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PROPOSAL FOR

A COUNCIL DIRECTIVE ON THE PREVENTION OF AIR POLLUTION FROM
NEW MUNICIPAL WASTE INCINERATION PLANTS

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A COUNCIL DIRECTIVE ON THE REDUCTION OF AIR POLLUTION FROM
EXISTING MUNICIPAL WASTE INCINERATION PLANTS

(submitted by the Commission)

EXPLANATORY MEMORANDUM

1. Municipal waste incineration in the Community

1.1. The most recent estimates put the volume of municipal waste generated in the Community at 110 million tonnes per annum. This municipal waste comprises domestic, office and trade refuse, and waste from undertakings that is equivalent in composition to domestic waste.

1.2. Controlled tipping is currently the most widely used disposal method in the Community as a whole and in each Member State. Thus almost 75% of the annual volume of municipal waste is disposed of in land fills while the remaining 25% is incinerated. However, the specific situation of certain Member States deviates considerably from this mean. Portugal and Ireland, for instance, do not incinerate waste and Greece has only one small-scale incineration plant, while over 30% of municipal waste is incinerated in Germany and the Netherlands and almost 40% in France.

- 1.3. The composition of the waste incinerated varies greatly :
- from one country to another
 - from one site to another in a given country
 - for a given incinerator over a period of time (seasonal and temporary variations).

By way of a guide, the average composition of domestic waste for the Community as a whole can be taken to be as follows :

paper/board/wood	30%
plastics	5%
metals	5%
putrescible matter	35%
inert/fine-grained/miscellaneous materials	25%

1.4. There are about 525 waste incineration plants in the Community, 38% of which have a nominal capacity greater than 6 tonnes/hour, 51% between 1 and 6 tonnes/hour and 11% less than 1 tonne/hour. In the case of France, however, small and medium-scale plants account for 83% of the total installed capacity, while 89% of the plant in Germany and 100% of the plant in the Netherlands has a capacity greater than 6 tonnes/hour.

1.5. Of the municipal waste incinerated in the Community, 88% is burnt in incinerators with a nominal capacity greater than 6 tonnes/hour, while only 1% of the total is incinerated in small plants (capacity lower than 1 tonne/hour). However, there are considerable differences in this respect, too, between Member States.

1.6. With regard to treatment of the combustion gases :

- 7% of the incinerators currently in operation in the Community are equipped both with electrostatic precipitators and gas scrubbing equipment;
- 36% of the incinerators are equipped only with electrostatic precipitators;
- 35% are equipped with mechanical dust separation equipment (cyclones, multicyclones);
- 22% of the incinerators have no equipment for treating combustion gases.

2. Legislation on municipal waste incineration in the Community, from the point of view of prevention of air pollution

2.1. Several Community instruments of a general nature are applicable to waste incineration, more particularly to the prevention of air pollution from municipal waste incineration plants. Council Directive 75/442/EEC of 15 July 1975 on waste (OJ No L 194, 25.7.1975, p. 9) provides for waste to be disposed of without endangering human health or the environment. To this end, the Directive provides that any installation or undertaking treating waste must obtain from the competent authority a permit concerning, among other things, precautions to be taken.

Council Directive 84/360/EEC of 28 June 1984 on the combating of air pollution from industrial plants (OJ No L 188, 18.7.1984, p. 20) makes the operation of new industrial installations and in particular waste incineration plants subject to prior authorization, and provides that this authorization may be issued only if all appropriate preventive measures against air pollution have been taken, including the application of the best available technology not entailing excessive costs.

In addition, the Directive provides that Member States shall implement policies and strategies, including appropriate measures, for the gradual adaptation of existing plants to the best available technology. These provisions apply in particular to existing municipal waste incineration plants.

Finally, Council Directive 85/337/EEC of 27 June 1985 on the assessment of the effects of certain public and private projects on the environment (OJ No L 175, 5.7.1985, p. 40) provides that installations for the disposal of domestic waste shall be made subject to an impact assessment where Member States consider that their characteristics so require.

2.2. In the general context of national provisions on environmental protection and, more particularly, the prevention or reduction of air pollution and waste management, the incineration of waste is subject in all Member States to conditions designed to limit the impact on health and the environment.

However, only five Member States have adopted specific detailed provisions designed to prevent air pollution from municipal waste incinerators. Furthermore, these provisions differ widely from country to country, from the the point of view both of their legal form and of their content.

- 2.3. This section summarizes the specific provisions in force in some Member States regarding municipal waste incinerators, highlighting the aspects relevant to the prevention of air pollution.

FRANCE

Decree of 9 June 1986 of the Minister of the Environment on municipal waste incineration plants.

This decree applies to all new plants and to plants for which extension work is authorized after the date of publication in the decree.

It sets out :

- the details of the impact study required for these plants;
- the characteristics of and the management procedure applicable to the waste accepted;
- the following combustion conditions :
 - . 750°C in the combustion or secondary combustion chamber
 - . 7% oxygen content in the gases during the residence time at the stipulated temperature
 - . minimum residence time of two seconds under the conditions defined above
 - . limit value of 100 mg/Nm³ for CO concentration in the combustion gases;
- the criteria for calculating stack height;
- the characteristics of the measurement equipment;
- provisions on noise emissions, residues and liquid effluents from the plant;
- the following emission limit values :

Pollutant	6 t/h	1-6 t/h	1 t/h
dust	50 mg/Nm ³	150 mg/Nm ³	600 mg/Nm ³
HCL	100 mg/Nm ³	250 mg/Nm ³	-
HC	10 ppm	10 ppm	30 ppm
Cu, Pb, Zn, Ni, Cr, Sn, Ag, Co, Ba	5 mg/Nm ³	6 mg/Nm ³	-
Hg + Cd	0,3 mg/Nm ³	-	-
As	1 mg/Nm ³	-	-

- provisions regarding down-time of purification equipment.

FEDERAL REPUBLIC OF GERMANY

The first General Administration Regulation implementing the Federal Law on the protection of air quality (Technical Instructions for Maintaining Air Purity - TA-Luft) was adopted by the Federal Government on 28 February 1986.

It applies to new plants and to existing plants that undergo modifications. It sets time limits for the adaptation of existing plants.

This sets out :

- the management procedure for the waste accepted;
- auxiliary combustion systems;
- the following combustion conditions :
 - . a minimum temperature of 800°C must be obtained in the secondary combustion chamber during an adequate residence time
 - . a minimum oxygen content of 6% must be assured under the conditions defined above
 - . a maximum concentration of 100 mg/Nm³ for CO and 20 mg for organic compounds expressed as total carbon must be respected;
- the following emission limit values :
 - . dust 30 mg/Nm³
 - . Cd + Hg 0,2 mg/Nm³
 - . As + Co + Ni 1 mg/Nm³

- . Sn + Pb + Cr + Cu + Mn + Zn 5 mg/Nm³
- . HCl 50 mg/Nm³
- . HF 2 mg/Nm³

- stipulations concerning the measurements to be carried out.

DENMARK

Environment Protection Agency Guide No 3/1986 on the control of pollution from waste incinerators.

The provisions of the Guide apply to new plants and to existing plants that undergo modifications.

These provisions set out :

- the characteristics of the waste to be treated and the procedures for waste management at the plant;
- the following combustion conditions :
 - . 875°C in the secondary combustion chamber
 - . an oxygen content between 6% and 12%
 - . a residence time of 2 seconds under the above conditions.
 - . a maximum CO concentration of 100 mg/Nm³ (daily mean)
 - . use of auxiliary burners;
- the following emission limit values :

. dust	40 mg/Nm ³ (monthly mean)
. HCl	100 mg/Nm ³ (monthly mean)
. Cd	0,1 mg/Nm ³ (monthly mean)
. Pb	1,4 mg/Nm ³ (annual mean)
. Hg	0,1 mg/Nm ³ (annual mean)
. HF	2 mg/Nm ³ (annual mean)
. SO ₂	300 mg/Nm ³ (annual mean)
. organic compounds	20 mg/Nm ³ (annual mean)
- monitoring and measurement trials;
- operational requirements.

ITALY

At national level, an International Decree of 20 November 1985 stipulates in particular the use of a secondary combustion chamber capable of raising the temperature of the combustion gases to 950°C for 2 seconds in the presence of at least 6% oxygen, with a mean flow rate of the gases at the inlet of at least 10 m/s and a minimum Reynolds No of 60 000.

The construction of incinerators with a nominal capacity lower than 100 tonnes/day is discouraged. The modification of existing plants is also planned.

In addition, certain aspects of the laws on the prevention of air pollution and on waste management also apply to incinerators.

NETHERLANDS

The Dutch Ministry of the Environment issued "Guidelines" on waste incineration on 1 February 1985, addressed to the competent authorities for permits and regional plants.

With regard to the prevention of air pollution, these Guidelines set out, among other things :

- the combustion conditions : gas temperature of 800°C for at least two seconds in the presence of at least 6% oxygen;
- the following emission limit values (0°C, 101,3 kPa, 11% O₂)

	24 hour mean	maximum limit
. dust	50	75
. HCl	50	75
. HF	3	5
. Pb + Zn	5	3
. Cd	0,1	-
. Hg	0,1	-

- provisions on the measurements to be carried out.

