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**COUNCIL DIRECTIVE 94/67/EC  
of 16 December 1994  
on the incineration of hazardous waste**

(OJ L 365, 31.12.1994, p. 34)

Amended by:

	Official Journal		
	No	page	date
► <u>M1</u> Regulation (EC) No 1882/2003 of the European Parliament and of the Council of 29 September 2003	L 284	1	31.10.2003

Corrected by:

► C1 Corrigendum, OJ L 23, 30.1.1998, p. 39 (94/67/EC)



**COUNCIL DIRECTIVE 94/67/EC**  
**of 16 December 1994**  
**on the incineration of hazardous waste**

THE COUNCIL OF THE EUROPEAN UNION,

Having regard to the Treaty establishing the European Community, and in particular ►C1 Article 130s(1) thereof, ◀

Having regard to the proposal from the Commission <sup>(1)</sup>,

Having regard to the opinion of the Economic and Social Committee <sup>(2)</sup>,

Acting in accordance with the procedure laid down in Article 189c of the Treaty <sup>(3)</sup>,

Whereas the objectives and principles of the Community's environment policy as set out in Article 130r of the Treaty, aim in particular at preventing pollution, rectifying pollution by acting as a priority at source, and applying the principle that the polluter should pay;

Whereas Council resolution of 7 May 1990 on waste policy <sup>(4)</sup> invited the Commission to complete its proposals on incinerators for industrial waste, as a matter of urgency;

Whereas the incineration of hazardous waste gives rise to emissions which may cause pollution and thereby, unless properly controlled, harm human health and the environment; whereas in some cases there might be transboundary pollution;

Whereas preventive action is therefore required to protect the environment against dangerous emissions from the incineration of hazardous waste;

Whereas the current differences in national provisions applicable to the incineration of hazardous waste, and in some cases the absence of such provisions, justify action at Community level;

Whereas, in accordance with Article 130t of the Treaty, the adoption of this Directive will not prevent any Member State from maintaining or introducing more stringent measures for the protection of the environment compatible with the Treaty;

Whereas Article 4 of Council Directive 75/442/EEC of 15 July 1975 on waste <sup>(5)</sup>, requires Member States to take the necessary measures to ensure that waste is recovered or disposed of without endangering human health and without harming the environment; whereas, to this end, Article 9 of that Directive stipulates that any installation or undertaking treating waste must obtain a permit from the competent authorities relating, *inter alia*, to the precautions to be taken;

Whereas Articles 3 and 4 of Council Directive 84/360/EEC of 28 June 1984 on the combating of air pollution from industrial plants <sup>(6)</sup>, provide that prior authorization shall be required for the operation of industrial plants belonging to listed categories among which are waste incineration plants;

Whereas the purpose of the incineration plants established and operated under this Directive is to reduce the pollution-related risks of hazardous

<sup>(1)</sup> OJ No C 130, 21. 5. 1992, p. 1.

<sup>(2)</sup> OJ No C 332, 16. 12. 1992, p. 49.

<sup>(3)</sup> Opinion of the European Parliament of 10 March 1993 (OJ No C 115, 26. 4. 1993, p. 90), Council common position of 11 July 1994 (OJ No C 232, 20. 8. 1994, p. 35) and Decision of the European Parliament of 17 November 1994 (OJ No C 341, 5. 12. 1994).

<sup>(4)</sup> OJ No C 122, 18. 5. 1990, p. 2.

<sup>(5)</sup> OJ No L 194, 25. 7. 1975, p. 39. Directive as last amended by Directive 91/692/EEC (OJ No L 377, 31. 12. 1991, p. 48).

<sup>(6)</sup> OJ No L 188, 16. 7. 1984, p. 20. Directive as amended by Directive 91/692/EEC.

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waste through a process of oxidation, to reduce the quantity and volume of the waste and to produce residues that can be re-used or disposed of safely;

Whereas a high level of environmental protection requires the setting and maintaining of appropriate operating conditions and emission limit values for hazardous waste incineration plants within the Community; whereas special provisions are necessary in the case of emissions of dioxins and furans which it is essential to reduce by using the most progressive technology;

Whereas high-standard measurement techniques are required to monitor emissions to ensure compliance with the emission limit and guide values for the pollutants;

Whereas integrated protection of the environment against emissions resulting from the incineration of hazardous waste is required; whereas, therefore, aqueous waste resulting from the cleaning of exhaust gases may be discharged after separate treatment only, in order to limit a transfer of pollution from one environmental medium to another; whereas specific emission limit values for pollutants in such aqueous waste should be established within two years of the date of entry into force of this Directive;

Whereas provisions should be laid down for cases where the emission limit values are exceeded as well as for technically unavoidable stoppages, disturbances or failures of the purification devices;

