision of Directive 88/609/EEC was identified as being an integral component of that strategy with the long term aim of reducing emissions of sulphur dioxide and nitrogen oxides sufficiently to bring depositions and concentrations down to levels below the critical loads and levels.

(5) In accordance with the principle of subsidiarity as set out in Article 5 of the Treaty, the objective of reducing acidifying emissions from large combustion plants cannot be sufficiently achieved by the Member States acting individually and uncoordinated action offers no guarantee of achieving the desired objective; in view of the need to reduce acidifying emissions across the Community, it is more effective to take action at Community level.

(6) Existing large combustion plants are significant contributors to emissions of sulphur dioxide and nitrogen oxides in the Community and it is necessary to reduce these emissions. It is therefore necessary to adapt the approach to the different characteristics of the large combustion plant sector in the Member States.

⁽¹⁾ OJ C 300, 29.9.1998, p. 6, OJ C 212 E, 25.7.2000, p. 36.

⁽²⁾ OJ C 101, 12.4.1999, p. 55.

⁽³⁾ Opinion of the European Parliament of 14 April 1999 (OJ C 219, 30.7.1999, p. 175), Council Common Position of 9 November 2000 (OJ C 375, 28.12.2000, p. 12) and Decision of the European Parliament of 14 March 2001 (not yet published in the Official Journal). Decision of the European Parliament of 20 September 2001 and Decision of the Council of 27 September 2001.

⁽⁴⁾ OJ L 336, 7.12.1988, p. 1. Directive as last amended by Council Directive 94/66/EC (OJ L 337, 24.12.1994, p. 83).

⁽⁵⁾ OJ C 138, 17.5.1993, p. 1.

(7) Council Directive 96/61/EC of 24 September 1996 concerning integrated pollution prevention and control ⁽⁶⁾ sets out an integrated approach to pollution prevention and control in which all the aspects of an installation's environmental performance are considered

⁽⁶⁾ OJ L 257, 10.10.1996, p. 26.

in an integrated manner; combustion installations with a rated thermal input exceeding 50 MW are included within the scope of that Directive; pursuant to Article 15(3) of that Directive an inventory of the principal emissions and sources responsible is to be published every three years by the Commission on the basis of data supplied by the Member States. Pursuant to Article 18 of that Directive, acting on a proposal from the Commission, the Council will set emission limit values in accordance with the procedures laid down in the Treaty for which the need for Community action has been identified, on the basis, in particular, of the exchange of information provided for in Article 16 of that Directive.

- (8) Compliance with the emission limit values laid down by this Directive should be regarded as a necessary but not sufficient condition for compliance with the requirements of Directive 96/61/EC regarding the use of best available techniques. Such compliance may involve more stringent emission limit values, emission limit values for other substances and other media, and other appropriate conditions.
- (9) Industrial experience in the implementation of techniques for the reduction of polluting emissions from large combustion plants has been acquired over a period of 15 years.
- (10) The Protocol on heavy metals to the UNECE Convention on long-range transboundary air pollution recommends the adoption of measures to reduce heavy metals emitted by certain installations. It is known that benefits from reducing dust emissions by dust abatement equipment will provide benefits on reducing particle-bound heavy metal emissions.
- (11) Installations for the production of electricity represent an important part of the large combustion plant sector.
- (12) Directive 96/92/EC of the European Parliament and of the Council of 19 December 1996 concerning common rules for the internal market in electricity ⁽¹⁾ is intended *inter alia* to have the effect of distributing new production capacity among new arrivals in the sector.
- (13) The Community is committed to a reduction of carbon dioxide emissions. Where it is feasible the combined production of heat and electricity represents a valuable opportunity for significantly improving overall efficiency in fuel use.
- (14) A significant increase in the use of natural gas for producing electricity is already underway and is likely to continue, in particular through the use of gas turbines.

- (15) In view of the increase in energy production from biomass, specific emission standards for this fuel are justified.
- (16) The Council Resolution of 24 February 1997 on a Community strategy for waste management ⁽²⁾ emphasises the need for promoting waste recovery and states that appropriate emission standards should apply to the operation of facilities in which waste is incinerated in order to ensure a high level of protection for the environment.
- (17) Industrial experience has been gained concerning techniques and equipment for the measurement of the principal pollutants emitted by large combustion plants; the European Committee for Standardisation (CEN) has undertaken work with the aim of providing a framework securing comparable measurement results within the Community and guaranteeing a high level of quality of such measurements.
- (18) There is a need to improve knowledge concerning the emission of the principal pollutants from large combustion plants. In order to be genuinely representative of the level of pollution of an installation, such information should also be associated with knowledge concerning its energy consumption.
- (19) This Directive is without prejudice to the time limits within which the Member States must transpose and implement Directive 88/609/EEC,

HAVE ADOPTED THIS DIRECTIVE:

Article 1

This Directive shall apply to combustion plants, the rated thermal input of which is equal to or greater than 50 MW, irrespective of the type of fuel used (solid, liquid or gaseous).

Article 2

For the purpose of this Directive:

- (1) 'emission' means the discharge of substances from the combustion plant into the air;
- (2) 'waste gases' means gaseous discharges containing solid, liquid or gaseous emissions; their volumetric flow rates shall be expressed in cubic metres per hour at standard temperature (273 K) and pressure (101,3 kPa) after correction for the water vapour content, hereinafter referred to as (Nm³/h);

⁽¹⁾ OJ L 27, 30.1.1997, p. 20.

⁽²⁾ OJ C 76, 11.3.1997, p. 1.

- (3) 'emission limit value' means the permissible quantity of a substance contained in the waste gases from the combustion plant which may be discharged into the air during a given period; it shall be calculated in terms of mass per volume of the waste gases expressed in mg/Nm³, assuming an oxygen content by volume in the waste gas of 3 % in the case of liquid and gaseous fuels, 6 % in the case of solid fuels and 15 % in the case of gas turbines;
- (4) 'rate of desulphurisation' means the ratio of the quantity of sulphur which is not emitted into the air at the combustion plant site over a given period to the quantity of sulphur contained in the fuel which is introduced into the combustion plant facilities and which is used over the same period;
- (5) 'operator' means any natural or legal person who operates the combustion plant, or who has or has been delegated decisive economic power over it;
- (6) 'fuel' means any solid, liquid or gaseous combustible material used to fire the combustion plant with the exception of waste covered by Council Directive 89/369/EEC of 8 June 1989 on the prevention of air pollution from new municipal waste incineration plants ⁽¹⁾, Council Directive 89/429/EEC of 21 June 1989 on the reduction of air pollution from existing municipal waste incineration plants ⁽²⁾, and Council Directive 94/67/EC of 16 December 1994 concerning the incineration of hazardous waste ⁽³⁾ or any subsequent Community act repealing and replacing one or more of these Directives;
- (7) 'combustion plant' means any technical apparatus in which fuels are oxidised in order to use the heat thus generated.