3. Emissions into the air from waste incinerators in the Community

3.1. The nature and quantities of pollutants emitted by incinerators generally depend both on the characteristics of the waste incinerated and those of the plant, including the combustion-gas treatment equipment.

In the case of the smaller plants which, in most cases, are equipped with only rudimentary dust separation equipment, it is the composition of the waste incinerated which is most important from the point of view of pollutant emissions; by contrast, in the case of certain large plants equipped with filters and gas scrubbing equipment, the efficiency of this equipment determines the characteristics of the emissions.

The most important pollutants from the point of view both of quantity and toxicity which occur in emissions from incinerators are :

- . dust
- . heavy metals (Pb, Cd, Hg,...)
- . chlorine
- . fluorine

All of these pollutants are directly linked to the composition of certain materials incinerated.

In addition, traces of polychlorinated aromatic compounds (dioxins) can be found in incinerator emissions which may be produced from certain precursors during combustion by mechanisms that are as yet not sufficiently understood.

The following table gives, as a guide, the typical concentration of the main pollutants in the combustion gas of municipal waste incinerators. It contains data derived from measurement results taken from the specialist literature

(mg/Nm³)

Pollutant	Before treatment			Cyclones			Electrostatic precipitators			Electrostatic precipitators + scrubbing	Electrostatic precipitators + dry treatment
	min	max	mean	min	max	mean	min	max	mean	mean	mean
Dust	1500	8000	3000	300	2000	500	50	150	100	50	50
HCl	400	2200	1150	400	2200	1150	400	2200	1150	50	50
HF	5	20	9	5	20	9	5	20	9	1	1
SO _x	200	2000	500	200	2000	500	200	2000	500	100	250
NO _x	150	650	250	150	650	250	150	650	250	150	150
Pb	6	55	30	2	13	9	0.1	6	3	1.0	0.2
Cd	0.3	3.6	1.8			0.3	0.01	0.7	0.2	0.04	0.02
Hg	0.1	1.1	0.5	0.1	1.1	0.5	0.1	1.1	0.5	0.3	0.05

3.2. An estimate has been made by the Commission of emissions of various pollutants from municipal waste incinerators in the Community. Account was taken in this calculation of the quantity of waste incinerated, the operating characteristics of the plant and the performance data of the effluent gas purification equipment for various categories of the plants in service. This produced the following data :

For the Community as a whole

Dust	28 Ktonnes/year
Pb	570 tonnes/year
Cd	31 tonnes/year
Hg	68 tonnes/year
HCl	144 Ktonnes/year
HF	1150 tonnes/year

These emissions originate mainly from the larger incinerators, as can be seen from the following table :

For the Community as a whole

Pollutant	% of emissions by category of nominal capacity		
	0 - 1 t/h	1 - 6 t/h	6 t/h
Dust	7	37	56
Pb	3	27	70
Cd	4	23	73
Hg	1	13	87
HCL	1	14	85
HF	1	14	86

4. Reasons for and objectives of the Directive

4.1. An analysis of the current situation regarding municipal waste incineration shows that it is desirable to pursue the following objectives at Community level :

- a. In the case of new plants, it is necessary to specify the conditions that are to be applied under Directive 360/84 in respect of technologies for the prevention of emissions. This objectives can be attained in particular with the aid of the provisions of Article 8 of the above-mentioned Directive, which provides in certain cases for the stipulation by the Council of emission limit values. This will make it possible to harmonize the minimum level of protection applied in the Community.

- b. In the case of existing installations, it is necessary to establish a framework and time limits for the adaptation of waste incineration plants stipulated by Article 13 of Directive 360/84. With the aid of this framework, conditions at a number of incinerators which no longer correspond to the state of the art can be improved with a period of ten years, including an interim stage five years after the entry into force of the Directive.

4.2. Municipal waste incinerators are a potential source of significant air pollution, and are therefore subject to special controls in some Member States.

The Council has included these installations in the category of industrial plants which require prior authorization and which must use the "best available technology" to prevent air pollution.

It is also provided that these plants be subject to an impact assessment pursuant to Directive 85/337 if the competent authorities consider that they may have a significant impact on the environment.

The main pollutants from the point of view of potential effects on health and the environment are :

- heavy metals, particularly Pb, Cr, Cu, Mn, Ni, Cd, Hg and As, the toxicity and ecotoxicity of which are well known;
- chlorine and fluorine, which have acidifying properties;
- dioxins, on which more detailed information is supplied in section 4.3.

4.3. While the problems in connection with the more "classic" pollutants (heavy metals, chlorine, etc.) are well known and do not require specific comment, it is worth quoting from recent reflections by the World Health Organization concerning emissions of dioxins and furans from incinerators :

"1. The level of PCDD and PCDF emissions from municipal solid waste incinerators varies widely, and factors causing these variations are not yet thoroughly understood. Nevertheless, tests show that modern, well-run MSS¹ and MSW² incinerators, generally show consistently lower emission levels of PCDD and PCDF than older or poorly maintained and poorly operated incinerators.

¹ Municipal sewage sludge

² Municipal solid waste

2. Available data suggest that high temperature, adequate retention time, high turbulence and excess oxygen, together reflecting good combustion conditions, are likely to result in low PCDD and PCDF emissions.
3. The most toxic of the PCDD and PCDF compounds, 2,3,7,8-TCDD, is only a minor component of the overall emissions of MSW and/or MSS incinerators.
4. The limited data available today on the level of PCDD and PCDF emissions from MSS incinerators suggest that these levels are significantly lower than those for MSW incinerators. Results from the testing of fluid-bed incinerators indicate PCDD and PCDF emissions at or below detection levels.
5. Available data indicate that the application of appropriate acid gas control facilities is likely to reduce PCDD and PCDF emissions significantly, to below the lowest levels considered in the present analysis.
6. The inhalation of emissions from well-operated MSS and/or MSW incinerators appears to contribute only a small fraction to the apparent overall daily intake of PCDD and PCDF, even for people living where the emission levels are highest.
7. The contribution of such incinerators, through indirect exposure routes such as the food chain, to the overall human exposure from PCDD and PCDF cannot now be determined, although it appears that in certain situations a significant contribution could be made through these routes.
8. The relationship between the levels of PCDD and PCDF detected in environmental and human specimens and the many potentially contributive environmental sources is not well understood. Some data indicate the presence of PCDD and PCDF in certain geographical areas in both biotic and abiotic specimens. Yet

significant differences exist between their profiles as detected in the environment (in soil and sediments) and observed in living organisms.

9. The available limited data on the relatively uniform levels of PCDD and PCDF in human adipose tissue suggest the presence of a background influence.
10. No data have been published on the human health effects of PCDD and PCDF emissions from MSS and/or MSW incinerators. Also unknown is the degree of human exposure from such emissions. Yet, based on information related to workers' exposure to very high concentrations, it can be deduced that the severity of emissions from incinerators remains below that concentration".

The WHO has formulated the following recommendations :

- "1. Appropriate incineration technology should be selected with due regard to the area of origin, quantity and quality of the waste.
2. A better, more comprehensive scientific data base should be developed to refine criteria for the selection of operating conditions of incinerators, more adequately to control PCDD and PCDF emissions.
3. The evaluation of PCDD and PCDF emissions should be based on a series of measurements of emission levels from incinerators and the recording of corresponding operating conditions.
4. Additional studies should be done to validate sampling techniques and analytical methods for the measurement of PCDD and PCDF emissions from incinerators.

5. The installation of afterburners should be considered if the nature or composition of a waste or the operation of an incinerator indicates that there may be problems in maintaining adequate temperatures and other operating conditions.
6. The construction of small incinerators should be discouraged when adequate and properly trained personnel cannot be provided on a cost-effective basis.
7. When sewage sludge incineration is being considered, the physical and chemical characteristics that differentiate MSS from MSW should be recognised and considered.
8. Sewage sludge should be properly prepared before incineration to ensure its proper combustion, alone or combined with municipal solid waste.
9. Additional monitoring should be conducted to determine the range of human body burdens of PCDD and PCDF in the general population.
10. Studies should be carried out to evaluate the relative importance of incinerators as sources of PCDD and PCDF in the human body.
11. Surveys should be attempted to identify any group with potentially high exposure to PCDD and PCDF from incinerators to enable the evaluation of possible effects on health.
12. Additional studies should be performed to clarify better the environmental pathways and impact on health of PCDD and PCDF from incinerators.
13. The effects of incinerators on health and the local environment should be evaluated on a case-by-case basis.

14. Because of the very limited data on human body burdens of PCDD and PCDF from MSS and/or MSW incinerators and other sources, the uncertainties inherent in the concept of the toxic equivalency of different PCDD and PCDF isomers and homologues and the wide range of calculated emissions, the evaluation of human exposure should be reviewed as more information and clearer understanding develop".

4.4. The available technologies enabling substantial reductions to be made in pollutant emissions from municipal waste incinerators include :

- for dust and heavy metals contained in the particles : electrostatic precipitators, fabric filters;
- for Hg, HCL and HF : gas scrubbing (wet or dry);
- for polychlorinated organic micropollutants : monitoring of combustion conditions and, if necessary, use of a secondary combustion chamber. Scrubbing and dust separation systems also have a positive effect in reducing these emissions.