Whereas the coincineration of hazardous waste in plants not primarily intended to incinerate hazardous waste should not be allowed to cause higher emissions of polluting substances in that part of the exhaust gas volume resulting from such coincineration and should therefore be subject to appropriate limitations;

Whereas, for better protection of human health and the environment, rapid adaptation of existing incineration plants to the emission limit values laid down in this Directive is required so as to avoid an increased transfer of hazardous wastes to such plants;

Whereas a committee should be set up to assist the Commission in implementing this Directive and adapting it to scientific and technical progress;

Whereas the reports on the implementation of this Directive are an important element for informing the Commission and Member States on the progress achieved in emission control techniques;

Whereas proposals for the revision of the emission limit values and related provisions of this Directive should be submitted to the Council before 31 December 2000 in the light of the expected development of the state of technology, of experience in the operation of incineration plants and of environmental requirements,

HAS ADOPTED THIS DIRECTIVE:

*Article 1*

1. The aim of this Directive is to provide for measures and procedures to prevent or, where that is not practicable, to reduce as far as possible negative effects on the environment, in particular the pollution of air, soil, surface and groundwater, and the resulting risks to human health, from the incineration of hazardous waste and, to that end, to set up and maintain appropriate operating conditions and emission limit values for hazardous waste incineration plants within the Community.

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2. This Directive applies without prejudice to other relevant Community legislation, in particular relating to waste and the protection of the health and safety of workers at incineration plants.

*Article 2*

For the purposes of this Directive:

1. 'hazardous waste' means any solid or liquid waste as defined in Article 1 (4) of Council Directive 91/689/EEC of 12 December 1991 on hazardous waste <sup>(1)</sup>.

The following hazardous wastes shall however be excluded from the scope of this Directive:

- combustible liquid wastes including waste oils as defined in Article 1 of Council Directive 75/439/EEC of 16 June 1975 on the disposal of waste oils <sup>(2)</sup> provided that they meet the following three criteria:
  - (i) the mass content of polychlorinated aromatic hydrocarbons, e.g. polychlorinated biphenyls (PCB) or pentachlorinated phenol (PCP), amounts to concentrations not higher than those set out in the relevant Community legislation;
  - (ii) these wastes are not rendered hazardous by virtue of containing other constituents listed in Annex II to Directive 91/689/EEC in quantities or in concentrations which are inconsistent with the achievement of the objectives set out in Article 4 of Directive 75/442/EEC; and
  - (iii) the net calorific value amounts to at least 30 MJ per kilogramme,
- any combustible liquid wastes which cannot cause, in the flue gas directly resulting from their combustion, emissions other than those from gasoil as defined in Article 1 (1) of Directive 75/716/EEC <sup>(3)</sup> or a higher concentration of emissions than those resulting from the combustion of gasoil as so defined,
- hazardous waste resulting from the exploration for and the exploitation of oil and gas resources from off-shore installations and incinerated on board,
- municipal waste covered by Directives 89/369/EEC <sup>(4)</sup> and 89/429/EEC <sup>(5)</sup>,
- sewage sludges from the treatment of municipal waste waters which are not rendered hazardous by virtue of containing constituents listed in Annex II to Directive 91/689/EEC in quantities or in concentrations, as defined by the Member States until the list of hazardous wastes referred to in Article 1 (4) of that Directive is established, which are inconsistent with the achievement of the objectives set out in Article 4 of Directive 75/442/EEC. This exclusion is without prejudice to Directive 86/278/EEC <sup>(6)</sup>;

<sup>(1)</sup> OJ No L 377, 31. 12. 1991, p. 20.

<sup>(2)</sup> OJ No L 194, 25. 7. 1975, p. 23. Directive as last amended by Directive 91/692/EEC.

<sup>(3)</sup> Council Directive 75/716/EEC of 24 November 1975 on the approximation of the laws of the Member States relating to the sulphur content of certain liquid fuels (OJ No L 307, 27. 11. 1975, p. 22). Directive as last amended by Directive 91/692/EEC.

<sup>(4)</sup> Council Directive 89/369/EEC of 8 June 1989 on the prevention of air pollution from new municipal waste incinerations plants (OJ No L 163, 14. 6. 1989, p. 32).

<sup>(5)</sup> Council Directive 89/429/EEC of 21 June 1989 on the reduction of air pollution from existing municipal waste incinerations plants (OJ No L 203, 15. 7. 1989, p. 50).

<sup>(6)</sup> Council Directive 86/278/EEC of 12 June 1986 on the protection of the environment and in particular of the soil, when sewage sludge is used in agriculture (OJ No L 181, 4. 7. 1986, p. 6). Directive as last amended by Directive 91/692/EEC.

