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**COUNCIL DIRECTIVE**

**of 12 June 1986**

**on limit values and quality objectives for discharges of certain dangerous substances included in List I of the Annex to Directive 76/464/EEC**

(86/280/EEC)

(OJ L 181, 4.7.1986, p. 16)

Amended by:

|                    |   | Official Journal |      |            |
|--------------------|---|------------------|------|------------|
|                    |   | No               | page | date       |
| ► <b><u>M1</u></b> | Council Directive 88/347/EEC of 16 June 1988  | L 158            | 35   | 25.6.1988  |
| ► <b><u>M2</u></b> | Council Directive 90/415/EEC of 27 July 1990  | L 219            | 49   | 14.8.1990  |
| ► <b><u>M3</u></b> | Council Directive 91/692/EEC of 23 December 1991  | L 377            | 48   | 31.12.1991 |
| ► <b><u>M4</u></b> | Directive 2008/105/EC of the European Parliament and of the Council of 16 December 2008 | L 348            | 84   | 24.12.2008 |

Corrected by:

- **C1** Corrigendum, OJ L 210, 1.8.1986, p. 108 (86/280/EEC)
- **C2** Corrigendum, OJ L 221, 7.8.1986, p. 51 (86/280/EEC)

**COUNCIL DIRECTIVE****of 12 June 1986****on limit values and quality objectives for discharges of certain dangerous substances included in List I of the Annex to Directive 76/464/EEC****(86/280/EEC)**

THE COUNCIL OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Economic Community, and in particular Articles 100 and 235 thereof,

Having regard to Council Directive 76/464/EEC of 4 May 1976 on pollution caused by certain dangerous substances discharged into the aquatic environment of the Community <sup>(1)</sup>, and in particular Article 6 thereof,

Having regard to the proposal from the Commission <sup>(2)</sup>,

Having regard to the opinion of the European Parliament <sup>(3)</sup>,

Having regard to the opinion of the Economic and Social Committee <sup>(4)</sup>,

Whereas, in order to protect the aquatic environment of the Community against pollution by certain dangerous substances, Article 3 of Directive 76/464/EEC introduces a system of prior authorization laying down emission standards for discharges of the substances in List I in the Annex thereto; whereas Article 6 of the said Directive provides that limit values shall be laid down for such emission standards and also quality objectives for the aquatic environment affected by discharges of these substances;

Whereas Member States are required to apply the limit values except in cases where they may employ quality objectives;

Whereas the dangerous substances covered by this Directive have been chosen mainly on the basis of the criteria adopted in Directive 76/464/EEC;

Whereas, since pollution due to the discharge of these substances into the aquatic environment is caused by a large number of industries, it is necessary to lay down specific limit values for discharges according to the type of industry concerned and to lay down quality objectives for the aquatic environment into which these substances are discharged;

Whereas the purpose of the limit values and quality objectives is to eliminate pollution of the various parts of the aquatic environment which might be affected by discharges of these substances;

Whereas such limit values and quality objectives must be laid down for this purpose and not with the intention of establishing rules pertaining to consumer protection or to the marketing of products from the aquatic environment;

Whereas, to enable Member States to demonstrate that the quality objectives are being met, provision should be made for reports to the Commission for each quality objective chosen and applied;

Whereas Member States should seek to ensure that the measures taken pursuant to this Directive do not have the effect of increasing soil or air pollution;

Whereas, moreover, for the purposes of effective implementation of this Directive, provision should be made for the monitoring by the Member

<sup>(1)</sup> OJ No L 129, 18.5.1976, p. 23.

<sup>(2)</sup> OJ No C 70, 18.3.1985, p. 15.

<sup>(3)</sup> OJ No C 120, 20.5.1986.

<sup>(4)</sup> OJ No C 188, 29.7.1985, p. 19.

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States of the aquatic environment affected by discharges of the substances in question; whereas the powers to introduce such monitoring are not provided by Directive 76/464/EEC; whereas, since the specific powers have not been provided for in the Treaty, recourse should be had to Article 235 thereof;

Whereas, in the case of certain significant sources of pollution by these substances other than sources subject to Community limit values or national emission standards, specific programmes should be devised to eliminate the pollution; whereas the necessary powers to that effect have not been provided by Directive 76/464/EEC; whereas, since the specific powers have not been provided for in the EEC Treaty, recourse should be had to Article 235 thereof;

Whereas ground water can be excluded from the scope of this Directive since it is the subject of Directive 80/68/EEC <sup>(1)</sup>;

Whereas, for the purposes of effective implementation of this Directive, it is important that the Commission should forward to the Council, every five years, a comparative assessment of its implementation by the Member States;

Whereas this Directive will have to be amended and supplemented, on proposals from the Commission, in line with developments in scientific knowledge relating principally to the toxicity, persistence and accumulation of the substances referred to in living organisms and sediments, or in the event of an improvement in the best technical means available; whereas it is necessary, for that purpose, to provide for additions to this Directive, relating to measures in respect of other dangerous substances, and for amendments to the content of the Annexes,

HAS ADOPTED THIS DIRECTIVE:

*Article 1*

1. This Directive:

- lays down, pursuant to (SIC! to) Article 6 (1) of Directive 76/464/EEC, limit values for emission standards for the substances referred to in Article 2 (a) in discharges from industrial plants as defined in Article 2 (e) of this Directive,
- lays down, pursuant to Article 6 (2) of Directive 76/464/EEC, quality objectives for the substances referred to in Article 2 (a) of this Directive in the aquatic environment,
- lays down, pursuant to Article 6 (4) of Directive 76/464/EEC, the time limits for compliance with the conditions specified in the authorizations granted by the competent authorities of Member States in respect of existing discharges,
- lays down, pursuant to Article 12 (1) of Directive 76/464/EEC, the reference methods of measurement enabling the content of the substances referred to in Article 2 (a) of this Directive in discharges and in the aquatic environment to be determined,
- establishes, pursuant to Article 6 (3) of Directive 76/464/EEC, a monitoring procedure,
- requires Member States to cooperate with one another in the case of discharges affecting the waters of more than one Member State,
- requires Member States to draw up programmes to avoid or eliminate pollution arising from the sources referred to in Article 5,
- lays down in Annex I a set of general provisions applicable to all the substances referred to in Article 2 (a) and relating, in particular,

<sup>(1)</sup> OJ No L 20, 26.1.1980, p. 43.

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- to limit values for emission standards (heading A), quality objectives (heading B) and reference methods of measurement (heading C),
- lays down in Annex II a set of specific provisions which amplify and supplement those headings in respect of individual substances.
2. This Directive applies to the waters referred to in Article 1 of Directive 76/464/EEC, with the exception of ground water.