The costs of these technologies depend on the separation efficiency required and the specific conditions encountered at a given plant.

While the retrofitting of existing plants may not involve any major technical problems, the economic aspect may be particularly crucial in the case of incinerators which have a particularly short remaining useful life or which have to operate under special conditions.

With regard to investment, the size of the plant influences the return on capital employed for emission control, particularly in the case of gas scrubbing equipment.

An assessment of the costs associated with the Directive is given in the section discussing the Articles.

5. Presentation of the Articles and assessment of the costs

5.1. New plants

ARTICLE 1

This Article contains the definitions necessary for interpretation of the instrument. Some of the definitions are derived from other texts adopted by the Council and thus do not require explanation. The type of waste covered by the Directive is defined as being exclusively waste which, by its composition, can be considered to be equivalent to domestic waste to the exclusion of chemical, toxic and special waste and sewage sludge.

Plants principally used for the incineration of other fuels are also excluded.

However, the Directive applies to furnaces which mainly burn refuse-derived fuel.

ARTICLE 2

This Article provides that the prior authorization required for the operation of all new incinerators under Directive 75/445/EEC (waste management) and 84/360/EEC (air pollution from industrial plants) impose the detailed conditions laid down in this Directive.

Moreover Article 2 reminds that Directive 84/360/EEC provides that all the necessary measures to prevent air pollution must be taken in the case of new plants. This implies that, if the emission limit values laid down by the Directive prove insufficient in a particular situation to prevent significant levels of air pollution, additional measures must be taken.

ARTICLE 3

This Article specifies the emission limit values applicable to new incinerators. These limits are expressed as a concentration of mg/m^3 and are standardized at a specific pressure and temperature, at 11% O_2 (or 9% CO_2 , which is equivalent) and dry gas.

The limit values for dust are differentiated according to the size of the plant in order to avoid unprofitable over-investment in small incinerators in terms of the separation costs per tonne of pollutant. The use of an electrostatic precipitator is necessary in all cases. However, the required efficiency of this equipment (and hence its cost) is linked to the plant size.

The limit values stipulated for heavy metals are differentiated according to the risk they present to health and the environment. Very tight control must be exercised regarding Cd, Hg and, to a lesser extent, Ni and As. A global limit value of 5 mg has been laid down for the other heavy metals (the list has been restricted to those that are most significant from the point of view of their presence in emissions and the risk they involve).

These concentrations can generally be observed by means of an appropriate degree of separation using electrostatic precipitators and, in the case of Hg, adequate purification (wet or dry scrubbing) of the gases.

With regard to HCl and HF, it is appropriate to make a distinction on the basis of plant size for the same reasons as stated in connection with dust.

There are various techniques of differing degrees of efficiency and cost available for purification of combustion gases. It is therefore necessary to allow sufficient flexibility in order to optimize the overall effectiveness of the investment made.

The limit fixed for sulphur dioxide can always be observed, even with rudimentary purification of the combustion gases.

The emission limit values fixed do not cover all the pollutants liable to constitute a risk to health and the environment. The authorities must therefore specify limit values for other pollutants in the light of the specific requirements in individual cases.

ARTICLE 4

Good combustion conditions are necessary both from the point of view of hygiene and from the point of view of the prevention of emissions of polychlorinated organic compounds. The organic substances must be completely broken down and oxidized.

Temperature, residence time of the gases at this temperature and oxygen content are the parameters determining combustion quality. In addition, the concentration of CO and total carbon in the residues serve as indicators to verify the results. It should be noted that all of these factors combine to guarantee combustion quality.

The proposed limit values represent, as a whole, a high level of prevention of PCDD and PCDF emissions. Nevertheless, it is appropriate to make allowance for the possibility that technological progress will provide other means of preventing the emissions in question than those laid down in the Directive for traditional incineration plants.

For this reason Article 4(3) permits derogations for innovative techniques used in the incineration furnaces or the gas treatment equipment.

ARTICLE 5

This Article defines the proper interpretation of the limit values and other parameters laid down in the Directive.

With regard to the concentrations that are measured continuously, it introduces a degree of flexibility designed to make allowance for fluctuations due to the operating conditions of the plant while still guaranteeing that certain maximum limits are observed.

ARTICLE 6

This Article stipulates the measurements to be made at new incineration plants.

Total dust, HCl, CO and oxygen must be continuously measured. Appropriate measurement techniques are already well established and widely used for these substances. By contrast, continuous measurement is not conceivable in the case of heavy metals, and it is not essential in the case of HF, SO₂ and organic compounds. As a result, period measurements are stipulated in these cases. The competent authorities are responsible for laying down the measurement programmes on the basis of the conditions specific to each plant. It does not appear necessary or reasonable to specify the measurements in greater detail in this Directive.

The Article also contains provisions on measuring temperature and water vapour. These parameters are crucial for monitoring compliance with the stipulated obligations. In addition, observance of the stipulated residence time must be verified, at the least when authorization is granted, in particular by means of a suitable examination of the characteristics of the plant.

ARTICLE 7

All incineration plants must be equipped with auxiliary burners to ensure appropriate temperature under all operating conditions, including the start-up and shut-down phase.

However, systematic use of these burners must be avoided.

Otherwise, it would mean that the characteristics of the waste and/or the operating conditions did not meet the requirements of good combustion conditions.

ARTICLE 8

Article 8(1) lays down the procedure to be followed in order to restore appropriate operating conditions in the event of the limit values being exceeded.

Article 8(2) defines the constraints on operation of the plant during breakdowns or stoppages of the purification devices.

ARTICLE 9

The public must be given access to information regarding the obligations applying to the plants and the results of measurements.

This is primarily intended to make the incinerator operators more directly responsive to public concerns. Secondly, it is designed to create transport conditions which will make it easier for the public to accept this type of waste treatment.

ARTICLE 10

This Article permits exemptions from some of the provisions of the Directive for very small plants used for waste disposal, particularly in tourist areas, where the volume of waste generated is subject to very considerable seasonable variations. In some cases there is no other possible means of disposal. The costs involved in fitting these small plants, which have a low utilization rate over the year, with the treatment equipment necessary to comply with the conditions laid down in the Directive would be excessive. By contrast, the 350 mg/m^3 limit for dust can be observed with the aid of simple dust separation equipment.

ARTICLE 11

Article 11(1) provides that the authorities make the necessary checks to verify observance of the conditions relating to incineration plants laid down by the Directive.

Article 11(2) provides for adaptation of the plant to technical progress not involving excessive and unreasonable cost.

ARTICLE 12

It is established that large installations must be subjected to an environmental impact assessment in accordance with the provisions of Directive 85/337. The latter Directive leaves it to the Member States to determine when the characteristics of an incinerator require such an assessment to be carried out.

The threshold for this obligation is now set at 5 t/h, which corresponds to 120 t/d for a plant operating in three shifts, i.e. to a plant serving a community of between 100 000 and 150 000 inhabitants.

It therefore concerns a very large plant capable of having a significant impact on the environment, even if the other provisions of the Directive concerning the prevention of air pollution are respected.

This obligation will result in diverse aspects of environmental protection being integrated in the authorization procedure (water, soil, air, noise, landscape, odours, problems related to transport, storage and pretreatment of the wastes to be incinerated, combustion residues, etc.).

It is only by means of such an assessment procedure that detailed standards on emissions into the air can be incorporated into a comprehensive, preventive, multimedia approach.

ARTICLE 13

In the light of the nature and objective of the provisions of this Directive, Member States may adopt more stringent measures that are in conformity with the Treaty for environmental protection reasons.

5.2. Existing plant

ARTICLE 1

See comments on Article 1 of the Directive on new plant.

ARTICLE 2

In the framework of the objectives defined in Article 13 of Directive 84/360, provision has been made for the retrofitting of existing incineration plants in two stages :

- by 30 June 1994 at the latest, all plants authorized before 30 June 1989 must comply with the minimum conditions laid down in Articles 3-9 of the Directive;
- by 30 June 1999 at the latest, all of the incineration plants referred to above must comply with all the conditions applying to "new" incineration plants.

This means that the less efficient plants have been granted a "period of grace" of five years. After this deadline, the plant will either have to be retrofitted or decommissioned. The choice will be made in the light of the remaining useful life of the plant and of other technical and economic parameters.

Plants which have a remaining lifespan such that they could continue to be operated after 30 June 1989 (if justified by the technical and economic conditions) must be retrofitted during the first stage in order to observe all the conditions applying to new plants.

The provisions of this Directive are therefore of a nature suited to concentrate and rationalize at Community level the process of cleaning up the stock of existing incineration plants.

ARTICLE 3

This Article lays down the emission limit values for total dust applying to plants of different capacity.

The staggered values take account of the requirement to avoid entailing excessive costs and major technical problems.

The use of an electrostatic precipitator is required for plants whose nominal capacity is greater than or equal to one tonne per hour. In the case of smaller plants, multicyclones will suffice to observe the stipulated limit.