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2. 'incineration plant' means any technical equipment used for the incineration by oxidation of hazardous wastes with or without recovery of the combustion heat generated, including pretreatment as well as pyrolysis or other thermal treatment processes, e. g. plasma process, insofar as their products are subsequently incinerated. This includes plants burning such wastes as a regular or additional fuel for any industrial process.

This definition covers the site and the entire installation comprising the waste reception, storage and pretreatment facilities, the incinerator, its wastes, fuel and air-supply systems, exhaust gas and waste water treatment facilities, and devices and systems for controlling incineration operations and continuously recording and monitoring incineration conditions.

The following plants are not covered by this definition:

- incinerators for animal carcasses or remains,
  - incinerators for infectious clinical waste provided that such waste is not rendered hazardous as a result of the presence of other constituents listed in Annex II to Directive 91/689/EEC, or
  - municipal waste incinerators also burning infectious clinical waste which is not mixed with other wastes which are rendered hazardous as a result of one of the other properties listed in Annex III to Directive 91/689/EEC;
3. 'new incineration plant' means a plant for which the permit to operate is granted on or after the date specified in Article 18 (1);
4. 'existing incineration plant' means a plant for which the original permit to operate is granted before the date specified in Article 18 (1);
5. 'emission limit value' means the mass concentration of polluting substances which is not to be exceeded in emissions from plants during a specified period;
6. 'operator' means any natural or legal person who operates the incineration plant, or who has or has been delegated decisive economic power over it.

### *Article 3*

1. The permit referred to in Articles 9 and 10 of Directive 75/442/EEC, in Article 11 of the said Directive, as complemented by Article 3 of Directive 91/689/EEC, and in Article 3 of Directive 84/360/EEC shall be granted only if the application shows that the incineration plant is designed, equipped and will be operated in such a manner that the appropriate preventive measures against environmental pollution will be taken and the requirements provided for in Articles 5 to 12 of this Directive will be met.

2. The permit granted by the competent authorities must explicitly list the types and quantities of those hazardous wastes which may be treated in the incineration plant as well as the total capacity of the incinerator.

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3. Where a plant not intended primarily to incinerate hazardous wastes is being fed with hazardous wastes (coincineration), the resulting heat release from which is no higher than 40 % inclusive of the total heat released in the plant at each moment of the operation, at least the following Articles shall apply:

- Articles 1 to 5,
- Article 6 (1) and (5),
- Article 7, including the provisions relating to the measurements referred to in Articles 10 and 11,
- Article 9,
- Articles 12, 13 and 14.

4. The permit for coincineration as described in paragraph 3 shall be granted only if it is demonstrated in the application:

- that the hazardous waste burners are located and the waste fed in such a way as to achieve a level of incineration as complete as possible, and
- with calculations as laid down in Annex II that the provisions of Article 7 will be met.

That permit shall explicitly list the types and quantities of those hazardous wastes which may be coincinerated in the plant. It shall, moreover, specify the minimum and maximum mass flows of those hazardous wastes, their lowest and maximum calorific values and their maximum contents of pollutants, e.g. PCB, PCP, chlorine, fluorine, sulphur, heavy metals.

The results of measurements carried out within six months after the start of operation, under the most unfavourable conditions anticipated, shall show that the provisions of Article 7 are complied with. For this period the competent authorities may grant exemptions from the percentage requirement stipulated in paragraph 3.

*Article 4*

Applications for permits and decisions of the competent authorities thereon, and the results of the monitoring provided for in Article 11 of this Directive, shall be made available to the public in accordance with Council Directive 90/313/EEC of 7 June 1990 on the freedom of access to information on the environment <sup>(1)</sup>.

*Article 5*

1. The operator shall take all necessary measures concerning the delivery and reception of waste in order to prevent or, where that is not practicable, to reduce as far as possible negative effects on the environment, in particular the pollution of air, soil, surface and groundwater, and the risks to human health. These measures shall cover at least the requirements set out in paragraphs 2 and 3.

2. Prior to accepting the waste at the incineration plant, the operator shall have available a description of the waste covering:

- the physical, and as far as practicable, the chemical composition of the waste and all information necessary to evaluate its suitability for the intended incineration process,
- the hazard characteristics of the waste, the substances with which it cannot be mixed, and the precautions to be taken in handling the waste.

3. Prior to accepting the waste at the incineration plant, at least the following reception procedures shall be carried out by the operator:

- determination of the mass of the waste,
- the checking of those documents required by Directive 91/689/EEC and, where applicable, those required by Council Regulation (EEC) No 259/93 of 1 February 1993 on the supervision and control of

<sup>(1)</sup> OJ No L 158, 23. 6. 1990, p. 56.