*Article 2*

For the purposes of this Directive:

- (a) ‘substances’ means:
- those dangerous substances, belonging to the families and groups of substances appearing in List I in the Annex to Directive 76/464/EEC, which are specified in Annex II to this Directive;
- (b) ‘limit-values’ means:
- the values specified in Annex II, under heading A, in respect of the substances referred to in (a);
- (c) ‘quality objectives’ means:
- the requirements specified in Annex II, under heading B, in respect of the substances referred to in (a);
- (d) ‘handling of substances’ means:
- any industrial process involving the production, the processing or use of the substances referred to in (a), or any other industrial process in which the presence of such substances is inherent;
- (e) ‘industrial plant’ means:
- a plant at which the substances referred to in (a), or any other substances containing them, are handled;
- (f) ‘existing plant’ means:
- an industrial plant which is operational at a date 12 months after the date of notification of this Directive or, where applicable, at a date 12 months after the date of notification of any Directive amending it that relates to such plant;
- (g) ‘new plant’ means:
- an industrial plant which becomes operational later than 12 months after the date of notification of this Directive or, where applicable, later than 12 months after the date of notification of any Directive amending it that relates to such plant,
  - an existing industrial plant whose capacity for handling the substances is substantially increased later than 12 months after the date of notification of this Directive or, where applicable, later than 12 months after the date of notification of any Directive amending it that relates to such plant.

*Article 3*

1. The limit values, the time limits for compliance therewith and the procedures for monitoring discharges are laid down in the Annexes, under heading A.
2. The limit values shall normally apply at the point where waste waters containing the substances referred to in Article 2 (a) leave the industrial plant.
- Should it be considered necessary in the case of certain substances to lay down other points where the limit values shall apply, these points shall be listed in Annex II.

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When waste waters containing these substances are treated outside the industrial plant at a treatment plant intended for their removal, the Member State may permit the limit values to be applied at the point where the waste waters leave the treatment plant.

3. The authorizations referred to in Article 3 of Directive 76/464/EEC must contain provisions as stringent as those set out under heading A in the Annexes to this Directive, except where a Member State is complying with Article 6 (3) of Directive 76/464/EEC on the basis of heading B in the Annexes to this Directive.

Authorizations shall be reviewed at least every four years.

4. Without prejudice to their obligations arising from paragraphs 1, 2 and 3 and to Directive 76/464/EEC, Member States may grant authorizations for new plants only if those plants apply the standards corresponding to the best technical means available when that is necessary for the elimination of pollution in accordance with Article 2 of the said Directive or for the prevention of distortions of competition.

Whatever method it adopts, the Member State concerned shall, where for technical reasons the measures envisaged do not correspond to the best technical means available, provide the Commission, before any authorization, with evidence in support of those reasons.

The Commission shall immediately forward such evidence to the other Member States and shall send all Member States a report, at the earliest opportunity, giving its opinion on the derogation referred to in the second subparagraph. If necessary, it shall at the same time submit appropriate proposals to the Council.

5. The reference method of analysis to be used in determining the presence of the substances referred to in Article 2 (a) is given under heading C in Annex II. Other methods may be used provided that the limits of detection, precision and accuracy of such methods are at least as good as those laid down under heading C in Annex II.

6. Member States shall seek to ensure that the measures taken pursuant to this Directive do not result in an increase in the pollution of other media, notably soil and air, by these substances.

*Article 4*

The Member States concerned shall be responsible for monitoring the aquatic environment affected by discharges from industrial establishments and by other sources of significant discharges.

In the case of discharges affecting the waters of more than one Member State, the Member States concerned shall cooperate with a view to harmonizing monitoring procedures.

*Article 5*

1. As regards substances to which specific reference is made in Annex II, the Member States shall draw up specific programmes to avoid or eliminate pollution from significant sources of these substances (including multiple and diffuse sources) other than sources of discharges subject to Community limit value rules or national emission standards.

2. The programmes shall include the most appropriate measures and techniques for the replacement, retention and/or recycling of the substances referred to in paragraph 1.

3. The specific programmes must be implemented not later than five years after the date of notification of the Directive which relates specifically to the substance concerned.

**▼B***Article 6***▼M3**

1. At intervals of three years the Member States shall send information to the Commission on the implementation of this Directive, in the form of a sectoral report which shall also cover other pertinent Community Directives. This report shall be drawn up on the basis of a questionnaire or outline drafted by the Commission in accordance with the procedure laid down in Article 6 of Directive 91/692/EEC <sup>(1)</sup>. The questionnaire (SIC! questionnaire) or outline shall be sent to the Member States six months before the start of the period covered by the report. The report shall be sent to the Commission within nine months of the end of the three-year period covered by it.

The first report shall cover the period from 1993 to 1995 inclusive.

The Commission shall publish a Community report on the implementation of the Directive within nine months of receiving the reports from the Member States.

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2. Should there be a change in scientific knowledge relating principally to the toxicity, persistence and accumulation of the substances referred to in Article 2 (a) in living organisms and sediments, or in the event of an improvement in the best technical means available, the Commission shall submit appropriate proposals to the Council with the aim of making the limit values and the quality objectives more stringent, if appropriate, or of establishing new limit values and additional quality objectives.

*Article 7*

1. Member States shall bring into force the measures necessary to comply with this Directive by 1 January 1988. They shall forthwith inform the Commission thereof.

2. Member States shall communicate to the Commission, immediately after adoption, the texts of the provisions of national law which they adopt in the field governed by this Directive.

*Article 8*

This Directive is addressed to the Member States.

<sup>(1)</sup> OJ No L 377, 31.12.1991, p. 48.



## ANNEX I

### GENERAL PROVISIONS

This Annex is divided into three headings which set out the general provisions applicable to all the substances concerned:

- A: limit values for emission standards,
- B: quality objectives,
- C: reference methods of measurement.

The general provisions are amplified and supplemented in Annex II by a series of specific provisions applicable to individual substances.

#### HEADING A

##### **Limit values, dates set for compliance therewith and procedures for monitoring discharges**

1. The limit values and the dates set for compliance therewith are set out in Annex II, under heading A, in respect of the different types of industrial plant concerned.
2. The quantities of substances discharged are expressed in terms of the quantity of substances produced, processed or used by the industrial plant during the same period or, in accordance with Article 6 (1) of Directive 76/464/EEC, of another parameter characteristic of that activity.
3. Limit values for industrial plants which discharge substances referred to in Article 2 (a) and which are not mentioned under heading A in Annex II will, where necessary, be determined by the Council at a later stage. Meanwhile, the Member States will independently set, in accordance with Directive 76/464/EEC, emission standards for discharges of such substances. Such standards must take into account the best technical means available and must not be less stringent than the most nearly comparable limit value set out under heading A in Annex II.

This paragraph will also apply where an industrial plant has activities other than those for which limit values have been set under heading A in Annex II and which are likely to be a source of discharges of the substances referred to in Article 2 (a).