ARTICLE 4

See comments on Article 4 of the Directive on new plants. By contrast to the provisions for new plants, there are no restrictions concerning emissions of total carbon in order to avoid unduly complicating the monitoring procedures.

ARTICLES 5 and 6

See remarks on Articles 5 and 6 of the Directive on new plants. The requirements regarding measurements to be carried out and interpretation of the results are simpler than those for new plants.

ARTICLES 7, 8, 9, 10 and 11

See remarks on the Articles on the corresponding subjects in the Directive on new incineration plants.

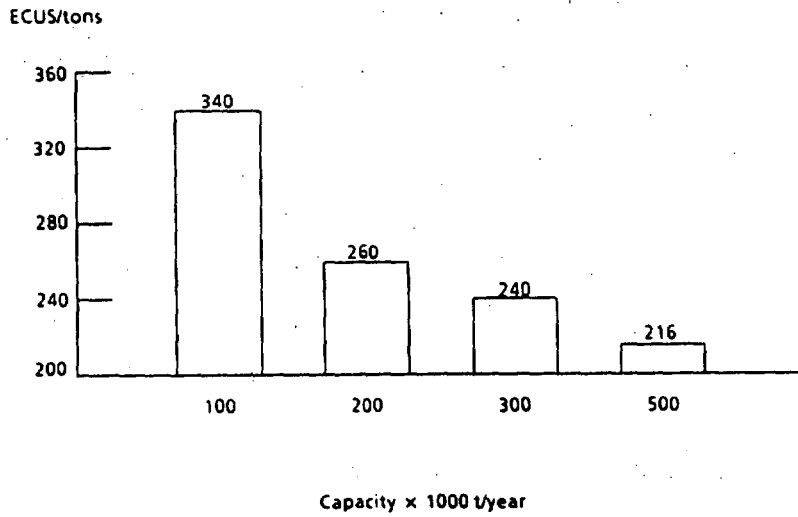
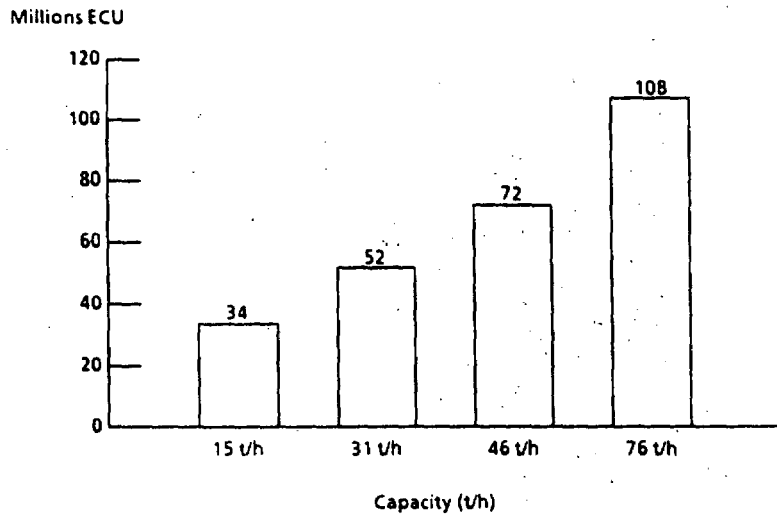
5.3. Assessment of the costs in connection with implementation of the proposed Directive

It is not possible to make a detailed and exhaustive assessment of the costs involved in implementing the proposed Directives owing to the many uncertainties regarding developments in this sector, which would mean that any estimate would have to be based on arbitrary and unsubstantial hypotheses.

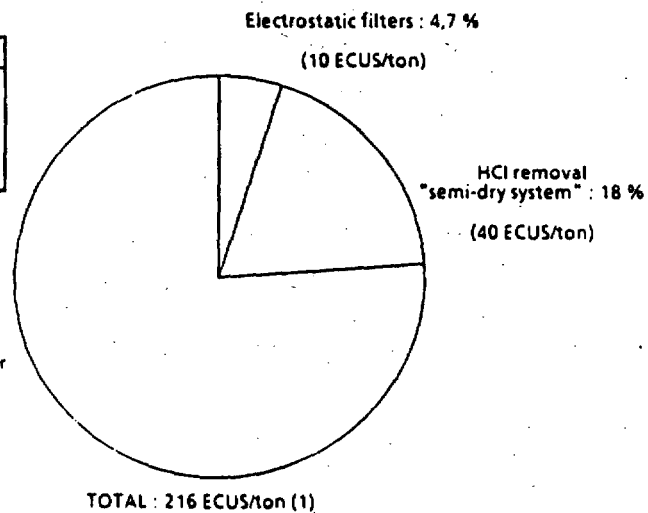
However, it is possible, as a guide, to provide information concerning the basic economic data of the incinerators and the emission abatement equipment required in order to meet the obligations imposed by the Directive.

This data is summarized in the following graphs and tables, taken from a report prepared for the Commission.

Investments costs for medium and large size solid municipal waste incinerators.



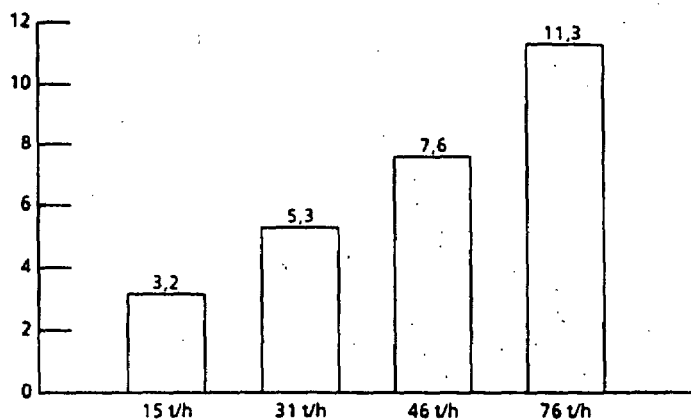
System (2)	Ecu/ton
Dry	40
Semi-dry	50
Wet	42



(1) 500 000 tons/year incinerator
 (2) Including particle removal

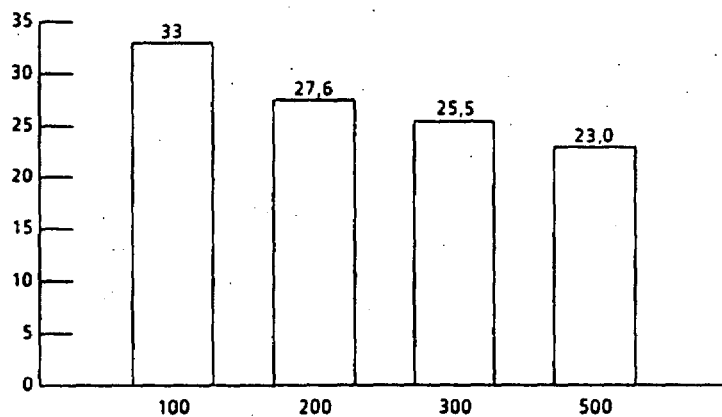
Operating costs for medium and large size solid municipal waste incinerators

Millions ECUS/year

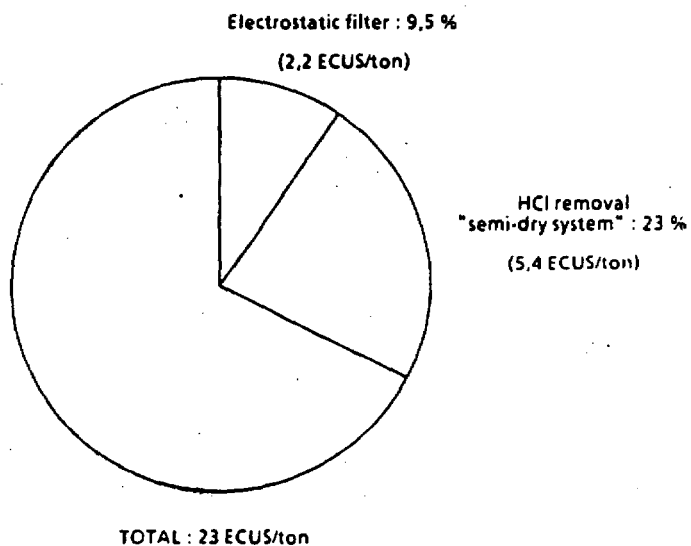


Capacity (1/h)

ECUS/ton



Capacity x 1000 t/year

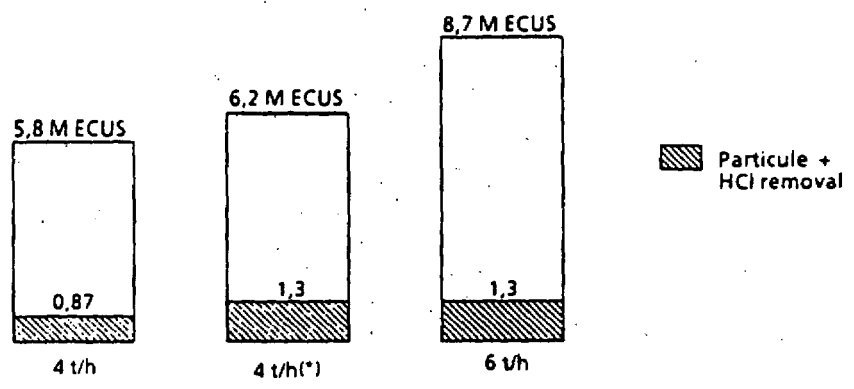


THOUSAND ECU 1986	WET SYSTEM	SEMI-DRY SYSTEM	DRY SYSTEM
Total investment	21 600	24 800	17 310
Operating cost			
Man power	265	221	221
Energy	1 381	1 009	265
Raw materials	274	734	850
Maintenance	1 080	1 239	867
Particles treatment	858	664	655
Depreciation	1 717	2 044	1 292
Total	5 575	5 911	4 150
Investment/ton (1)	43,2	49,6	34,6
Operating cost/ton	11,1	11,8	8,3