This Directive shall apply only to combustion plants designed for production of energy with the exception of those which make direct use of the products of combustion in manufacturing processes. In particular, this Directive shall not apply to the following combustion plants:

- (a) plants in which the products of combustion are used for the direct heating, drying, or any other treatment of objects or materials e.g. reheating furnaces, furnaces for heat treatment;
- (b) post-combustion plants i.e. any technical apparatus designed to purify the waste gases by combustion which is not operated as an independent combustion plant;

- (c) facilities for the regeneration of catalytic cracking catalysts;
- (d) facilities for the conversion of hydrogen sulphide into sulphur;
- (e) reactors used in the chemical industry;
- (f) coke battery furnaces;
- (g) cowpers;
- (h) any technical apparatus used in the propulsion of a vehicle, ship or aircraft;
- (i) gas turbines used on offshore platforms;
- (j) gas turbines licensed before 27 November 2002 or which in the view of the competent authority are the subject of a full request for a licence before 27 November 2002 provided that the plant is put into operation no later than 27 November 2003 without prejudice to Article 7(1) and Annex VIII(A) and (B);

Plants powered by diesel, petrol and gas engines shall not be covered by this Directive.

Where two or more separate new plants are installed in such a way that, taking technical and economic factors into account, their waste gases could, in the judgement of the competent authorities, be discharged through a common stack, the combination formed by such plants shall be regarded as a single unit;

- (8) 'multi-fuel firing unit' means any combustion plant which may be fired simultaneously or alternately by two or more types of fuel;
- (9) 'new plant' means any combustion plant for which the original construction licence or, in the absence of such a procedure, the original operating licence was granted on or after 1 July 1987;
- (10) 'existing plant' means any combustion plant for which the original construction licence or, in the absence of such a procedure, the original operating licence was granted before 1 July 1987;
- (11) 'biomass' means products consisting of any whole or part of a vegetable matter from agriculture or forestry which can be used as a fuel for the purpose of recovering its energy content and the following waste used as a fuel:

- (a) vegetable waste from agriculture and forestry;

⁽¹⁾ OJ L 163, 14.6.1989, p. 32.

⁽²⁾ OJ L 203, 15.7.1989, p. 50.

⁽³⁾ OJ L 365, 31.12.1994, p. 34.

- (b) vegetable waste from the food processing industry, if the heat generated is recovered;
 - (c) fibrous vegetable waste from virgin pulp production and from production of paper from pulp, if it is co-incinerated at the place of production and the heat generated is recovered;
 - (d) cork waste;
 - (e) wood waste with the exception of wood waste which may contain halogenated organic compounds or heavy metals as a result of treatment with wood preservatives or coating, and which includes in particular such wood waste originating from construction and demolition waste;
- (12) 'gas turbine' means any rotating machine which converts thermal energy into mechanical work, consisting mainly of a compressor, a thermal device in which fuel is oxidised in order to heat the working fluid, and a turbine.
- (13) 'Outermost Regions' means the French Overseas Departments with regard to France, the Azores and Madeira with regard to Portugal and the Canary Islands with regard to Spain.

Article 3

1. Not later than 1 July 1990 Member States shall draw up appropriate programmes for the progressive reduction of total annual emissions from existing plants. The programmes shall set out the timetables and the implementing procedures.

2. In accordance with the programmes mentioned in paragraph 1, Member States shall continue to comply with the emission ceilings and with the corresponding percentage reductions laid down for sulphur dioxide in Annex I, columns 1 to 6, and for oxides of nitrogen in Annex II, columns 1 to 4, by the dates specified in those Annexes, until the implementation of the provisions of Article 4 that apply to existing plants.

3. When the programmes are being carried out, Member States shall also determine the total annual emissions in accordance with Annex VIII(C).

4. If a substantial and unexpected change in energy demand or in the availability of certain fuels or certain generating installations creates serious technical difficulties for the implementation by a Member State of its programme drawn up under paragraph 1, the Commission shall, at the request of the Member State concerned and taking into account the terms of the request, take a decision to modify, for that Member State, the emission ceilings and/or the dates set out in Annexes I and II and communicate its decision to the

Council and to the Member States. Any Member State may within three months refer the decision of the Commission to the Council. The Council, acting by a qualified majority, may within three months take a different decision.

Article 4

1. Without prejudice to Article 17 Member States shall take appropriate measures to ensure that all licences for the construction or, in the absence of such a procedure, for the operation of new plants which in the view of the competent authority are the subject of a full request for a licence before 27 November 2002, provided that the plant is put into operation no later than 27 November 2003 contain conditions relating to compliance with the emission limit values laid down in part A of Annexes III to VII in respect of sulphur dioxide, nitrogen oxides and dust.

2. Member States shall take appropriate measures to ensure that all licences for the construction or, in the absence of such a procedure, for the operation of new plants, other than those covered by paragraph 1, contain conditions relating to compliance with the emission limit values laid down in part B of Annexes III to VII in respect of sulphur dioxide, nitrogen oxides and dust.

3. Without prejudice to Directive 96/61/EC and Council Directive 96/62/EC of 27 September 1996 on ambient air quality assessment and management ⁽¹⁾, Member States shall, by 1 January 2008 at the latest, achieve significant emission reductions by:

- (a) taking appropriate measures to ensure that all licences for the operation of existing plants contain conditions relating to compliance with the emission limit values established for new plants referred to in paragraph 1; or
- (b) ensuring that existing plants are subject to the national emission reduction plan referred to in paragraph 6;

and, where appropriate, applying Articles 5, 7 and 8.

4. Without prejudice to Directives 96/61/EC and 96/62/EC, existing plants may be exempted from compliance with the emission limit values referred to in paragraph 3 and from their inclusion in the national emission reduction plan on the following conditions:

- (a) the operator of an existing plant undertakes, in a written declaration submitted by 30 June 2004 at the latest to the competent authority, not to operate the plant for more than 20 000 operational hours starting from 1 January 2008 and ending no later than 31 December 2015;

⁽¹⁾ OJ L 296, 21.11.1996, p. 55.

(b) the operator is required to submit each year to the competent authority a record of the used and unused time allowed for the plants' remaining operational life.

5. Member States may require compliance with emission limit values and time limits for implementation which are more stringent than those set out in paragraphs 1, 2, 3 and 4 and in Article 10. They may include other pollutants, and they may impose additional requirements or adaptation of plant to technical progress.

6. Member States may, without prejudice to this Directive and Directive 96/61/EC, and taking into consideration the costs and benefits as well as their obligations under Directive 2001/81/EC of the European Parliament and of the Council of 23 October 2001 on national emission ceilings for certain atmospheric pollutants ⁽¹⁾ and Directive 96/62/EC, define and implement a national emission reduction plan for existing plants, taking into account, *inter alia*, compliance with the ceilings as set out in Annexes I and II.

The national emission reduction plan shall reduce the total annual emissions of nitrogen oxides (NO_x), sulphur dioxide (SO₂) and dust from existing plants to the levels that would have been achieved by applying the emission limit values referred to in paragraph 3 to the existing plants in operation in the year 2000, (including those existing plants undergoing a rehabilitation plan in 2000, approved by the competent authority, to meet emission reductions required by national legislation) on the basis of each plant's actual annual operating time, fuel used and thermal input, averaged over the last five years of operation up to and including 2000.