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- shipments of waste within, into and out of the European Community <sup>(1)</sup> and by dangerous goods transport regulations,
- the taking of representative samples, unless inappropriate, as far as possible before unloading, to verify conformity with the description provided for in paragraph 2 by carrying out controls and to enable the competent authorities to identify the nature of the wastes treated. These samples shall be kept for at least one month after the incineration.
4. The competent authorities may grant exemptions from paragraphs 2 and 3 for industrial plants and undertakings incinerating only their own waste at the place of production of the waste provided that the same level of protection is met.

*Article 6*

1. Plants for the incineration of hazardous wastes shall be operated in order to achieve a level of incineration as complete as possible. This may require the use of appropriate techniques of waste pretreatment.
2. All incineration plants shall be designed, equipped and operated in such a way that the gas resulting from the incineration of the hazardous waste is raised, after the last injection of combustion air, in a controlled and homogeneous fashion and even under the most unfavourable conditions anticipated, to a temperature of at least 850 °C, as achieved at or near the inner wall of the combustion chamber, for at least two seconds in the presence of at least 6 % oxygen; if hazardous wastes with a content of more than 1 % of halogenated organic substances, expressed as chlorine, are incinerated, the temperature has to be raised to at least 1 100 °C.

When the furnace is fuelled with liquid hazardous waste only or with a mixture of gaseous substances and powdered solids from a thermal pretreatment of hazardous waste under oxygen deficiency, and when the gaseous part accounts for more than 50 % of the entire heat released, the oxygen content after the last injection of combustion air shall amount to at least 3 %.

3. All incineration plants shall be equipped with burners which switch on automatically when the temperature of the combustion gases, after the last injection of combustion air, falls below the relevant minimum temperature stated in paragraph 2. Such burners shall also be used during plant start-up or shut-down operations in order to ensure that the relevant minimum temperature is maintained while unburnt waste is in the combustion chamber.

During start-up and shut-down or when the temperature of the combustion gases falls below the relevant minimum temperature stated in paragraph 2, the burners must not be fed with fuels which can cause higher emissions than those resulting from the burning of gasoil as defined in Article 1 (1) of Directive 75/716/EEC, liquefied gas or natural gas.

It is mandatory to have and to operate a system to prevent hazardous waste feed:

- at start-up, until the required minimum incineration temperature has been reached,
  - whenever the required minimum incineration temperature is not maintained,
  - whenever the continuous measurements required by Article 11 (1) (a) show that any emission limit value is exceeded owing to disturbances or failures of the purification devices.
4. Requirements different from those laid down in paragraph 2 and specified in the permit for certain hazardous wastes may be authorized by the competent authorities. Such authorization shall be conditional upon at least the provisions of Article 7 being complied with and the levels of dioxins and furans emitted being lower or equivalent to those

<sup>(1)</sup> OJ No L 30, 6. 2. 1993, p. 1.

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obtained by applying the requirements laid down in paragraph 2 of the present Article.

All operating conditions determined under the provisions of this paragraph and the results of verifications made shall be communicated to the Commission as part of the information provided in accordance with Article 17.

5. During the operation of the incineration plant the following limit values for carbon monoxide (CO) concentrations shall not be exceeded in the combustion gases:

- (a) 50 mg/m<sup>3</sup> of combustion gas determined as daily average value;
- (b) 150 mg/m<sup>3</sup> of combustion gas of at least 95 % of all measurements determined as 10-minute average values or 100 mg/m<sup>3</sup> of combustion gas of all measurements determined as half-hourly average values taken in any 24-hour period.

6. All incineration plants shall be designed, equipped and operated in such a way as to prevent emissions into the air giving rise to significant ground-level air pollution; in particular, exhaust gases shall be discharged in a controlled fashion by means of a stack.

The stack height shall be calculated in such a way as to safeguard human health and the environment.

*Article 7*

1. These average values also cover the gaseous and the vapour forms of the relevant heavy metal emissions as well as their compounds.

**(a) Daily average values:**

- |   |                      |
|---|----------------------|
| 1. Total dust   | 10 mg/m <sup>3</sup> |
| 2. Gaseous and vaporous organic substances, expressed as total organic carbon | 10 mg/m <sup>3</sup> |
| 3. Hydrogen chloride (HCl)  | 10 mg/m <sup>3</sup> |
| 4. Hydrogen fluoride (HF)   | 1 mg/m <sup>3</sup>  |
| 5. Sulphur dioxide (SO <sub>2</sub> )   | 50 mg/m <sup>3</sup> |

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**(b) Half-hourly average values:**

- |   |                       |                      |
|---|-----------------------|----------------------|
| 1. Total dust   | 30 mg/m <sup>3</sup>  | 10 mg/m <sup>3</sup> |
| 2. Gaseous and vaporous organic substances, expressed as total organic carbon | 20 mg/m <sup>3</sup>  | 10 mg/m <sup>3</sup> |
| 3. Hydrogen chloride (HCl)  | 60 mg/m <sup>3</sup>  | 10 mg/m <sup>3</sup> |
| 4. Hydrogen fluoride (HF)   | 4 mg/m <sup>3</sup>   | 2 mg/m <sup>3</sup>  |
| 5. Sulphur dioxide (SO <sub>2</sub> )   | 200 mg/m <sup>3</sup> | 50 mg/m <sup>3</sup> |