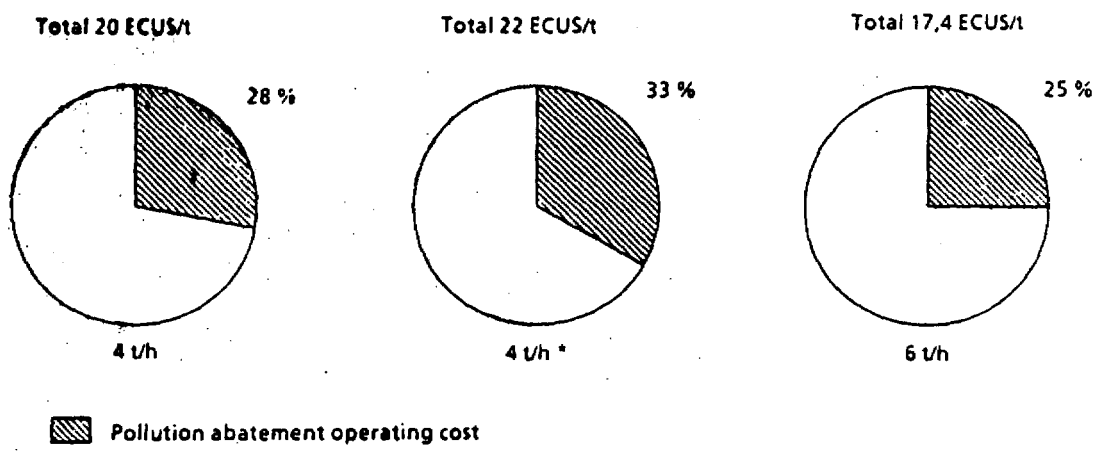
(*) Source : TIRU, France : 3 x 28 t/h, 500 000 tons of SWM/year

(1) Including buildings for air pollution abatement techniques

Investment cost for small size solid municipal waste incinerators

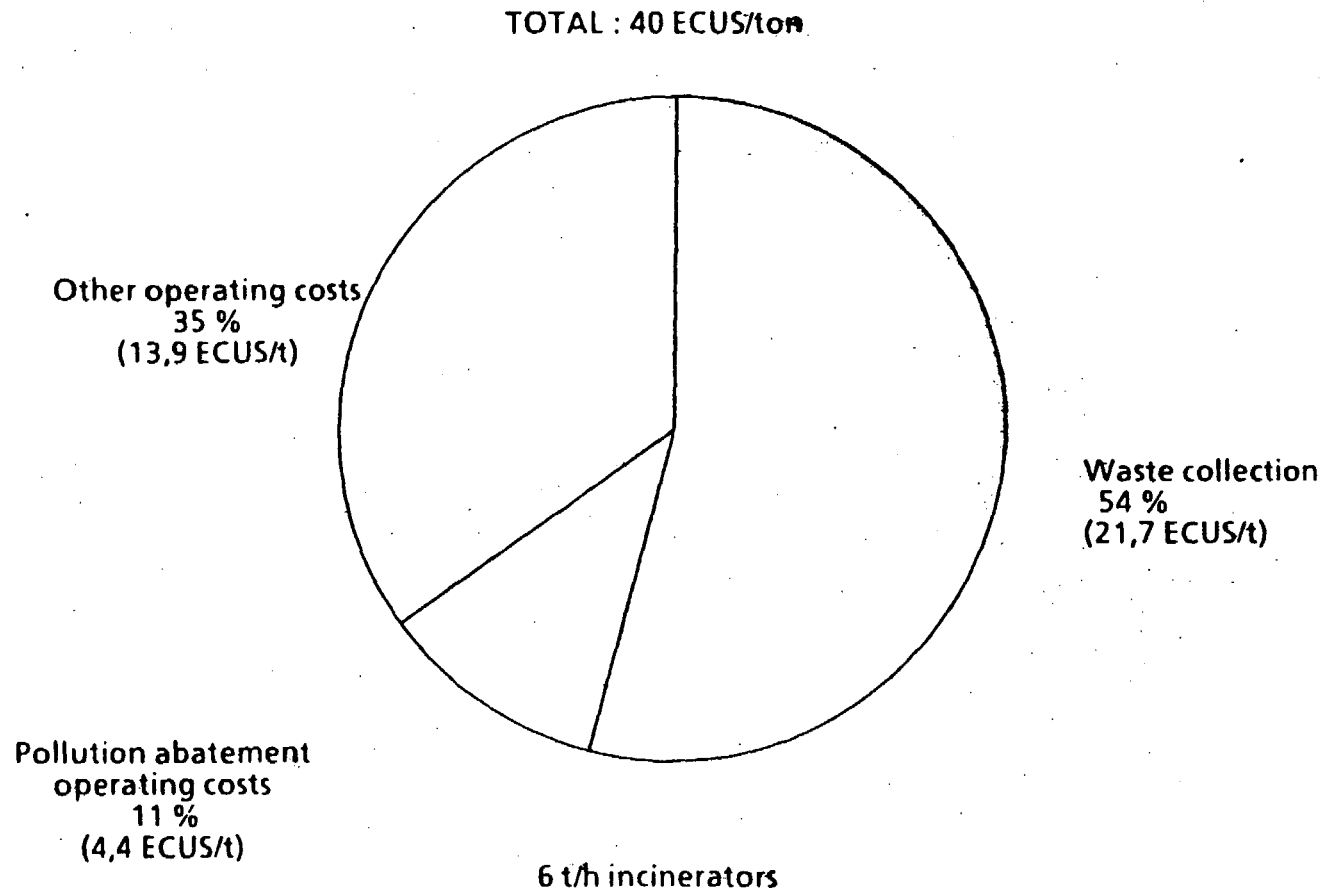


(*) The oven is equipped with pollution abatement techniques equivalent to those of a 6 t/h oven.



(*) The oven is equipped with pollution abatement techniques equivalent to those of a 6 t/h oven.

Operating cost for small size solid municipal waste incinerators compared to waste collection costs.



**PROPOSAL FOR
A COUNCIL DIRECTIVE ON THE PREVENTION OF AIR POLLUTION FROM
NEW MUNICIPAL WASTE INCINERATION PLANTS**

THE COUNCIL OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Economic Community,
and in particular Article 130 S thereof,

Having regard to the proposal from the Commission,

Having regard to the opinion of the European Parliament,

Having regard to the opinion of the Economic and Social Committee,

Whereas the 1973 ¹, 1977 ², 1983 ³ and 1987 ⁴ European Community action
programmes on the environment stress the importance of the prevention and
reduction of air pollution;

¹ O.J. No C112, 20.12.1973, p. 1.

² O.J. No C139, 13.6.1977, p. 1.

³ O.J. No C46, 17.2.1983, p. 1.

⁴ O.J. No C328, 7.12.1987, p. 1.

Whereas the Council Resolution of 19 October 1987 on the action programme on the environment for 1987 to 1992 states that it is important for Community action to concentrate, inter alia, on implementation of appropriate standards in order to ensure a high level of public health and environmental protection;

Whereas Council Directive 85/337/EEC of 27 June 1985 on the assessment of the effects of certain public and private projects on the environment ⁵ provides that an environmental impact assessment shall be carried out in the case of installations for the disposal of domestic waste where Member States consider that their characteristics so require;

Whereas Council Directive 75/442/EEC of 15 July 1975 on waste ⁶ provides that waste must be disposed of without endangering human health and without harming the environment; whereas, to this end, the same Directive stipulates that any installation or undertaking treating waste must obtain a permit from the competent authority relating, inter alia, to the precautions to be taken;

Whereas Council Directive 84/360/EEC of 28 June 1984 on the combating of air pollution from industrial plants ⁷ provides that prior authorization shall be required to operate new industrial installations and in particular waste incineration plants; whereas this authorization may be issued only when all appropriate preventive measures against air pollution have been taken, including the application of the best available technology not entailing excessive costs;

Whereas the abovementioned Directive 84/360/EEC stipulates that the Council, acting unanimously on a proposal from the Commission, shall, if necessary, fix emission limit values based on the best available

⁵ O.J. No L175, 5.7.1985, p. 40.

⁶ O.J. No L194, 25.7.1975, p. 39.