The closure of a plant included in the national emission reduction plan shall not result in an increase in the total annual emissions from the remaining plants covered by the plan.

The national emission reduction plan may under no circumstances exempt a plant from the provisions laid down in relevant Community legislation, including *inter alia* Directive 96/61/EC.

The following conditions shall apply to national emission reduction plans:

(a) the plan shall comprise objectives and related targets, measures and timetables for reaching these objectives and targets, and a monitoring mechanism;

(b) Member States shall communicate their national emission reduction plan to the Commission no later than 27 November 2003;

(c) within six months of the communication referred to in point (b) the Commission shall evaluate whether or not the plan meets the requirements of this paragraph. When the Commission considers that this is not the case, it shall inform the Member State and within the subsequent three months the Member State shall communicate any measures it has taken in order to ensure that the requirements of this paragraph are met;

(d) the Commission shall, no later than 27 November 2002, develop guidelines to assist Member States in the preparation of their plans.

7. Not later than 31 December 2004 and in the light of progress towards protecting human health and attaining the Community's environmental objectives for acidification and for air quality pursuant to Directive 96/62/EC, the Commission shall submit a report to the European Parliament and the Council in which it shall assess:

(a) the need for further measures;

(b) the amounts of heavy metals emitted by large combustion plants;

(c) the cost-effectiveness and costs and advantages of further emission reductions in the combustion plants sector in Member States compared to other sectors;

(d) the technical and economic feasibility of such emission reductions;

(e) the effects of both the standards set for the large combustion plants sector including the provisions for indigenous solid fuels, and the competition situation in the energy market, on the environment and the internal market;

(f) any national emission reduction plans provided by Member States in accordance with paragraph 6.

The Commission shall include in its report an appropriate proposal of possible end dates or of lower limit values for the derogation contained in footnote 2 to Annex VI A.

8. The report referred to in paragraph 7 shall, as appropriate, be accompanied by related proposals, having regard to Directive 96/61/EC.

Article 5

By way of derogation from Annex III:

(1) Plants, of a rated thermal input equal to or greater than 400 MW, which do not operate more than the following

⁽¹⁾ See p. 22 of this Edition of the Official Journal.

numbers of hours a year (rolling average over a period of five years),

— until 31 December 2015, 2 000 hours;

— from 1 January 2016, 1 500 hours;

shall be subject to a limit value for sulphur dioxide emissions of 800 mg/Nm³.

This provision shall not apply to new plants for which the licence is granted pursuant to Article 4(2).

(2) Until 31 December 1999, the Kingdom of Spain may authorise new power plants with a rated thermal input equal to or greater than 500 MW burning indigenous or imported solid fuels, commissioned before the end of 2005 and complying with the following requirements:

(a) in the case of imported solid fuels, a sulphur dioxide emission limit value of 800 mg/Nm³;

(b) in the case of indigenous solid fuels, at least a 60 % rate of desulphurisation,

provided that the total authorised capacity of such plants to which this derogation applies does not exceed:

— 2 000 MWe in the case of plants burning indigenous solid fuels;

— in the case of plants burning imported solid fuels either 7 500 or 50 % of all the new capacity of all plants burning solid fuels authorised up to 31 December 1999, whichever is the lower.

Article 6

In the case of new plants for which the licence is granted pursuant to Article 4(2) or plants covered by Article 10, Member States shall ensure that the technical and economic feasibility of providing for the combined generation of heat and power is examined. Where this feasibility is confirmed, bearing in mind the market and the distribution situation, installations shall be developed accordingly.

Article 7

1. Member States shall ensure that provision is made in the licences or permits referred to in Article 4 for procedures relating to malfunction or breakdown of the abatement equipment. In case of a breakdown the competent authority shall in particular require the operator to reduce or close down operations if a return to normal operation is not achieved within 24 hours, or to operate the plant using low polluting fuels. In any case the competent authority shall be notified within 48 hours. In no circumstances shall the cumulative

duration of unabated operation in any twelve-month period exceed 120 hours. The competent authority may allow exceptions to the limits of 24 hours and 120 hours above in cases where, in their judgement:

(a) there is an overriding need to maintain energy supplies, or

(b) the plant with the breakdown would be replaced for a limited period by another plant which would cause an overall increase in emissions.

2. The competent authority may allow a suspension for a maximum of six months from the obligation to comply with the emission limit values provided for in Article 4 for sulphur dioxide in respect of a plant which to this end normally uses low-sulphur fuel, in cases where the operator is unable to comply with these limit values because of an interruption in the supply of low-sulphur fuel resulting from a serious shortage. The Commission shall immediately be informed of such cases.

3. The competent authority may allow a derogation from the obligation to comply with the emission limit values provided for in Article 4 in cases where a plant which normally uses only gaseous fuel, and which would otherwise need to be equipped with a waste gas purification facility, has to resort exceptionally, and for a period not exceeding 10 days except where there is an overriding need to maintain energy supplies, to the use of other fuels because of a sudden interruption in the supply of gas. The competent authority shall immediately be informed of each specific case as it arises. Member States shall inform the Commission immediately of the cases referred to in this paragraph.

Article 8

1. In the case of plants with a multi-firing unit involving the simultaneous use of two or more fuels, when granting the licence referred to in Articles 4(1) or 4(2), and in the case of such plants covered by Articles 4(3) or 10, the competent authority shall set the emission limit values as follows:

(a) firstly by taking the emission limit value relevant for each individual fuel and pollutant corresponding to the rated thermal input of the combustion plant as given in Annexes III to VII,

(b) secondly by determining fuel-weighted emission limit values, which are obtained by multiplying the above individual emission limit value by the thermal input delivered by each fuel, the product of multiplication being divided by the sum of the thermal inputs delivered by all fuels,

(c) thirdly by aggregating the fuel-weighted limit values.

2. In multi-firing units using the distillation and conversion residues from crude-oil refining for own consumption, alone or with other fuels, the provisions for the fuel with the highest emission limit value (determinative fuel) shall apply, notwithstanding paragraph 1 above, if during the operation of the combustion plant the proportion contributed by that fuel to the sum of the thermal inputs delivered by all fuels is at least 50 %.

Where the proportion of the determinative fuel is lower than 50 %, the emission limit value is determined on a pro rata basis of the heat input supplied by the individual fuels in relation to the sum of the thermal inputs delivered by all fuels as follows:

- (a) firstly by taking the emission limit value relevant for each individual fuel and pollutant corresponding to the rated heat input of the combustion plant as given in Annexes III to VII,
- (b) secondly by calculating the emission limit value of the determinative fuel (fuel with the highest emission limit value according to Annexes III to VII and, in the case of two fuels having the same emission limit value, the fuel with the higher thermal input); this value is obtained by multiplying the emission limit value laid down in Annexes III to VII for that fuel by a factor of two, and subtracting from this product the emission limit value of the fuel with the lowest emission limit value,
- (c) thirdly by determining the fuel-weighted emission limit values, which are obtained by multiplying the calculated fuel emission limit value by the thermal input of the determinative fuel and the other individual emission limit values by the thermal input delivered by each fuel, the product of multiplication being divided by the sum of the thermal inputs delivered by all fuels,
- (d) fourthly by aggregating the fuel-weighted emission limit values.