**(c) All average values over the sample period of a minimum of 30 minutes and a maximum of eight hours;**

- |   |  |
|---|--|
| 1. Cadmium and its compounds, expressed as cadmium (Cd)   | } total 0,05 mg/m <sup>3</sup> (*)0,1 mg/m <sup>3</sup> (**) |
| 2. Thallium and its compounds, expressed as thallium (TI) |  |

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3. Mercury and its compounds, expressed as mercury (Hg)	}	0,05 mg/m <sup>3</sup> (*) 0,1 mg/m <sup>3</sup> (**)
4. Antimony and its compounds, expressed as anti- mony (Sb)		
5. Arsenic and its compounds, expressed as arsenic (As)	}	total 0,5 mg/m <sup>3</sup> (*) 1 mg/m <sup>3</sup> (**)
6. Lead and its compounds, expressed as lead (Pb)		
7. Chromium and its compounds, expressed as chro- mium (Cr)		
8. Cobalt and its compounds, expressed as cobalt (Co)		
9. Copper and its compounds, expressed as copper (Cu)		
10. Manganese and its compounds, expressed as manganese (Mn)		
11. Nickel and its compounds, expressed as nickel (Ni)		
12. Vanadium and its compounds, expressed as vana- dium (V)		
13. Tin and its compounds, expressed as tin (Sn)		

Incineration plants shall be designed, equipped and operated in such a way that at least the following emission limit values are not exceeded in the exhaust gases:

(\*) New plants.

(\*\*) Existing plants.

2. The emission of dioxins and furans shall be reduced by the most progressive techniques. At the latest from 1 January 1997, all average values measured over the sample period of a minimum of six hours and a maximum of eight hours shall not exceed a limit value of 0,1 ng/m<sup>3</sup> unless, at least six months before that date, the availability of harmonized measurement methods has not been established at Community level by the Commission acting in accordance with the procedure laid down in Article 16. This limit value is defined as the sum of the concentrations of the individual dioxins and furans evaluated in accordance with Annex I.

Until the date of application of this limit value, Member States shall use this value at least as a guide value.

3. The results of the measurements made to verify compliance with the limit and guide values set out in Article 6 and in this Article shall be standardized at the conditions laid down in Article 11 (2).

4. Where hazardous wastes are co-incinerated in accordance with Article 3 (3), the provisions of Article 6 (5) and paragraphs 1, 2 and 3 of this Article shall only apply, according to the criteria laid down in Annex II, to that part of the volume of exhaust gas resulting from the incineration of the hazardous wastes.

Appropriate emission limit and guide values for the relevant pollutants emitted in the exhaust gas of the plants referred to in Article 3 (3) shall be determined in accordance with Annex II.

*Article 8*

1. Any waste water discharged from an incineration plant shall be subject to a permit granted by the competent authorities.

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2. Discharges to the aquatic environment of aqueous waste resulting from the cleaning of exhaust gases shall be limited as far as possible.

Subject to a specific provision in the permit, the aqueous wastes may be discharged after separate treatment on condition that:

- the requirements of relevant Community, national and local provisions are complied with in the form of emission limit values, and
- the mass of heavy metals, dioxins and furans contained in those aqueous wastes in relation to the quantity of hazardous waste processed is reduced in such a way that the mass allowed to be discharged to water is less than that allowed to be discharged into the air.

3. Without prejudice to paragraph 2, the Council, acting on a proposal from the Commission, shall establish within two years of the entry into force of this Directive a set of specific limit values for the pollutants contained in the effluents from the cleaning of exhaust gases to be discharged.

4. Incineration plant sites including associated storage areas for hazardous wastes shall be designed and operated in such a way as to prevent the release of any polluting substance into soil and groundwater following the provisions of Council Directive 80/68/EEC of 17 December 1979 on the protection of groundwater against pollution caused by certain dangerous substances<sup>(1)</sup>. Moreover, storage capacity shall be provided for rainwater runoff from the incineration plant site or for contaminated water arising from spillages or firefighting operations. This storage capacity shall be adequate to ensure that such waters can be tested and treated before discharge where necessary.

*Article 9*

1. Residues resulting from the operation of the incineration plant shall be recovered or disposed of in accordance with Directives 75/442/EEC and 91/689/EEC. This may require a pretreatment of the residues. Such residues should be kept separate from each other pending assessment of their recovery or disposal; in order to further facilitate these, the appropriate technologies should be applied.

2. Transport and intermediate storage of dry residues in the form of dust, e.g. boiler dust and dry residues from the treatment of exhaust gases, shall take place in closed containers.