⁷ O.J. No L188, 16.7.1984, p. 20.

technology not entailing excessive costs and suitable measurement techniques and methods and whereas it is advisable to avoid that the limit values fixed entail an excessive energy consumption;

Whereas incineration of municipal waste gives rise to emissions of substances which can cause air pollution and thereby harm public health and the environment; whereas in some cases this pollution may have transboundary features;

Whereas the techniques for reducing emissions of pollutants from municipal waste incineration plants are well established; whereas they can be applied reasonably economically in new incineration plants; whereas they provide a mean of attaining concentrations of pollutants in the combustion gases not exceeding certain limit values;

Whereas all the Member States have laws, regulations and administrative provisions concerning the combating of air pollution from stationary plants; whereas several Member States have specific provisions on municipal waste incineration plants;

Whereas the Community by fixing emission limit values and other pollution prevention requirements helps increase the effectiveness of the action taken by the Member States to combat air pollution from municipal waste incineration plants;

Whereas in order to ensure an effective protection of the environment an assessment of the environmental impact of larger municipal waste incineration plants should be required and requirements and conditions should be laid down before authorization is granted for any new municipal waste incineration plant; whereas these requirements must include an obligation to observe emission limit values for the most significant pollutants and appropriate combustion conditions; whereas provision must be made for appropriate measurements and verifications at the incineration plants; whereas the public must be informed of the conditions imposed and of the results obtained,

HAS ADOPTED THIS DIRECTIVE :

Article 1

For the purposes of this Directive :

1. "Air pollution" means the introduction by man, directly or indirectly, of substances or energy into the air resulting in deleterious effects of such a nature as to endanger human health, harm living resources and ecosystems and material property and impair or interfere with amenities and other legitimate uses of the environment.

2. "Emission limit value" means the concentration and/or mass of polluting substances which is not to be exceeded in emissions from plants during a specified period.

3. "Municipal waste" means domestic refuse, commercial and trade waste and other waste equivalent to domestic refuse.

4. "Municipal waste incineration plant" means any technical equipment used for the treatment of municipal waste by incineration, with or without recovery of the combustion heat generated, but excluding :
 - combustion plants which are designed to use other fuels but which burn a fuel derived from municipal waste as a back-up;
 - plants used specifically for the incineration of sewage sludge, chemical, toxic and dangerous waste, hospital waste or other types of special waste, on land or at sea, even if these plants may burn municipal waste as well.

This definition covers the entire installation comprising the incinerator, its waste, fuel and air supply systems and the devices and systems for checking incineration operations and continuously recording and monitoring incineration conditions.

5. "New plant" means a municipal waste incineration plant for which authorization to operate is granted as from the date specified in Article 14(1) of this Directive.

6. "Nominal capacity of the incineration plant" means the sum of the incineration capacities of the furnaces of which the plant is composed, as specified by the constructor, on the basis of :
- the quantity of waste incinerated, the calorific value and other characteristics of the waste to be treated;
 - the factors which determine the lifespan of the plant, namely the technical characteristics and its permissible rate of utilization.

Article 2

Without prejudice to the provisions of Article 4 of Council Directive 84/360/EEC of 28 June 1984 on the combating of air pollution from industrial plants⁸, Member States shall take the necessary measures to ensure that the conditions laid down in this Directive shall be attached to the prior authorization required to operate all new municipal waste incineration plants under Article 3 of the above mentioned Council Directive 84/360/EEC and under Article 8 of Council Directive 75/442/EEC of 15 July 1975 on waste⁹.

Article 3

1. The following emission limit values, standardized at the following conditions : temperature 273 K, pressure 101.3 kPa, 11% oxygen or 9% CO₂ and dry gas, shall apply to new municipal waste incineration plants :

- Total dust

- . nominal capacity equal to or greater than

5 tonnes per hour

50 mg/Nm³

- . nominal capacity less than 5 tonnes per hour

100 mg/Nm³

- Heavy metals

- . Pb + Cr + Cu + Mn

5 mg/Nm³

⁸ O.J. No L188, 16.7.1984, p. 20.

⁹ O.J. No L194, 25.7.1975, p. 39.

. Ni + As	1 mg/Nm ³
. Cadmium (Cd)	0.1 mg/Nm ³
. Mercury (Hg)	0.1 mg/Nm ³
- Hydrochloric acid (HCl)	
. nominal capacity equal to or greater than 5 tonnes per hour	50 mg/Nm ³
. nominal capacity less than 5 tonnes per hour	100 mg/Nm ³
- Hydrofluoric acid (HF)	
. nominal capacity equal to or greater than 5 tonnes per hour	2 mg/Nm ³
. nominal capacity less than 5 tonnes per hour	4 mg/Nm ³
- Sulphur dioxide (SO ₂)	300 mg/Nm ³

2. Where appropriate, the competent authorities, taking due account of the composition of the wastes to be incinerated and of the characteristics of the incineration plant, shall lay down emission limits for pollutants other than those mentioned in paragraph 1 of this Article which could also give rise to significant emissions in the specific case under consideration. For the purposes of laying down these emission limit values, the authorities shall take account of the potential harmful effects of the pollutants in question on human health and the environment and of the best technology available not entailing excessive costs.

Article 4

1. All new municipal waste incineration plants must be designed, equipped and operated in such a way that the gas resulting from the combustion of the waste is raised, after the last injection of combustion air, in a controlled and homogeneous fashion and even in the most unfavourable conditions, to a temperature of at least 850°C for at least 2 seconds in the presence of at least 6% oxygen.
2. All new municipal waste incineration plants shall observe the following conditions when in operation :
 - a. the concentration of carbon monoxide (CO) in the combustion gases must not exceed 100 mg/Nm³;

b. the concentration of organic compounds (expressed as total carbon) in the combustion gases must not exceed 20 mg/Nm³.

The limits stipulated in subparagraphs a and b of this paragraph shall be standardized at the following conditions : temperature 273 K, pressure 101.3 kPa, 11% oxygen or 9% CO₂ and dry gas.

3. Exemptions from the conditions laid down in paragraph 1 of this Article may be authorized if innovative techniques are used in the incineration furnaces or combustion-gas treatment equipment, provided that the competent authorities have satisfied themselves that, with the use of these techniques, the levels of polychlorinated dibenzodioxins (PCDDs) and of polychlorinated dibenzofurans (PCDFs) emitted will be equivalent to those obtained with the technical conditions laid down in the first paragraph of this Article.

Article 5

1. The temperatures and oxygen content laid down in Article 4(1) of this Directive are minimum values to be observed at all times when the plant is in operation.
2. The carbon monoxide (CO) concentration laid down in Article 4(2).a. of this Directive is the limit value for the daily average calculated by taking into account, where appropriate, only the hours in which the plant is actually in operation, including the start-up and shut-off periods.
3. In the case of the other substances to be continuously monitored under Article 6 of this Directive :
 - a. none of the monthly averages of the concentration values measured for these substances must exceed the corresponding limit value;
 - b. none of the daily averages of the concentration values measured for these substances must exceed the corresponding limit value by more than 30%.

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For the purposes of calculating the abovementioned average values, only the periods in which the plant is actually in operation shall be taken into account, including the start-up and shut-off periods.

4. In the case of substances to be measured periodically under Article 6 of this Directive, the concentration values measured in accordance with the rules laid down by the competent authorities under Articles 6(3), 6(4) and 6(5) must not exceed the limit value.

Article 6

1. The following measurements shall be taken at new municipal waste incineration plants :
 - a. concentrations of certain substances in the combustion gases :
 - i. concentrations of total dust, HCl, CO and oxygen shall be continuously measured and recorded;
 - ii. concentrations of the heavy metals referred to in the second indent of Article 3(1) of this Directive, HF, SO₂ and organic compounds (expressed as total carbon) shall be measured periodically;
 - b. operating parameters :
 - i. the temperatures of the gases in the area where the conditions imposed by Article 4(1) of this Directive are satisfied and the water vapour content of the combustion gases shall be continuously measured and recorded;
 - ii. the residence time of the combustion gases at the minimum temperature of 850°C specified in Article 4(1) of this Directive must be the subject of appropriate verifications at least once when the incineration plant is brought into service and the most unfavourable operating conditions envisaged.

2. The results of the measurements referred to in paragraph 1 of this Article shall be standardized at the following conditions :
temperature 273 K, pressure 101.3 kPa, 11% oxygen or 9% CO₂ and dry gas.
3. All the measurement results shall be recorded, processed and presented in an appropriate fashion so that the competent authorities can verify compliance with the conditions laid down, in accordance with procedures to be decided upon by those authorities.
4. The sampling and measurement procedures, methods and equipment used to satisfy the obligations imposed by paragraph 1 of this Article and the location of the sampling or measurement points shall require the prior approval of the competent authorities.
5. For the periodic measurements, the competent authorities shall lay down appropriate measurement programmes to ensure that the results are representative of the normal level of emissions of the substances concerned.
The results obtained must be suitable for verifying that the limit values applicable have been observed.
6. The Council acting by a qualified majority on a proposal from the Commission shall adopt the appropriate decisions concerning the steps to be taken to measure emissions of polychlorinated dibenzodioxins and of polychlorinated dibenzofurans from new municipal waste incineration plants and the reference methods to be used for measuring these substances as soon as the state of knowledge in this field will permit it.