3. As an alternative to paragraph 2, the following average emission limit values for sulphur dioxide may be applied (irrespective of the fuel combination used):

- (a) for plants referred to in Article 4(1) and (3): 1 000 mg/Nm³, averaged over all such plants within the refinery;
- (b) for new plants referred to in Article 4(2): 600 mg/Nm³, averaged over all such plants within the refinery, with the exception of gas turbines.

The competent authorities shall ensure that the application of this provision does not lead to an increase in emissions from existing plants.

4. In the case of plants with a multi-firing unit involving the alternative use of two or more fuels, when granting the licence referred to in Article 4(1) and (2), and in the case of such plants covered by Articles 4(3) or 10, the emission limit values set out in Annexes III to VII corresponding to each fuel used shall be applied.

Article 9

Waste gases from combustion plants shall be discharged in controlled fashion by means of a stack. The licence referred to in Article 4 and licences for combustion plants covered by Article 10 shall lay down the discharge conditions. The competent authority shall in particular ensure that the stack height is calculated in such a way as to safeguard health and the environment.

Article 10

Where a combustion plant is extended by at least 50 MW, the emission limit values as set in part B of Annexes III to VII shall apply to the new part of the plant and shall be fixed in relation to the thermal capacity of the entire plant. This provision shall not apply in the cases referred to in Article 8(2) and (3).

Where the operator of a combustion plant is envisaging a change according to Articles 2(10)(b) and 12(2) of Directive 96/61/EC, the emission limit values as set out in part B of Annexes III to VII in respect of sulphur dioxide, nitrogen oxides and dust shall apply.

Article 11

In the case of construction of combustion plants which are likely to have significant effects on the environment in another Member State, the Member States shall ensure that all appropriate information and consultation takes place, in accordance with Article 7 of Council Directive 85/337/EEC of 27 June 1985 on the assessment of the effects of certain public and private projects on the environment ⁽¹⁾.

Article 12

Member States shall take the necessary measures to ensure the monitoring, in accordance with Annex VIII(A), of emissions from the combustion plants covered by this Directive and of all other values required for the implementation of this

⁽¹⁾ OJ L 175, 5.7.1985, p. 40. Directive as last amended by Council Directive 97/11/EC (OJ L 73, 14.3.1997, p. 5).

Directive. Member States may require that such monitoring shall be carried out at the operator's expense.

Article 13

Member States shall take appropriate measures to ensure that the operator informs the competent authorities within reasonable time limits about the results of the continuous measurements, the checking of the measuring equipment, the individual measurements and all other measurements carried out in order to assess compliance with this Directive.

Article 14

1. In the event of continuous measurements, the emission limit values set out in part A of Annexes III to VII shall be regarded as having been complied with if the evaluation of the results indicates, for operating hours within a calendar year, that:

- (a) none of the calendar monthly mean values exceeds the emission limit values; and
- (b) in the case of:
 - (i) sulphur dioxide and dust: 97 % of all the 48 hourly mean values do not exceed 110 % of the emission limit values,
 - (ii) nitrogen oxides: 95 % of all the 48 hourly mean values do not exceed 110 % of the emission limit values.

The periods referred to in Article 7 as well as start-up and shut-down periods shall be disregarded.

2. In cases where only discontinuous measurements or other appropriate procedures for determination are required, the emission limit values set out in Annexes III to VII shall be regarded as having been complied with if the results of each of the series of measurements or of the other procedures defined and determined according to the rules laid down by the competent authorities do not exceed the emission limit values.

3. In the cases referred to in Article 5(2) and (3), the rates of desulphurisation shall be regarded as having been complied with if the evaluation of measurements carried out pursuant to Annex VIII, point A.3, indicates that all of the calendar monthly mean values or all of the rolling monthly mean values achieve the required desulphurisation rates.

The periods referred to in Article 7 as well as start-up and shut-down periods shall be disregarded.

4. For new plants for which the licence is granted pursuant to Article 4(2), the emission limit values shall be regarded, for operating hours within a calendar year, as complied with if:

- (a) no validated daily average value exceeds the relevant figures set out in part B of Annexes III to VII, and
- (b) 95 % of all the validated hourly average values over the year do not exceed 200 % of the relevant figures set out in part B of Annexes III to VII.

The 'validated average values' are determined as set out in point A.6 of Annex VIII.

The periods referred to in Article 7 as well as start up and shut down periods shall be disregarded.

Article 15

1. Member States shall, not later than 31 December 1990, inform the Commission of the programmes drawn up in accordance with Article 3(1).

At the latest one year after the end of the different phases for reduction of emissions from existing plants, the Member States shall forward to the Commission a summary report on the results of the implementation of the programmes.

An intermediate report is required as well in the middle of each phase.

2. The reports referred to in paragraph 1 shall provide an overall view of:

- (a) all the combustion plants covered by this Directive,
- (b) emissions of sulphur dioxide, and oxides of nitrogen expressed in tonnes per annum and as concentrations of these substances in the waste gases,
- (c) measures already taken or envisaged with a view to reducing emissions, and of changes in the choice of fuel used,
- (d) changes in the method of operation already made or envisaged,
- (e) definitive closures of combustion plants already effected or envisaged, and
- (f) where appropriate, the emission limit values imposed in the programmes in respect of existing plants.

When determining the annual emissions and concentrations of pollutants in the waste gases, Member States shall take account of Articles 12, 13 and 14.

3. Member States applying Article 5 or the provisions of the *Nota Bene* in Annex III or the footnotes in Annex VI.A shall report thereon annually to the Commission.

Article 16

The Member States shall determine the penalties applicable to breaches of the national provisions adopted pursuant to this Directive. The penalties thus provided for shall be effective, proportionate and dissuasive.

Article 17

1. Directive 88/609/EEC shall be repealed with effect from 27 November 2002, without prejudice to paragraph 2 or to the obligations of Member States concerning the time limits for transposition and application of that Directive listed in Annex IX hereto.

2. In the case of new plants licensed before 27 November 2002 Article 4(1) of this Directive, Article 4(1), Article 5(2), Article 6, Article 15(3), Annexes III, VI, VIII and point A.2 of Annex IX to Directive 88/609/EEC as amended by Directive 94/66/EC shall remain in effect until 1 January 2008 after which they shall be repealed.

3. References to Directive 88/609/EEC shall be construed as references to this Directive and shall be read in accordance with the correlation table in Annex X hereto.

Article 18

1. Member States shall bring into force the laws, regulations and administrative provisions necessary to comply with this Directive before 27 November 2002. They shall forthwith inform the Commission thereof.