3. Any heat generated by the incineration processes should be used as far as possible.

4. Prior to determining the routes for the disposal or recovery of the residues from incineration, appropriate tests shall be carried out to establish the physical and chemical characteristics and the polluting potential of the different incineration residues. The analysis shall concern in particular the soluble fraction and heavy metals.

*Article 10*

1. Measurement requirements in order to monitor in accordance with Article 11 the parameters, conditions and mass concentrations of the pollutants relevant to the incineration process shall be laid down in the permit or in the conditions attached to the permit issued by the competent authorities or in the relevant general binding rules on measurement requirements.

2. The permit shall only be granted if the application shows that the proposed measurement techniques comply with Annex III. The values of the confidence interval (95 %) at the emission limit values given in Article 6 (5) (a) and Article 7 (1) (a), Nos 1, 2, 3 and 5, shall not exceed the values given in Annex III, point 4.

<sup>(1)</sup> OJ No L 20, 26. 1. 1980, p. 43. Directive as last amended by Directive 91/692/EEC.

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The appropriate installation and the functioning of the automated monitoring equipment shall be subject to control and to an annual surveillance test.

3. The sampling and measurement procedures used to satisfy the obligations imposed for periodical measurements of each air pollutant and the location of the sampling or measurement points shall be specified in the permit granted by the competent authorities, or in the conditions attached to the permit or in the relevant general binding rules on sampling and measurement procedures.

The requirements for periodical measurements shall be fixed by the competent authorities in accordance with Annex III.

*Article 11*

1. The following measurements shall be carried out in accordance with Annex III at the incineration plant:

- (a) continuous measurements of the substances referred to in Article 6 (5) and Article 7 (1) (a) and (b);
- (b) continuous measurements of the following process operation parameters:
  - temperature as referred to in Article 6 (2) and (4),
  - concentration of oxygen, pressure, temperature and water vapour content of the exhaust gas;
- (c) at least two measurements per year of the substances referred to in Article 7 (1) (c) and (2); one measurement every two months shall however be carried out for the first 12 months of operation;
- (d) the residence time, the relevant minimum temperature and the oxygen content of the exhaust gases as specified in Article 6 (2) and (4) shall be subject to appropriate verification, at least once when the incineration plant is brought into service and under the most unfavourable operating conditions anticipated.

The continuous measurement of HF may be omitted if treatment stages for HCl are used which make sure that the emission limit value under Article 7 (1) (a) (3) and (1) (b) (3) is not being exceeded. In this case the emissions of HF shall be subject to periodical measurements.

The continuous measurement of the water vapour content shall not be necessary, provided that the sampled exhaust gas is dried before the emissions are analysed.

Measurements of the pollutants listed in Article 7 (1) shall not be necessary, provided that the permit allows the incineration of only those hazardous wastes which cannot cause average values of those pollutants higher than 10 % of the emission limit values set out in Article 7 (1).

The Commission, acting in accordance with the procedure laid down in Article 16, shall decide, as soon as appropriate measurement techniques are available within the Community, the date from which continuous measurements of the substances referred to in Article 7 (1) (c) and (2) are to be carried out in accordance with Annex III.

2. The results of the measurements made to verify compliance with the emission limit and guide values set out in Articles 6 and 7 shall be standardized at the following conditions:

- Temperature 273 K, pressure 101,3 kPa, 11 % oxygen, dry gas,
- Temperature 273 K, pressure 101,3 kPa, 3 % oxygen, dry gas, in case of incineration of waste oil only as defined in Directive 75/439/EEC.

When the hazardous wastes are incinerated in an oxygen-enriched atmosphere, the results of the measurements can be standardized at an oxygen content laid down by the competent authorities reflecting the special circumstances of the individual case. In a case covered by Article 3 (3), the results of the measurements shall be standardized at a total oxygen content as calculated in Annex II.

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When the emissions of pollutants are reduced by exhaust gas treatment, the standardization with respect to the oxygen contents provided for in the first subparagraph shall be done only if the oxygen content measured over the same period as for the pollutant concerned exceeds the relevant standard oxygen content.

3. The emission limit values are complied with if:
  - all the daily average values do not exceed the emission limit values set out in Article 6 (5) (a) and Article 7 (1) (a), and either all the half-hourly average values over the year do not exceed the emission limit values set out in column A of Article 7 (1) (b), or 97 % of the half-hourly average values over the year do not exceed the emission limit values set out in column B of Article 7 (1) (b),
  - all average values over the sample period set out in Article 7 (1) (c) do not exceed the emission limit values set out in that subparagraph,
  - the provisions of Article 6 (5) (b) are complied with.

The average values determined within the periods referred to in Article 12 (2) shall be excluded from the judgment on compliance.