Article 7

All new municipal waste incineration plants shall be equipped with auxiliary burners. These burners must be switched on automatically when the temperature of the combustion gases falls below 850°C. They shall also be used during plant start-up and shut-down operations in order to

ensure that the abovementioned minimum temperature is maintained at all times during these operations and as long as the waste is in the combustion chamber.

However, if the total utilization time of these burners exceeds 5% of the total plant operation time for seven consecutive days, appropriate measures must be taken to restore adequate combustion conditions.

Article 8

1. Should the measurements taken show that the limit values laid down in this Directive have been exceeded, the competent authority shall be informed as soon as possible. It shall lay down appropriate emergency measures to ensure that the abovementioned limits are again observed. Plants which do not comply with these provisions shall no longer be operated.

2. The competent authorities shall lay down the maximum permissible period of any breakdowns or stoppages of the purification devices during which the concentrations in the discharges into the air of the substances which these devices are intended to reduce exceed the limit values laid down. Under no circumstances may they exceed 16 hours uninterrupted operation; their cumulative duration over a year shall be less than 200 hours.
The dust content of the discharges shall under no circumstances exceed 600 mg/Nm^3 during the periods referred to in the preceding paragraph, and all the other conditions, in particular the combustion conditions, shall be complied with.

Article 9

Besides the publicity required by Article 9 of Council Directive 84/360/EEC of 28 June 1984¹⁰, the public shall have access, in accordance with appropriate procedures and in the form decided upon by

¹⁰ O.J. No L188, 16.7.1984, p. 20.

the competent authorities, at sufficient intervals, to the results of measurements of pollutant emissions and measurements relating to the plant operating conditions.

Article 10

Exemptions from some of the conditions laid down in this Directive may be allowed when authorization to operate is granted to new incineration plants with a nominal capacity of less than 1 tonne of waste per hour used for the disposal of municipal waste streams characterized by very considerable seasonal variations, in particular in winter or summer tourist areas and where, because of the size of the plant and the way in which it is operated, these provisions cannot be complied with without entailing excessive costs.

In such cases, the provisions of Article 4(1) and 4(2) of this Directive must be complied with and the following emission limit measured and interpreted in line with Article 5 and 6 of this Directive and standardized at the following conditions : temperature 273 K, pressure 101.3 kPa, 11% oxygen or 9% CO₂ and dry gas, shall apply :

- total dust 350 mg/Nm³

Article 11

1. In the framework of the verification required by Article 11 of Directive 84/360/EEC and also in relation to the provisions of Article 4 of the same Directive, Member States shall take the necessary measures to ensure that compliance with the conditions relating to new incineration plants pursuant to this Directive is verified by the competent authorities.
2. Provisions of this Directive are without prejudice to the requirement of Article 12 of Directive 84/360/EEC for Member States to revise, where necessary, the conditions imposed in the authorization granted to an incineration plant.

Article 12

Annex I, point 9 of the Council Directive 85/337/EEC of 27 June 1985 on the assessment of the effects of certain public and private projects on the environment the following phrase is modified by the addition of : "and municipal waste incineration plants the nominal capacity at which exceeds 5 tons of waste per hour".

Article 13

Member States may adopt more stringent provisions than those of this Directive, where necessary, in order to protect health and the environment.

Article 14

1. Member States shall bring into force the laws, regulations and administrative provisions necessary to comply with this Directive not later than (30 June 1989). They shall forthwith inform the Commission thereof.
2. Member States shall communicate to the Commission the texts of the provisions of national law which they adopt in the field governed by this Directive.

Article 15

This Directive is addressed to the Member States.

Done at Brussels,

For the Council
The President

**PROPOSAL FOR
A COUNCIL DIRECTIVE ON THE REDUCTION OF AIR POLLUTION FROM EXISTING
MUNICIPAL WASTE INCINERATION PLANTS**

THE COUNCIL OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Economic Community,
and in particular Article 130 S thereof,

Having regard to the proposal from the Commission,

Having regard to the opinion of the European Parliament,

Having regard to the opinion of the Economic and Social Committee,

Whereas the 1973 ¹, 1977 ², 1983 ³ and 1987 ⁴ European Community action programmes on the environment stress the importance of the prevention and reduction of air pollution;

Whereas the Council Resolution of 19 October 1987 on the action programme on the environment for 1987 to 1992 states that it is important for Community action to concentrate, inter alia, on implementation of appropriate standards in order to ensure a high level of public health and environmental protection;

¹ O.J. No C112, 20.12.1973, p. 1

² O.J. No C139, 13.6.1977, p. 1

³ O.J. No C46, 17.2.1983, p. 1

⁴ O.J. No C328, 7.12.1987, p. 1

Whereas Council Directive 75/442/EEC of 15 July 1975 on waste ⁵ provides that waste must be disposed of without endangering human health and without harming the environment; whereas, to this end, the same Directive stipulates that any installation or undertaking treating waste must obtain a permit from the competent authority relating, inter alia, to the precautions to be taken;

Whereas Council Directive 84/360/EEC of 28 June 1984 on the combating of air pollution from industrial plants ⁶ provides for the Member States to implement policies and strategies, including appropriate measures, for the gradual adaptation of existing plants to the best available technology; whereas these provisions apply in particular to existing municipal waste incineration plants;

Whereas the abovementioned Directive 84/360/EEC stipulates that the Council, acting unanimously on a proposal from the Commission, shall, if necessary, fix emission limit values based on the best available technology not entailing excessive costs and suitable measurement techniques and methods and whereas it is advisable to avoid that the limit values fixed entail an excessive energy consumption;

Whereas incineration of municipal waste gives rise to emissions of substances which can cause air pollution and thereby harm public health and the environment; whereas in some cases this pollution may have transboundary features

Whereas the techniques for reducing emissions of pollutants from municipal waste incineration plants are well established; whereas they must be applied progressively in existing incineration plants, taking due account of the technical characteristics, rate of utilization and the length of the remaining life of the plant and of the need to avoid excessive costs; whereas they provide a mean of attaining concentrations of pollutants in the combustion gases not exceeding certain limit values;

⁵ O.J. No L194, 25.7.1975, p. 39

⁶ O.J. No L188, 16.7.1984, p. 20

Whereas all the Member States have laws, regulations and administrative provisions concerning the combating of air pollution from stationary plants; whereas several Member States have specific provisions on municipal waste incineration plants;

Whereas by fixing emission limit values and other pollution prevention requirements the Community helps increase the effectiveness of the action taken by the Member States to combat air pollution from municipal waste incineration plants;

Whereas, in order to ensure rapidly an effective protection of the environment without imposing to the undertakings concerned an excessive burden, appropriate time limits must be set for adapting existing incineration plants to the best available technology not entailing excessive costs; whereas, to this end, account must be taken not only of the needs of the environment but also of the technical and economic constraints including energy considerations; whereas in the long run all municipal waste incineration plants should observe the same conditions, but in the interim less stringent requirements can be accepted at plants with only a short service life remaining;

Whereas the requirements imposed on existing plants must include an obligation to observe emission limit values for the most significant pollutants and appropriate combustion conditions; whereas provision must be made for appropriate measurements and verifications at the incineration plants; whereas the public must be informed of the results obtained,

HAS ADOPTED THIS DIRECTIVE :

Article 1

For the purposes of this Directive :

1. "Air pollution" means the introduction by man, directly or indirectly, of substances or energy into the air resulting in deleterious effects of such a nature as to endanger human health, harm living resources and ecosystems and material property and impair or interfere with amenities and other legitimate uses of the environment.
2. "Emission limit value" means the concentration and/or mass of polluting substances which is not to be exceeded in emissions from plants during a specified period.
3. "Municipal waste" means domestic refuse, commercial and trade waste and other waste equivalent to domestic refuse.
4. "Municipal waste incineration plant" means any technical equipment used for the treatment of municipal waste by incineration, with or without recovery of the combustion heat generated, but excluding :
 - combustion plants which are designed to use other fuels but which burn a fuel derived from municipal waste as a back-up;
 - plants used specifically for the incineration of sewage sludge, chemical, toxic and dangerous waste, hospital waste or other types of special waste, on land or at sea, even if these plants may burn municipal waste as well.

This definition covers the entire installation comprising the incinerator, its waste, fuel and air supply systems and the devices and systems for checking incineration operations and continuously recording and monitoring incineration conditions.
5. "Existing plant" means a municipal waste incineration plant for which authorization to operate is granted before the date specified in Article 12(1) of this Directive.

6. "New plant" means a municipal waste incineration plant for which authorization to operate is granted as from the date specified in Article 12(1) of this Directive.
7. "Nominal capacity of the incineration plant" means the sum of the incineration capacities of the furnaces of which the plant is composed, as specified by the constructor, on the basis of :
- the quantity of waste incinerated, the calorific value and other characteristics of the waste to be treated;
 - the factors which determine the lifespan of the plant, namely the technical characteristics and its permissible rate of utilization.