When Member States adopt these provisions, they shall contain a reference to this Directive or shall be accompanied by such reference on the occasion of their official publication. The methods of making such reference shall be laid down by Member States.

2. For existing plant, and for new plant for which a licence is granted pursuant to Article 4(1), the provisions of point A.2 of Annex VIII shall be applied from 27 November 2004.

3. Member States shall communicate to the Commission the texts of the provisions of national law which they adopt in the field covered by this Directive.

Article 19

This Directive shall enter into force on the day of its publication in the *Official Journal of the European Communities*.

Article 20

This Directive is addressed to the Member States.

Done at Luxembourg, 23 October 2001.

For the European Parliament

The President

N. FONTAINE

For the Council

The President

A. NEYTS-UYTTEBROECK

ANNEX I

CEILINGS AND REDUCTION TARGETS FOR EMISSIONS OF SO₂ FROM EXISTING PLANTS ⁽¹⁾ ⁽²⁾

Member State	0	1	2	3	4	5	6	7	8	9
	SO ₂ emissions by large combustion plants 1980 ktonnes	Emission ceiling (ktonnes/year)			% reduction over 1980 emissions			% reduction over adjusted 1980 emissions		
		Phase 1	Phase 2	Phase 3	Phase 1	Phase 2	Phase 3	Phase 1	Phase 2	Phase 3
		1993	1998	2003	1993	1998	2003	1993	1998	2003
Belgium	530	318	212	159	- 40	- 60	- 70	- 40	- 60	- 70
Denmark	323	213	141	106	- 34	- 56	- 67	- 40	- 60	- 70
Germany	2 225	1 335	890	668	- 40	- 60	- 70	- 40	- 60	- 70
Greece	303	320	320	320	+ 6	+ 6	+ 6	- 45	- 45	- 45
Spain	2 290	2 290	1 730	1 440	0	- 24	- 37	- 21	- 40	- 50
France	1 910	1 146	764	573	- 40	- 60	- 70	- 40	- 60	- 70
Ireland	99	124	124	124	+ 25	+ 25	+ 25	- 29	- 29	- 29
Italy	2 450	1 800	1 500	900	- 27	- 39	- 63	- 40	- 50	- 70
Luxembourg	3	1,8	1,5	1,5	- 40	- 50	- 60	- 40	- 50	- 50
Netherlands	299	180	120	90	- 40	- 60	- 70	- 40	- 60	- 70
Portugal	115	232	270	206	+ 102	+ 135	+ 79	- 25	- 13	- 34
United Kingdom	3 883	3 106	2 330	1 553	- 20	- 40	- 60	- 20	- 40	- 60
Austria	90	54	36	27	- 40	- 60	- 70	- 40	- 60	- 70
Finland	171	102	68	51	- 40	- 60	- 70	- 40	- 60	- 70
Sweden	112	67	45	34	- 40	- 60	- 70	- 40	- 60	- 70

⁽¹⁾ Additional emissions may arise from capacity authorised on or after 1 July 1987.

⁽²⁾ Emissions coming from combustion plants authorised before 1 July 1987 but not yet in operation before that date and which have not been taken into account in establishing the emission ceilings fixed by this Annex shall either comply with the requirements established by this Directive for new plants or be accounted for in the overall emissions from existing plants that must not exceed the ceilings fixed in this Annex.

ANNEX II

CEILINGS AND REDUCTION TARGETS FOR EMISSIONS OF NO_x FROM EXISTING PLANTS ⁽¹⁾ ⁽²⁾

Member State	0	1	2	3	4	5	6
	NO _x emissions (as NO ₂) by large combustion plants 1980 ktonnes	NO _x emission ceilings (ktonnes/year)		% reduction over 1980 emissions		% reduction over adjusted 1980 emissions	
		Phase 1	Phase 2	Phase 1	Phase 2	Phase 1	Phase 2
		1993 ⁽¹⁾	1998	1993 ⁽¹⁾	1998	1993 ⁽¹⁾	1998
Belgium	110	88	66	- 20	- 40	- 20	- 40
Denmark	124	121	81	- 3	- 35	- 10	- 40
Germany	870	696	522	- 20	- 40	- 20	- 40
Greece	36	70	70	+ 94	+ 94	0	0
Spain	366	368	277	+ 1	- 24	- 20	- 40
France	400	320	240	- 20	- 40	- 20	- 40
Ireland	28	50	50	+ 79	+ 79	0	0
Italy	580	570	428	- 2	- 26	- 20	- 40
Luxembourg	3	2,4	1,8	- 20	- 40	- 20	- 40
Netherlands	122	98	73	- 20	- 40	- 20	- 40
Portugal	23	59	64	+ 157	+ 178	- 8	0
United Kingdom	1 016	864	711	- 15	- 30	- 15	- 30
Austria	19	15	11	- 20	- 40	- 20	- 40
Finland	81	65	48	- 20	- 40	- 20	- 40
Sweden	31	25	19	- 20	- 40	- 20	- 40

⁽¹⁾ Member States may for technical reasons delay for up to two years the phase 1 date for reduction in NO_x emissions by notifying the Commission within one month of the notification of this Directive.

⁽¹⁾ Additional emissions may arise from capacity authorised on or after 1 July 1987.

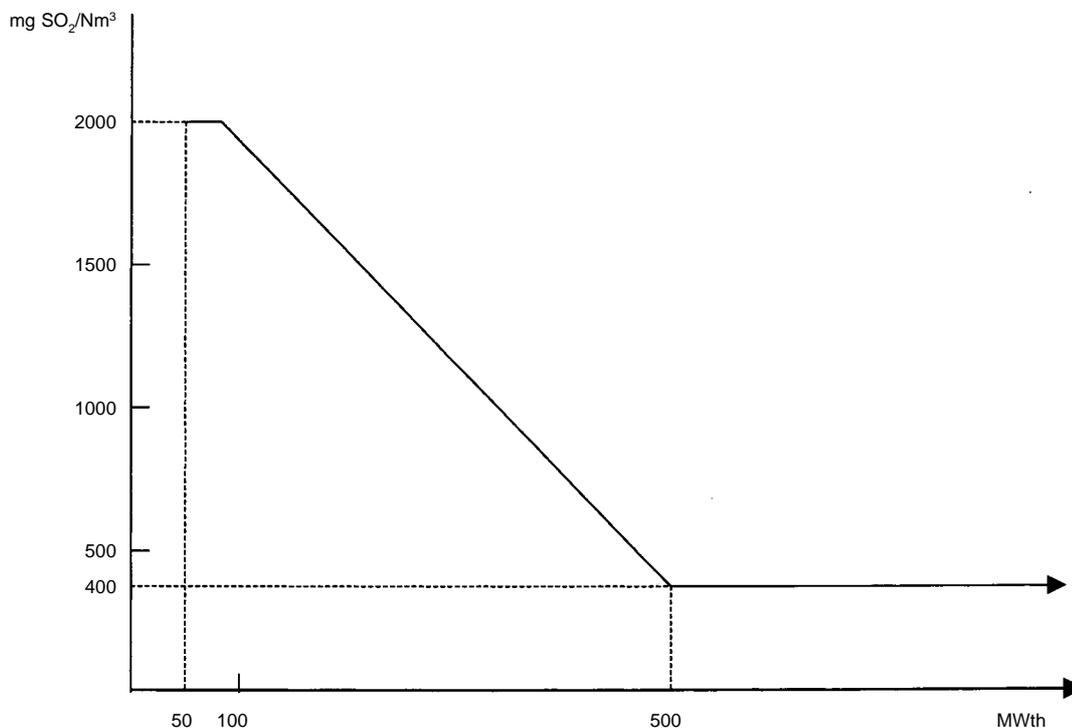
⁽²⁾ Emissions coming from combustion plants authorised before 1 July 1987 but not yet in operation before that date and which have not been taken into account in establishing the emission ceilings fixed by this Annex shall either comply with the requirements established by this Directive for new plants or be accounted for in the overall emissions from existing plants that must not exceed the ceilings fixed in this Annex.