The half-hourly average values and the 10-minute averages shall be determined within the effective operating time (including the start-up and shut-off periods when hazardous waste is being incinerated) from the measured values after having subtracted the value of the confidence interval specified in point 4 of Annex III. The daily average values shall be determined from those validated average values.

The average values over the sample period and, in the case of periodical measurements of HF, the average values for HF shall be determined in accordance with the requirements of Article 10 (3).

#### *Article 12*

1. Should the measurements taken show that the emission limit values laid down in this Directive have been exceeded, the competent authorities shall be informed without delay. The plant concerned shall not continue to feed hazardous waste while failing to comply with emission limit values, until such time as the competent authorities allow the resumption of the feeding of such waste.

2. The competent authorities shall lay down the maximum permissible period of any technically unavoidable stoppages, disturbances, or failures of the purification devices or the measurement devices, during which the concentrations in the discharges into the air of the regulated substances may exceed the emission limit values laid down. Under no circumstances shall the plant continue to incinerate hazardous waste for a time period of more than four hours uninterrupted; moreover, the cumulative duration of operation in such conditions over one year shall be less than 60 hours.

In case of a breakdown, the operator shall reduce or close down operations as soon as practicable until normal operations can be restored. In plants covered by Article 3 (3) feeding of hazardous wastes shall be stopped.

The total dust content of the discharges shall under no circumstances exceed 150 mg/m<sup>3</sup> expressed as a half-hourly average; moreover, the emission limit value laid down in Article 7 (1) (a) (2) and (1) (b) (2) must not be exceeded. All other conditions referred to in Article 6 shall be complied with.

#### *Article 13*

1. The provisions of this Directive shall apply to existing incineration plants within three years and six months after the date specified in Article 18 (1).

2. However, the operator may notify the competent authorities within six months after the date specified in Article 18 (1) that the

**▼B**

existing plant will not be operated for more than 20 000 hours within a period of five years at maximum, starting from the operator's notification, before being definitely shut down. In this case the provisions of paragraph 1 shall not apply.

*Article 14*

Before 31 December 2000, and notably in the light of the expected development of the state of technology, of experience in the operation of the plants, and of environmental requirements, the Commission shall submit to the Council a report, based on experience of the application of the Directive and on the progress achieved in emission control techniques, accompanied by proposals for revision of the emission limit values and related provisions referred to in this Directive.

Any emission limit value established following such revision shall not apply to existing incineration plants before 31 December 2006.

*Article 15*

The Commission, acting in accordance with the procedure laid down in Article 16, shall adopt the amendments required to adapt to technical progress the provisions of Articles 10 to 12 and Annexes I to III.

**▼M1***Article 16*

1. The Commission shall be assisted by a committee.
2. Where reference is made to this Article, Articles 5 and 7 of Decision 1999/468/EC <sup>(1)</sup> shall apply, having regard to the provisions of Article 8 thereof.

The period laid down in Article 5(6) of Decision 1999/468/EC shall be set at three months.

3. The Committee shall adopt its rules of procedure.

**▼B***Article 17*

The reports on the implementation of this Directive shall be established in accordance with the procedure laid down in Article 5 of Directive 91/692/EEC. The first report shall cover the first full three-year period after the entry into force of this Directive.

*Article 18*

1. Member States shall bring into force the laws, regulations and administrative provisions necessary to comply with this Directive before 31 December 1996. They shall forthwith inform the Commission thereof.

When Member States adopt these measures, 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. Member States shall communicate to the Commission the texts of the provisions of domestic 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*

<sup>(1)</sup> Council Decision 1999/468/EC of 28 June 1999 laying down the procedures for the exercise of implementing powers conferred on the Commission (OJ L 184, 17.7.1999, p. 23).

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*Article 20*

This Directive is addressed to the Member States.

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## ANNEX I

**EQUIVALENCE FACTORS FOR DIOXINS AND DIBENZOFURANS**

For the determination of the summed value referred to in Article 7 (2) the mass concentrations of the following dioxins and dibenzofurans have to be multiplied by the following equivalence factors before summing up (using the concept of toxic equivalents).