Article 2

As part of their policies and strategies for the gradual adaptation of existing industrial plants to the best available technology, as required by Article 13 of Council Directive 84/360/EEC of 28 June 1984 on the combating of air pollution from industrial plants⁷, Member States shall take appropriate measures to ensure that the operation of existing municipal waste incineration plants is subject :

- a. within five years from the date specified in Article 12(1), to the conditions laid down in Articles 3 to 9 of this Directive;
- b. within ten years from the date specified in Article 12(1), to the conditions imposed on new incineration plants by Council Directive (...) of (...) on the prevention of air pollution from new municipal waste incineration plants.

The competent authorities shall ensure that any adaptation of existing plants decided after taking account of the length of their remaining life and of the time limits and conditions laid down in this Directive is carried out as soon as possible.

⁷ O.J. No L188, 16.7.1984, p. 20

Article 3

Within the time limit laid down in Article 2.a. of this Directive, the following emission limit values, standardized at the following conditions : temperature 273 K, pressure 101.3 kPa, 11% oxygen or 9% CO₂ and dry gas, shall apply to existing municipal waste incineration plants :

- a. Plants whose nominal capacity is at least 6 tonnes of waste per hour
 - total dust 100 mg/Nm³

- b. Plants whose nominal capacity is less than 6 tonnes of waste per hour but at least one tonne per hour
 - total dust 150 mg/Nm³

- c. Plants whose nominal capacity is less than one tonne of waste per hour
 - total dust 600 mg/Nm³

Article 4

1. Within the time limit laid down in Article 2.a. of this Directive, existing municipal waste incineration plants must be designed, equipped and operated in such a way that the gas resulting from the combustion of the waste is raised, after the last injection of combustion air, in a controlled and homogeneous fashion and even in the most unfavourable conditions, to a temperature of at least 850°C for at least 2 seconds in the presence of at least 6% oxygen.

2. Within the time limit laid down in paragraph 1 of this Article all existing municipal waste incineration plants shall observe a limit value of 100 mg/Nm³ for the carbon monoxide concentration in the combustion gases while in operation.
 This limit value shall be standardized at the following conditions : temperature 273 K, pressure 101.3 kPa, 11% oxygen or 9% CO₂ and dry gas.

Article 5

1. The temperature and oxygen content laid down in Article 4(1) of this Directive are minimum values to be observed at all times when the plant is in operation.
2. The carbon monoxide (CO) concentration laid down in Article 4(2) of this Directive is the limit value for the daily average calculated by taking into account, where appropriate, only the hours in which the plant is actually in operation, including the start-up and shut-off periods.
3. In the case of total dust, wherever continuous monitoring is required under Article 6 of this Directive :
 - a. none of the monthly averages of the concentration values measured for these substances must exceed the corresponding limit value;
 - b. none of the daily averages of the concentration values measured for these substances must exceed the corresponding limit value by more than 30%.

For the purposes of calculating the abovementioned average values, only the periods in which the plant is actually in operation shall be taken into account, including the start-up and shut-off periods.
4. In the case of total dust, wherever periodic measurements are required under Article 6 of this Directive, the concentration values measured in accordance with the rules laid down by the competent authorities under Articles 6(3), 6(4) and 6(5) must not exceed the limit value.

Article 6

1. Within the time limit laid down in Article 2.a. of this Directive, the following measurements shall be required for existing incineration plants :

a. concentrations of certain substances in the combustion gases

- i. the following shall be continuously measured and recorded :
- at all existing plants, the concentrations of carbon monoxide (CO) and oxygen;
 - at existing plants with a nominal capacity of 1 tonne of waste per hour or more, the concentration of total dust;

- ii. the following shall be measured periodically :
- at existing plants with a nominal capacity of less than 1 tonne of waste per hour, the concentration of total dust.

b. operating parameters :

- i. the temperature of the gases in the area where the conditions imposed by Article 4(1) of this Directive are satisfied shall be continuously measured and recorded;

- ii. the residence time of the combustion gases at the minimum temperature of 850°C specified in Article 4(1) of this Directive, under the most unfavourable operating conditions envisaged for the plant must be the subject of appropriate verifications at least once after any adaptation of the plant and, under all circumstances, before the time limit set in Article 2.a. of this Directive.

2. The results of the measurements referred to in paragraph 1 of this Article shall be standardized at the following conditions :
temperature 273 K, pressure 101.3 kPa, 11% oxygen or 9% CO₂, and dry gas.

3. All the measurement results shall be recorded, processed and presented in an appropriate fashion so that the competent authorities can verify compliance with the conditions laid down, in accordance with procedures to be decided upon by those authorities.

- 4. The sampling and measurement procedures, methods and equipment used to satisfy the obligations imposed by paragraph 1 of this Article and the location of the sampling or measurement points shall require the prior approval of the competent authorities.

- 5. For the periodic measurements, the competent authorities shall lay down appropriate measurement programmes to ensure that the results are representative of the normal level of emissions of the substances concerned.
 The results obtained must be suitable for verifying that the limit values applicable have been observed.

- 6. The Council acting by a qualified majority on a proposal from the Commission shall adopt the appropriate decisions concerning the steps to be taken to measure emissions of polychlorinated dibenzodioxins and of polychlorinated dibenzofurans from new municipal waste incineration plants and the reference methods to be used for measuring these substances as soon as the state of knowledge in this field will permit it.

Article 7

Within the time limit laid down in Article 2.a. of this Directive, all existing municipal waste incineration plants shall be equipped with auxiliary burners. These burners must be switched on automatically when the temperature of the combustion gases falls below 850°C. They shall also be used during plant start-up and shut-down operations in order to ensure that the abovementioned minimum temperature is maintained at all times during these operations and as long as the waste is in the combustion chamber.

However, if the total utilization time of these burners exceeds 5% of the total plant operation time for seven consecutive days, appropriate measures must be taken to restore adequate combustion conditions.

Article 8

1. Should the measurements taken show that the limit values laid down in this Directive have been exceeded, the competent authority shall be informed as soon as possible. It shall lay down appropriate emergency measures to ensure that the abovementioned limits are again observed. Plants which do not comply with these provisions shall no longer be operated.

2. The competent authorities shall lay down the maximum permissible period of any breakdowns or stoppages of the purification devices during which the concentrations in the discharges into the air of the substances which these devices are designed to reduce exceed the limit values laid down. Under no circumstances may they exceed 16 hours uninterrupted operation; their cumulative duration over a year shall be less than 200 hours.
 The dust content of the discharges shall under no circumstances exceed 600 mg/Nm³ during the periods referred to in the preceding paragraph, and all the other conditions, in particular the combustion conditions, shall be complied with.

Article 9

The public shall be informed of the obligations imposed in respect of existing incineration plants pursuant to this Directive. The public will also have access, in accordance with appropriate procedures and in the form decided upon by the competent authorities, at sufficient intervals, to the results of measurements of pollutant emissions and measurements relating to the plant operating conditions.

Article 10

Member States shall take the necessary measures to ensure that compliance with the conditions imposed on existing incineration plants pursuant to this Directive is verified by the competent authorities.

Article 11

Member States may adopt more stringent provisions than those of this Directive, where necessary, in order to protect health and the environment.

Article 12

1. Member States shall bring into force the laws, regulations and administrative provisions necessary to comply with this Directive not later than (30 June 1989). They shall forthwith inform the Commission thereof.
2. Member States shall communicate to the Commission the texts of the provisions of national law which they adopt in the field governed by this Directive.

Article 13

This Directive is addressed to the Member States.

Done at Brussels,

For the Council
The President

SMALL BUSINESS IMPACT STATEMENT

These proposals for Council Directives should not have any direct effect on small and medium size businesses, which are not concerned with municipal waste incineration.

Some makers of small-sized incinerators could nevertheless be persuaded to re-orientate their production towards larger and more efficient installations.

FICHE D'IMPACT SUR LA COMPETITIVITE ET L'EMPLOI

I. Quelle est la justification principale de la mesure?
Il s'agit de réduire la pollution atmosphérique en provenance des installations d'incinération des déchets municipaux et de fixer des normes d'émission pour ces installations aux termes de l'article 8 de la directive 360/84.

II. Caractéristiques des entreprises concernées. En particuliers :

- Y a-t-il un grand nombre de PME?
Les PME ne sont pas en général concernées par l'incinération des déchets municipaux.
 - note t-on des concentrations dans des régions?
 - . éligibles aux aides régionales des Etats membres?
 - . éligibles au FEDER?
- non applicable

III. Quelles sont les obligations imposées directement aux entreprises?
Aucune. L'incinération des déchets municipaux est gérée par les collectivités locales.

IV. Quelles sont les obligations susceptibles d'être imposées indirectement aux entreprises via les autorités locales?
Le seul effet indirect sera représenté par les spécifications plus sévères requises des fournisseurs d'équipement (fours, équipement des filtrage, etc.)
A ce point de vue les spécialistes de fours de petite taille devrait probablement réorienter leur production.

V. Y a-t-il des mesures spéciales pour les PME? Lesquelles?
NON

VI. Quel est l'effet prévisible?
- sur la compétitivité des entreprises?

} aucun effet sensible dans le secteur de PME

- sur l'emploi

VII. Les partenaires sociaux ont-ils été consultés?

- avis des partenaires sociaux non applicable
- en général commentaires positifs (syndicats, employeurs).