4. Limit values expressed as concentrations which, in principle, must not be exceeded are given in Annex II under heading A, in respect of the industrial plants concerned. In no instance may limit values expressed as maximum concentrations, when they are not the only values applicable, be greater than limit values expressed by weight divided by water requirements per element characteristic of the polluting activity. However, because the concentration of these substances in effluents depends on the volume of water involved, which varies for different processes and plants, the limit values expressed in terms of the weight of the substances discharged in relation to the parameters characteristic of the activity given under heading A in Annex II, must be complied with in all cases.
5. A monitoring procedure must be instituted to check whether the discharges of the substances referred to in Article 2 (a) comply with the emission standards.

This procedure must provide for the taking and analysis of samples and for measurement of the flow of the discharge and the quantity of substances handled or, where appropriate, measurement of the parameters characteristic of the activity causing pollution as listed in Annex II, heading A.

In particular, should the quantity of substances handled be impossible to determine, the monitoring procedure may be based on the quantity of substances that may be used as a function of the production capacity on which the authorization was based.

6. A sample representative of the discharge over a period of 24 hours must be taken. The quantity of substances discharged over one month must be calculated on the basis of the daily quantities of substances discharged.

Annex II may, however, lay down for discharges of certain substances quantitative thresholds below which the Member States may apply a simplified monitoring procedure.

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7. The sampling and flow measurement provided for in paragraph 5 shall normally be effected at the points of application of the limit values provided for in Article 3 (2).

However, where necessary to ensure that the measurements comply with the requirements of heading C of the Annexes, a Member State may allow the sampling and flow measurement to be effected at another point before that at which the limit values apply, provided that:

- all waters discharged from the plant that may have been polluted by the substance in question are taken into account by those measurements,
- regular checks show that the measurements are fully representative of the quantities discharged at the points of application of the limit values or are always higher.

## HEADING B

**Quality objectives, dates set for compliance therewith and procedure for monitoring compliance with them**

1. For those Member States which opt for the exception provided for in Article 6 (3) of Directive 76/464/EEC, the emission standards which they must establish and apply, pursuant to Article 5 of that Directive, will be fixed so that the appropriate quality objective or objectives from those fixed pursuant to paragraphs 2 and 3 below is or are complied with in the area affected by discharges of the substances referred to in Article 2 (a). The competent authority will determine the area affected in each case and will select from the quality objectives fixed pursuant to paragraphs 2 and 3 below the objective or objectives that it deems appropriate having regard to the intended use of the area affected, while taking account of the fact that the purpose of this Directive is to eliminate all pollution.
2. With a view to eliminating pollution, as defined in Directive 76/464/EEC, and pursuant to Article 2 of that Directive, the quality objectives and dates set for compliance therewith are set out under heading B in Annex II.
3. Unless otherwise specified under heading B in Annex II, all the concentrations mentioned as quality objectives refer to the arithmetic mean of the results obtained over a year.
4. Where more than one quality objective is applied to waters within one area, the quality of the water must be sufficient to comply with each of those objectives.
5. For each authorization granted pursuant to this Directive, the competent authority will specify the detailed rules, monitoring procedures and dates for ensuring compliance with the quality objective or objectives concerned.
6. In accordance with Article 6 (3) of Directive 76/464/EEC, the Member States will, for each quality objective chosen and applied, report to the Commission on:
  - the points of discharge and the means of dispersal,
  - the area in which the quality objective is applied,
  - the location of sampling points,
  - the frequency of sampling,
  - the methods of sampling and measurement,
  - the results obtained.
7. Samples must be taken at a point sufficiently close to the discharge point to be representative of the quality of the aquatic environment in the area affected by the discharges, and the frequency of sampling must be sufficient to show any changes in the aquatic environment, having regard in particular to natural variations in hydrological conditions.

## HEADING C

**Reference methods of measurement and limit of detection**

1. The definitions given in Council Directive 79/869/EEC of 9 October 1979 concerning the methods of measurement and frequencies of sampling and



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analysis of surface water intended for the abstraction of drinking water in the Member States <sup>(1)</sup> will apply in the context of this Directive.

2. The reference methods of measurement to be used for determining the concentration of the substances in question and the limit of detection for the environment concerned are set out under heading C in Annex II.
3. The limit of detection, the accuracy and the precision of the method are specified for each substance under heading C in Annex II.
4. Effluent flow measurements must be carried out to an accuracy of  $\pm 20$  %.

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<sup>(1)</sup> OJ No L 271, 29.10.1979, p. 44.

**▼B***ANNEX II***SPECIFIC PROVISIONS**

1. Relating to carbon tetrachloride
2. Relating to DDT
3. Relating to pentachlorophenol

**▼M1**

4. Relating to aldrin, dieldrin, endrin and isodrin
5. Relating to hexachlorobenzene
6. Relating to hexachlorobutadiene
7. Relating to chloroform

**▼M2**

8. Relating to 1,2-dichloroethane (EDC)
9. Relating to trichloroethylene (TRI)
10. Relating to perchloroethylene (PER)
11. Relating to trichlorobenzene (TCB).

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The numbering of the substances listed in this Annex corresponds to the list of 129 substances contained in the communication from the Commission to the Council of 22 June 1982 <sup>(1)</sup>.

Should substances be included in future in this Annex which are not set out in the abovementioned list, they shall be numbered in chronological order of inclusion beginning with No 130.

**I. Specific provisions relating to carbon tetrachloride (No 13) <sup>(2)</sup>**CAS No 56-23-5 <sup>(3)</sup>*Heading A (13): Limit values for emission standards*

| Type of industrial plant <sup>(1)</sup> <sup>(2)</sup>   | Type of average value | Limit values expressed as <sup>(3)</sup>  |               | To be complied with as from |
|--|-----------------------|---|---------------|-----------------------------|
|  |                       | weight  | concentration |                             |
| 1. Carbon tetrachloride production by perchlorination  | Monthly               | a) process involving washing: 40 g CCl <sub>4</sub> per tonne of total production capacity of CCl <sub>4</sub> and perchlorethylene | 1,5 mg/l      | } 1. 1. 1988                |
|  |                       | b) process not involving washing: 2,5 g/tonne   | 1,5 mg/l      |                             |
|  | Daily                 | a) process involving washing: 80 g/tonne  | 3 mg/l        |                             |
|  |                       | b) process not involving washing: 5 g/tonne   | 3 mg/l        |                             |
| 2. Production of chloromethanes by methane chlorination (including high-pressure electrolytic chlorine generation) and from methanol | Monthly               | 10 g CCl <sub>4</sub> per tonne of total production capacity of chloromethanes  | 1,5 mg/l      | } 1. 1. 1988                |
|  | Daily                 | 20 g/tonne  | 3 mg/l        |                             |

<sup>(1)</sup> OJ No C 176, 14.7.1982, p. 3.

<sup>(2)</sup> Article 5 applies in particular to use of carbon tetrachloride in industrial laundries.

<sup>(3)</sup> CAS (Chemical Abstract Service) number.