ANNEX III

EMISSION LIMIT VALUES FOR SO₂

Solid fuel

- A. SO₂ emission limit values expressed in mg/Nm³ (O₂ content 6 %) to be applied by new and existing plants pursuant to Article 4(1) and 4(3) respectively:



NB. Where the emission limit values above cannot be met due to the characteristics of the fuel, a rate of desulphurisation of at least 60 % shall be achieved in the case of plants with a rated thermal input of less than or equal to 100 MWth, 75 % for plants greater than 100 MWth and less than or equal to 300 MWth and 90 % for plants greater than 300 MWth. For plants greater than 500 MWth, a desulphurisation rate of at least 94 % shall apply or of at least 92 % where a contract for the fitting of flue gas desulphurisation or lime injection equipment has been entered into, and work on its installation has commenced, before 1 January 2001.

- B. SO₂ emission limit values expressed in mg/Nm³ (O₂ content 6 %) to be applied by new plants pursuant to Article 4(2) with the exception of gas turbines.

Type of fuel	50 to 100 MWth	100 to 300 MWth	> 300 MWth
Biomass	200	200	200
General case	850	200 ⁽¹⁾	200

⁽¹⁾ Except in the case of the 'Outermost Regions' where 850 to 200 mg/Nm³ (linear decrease) shall apply.

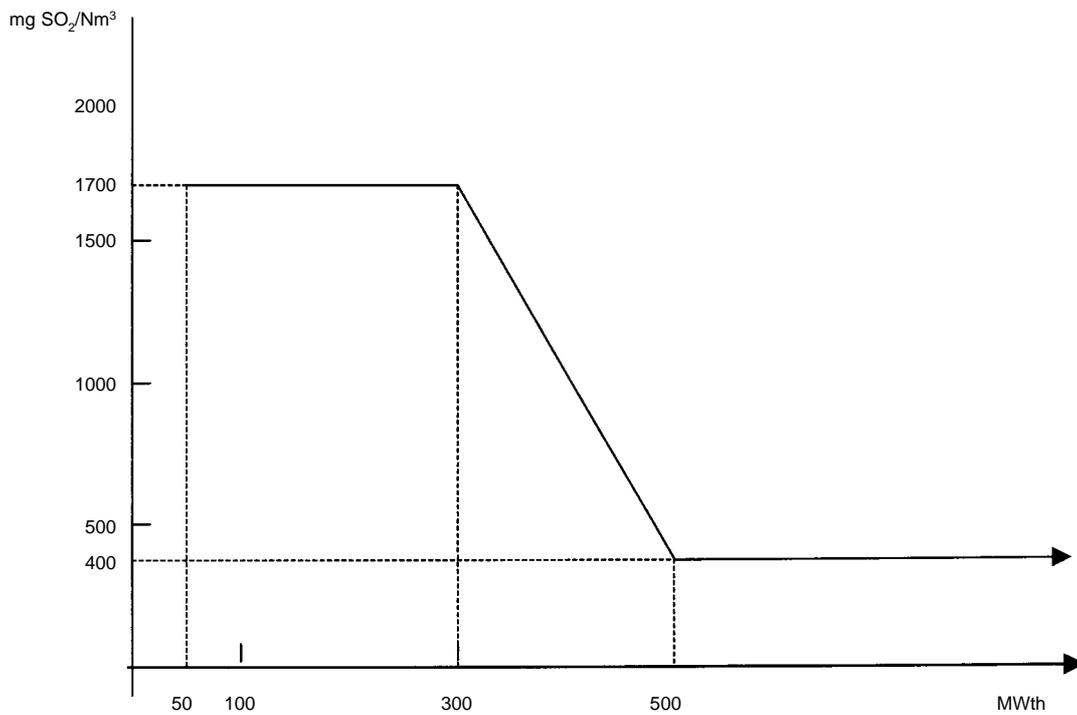
NB. Where the emission limit values above cannot be met due to the characteristics of the fuel, installations shall achieve 300 mg/Nm³ SO₂, or a rate of desulphurisation of at least 92 % shall be achieved in the case of plants with a rated thermal input of less than or equal to 300 MWth and in the case of plants with a rated thermal input greater than 300 MWth a rate of desulphurisation of at least 95 % together with a maximum permissible emission limit value of 400 mg/Nm³ shall apply.

ANNEX IV

EMISSION LIMIT VALUES FOR SO₂

Liquid fuels

- A. SO₂ emission limit values expressed in mg/Nm³ (O₂ content 3 %) to be applied by new and existing plants pursuant to Article 4(1) and 4(3), respectively:



- B. SO₂ emission limit values expressed in mg/Nm³ (O₂ content 3 %) to be applied by new plants pursuant to Article 4(2) with the exception of gas turbines:

50 to 100 MWth	100 to 300 MWth	> 300 MWth
850	400 to 200 (linear decrease) ⁽¹⁾	200

⁽¹⁾ Except in the case of the 'Outermost Regions' where 850 to 200 mg/Nm³ (linear decrease) shall apply.

In the case of two installations with a rated thermal input of 250 MWth on Crete and Rhodos to be licensed before 31 December 2007 the emission limit value of 1 700 mg/Nm³ shall apply.

ANNEX V

EMISSION LIMIT VALUES FOR SO₂

Gaseous fuels

- A. SO₂ emission limit values expressed in mg/Nm³ (O₂ content 3%) to be applied by new and existing plants pursuant to Article 4(1) and 4(3), respectively:

Type of fuel	Limit values (mg/Nm ³)
Gaseous fuels in general	35
Liquefied gas	5
Low calorific gases from gasification of refinery residues, coke oven gas, blast-furnace gas	800
Gas from gasification of coal	(¹)

(¹) The Council will fix the emission limit values applicable to such gas at a later stage on the basis of proposals from the Commission to be made in the light of further technical experience.