*Toxic equivalence factor*

2,3,7,8	— Tetrachlorodibenzodioxin (TCDD)	1
1,2,3,7,8	— Pentachlorodibenzodioxin (PeCDD)	0,5
1,2,3,4,7,8	— Hexachlorodibenzodioxin (HxCDD)	0,1
1,2,3,7,8,9	— Hexachlorodibenzodioxin (HxCDD)	0,1
1,2,3,6,7,8	— Hexachlorodibenzodioxin (HxCDD)	0,1
1,2,3,4,6,7,8	— Heptachlorodibenzodioxin (HpCDD)	0,01
	— Octachlorodibenzodioxin (OCDD)	0,001
2,3,7,8	— Tetrachlorodibenzofuran (TCDF)	0,1
2,3,4,7,8	— Pentachlorodibenzofuran (PeCDF)	0,5
1,2,3,7,8	— Pentachlorodibenzofuran (PeCDF)	0,05
1,2,3,4,7,8	— Hexachlorodibenzofuran (HxCDF)	0,1
1,2,3,7,8,9	— Hexachlorodibenzofuran (HxCDF)	0,1
1,2,3,6,7,8	— Hexachlorodibenzofuran (HxCDF)	0,1
2,3,4,6,7,8	— Hexachlorodibenzofuran (HxCDF)	0,1
1,2,3,4,6,7,8	— Heptachlorodibenzofuran (HpCDF)	0,01
1,2,3,4,7,8,9	— Heptachlorodibenzofuran (HpCDF)	0,01
	— Octachlorodibenzofuran (OCDF)	0,001



## ANNEX II

**DETERMINATION OF EMISSION LIMIT AND GUIDE VALUES FOR THE COINCINERATION OF HAZARDOUS WASTE**

The limit or guide value for each relevant pollutant and carbon monoxide in the exhaust gas resulting from the coincineration of hazardous waste must be calculated as follows:

$$\frac{V_{\text{waste}} \times C_{\text{waste}} + V_{\text{proc}} \times C_{\text{proc}}}{V_{\text{waste}} + V_{\text{proc}}} = C$$

$V_{\text{waste}}$ : exhaust gas volume resulting from the incineration of hazardous waste only determined from the waste with the lowest calorific value specified in the permit and standardized at the conditions given in Article 11 (2).

If the resulting heat release from the incineration of hazardous waste amounts to less than 10 % of the total heat released in the plant,  $V_{\text{waste}}$  must be calculated from a (notional) quantity of waste that, being incinerated, would equal 10 % heat release, the total heat release being fixed.

$C_{\text{waste}}$ : emission limit values set for plants intended to incinerate hazardous wastes only (at least the emission limit values and guide value for the pollutants and carbon monoxide as laid down in Article 7 (1) and (2) and Article 6 (5)).

$V_{\text{proc}}$ : exhaust gas volume resulting from the plant process including the combustion of the authorized fuels normally used in the plant (hazardous wastes excluded) determined on the basis of oxygen contents at which the emissions must be standardized as laid down in Community or national regulations. In the absence of regulations for this kind of plant, the real oxygen content in the exhaust gas without being thinned by addition of air unnecessary for the process must be used. The standardization at the other conditions is given in Article 11 (2).

$C_{\text{proc}}$ : emission limit values for the relevant pollutants and carbon monoxide in the flue gas of plants which comply with the national laws, regulations and administrative provisions for such plants while burning the normally authorized fuels (hazardous wastes excluded). In the absence of these measures the emission limit values laid down in the permit are used. In the absence of such permit values the real mass concentrations are used.

$C$ : total emission limit value or guide value for CO and the relevant pollutants replacing the emission limit values and the guide value as laid down in Article 6 (5) and in Article 7 (1) and (2). The total oxygen content to replace the oxygen content for the standardization in Articles 6 and 7 is calculated on the basis of the content above respecting the partial volumes.

Pollutants and CO not resulting directly from the incineration of hazardous wastes or from the combustion of fuels e.g. from materials necessary for production or from products), as well as CO directly resulting from such incineration or combustion if

- the higher CO concentrations in the combustion gas are required by the production process, and
- $C_{\text{waste}}$  (as defined above) for dioxins and furans is met,

shall not be taken into account.

In any case, given the authorized hazardous wastes which can be coincinerated, the total emission limit value ( $C$ ) must be calculated in such a way as to minimize the emissions into the environment.

*ANNEX III***MEASUREMENT TECHNIQUES**

1. Measurements for the determination of concentrations of air pollutants in gas-carrying products have to be carried out representatively.
2. Sampling and analysis of all pollutants including dioxins and furans as well as reference measurement methods to calibrate automated measurement systems shall be carried out as given by CEN-standards elaborated on the basis of orders placed by the Commission. While awaiting the elaboration of the CEN-standards, national standards shall apply.
3. The procedure to monitor dioxins and furans can only be authorized if the detection limit for the sampling and analysis of the individual dioxins and furans is sufficiently low to allow the determination of a meaningful result in terms of toxicity equivalents.
4. The values of the 95 % confidence intervals determined at the emission limit values shall not exceed the following percentages of the emission limit values:

Carbon monoxide (Article 6 (5) (a)):	10 %
Sulphur dioxide (Article 7 (1) (a) (5)):	20 %
Total dust (Article 7 (1) (a) (1)):	30 %
Total organic carbon (Article 7 (1) (a) (2)):	30 %
Hydrogen chloride (Article 7 (1) (a) (3)):	40 %