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| Type of industrial plant <sup>(1)</sup> <sup>(2)</sup> | Type of average value | Limit values expressed as <sup>(3)</sup> |               | To be complied with as from |
|--|-----------------------|--|---------------|-----------------------------|
|  |                       | weight                                   | concentration |                             |
| 3. Production of chlorofluorocarbons <sup>(4)</sup>    | Monthly               | —  | —             | —                           |
|  | Daily                 | —  | —             | —                           |

<sup>(1)</sup> Among the industrial establishments referred to under heading A, point 3, of Annex I, reference is made in particular to plants using carbon tetrachloride as solvent.

<sup>(2)</sup> A simplified monitoring procedure may be introduced if annual discharges do not exceed 30 kg a year.

<sup>(3)</sup> In view of the volatility of carbon tetrachloride and in order to ensure compliance with Article 3 (6), where a process involving agitation in the open air of effluent containing carbon tetrachloride is used, the Member States shall require compliance with the limit values upstream of the plant concerned; they shall ensure that all water likely to be polluted is taken fully into account.

<sup>(4)</sup> It is not possible at present to adopt limit values for this sector. The Council is to adopt such limit values at a later date, acting on a Commission proposal.

**▼M4****▼B***Heading C (13): Reference method of measurement*

1. The reference method of measurement to be used for determining the presence of tetrachloride in effluents and water is gas chromatography.

A sensitive detector must be used when concentration levels are below 0,5 mg/l and in this case the determination limit <sup>(1)</sup> is 0,1 µg/l. For concentration levels higher than 0,5 mg/l a determination limit <sup>(1)</sup> of 0,1 mg/l is acceptable.

2. The accuracy and precision of the method must be ± 50 % at a concentration which represents twice the value of the determination limit <sup>(1)</sup>.

**II. Specific provisions relating to DDT (No 46) ►C2 <sup>(2)</sup> ◄ <sup>(3)</sup>**

CAS No 50 - 29 - 3 <sup>(4)</sup>

STANDSTILL: The concentration of DDT in the aquatic environment, sediments and/or molluscs and/or shellfish and/or fish must not increase significantly with time.

*Heading A (46): Limit values for emission standards <sup>(1)</sup> <sup>(2)</sup>*

| Type of industrial plant <sup>(3)</sup> <sup>(4)</sup>          | Type of average value | Limit value expressed as                        |                          | To be complied with as from |
|---|-----------------------|---|--------------------------|-----------------------------|
|   |                       | g/tonne of substances produced, handled or used | mg/l of water discharged |                             |
| Production of DDT including formulation of DDT on the same site | Monthly               | 8   | 0,7                      | 1. 1. 1988                  |
|   | Daily                 | 16  | 1,3                      | 1. 1. 1988                  |
|   | Monthly               | 4   | 0,2                      | 1. 1. 1991                  |
|   | Daily                 | 8   | 0,4                      | 1. 1. 1991                  |

<sup>(1)</sup> With regard to new plants, the best technical means available must already make it possible to lay down, for DDT, emission standards lower than 1 g/tonne substances produced.

<sup>(2)</sup> On the basis of experience gained in implementing this Directive, the Commission will submit to the Council, pursuant to Article 6 (3) of this Directive, in good time, proposals aimed at fixing more stringent limit values to enter into force by 1994.

<sup>(3)</sup> Among the industrial plants referred to under heading A, point 3, of Annex I, reference is made in particular to plants formulating DDT away from the production site and to the dicofol production industry.

<sup>(4)</sup> A simplified monitoring procedure may be introduced if annual discharges do not exceed 1 kg a year.

<sup>(1)</sup> The 'determination limit' is the smallest quantity, quantitatively determinable in a sample on the basis of a given working method, which can still be distinguished from zero.

<sup>(2)</sup> The sum of the isomers 1,1,1-trichloro-2,2 bis (*p*-chlorophenyl) ethane; 1,1,1-trichloro-2 (*o*-chlorophenyl)-2-(*p*-chlorophenyl) ethane; 1,1-dichloro-2,2 bis (*p*-chlorophenyl) ethylene; and 1,1-dichloro-2,2 bis (*p*-chlorophenyl) ethane.

<sup>(3)</sup> Article 5 applies to DDT if sources other than those mentioned in this Annex are identified.

<sup>(4)</sup> CAS (Chemical Abstract Service) number.

▼ **M4**▼ **B***Heading C (46): Reference method of measurement*

1. The reference method of measurement to be used for determining DDT in effluents and the aquatic environment is gas chromatography with electron capture detection after extraction by means of an appropriate solvent. The limit of determination <sup>(1)</sup> ► **C1** for total DDT is approximately 4 ng/l for the aquatic environment ◀ and 1 µg/l for effluents, depending on the number of extraneous substances present in the sample.
2. The reference method to be used for determining DDT in sediments and organisms is gas chromatography with electron capture detection after appropriate preparation of samples. The limit of determination <sup>(1)</sup> is 1 µg/kg.
3. The accuracy and precision of the method must be ± 50 % at a concentration which represents twice the value of the limit of determination <sup>(1)</sup>.

**III. Specific provisions relating to pentachlorophenol (No 102) <sup>(2)</sup> <sup>(3)</sup>**CAS 87-86-5 <sup>(4)</sup>

STANDSTILL: The concentration of PCP in sediments and/or molluscs and/or shellfish and/or fish must not increase significantly with time.

*Heading A (102): Limit values for emission standards*

| Type of industrial plant <sup>(1)</sup> <sup>(2)</sup>                     | Type of average value | Limit values expressed as               |                          | To be complied with as from |
|--|-----------------------|---|--------------------------|-----------------------------|
|  |                       | g/tonne production/utilization capacity | mg/l of water discharged |                             |
| Production of sodium pentachlorophenate by hydrolysis of hexachlorobenzene | Monthly               | 25                                      | 1                        | 1. 1. 1988                  |
|  | Daily                 | 50                                      | 2                        | 1. 1. 1988                  |

<sup>(1)</sup> Among the industrial plants referred to under heading A, point 3, of Annex I, reference is made in particular to plants producing sodium pentachlorophenate by saponification and those producing pentachlorophenol by chlorination.

<sup>(2)</sup> A simplified monitoring procedure may be introduced if annual discharges do not exceed 3 kg a year.

▼ **M4**▼ **B***Heading C (102): Reference method of measurement*

1. The reference method of measurement to be used for determining pentachlorophenol in effluents and the aquatic environment is high-pressure liquid chromatography with electron-capture detection after extraction by means of an appropriate solvent. The limit of determination <sup>(1)</sup> is 2 µg/l for effluents and 0,1 µg/l for the aquatic environment.
2. The reference method to be used for determining pentachlorophenol in sediments and organisms is high-pressure liquid chromatography or gas chromatography with electroncapture (SIC! electron-capture) detection after appropriate preparation of samples. The limit of determination <sup>(1)</sup> is 1 µg/kg.
3. The accuracy and precision of the method must be ± 50 % at a concentration which represents twice the value of the limit of determination <sup>(1)</sup>.