- B. SO₂ emission limit values expressed in mg/Nm³ (O₂ content 3%) to be applied by new plants pursuant to Article 4(2):

Gaseous fuels in general	35
Liquefied gas	5
Low calorific gases from coke oven	400
Low caloric gases from blast furnace	200

ANNEX VI

EMISSION LIMIT VALUES FOR NO_x (MEASURED AS NO₂)

- A. NO_x emission limit values expressed in mg/Nm³ (O₂ content 6 % for solid fuels, 3 % for liquid and gaseous fuels) to be applied by new and existing plants pursuant to Article 4(1) and 4(3), respectively:

Type of fuel:	Limit values ⁽¹⁾ (mg/Nm ³)
Solid ⁽²⁾ , ⁽³⁾ :	
50 to 500 MWth:	600
>500 MWth:	500
From 1 January 2016	
50 to 500 MWth:	600
>500 MWth:	200
Liquid:	
50 to 500 MWth:	450
>500 MWth:	400
Gaseous:	
50 to 500 MWth:	300
>500 MWth:	200

- ⁽¹⁾ Except in the case of the 'Outermost Regions' where the following values shall apply:

Solid in general: 650
Solid with < 10 % vol comps: 1 300
Liquid: 450
Gaseous: 350

- ⁽²⁾ Until 31 December 2015 plants of a rated thermal input greater than 500 MW, which from 2008 onwards do not operate more than 2 000 hours a year (rolling average over a period of five years), shall:
- in the case of plant licensed in accordance with Article 4(3)(a), be subject to a limit value for nitrogen oxide emissions (measured as NO₂) of 600 mg/Nm³;
 - in the case of plant subject to a national plan under Article 4(6), have their contribution to the national plan assessed on the basis of a limit value of 600 mg/Nm₃.
- From 1 January 2016 such plants, which do not operate more than 1 500 hours a year (rolling average over a period of five years), shall be subject to a limit value for nitrogen oxide emissions (measured as NO₂) of 450 mg/Nm³.
- ⁽³⁾ Until 1 January 2018 in the case of plants that in the 12 month period ending on 1 January 2001 operated on, and continue to operate on, solid fuels whose volatile content is less than 10 %, 1 200 mg/Nm³ shall apply.

- B. NO_x emission limit values expressed in mg/Nm³ to be applied by new plants pursuant to Article 4(2) with the exception of gas turbines

Solid fuels (O₂ content 6 %)

Type of fuel	50 to 100 MWth	100 to 300 MWth	> 300 MWth
Biomass	400	300	200
General case	400	200 ⁽¹⁾	200

⁽¹⁾ Except in the case of the 'Outermost Regions' where 300 mg/Nm³ shall apply.

Liquid fuels (O₂ content 3 %)

50 to 100 MWth	100 to 300 MWth	> 300 MWth
400	200 ⁽¹⁾	200

⁽¹⁾ Except in the case of the 'Outermost Regions' where 300 mg/Nm³ shall apply.

In the case of two installations with a rated thermal input of 250 MWth on Crete and Rhodos to be licensed before 31 December 2007 the emission limit value of 400 mg/Nm³ shall apply.

Gaseous fuels (O₂ content 3 %)

	50 to 300 MWth	> 300 MWth
Natural gas (note 1)	150	100
Other gases	200	200

Gas Turbines

NO_x emission limit values expressed in mg/Nm³ (O₂ content 15 %) to be applied by a single gas turbine unit pursuant to Article 4(2) (the limit values apply only above 70 % load):

	> 50 MWth (thermal input at ISO conditions)
Natural gas (Note 1)	50 (Note 2)
Liquid fuels (Note 3)	120
Gaseous fuels (other than natural gas)	120

Gas turbines for emergency use that operate less than 500 hours per year are excluded from these limit values. The operator of such plants is required to submit each year to the competent authority a record of such used time.

Note 1: Natural gas is naturally occurring methane with not more than 20 % (by volume) of inerts and other constituents.

Note 2: 75 mg/Nm³ in the following cases, where the efficiency of the gas turbine is determined at ISO base load conditions:

- gas turbines, used in combined heat and power systems having an overall efficiency greater than 75 %;
- gas turbines used in combined cycle plants having an annual average overall electrical efficiency greater than 55 %;
- gas turbines for mechanical drives.

For single cycle gas turbines not falling into any of the above categories, but having an efficiency greater than 35 % – determined at ISO base load conditions – the emission limit value shall be 50*η/35 where η is the gas turbine efficiency expressed as a percentage (and at ISO base load conditions).

Note 3: This emission limit value only applies to gas turbines firing light and middle distillates.

ANNEX VII

EMISSION LIMIT VALUES FOR DUST

- A. Dust emission limit values expressed in mg/Nm³ (O₂ content 6 % for solid fuels, 3 % for liquid and gaseous fuels) to be applied by new and existing plants pursuant to Article 4(1) and 4(3), respectively:

Type of fuel	Rated thermal input (MW)	Emission limit values (mg/Nm ³)
Solid	≥ 500	50 ⁽²⁾
	< 500	100
Liquid ⁽¹⁾	all plants	50
Gaseous	all plants	5 as a rule 10 for blast furnace gas 50 for gases produced by the steel industry which can be used elsewhere

⁽¹⁾ A limit value of 100 mg/Nm³ may be applied to plants with a rated thermal input of less than 500 MWth burning liquid fuel with an ash content of more than 0,06 %.

⁽²⁾ A limit value of 100 mg/Nm³ may be applied to plants licensed pursuant to Article 4(3) with a rated thermal input greater than or equal to 500 MWth burning solid fuel with a heat content of less than 5 800 kJ/kg (net calorific value), a moisture content greater than 45 % by weight, a combined moisture and ash content greater than 60 % by weight and a calcium oxide content greater than 10 %.

- B. Dust emission limit values expressed in mg/Nm³ to be applied by new plants, pursuant to Article 4(2) with the exception of gas turbines:

Solid fuels (O₂ content 6 %)

50 to 100 MWth	> 100 MWth
50	30

Liquid fuels (O₂ content 3 %)

50 to 100 MWth	> 100 MWth
50	30

In the case of two installations with a rated thermal input of 250 MWth on Crete and Rhodos to be licensed before 31 December 2007 the emission limit value of 50 mg/Nm³ shall apply.

Gaseous fuels (O₂ content 3 %)

As a rule	5
For blast furnace gas	10
For gases produced by the steel industry which can be used elsewhere	30

ANNEX VIII

METHODS OF MEASUREMENT OF EMISSIONS

A. Procedures for measuring and evaluating emissions from combustion plants.

1. *Until 27 November 2004*

Concentrations of SO₂, dust, NO_x shall be measured continuously in the case of new plants for which a licence is granted pursuant to Article 4(1) with a rated thermal input of more than 300 MW. However, monitoring of SO₂ and dust may be confined to discontinuous measurements or other appropriate determination procedures in cases where such measurements or procedures, which must be verified and approved by the competent authorities, may be used to obtain concentration.

In the case of new plants for which a licence is granted pursuant to Article 4(1) not covered by the first subparagraph, the competent authorities may require continuous measurements of those three pollutants to be carried out where considered necessary. Where continuous measurements are not required, discontinuous measurements or appropriate determination procedures as approved by the competent authorities shall be used regularly to evaluate the quantity of the above-mentioned substances present in the emissions.