▼ **M1****IV. Specific provisions relating to:**

- **aldrin (No 1)** <sup>(1)</sup> CAS-No 309-00-2
- **dieldrin (No 71)** <sup>(2)</sup> CAS-No 60-57-1
- **endrin (No 77)** <sup>(3)</sup> CAS-No 72-20-8

<sup>(1)</sup> The 'limit of determination'<sup>xg</sup> of a given substance is the smallest quantity, quantitatively determinable in a sample on the basis of a given working method, which can still be distinguished from zero.

<sup>(2)</sup> The chemical compound 2,3,4,5,6-Pentachloro-l-hydroxybenzene and its salts.

<sup>(3)</sup> Article 5 applies to pentachlorophenol, and particularly to its use for treating wood.

<sup>(4)</sup> CAS (Chemical Abstract Service) number.

▼ **M1**— **isodrin (No 130) <sup>(4)</sup>** CAS-No 465-73-6

- <sup>(1)</sup> Aldrin is the chemical compound C<sub>12</sub>H<sub>8</sub>Cl<sub>6</sub>  
1, 2, 3, 4, 10, 10-hexachloro-1, 4, 4a, 5, 8, 8a-hexahydro-1, 4-endo-5, 8-exo-dimethanonaphthalene.
- <sup>(2)</sup> Dieldrin is the chemical compound C<sub>12</sub>H<sub>8</sub>Cl<sub>6</sub>O  
1, 2, 3, 4, 10, 10-hexachloro-6, 7-epoxy-1, 4, 4a, 5, 6, 7, 8, 8a-octahydro-1, 4-endo-5, 8-exo-dimethanonaphthalene.
- <sup>(3)</sup> Endrin is the chemical compound C<sub>12</sub>H<sub>8</sub>Cl<sub>6</sub>O  
1, 2, 3, 4, 10, 10-hexachloro-6, 7-epoxy-1, 4, 4a, 5, 6, 7, 8, 8a-octahydro-1, 4-endo-5, 8-endo-dimethanonaphthalene.
- <sup>(4)</sup> Isodrin is the chemical compound C<sub>12</sub>H<sub>8</sub>Cl<sub>6</sub>  
1, 2, 3, 4, 10, 10-hexachloro-1, 4, 4a, 5, 8, 8a-hexahydro-1, 4-endo-5, 8-endo-dimethanonaphthalene.

*Heading A (1, 71, 77, 130): Limit values for emission standards <sup>(1)</sup>*

| Type of industrial plant <sup>(1)</sup>   | Type of average value |  |                   |   | To be complied with as from |
|---|-----------------------|--|-------------------|---|-----------------------------|
|   |                       | Limit value expressed as   | Weight            | Concentration in effluent µg/l of water discharged <sup>(2)</sup> |                             |
| Production of aldrin and/or dieldrin and/or endrin including formulation of these substances on the same site | Monthly               | 3 g per tonne of total production capacity (g/tonne)                 | 2                 | 1. 1. 1989  |                             |
|   | Daily                 | 15 g per tonne of total production capacity (g/tonne) <sup>(3)</sup> | 10 <sup>(3)</sup> | 1. 1. 1989  |                             |

- <sup>(1)</sup> Among the industrial plants referred to under heading A, point 3, of Annex I, reference is made in particular to plants formulating aldrin, and/or dieldrin and/or endrin away from the production site.
- <sup>(2)</sup> These figures take account of the total amount of water passing through the plant.
- <sup>(3)</sup> If possible, daily values should not exceed twice the monthly value.

▼ **M4**▼ **M1***Heading C (1, 71, 77, 130): Reference method of measurement*

- The reference method of measurement to be used for determining aldrin, dieldrin, endrin and/or isodrin in effluents and the aquatic environment is gas chromatography with electron-capture detection after extraction by means of an appropriate solvent. The limit of determination <sup>(2)</sup> for each substance is 2,5 ng/l for the aquatic environment and 400 ng/l for effluents, depending on the number of parasite substances present in the sample.
- The reference method to be used for determining aldrin, dieldrin and/or endrin and/or isodrin in sediments and organisms is gas chromatography with electron-capture detection after appropriate preparation of samples. The limit of determination is 1 µg/kg dry weight for each separate substance.
- The accuracy and precision of the method must be ± 50 % at a concentration which represents twice the value of the limit of determination.

**V. Specific dispositions relating to hexachlorobenzene (HCB) (No 83)**

CAS-118-74-1

*Heading A (83): Limit values for emission standards*

Standstill: There must be no significant direct or indirect increase over time in pollution arising from discharges of HCB and affecting concentrations in sediments and/or molluscs and/or shellfish and/or fish.

- <sup>(1)</sup> The limit values indicated in this heading shall apply to the total discharge of aldrin, dieldrin and endrin.  
If the effluent resulting from the production or use of aldrin, dieldrin and/or endrin (including formulation of these substances) also contains isodrin, the limit values laid down above shall apply to the total discharges of aldrin, dieldrin, endrin and isodrin.
- <sup>(2)</sup> The 'limit of determination' of a given substance is the smallest quantity, quantitatively determinable in a sample on the basis of a given working method, which can still be distinguished from zero.

▼ **M1**

| Type of industrial plant <sup>(1)</sup> <sup>(2)</sup> <sup>(3)</sup>                                     | Type of average value | Limit values expressed as   |                 | To be complied with as from |
|---|-----------------------|---|-----------------|-----------------------------|
|   |                       | weight  | concentration   |                             |
| 1. HCB production and processing  | monthly               | 10 g HCB/tonne of HCB production capacity                           | 1 mg/l of HCB   | } 1. 1. 1990                |
|   | daily                 | 20 g HCB/tonne of HCB production capacity                           | 2 mg/l of HCB   |                             |
| 2. Production of perchloro ethylene (PER) and carbon tetrachloride (CCl <sub>4</sub> ) by perchlorination | monthly               | 1,5 g HCB/tonne of PER + CCl <sub>4</sub> total production capacity | 1,5 mg/l of HCB | } 1. 1. 1990                |
|   | daily                 | 3g HCB/tonne of PER + CCl <sub>4</sub> total production capacity    | 3 mg/l of HCB   |                             |
| 3. Production of trichloroethylene and/or perchloroethylene by any other process <sup>(4)</sup>           | monthly               | —   | —               | —                           |
|   | daily                 | —   | —               | —                           |

<sup>(1)</sup> A simplified monitoring procedure may be introduced if annual discharges do not exceed 1 kg a year.

<sup>(2)</sup> Among the industrial plants referred to in Annex I, heading A, point 3, reference is made in particular to industrial plants producing quintozone and tecnazene, industrial plants producing chlorine by chlor-alkali electrolysis with graphite electrodes, industrial rubber processing plants, plants manufacturing pyrotechnic products and plants producing vinylchloride.