2. *From 27 November 2002 and without prejudice to Article 18(2)*

Competent authorities shall require continuous measurements of concentrations of SO₂, NO_x, and dust from waste gases from each combustion plant with a rated thermal input of 100 MW or more.

By way of derogation from the first subparagraph, continuous measurements may not be required in the following cases:

- for combustion plants with a life span of less than 10 000 operational hours;
- for SO₂ and dust from natural gas burning boilers or from gas turbines firing natural gas;
- for SO₂ from gas turbines or boilers firing oil with known sulphur content in cases where there is no desulphurisation equipment;
- for SO₂ from biomass firing boilers if the operator can prove that the SO₂ emissions can under no circumstances be higher than the prescribed emission limit values.

Where continuous measurements are not required, discontinuous measurements shall be required at least every six months. As an alternative, appropriate determination procedures, which must be verified and approved by the competent authorities, may be used to evaluate the quantity of the above mentioned pollutants present in the emissions. Such procedures shall use relevant CEN standards as soon as they are available. If CEN standards are not available ISO standards, national or international standards which will ensure the provision of data of an equivalent scientific quality shall apply.

3. In the case of plants which must comply with the desulphurisation rates fixed by Article 5(2) and Annex III, the requirements concerning SO₂ emission measurements established under paragraph 2 of this point shall apply. Moreover, the sulphur content of the fuel which is introduced into the combustion plant facilities must be regularly monitored.
4. The competent authorities shall be informed of substantial changes in the type of fuel used or in the mode of operation of the plant. They shall decide whether the monitoring requirements laid down in paragraph 2 are still adequate or require adaptation.
5. The continuous measurements carried out in compliance with paragraph 2 shall include the relevant process operation parameters of oxygen content, temperature, pressure and water vapour content. The continuous measurement of the water vapour content of the exhaust gases shall not be necessary, provided that the sampled exhaust gas is dried before the emissions are analysed.

Representative measurements, i.e. sampling and analysis, of relevant pollutants and process parameters as well as reference measurement methods to calibrate automated measurement systems shall be carried out in accordance with CEN standards as soon as they are available. If CEN standards are not available ISO standards, national or international standards which will ensure the provision of data of an equivalent scientific quality shall apply.

Continuous measuring systems shall be subject to control by means of parallel measurements with the reference methods at least every year.

6. The values of the 95 % confidence intervals of a single measured result shall not exceed the following percentages of the emission limit values:

Sulphur dioxide	20 %
Nitrogen oxides	20 %
Dust	30 %

The validated hourly and daily average values shall be determined from the measured valid hourly average values after having subtracted the value of the confidence interval specified above.

Any day in which more than three hourly average values are invalid due to malfunction or maintenance of the continuous measurement system shall be invalidated. If more than ten days over a year are invalidated for such situations the competent authority shall require the operator to take adequate measures to improve the reliability of the continuous monitoring system.

B. Determination of total annual emissions of combustion plants

Until and including 2003 the competent authorities shall obtain determination of the total annual emissions of SO₂ and NO_x from new combustion plants. When continuous monitoring is used, the operator of the combustion plant shall add up separately for each pollutant the mass of pollutant emitted each day, on the basis of the volumetric flow rates of waste gases. Where continuous monitoring is not in use, estimates of the total annual emissions shall be determined by the operator on the basis of paragraph A.1 to the satisfaction of the competent authorities.

Member States shall communicate to the Commission the total annual SO₂ and NO_x emissions of new combustion plants at the same time as the communication required under paragraph C.3 concerning the total annual emissions of existing plants.

Member States shall establish, starting in 2004 and for each subsequent year, an inventory of SO₂, NO_x and dust emissions from all combustion plants with a rated thermal input of 50 MW or more. The competent authority shall obtain for each plant operated under the control of one operator at a given location the following data:

- the total annual emissions of SO₂, NO_x and dust (as total suspended particles).
- the total annual amount of energy input, related to the net calorific value, broken down in terms of the five categories of fuel: biomass, other solid fuels, liquid fuels, natural gas, other gases.

A summary of the results of this inventory that shows the emissions from refineries separately shall be communicated to the Commission every three years within twelve months from the end of the three-year period considered. The yearly plant-by-plant data shall be made available to the Commission upon request. The Commission shall make available to the Member States a summary of the comparison and evaluation of the national inventories within twelve months of receipt of the national inventories.

Commencing on 1 January 2008 Member States shall report annually to the Commission on those existing plants declared for eligibility under Article 4(4) along with the record of the used and unused time allowed for the plants' remaining operational life.

C. Determination of the total annual emissions of existing plants until and including 2003.

1. Member States shall establish, starting in 1990 and for each subsequent year until and including 2003, a complete emission inventory for existing plants covering SO₂ and NO_x:
 - on a plant by plant basis for plants above 300 MWth and for refineries;
 - on an overall basis for other combustion plants to which this Directive applies.
2. The methodology used for these inventories shall be consistent with that used to determine SO₂ and NO_x emissions from combustion plants in 1980.
3. The results of this inventory shall be communicated to the Commission in a conveniently aggregated form within nine months from the end of the year considered. The methodology used for establishing such emission inventories and the detailed base information shall be made available to the Commission at its request.
4. The Commission shall organise a systematic comparison of such national inventories and, if appropriate, shall submit proposals to the Council aiming at harmonising emission inventory methodologies, for the needs of an effective implementation of this Directive.

ANNEX IX

TIME-LIMITS FOR TRANSPOSITION AND IMPLEMENTATION OF THE REPEALED DIRECTIVE

(referred to in Article 17(1))

Directive	Time-limits for transposition	Time-limits for application
88/609/EEC (OJ L 336, 7.12.1988, p. 1)	30 June 1990	1 July 1990 31 December 1990 31 December 1993 31 December 1998 31 December 2003
94/66/EC (OJ L 337, 24.12.1994, p. 83)	24 June 1995	

ANNEX X

CORRELATION TABLE

(Referred to in Article 17(3))

This Directive	Directive 88/609/EEC
Article 1	Article 1
Article 2	Article 2
Article 3	Article 3
Article 4(1)	Article 4(1)
Article 4(2), (3) and (4)	
Article 4(5)	Article 4(3)
Article 4(6), (7) and (8)	
Article 5	Article 5
	Article 6
Article 6	
Article 7	Article 8
Article 8	Article 9
Article 9	Article 10
Article 10	Article 11
Article 11	Article 12
Article 12	Article 13(1)
Article 13	Article 14
Article 14	Article 15
Article 15(1), (2) and (3)	Article 16(1), (2) and (4)
Article 16	
Article 17	
Article 18(1), first subparagraph, and (3)	Article 17(1) and (2)
Article 18(1), second subparagraph, and (2) and Article 19	
Article 20	Article 18
Annexes I to VIII	Annexes I to IX
Annex IX and X	—