<sup>(3)</sup> On the basis of experience gained in implementing the Directive, and taking into account the fact that the use of best technical means already makes it possible to apply in some cases much more stringent values than those indicated above, the Council shall decide, on the basis of proposals from the Commission, upon more stringent limit values, such decision to be taken by 1 January 1995.

<sup>(4)</sup> It is not possible at present to adopt limit values for this sector. The Council shall adopt such limit values at a later stage, acting on a proposal from the Commission. In the meantime, Member States will apply national emission standards in accordance with Annex I, heading A, point 3.

▼ **M4**▼ **M1***Heading C (83): Reference method of measurement*

1. The reference method of measurement to be used for determining the presence of HCB in effluents and waters is gas chromatography with electron-capture detection after extraction by means of an appropriate solvent.

The limit of determination <sup>(1)</sup> for HCB shall be within the range 1 to 10 ng/l for waters and 0,5 to 1 µg/l for effluents depending on the number of extraneous substances present in the sample.

2. The reference method to be used for determining HCB in sediments and organisms is gas chromatography with electron-capture detection after appropriate preparation of the sample. The limit of determination <sup>(1)</sup> shall be within the range 1 to 10 µg/kg of dry matter.
3. The accuracy and precision of the method must be ± 50 % at a concentration which represents twice the value of the limit of determination <sup>(1)</sup>.

**VI. Specific provisions relating to hexachlorobutadiene (HCBD) (No 84)**

CAS-87-68-3

*Heading A (84): Limit values for emission standards*

Standstill: There must be no significant direct or indirect increase over time in pollution arising from discharges of HCB and affecting concentrations in sediments and/or molluscs and/or shellfish and/or fish.

<sup>(1)</sup> The 'limit of determination' x g of a given substance is the smallest quantity, quantitatively determinable in a sample on the basis of a given working method, which can still be distinguished from zero.

▼ **M1**

| Type of industrial plant <sup>(1)</sup> <sup>(2)</sup> <sup>(3)</sup>                                    | Type of average value | Limit values expressed as   |                  | To be complied with as from |
|--|-----------------------|---|------------------|-----------------------------|
|  |                       | weight  | concentration    |                             |
| 1. Production of perchloroethylene (PER) and carbon tetrachloride (CCl <sub>4</sub> ) by perchlorination | monthly               | 1,5 g HCBd/tonne of total production capacity of PER + CCl <sub>4</sub> | 1,5 mg/l of HCBd | 1. 1. 1990                  |
|  | daily                 | 3 g HCBd/tonne of total production capacity of PER + CCl <sub>4</sub>   | 3 mg/l of HCBd   |                             |
| 2. Production of trichloroethylene and/or perchloroethylene by any other process <sup>(4)</sup>          | monthly               | —   | —                | —                           |
|  | daily                 | —   | —                | —                           |

<sup>(1)</sup> A simplified monitoring procedure may be introduced if annual discharges do not exceed 1 kg a year.

<sup>(2)</sup> Among the industrial plants referred to in Annex I, heading A, point 3, reference is made in particular to industrial plants using HCBd for technical purposes.

<sup>(3)</sup> On the basis of experience gained in implementing this Directive, and taking into account the fact that the use of best technical means already makes it possible to apply in some cases much more stringent values than those indicated above, the Council shall decide on the basis of proposals from the Commission, upon more stringent limit values, such decision to be taken by 1 January 1995.

<sup>(4)</sup> It is not possible at present to adopt limit values for this sector. The Council shall adopt such values at a later stage, acting on a proposal from the Commission. In the meantime, Member States will apply national emission standards in accordance with Annex I, heading A, point 3.

▼ **M4**▼ **M1***Heading C (84): Reference method of measurement*

- The reference method of measurement to be used for determining HCBd in effluents and waters is gas chromatography with electron-capture detection after extraction by means of an appropriate solvent.

The limit of determination <sup>(1)</sup> for HCBd shall be within the range 1 to 10 ng/l for waters and 0,5 to 1 µg/l for effluents, depending on the number of extraneous substances present in the sample.

- The reference method to be used for determining HCDB in sediments and organisms is gas chromatography with electron-capture detection after appropriate preparation of the sample. The limit of determination <sup>(1)</sup> shall be within the range 1 to 10 µg/kg of dry matter.
- The accuracy and precision of the method must be ± 50 % at a concentration which represents twice the value of the limit of determination <sup>(1)</sup>.

**VII. Specific provisions relating to chloroform (CHCl<sub>3</sub>) (No 23) <sup>(2)</sup>**

CAS-67-66-3

*Heading A (23): Limit values for emission standards*

| Type of industrial plant <sup>(1)</sup> <sup>(2)</sup>   | <sup>(3)</sup> <sup>(4)</sup> Limit value (monthly averages) expressed as    |               | To be complied with as from |
|--|--|---------------|-----------------------------|
|  | weight   | concentration |                             |
| 1. Production of chloromethanes from methanol or from a combination of methanol and methane <sup>(5)</sup> | 10 g CHCl <sub>3</sub> /tonne of total production capacity of chloromethanes | 1 mg/l        | 1. 1. 1990                  |

<sup>(1)</sup> The 'limit of determination'<sup>x</sup> g of a given substance is the smallest quantity, quantitatively determinable in a sample on the basis of a given working method, which can still be distinguished from zero.

<sup>(2)</sup> In the case of chloroform, Article 3 of Directive 76/464/EEC shall apply to discharges from industrial processes which may in themselves contribute significantly to the level of chloroform in the aqueous effluent; in particular it shall apply to those mentioned under Heading A of this Annex. Article 5 of this Directive applies if sources other than those listed in this Annex are identified.

▼ **M1**

| Type of industrial plant <sup>(1)</sup> <sup>(2)</sup>     | <sup>(3)</sup> <sup>(4)</sup> Limit value (monthly averages) expressed as     |               | To be complied with as from |
|--|---|---------------|-----------------------------|
|  | weight  | concentration |                             |
| 2. Production of chloromethanes by chlorination of methane | 7,5 g CHCl <sub>3</sub> /tonne of total production capacity of chloromethanes | 1 mg/l        | 1. 1. 1990                  |
| 3. Production of chlorofluorocarbon CFC <sup>(6)</sup>     | —   | —             | —                           |

<sup>(1)</sup> Among the industrial plants referred to under heading A, point 3 of Annex I, special reference is made, in the case of chloroform, to plants manufacturing monomer vinyl chloride using dichloroethane pyrolysis, those producing bleached pulp and other plants using CHCl<sub>3</sub> as a solvent and plants in which cooling waters or other effluents are chlorinated. The Council shall adopt limit values for these sectors at a later stage, acting on proposals from the Commission.

<sup>(2)</sup> A simplified monitoring procedure may be introduced if annual discharges do not exceed 30 kg a year.

<sup>(3)</sup> Daily average limit values are equal to twice the monthly average values.

<sup>(4)</sup> In view of the volatility of chloroform and in order to ensure compliance with Article 3 (6), where a process involving agitation in the open air of effluent containing chloroform is used, the Member States shall require compliance with the limit values upstream of the plant concerned; they shall ensure that all water likely to be polluted is taken fully into account.

<sup>(5)</sup> I.e. by hydrochlorination of methanol, then chlorination of methyl chloride.

<sup>(6)</sup> It is not possible at present to adopt limit values for this sector. The Council shall adopt such limit values at a later date, acting on a proposal from the Commission. In the meantime, Member States will apply national emission standards in accordance with Annex I, heading A, point 3.

▼ **M4**▼ **M1***Heading C (23): Reference method of measurement*

1. The reference method of measurement to be used for determining the presence of chloroform in effluents and the aquatic environment is gas chromatography.

A sensitive detector must be used when concentration levels are below 0,5 mg/l and in this case the determination limit <sup>(1)</sup> is 0,1 µg/l. For concentration levels higher than 0,5 mg/l a determination limit of 0,1 mg/l is acceptable.

2. The accuracy and precision of the method must be ± 50 % at a concentration which represents twice the value of the determination limit.

▼ **M2****VIII. Specific provisions relating to 1,2-dichloroethane (EDC) (No 59) <sup>(2)</sup>**

CAS — 107-06-2

*Heading A (59): Limit values for emission standards <sup>(3)</sup>*

| Type of industrial plant <sup>(1)</sup> <sup>(2)</sup>                                | Type of average value | Limit values expressed as       |   | To be complied with as from |
|---|-----------------------|---------------------------------|---|-----------------------------|
|   |                       | weight (g/tonne) <sup>(3)</sup> | concentration (mg/litre) <sup>(4)</sup> |                             |
| a) Production only of 1,2-dichloroethane (without processing or use on the same site) | Monthly               | 4                               | 2                                       | 1. 1. 1993                  |
|   |                       | 2,5                             | 1,25                                    | 1. 1. 1995                  |
|   | Daily                 | 8                               | 4                                       | 1. 1. 1993                  |
|   |                       | 5                               | 2,5                                     | 1. 1. 1995                  |

<sup>(1)</sup> The 'determination limit' x g of a given substance is the smallest quantity, quantitatively determinable in a sample on the basis of a given working method, which can still be distinguished from zero.

<sup>(2)</sup> Article 5 of Directive 86/280/EEC applies in particular to EDC used as a solvent away from production or processing site if annual discharges amount to less than 30 kg/year. Such small discharges may be exempted from requirements of Article 3 of Directive 76/464/EEC. Notwithstanding Article 5 (3) of Directive 86/280/EEC, Member States must implement their specific programmes no later than 1 January 1993. They must communicate them to the Commission at the same time.

<sup>(3)</sup> In view of the volatility of EDC and in order to ensure compliance with Article 3 (6) of Directive 86/280/EEC, where the process used involves open-air agitation containing EDC, Member States must require compliance with the limit values upstream of the plants concerned; they must ensure that all waters likely to be polluted are properly taken into account.



## ▼ M2

| Type of industrial plant <sup>(1)</sup> <sup>(2)</sup>   | Type of average value | Limit values expressed as       |   | To be complied with as from |
|--|-----------------------|---------------------------------|---|-----------------------------|
|  |                       | weight (g/tonne) <sup>(3)</sup> | concentration (mg/litre) <sup>(4)</sup> |                             |
| b) Production of 1,2-dichloroethane, and processing or use at the same site, except for the use defined in (e) below <sup>(5)</sup> <sup>(6)</sup> | Monthly               | 12                              | 6                                       | 1. 1. 1993                  |
|  | Daily                 | 5                               | 2,5                                     | 1. 1. 1995                  |
|  |                       | 24                              | 12                                      | 1. 1. 1993                  |
|  |                       | 10                              | 5                                       | 1. 1. 1995                  |
| c) Processing of 1,2-dichloroethane into substances other than vinyl chloride <sup>(7)</sup>   | Monthly               | 2,5                             | 1                                       | 1. 1. 1993                  |
|  | Daily                 | 5                               | 2                                       | 1. 1. 1993                  |
| d) Use of EDC for degreasing metals (away from an industrial site covered by (b)) <sup>(8)</sup>   | Monthly               | —                               | 0,1                                     | 1. 1. 1993                  |
|  | Daily                 | —                               | 0,2                                     | 1. 1. 1993                  |
| e) use of EDC in the production of ion exchangers <sup>(9)</sup>   | Monthly               | —                               | —                                       | —                           |
|  | Daily                 | —                               | —                                       | —                           |

<sup>(1)</sup> The purified EDC production capacity includes that fraction of the EDC which is not cracked in the vinyl chloride (VC) production unit associated with the EDC production unit and which is recycled to the EDC purification section of the plant.

Production or processing capacity is the capacity authorized by administration or, failing that, the highest annual quantity produced or processed over the four years prior to the granting or review of the authorization. The capacity authorized by the administration should not differ greatly from actual production.

<sup>(2)</sup> A simplified monitoring procedure may be introduced where annual discharges do not exceed 30 kg/year.

<sup>(3)</sup> These limit values relate:

- for sectors (a) and (b), to purified EDC production capacity in tonnes,
- for sector (c), to EDC processing capacity expressed in tonnes.

However, in the case of sector (b), if the processing and utilization capacity is greater than the production capacity, the limit values shall be applied in relation to the global processing and utilization capacity. If there are several plants on the same site, the limit values shall apply to the plants taken together.

<sup>(4)</sup> Without prejudice to the provisions of heading A (4) in Annex I, these concentration limits relate to the following reference volumes:

- (a) 2 m<sup>3</sup>/tonne of purified EDC production capacity;
- (b) 2,5 m<sup>3</sup>/tonne of purified EDC production capacity;
- (c) 2,5 m<sup>3</sup>/tonne of EDC processing capacity.

<sup>(5)</sup> The limit values take account of all diffuse internal sources and/or of EDC used as a solvent within the industrial production site; this will ensure a reduction in EDC discharges of more than 99 %.

Nevertheless, the combination of the best available technology and the absence of any diffuse internal source enables reduction amounts greater than 99,9 % to be achieved.

On the basis of the experience acquired in the application of the present measures, the Commission will present to the Council in good time proposals for more severe limit values to be applied from 1998.

<sup>(6)</sup> Where a Member State takes the view that, owing to the integration of EDC production with the manufacture of other chlorinated hydrocarbons, an EDC production process is unlikely to comply with these limit values by the 1 January 1993 deadline, it must advise the Commission thereof before 1 January 1991. A programme for the reduction of EDC discharges which will enable these limit values to be complied with by 1 January 1997 will be submitted to the Commission no later than 31 December 1993. The following limit value must, meanwhile, be complied with as at 1 January 1993:

- 40 g EDC/tonne of purified EDC production capacity (monthly and daily averages).

The limit value expressed as concentration is deduced on the basis of the volume of water discharged by the plant(s) concerned.

<sup>(7)</sup> The production of the following substances specifically is involved here: ethylene diamine, ethylene polyamine, 1.1.1.-trichloroethane, trichloroethylene and perchloroethylene.

<sup>(8)</sup> These limit values apply only to plants the annual discharges from which exceed 30 kg/year.

<sup>(9)</sup> It is not possible at present to adopt limit values for this sector. The Council shall adopt such limit values at a later stage, acting on a proposal from the Commission. In the meantime, Member States will apply national limit values in accordance with Annex I, heading A, point 3.

## ▼ M4

## ▼ M2

*Heading C (59): reference method measurement*

1. The reference method of measurement to be used for determining the presence of 1,2-dichloroethane in effluents and the water environment is gas chromatography with electron capture (SIC! electron-capture) detection after extraction by means of an appropriate solvent or gas chromatography following isolation by means of the 'purge and trap' process and trapping by using a cryogenically cooled capillary trap. The limit of determination is 10 µg/litre for effluents and 1 µg/litre for the water environment.

▼ **M2**

2. The accuracy and precision of the method must be plus or minus 50 % at a concentration which represents twice the value of the limit of determination.
3. Member States may determine concentrations of EDC by reference to the quantity of AOX, EOX or VOX, provided that the Commission is first satisfied that these methods give equivalent results and until the general solvent Directive is adopted.

The Member States concerned will establish regularly the relationship in concentration between EDC and the parameter used.

**IX. Specific provisions relating to trichloroethylene (TRI) (No 121) <sup>(1)</sup>**

CAS 79.01.6

*Heading A (121): limit values for emission standards <sup>(2)</sup>*

| Type of industrial plants <sup>(1)</sup>                          | Type of average value | Limit values expressed as       |   | To be complied with as from |
|---|-----------------------|---------------------------------|---|-----------------------------|
|   |                       | weight (g/tonne) <sup>(2)</sup> | concentration (mg/litre) <sup>(3)</sup> |                             |
| a) Trichloroethylene (TRI) and perchloroethylene (PER) production | Monthly               | 10                              | 2                                       | 1. 1. 1993                  |
|   |                       | 2,5                             | 0,5                                     | 1. 1. 1995                  |
|   | Daily                 | 20                              | 4                                       | 1. 1. 1993                  |
|   |                       | 5                               | 1                                       | 1. 1. 1995                  |
| b) Use of TRI for degreasing metals <sup>(4)</sup>                | Monthly               |                                 | 0,1                                     | 1. 1. 1993                  |
|   | Daily                 |                                 | 0,2                                     | 1. 1. 1993                  |

<sup>(1)</sup> A simplified monitoring procedure may be introduced where annual discharges do not exceed 30 kg/year.

<sup>(2)</sup> For sector (a), limit values for TRI discharges to overall TRI + PER production capacity.

For existing plant using dehydrochlorination of tetrachloroethane, the capacity of production is equivalent to the capacity of TRI-PER production, the ratio of TRI-PER production taken at one third.

Production or processing capacity is the capacity authorized by the administration or, failing that, the highest annual quantity produced or processed over the four years prior to the granting or review of the authorization. The capacity authorized by the administration should not differ greatly from actual production.

<sup>(3)</sup> Without prejudice to the provisions of heading A (4) in Annex I, TRI limit concentrations relate to the following reference values:

— sector (a), 5 m<sup>3</sup>/tonne of TRI + PER production.

<sup>(4)</sup> These limit values apply only to industrial plants the annual discharges from which exceed 30 kg/year.

▼ **M4**▼ **M2***Heading C (121): reference method of measurement*

1. The reference method of measurement to be used for determining the presence of trichloroethylene (TRI) in effluents and the water environment is gas chromatography with electron-capture detection after extraction by means of an appropriate solvent.

The limit of determination for TRI is 10 µg/litre for the effluents and 0,1 µg/litre for the water environment.

2. The accuracy and precision of the method must be plus or minus 50 % at a concentration which represents twice the value of the limit of determination.
3. Member States may determine concentrations of TRI by reference to the quantity of AOX, EOX or VOX provided that the Commission is first

<sup>(1)</sup> Article 5 of Directive 86/280/EEC applies in particular to TRI used as solvent for dry-cleaning for the extraction of grease or odours and for degreasing metals where annual discharges amount to less than 30 kg/year. Such small discharges may be exempted from the requirements of Article 3 of Directive 76/464/EEC. Notwithstanding Article 5 (3) of Directive 86/280/EEC, Member States must implement their specific programmes no later than 1 January 1993. They must communicate them to the Commission at the same time.

<sup>(2)</sup> In view of the volatility of trichloroethylene and in order to ensure compliance with Article 3 (6) of Directive 86/280/EEC, where the process used involves open-air agitation of the effluents containing trichloroethylene, Member States must require compliance with the limit values upstream of the plants concerned; they must ensure that all waters likely to be polluted are properly taken into account.

▼ M2

satisfied that these methods give equivalent results and until the general solvent Directive is adopted.

**X. Specific provisions relating to perchloroethylene (PER) (No 111) <sup>(1)</sup>**

CAS-127-18-4

*Heading A (111): limit values for emission standards <sup>(2)</sup>*

| Type of industrial plant <sup>(1)</sup>   | Type of average value | Limit values expressed as       |   | To be complied with as from |
|---|-----------------------|---------------------------------|---|-----------------------------|
|   |                       | weight (g/tonne) <sup>(2)</sup> | concentration (mg/litre) <sup>(3)</sup> |                             |
| a) Trichloroethylene (TRI) and perchloroethylene (PER) production (TRI-PER processes) | Monthly               | 10                              | 2                                       | 1. 1. 1993                  |
|   |                       | 2,5                             | 0,5                                     | 1. 1. 1995                  |
|   | Daily                 | 20                              | 4                                       | 1. 1. 1993                  |
|   |                       | 5                               | 1                                       | 1. 1. 1995                  |
| b) Carbon tetrachloride and perchloroethylene production (TETRA-PER processes)        | Monthly               | 10                              | 5                                       | 1. 1. 1993                  |
|   |                       | 2,5                             | 1,25                                    | 1. 1. 1995                  |
|   | Daily                 | 20                              | 10                                      | 1. 1. 1993                  |
|   |                       | 5                               | 2,5                                     | 1. 1. 1995                  |
| c) Use of PER for degreasing metals <sup>(4)</sup>                                    | Monthly               | —                               | 0,1                                     | 1. 1. 1993                  |
|   | Daily                 | —                               | 0,2                                     | 1. 1. 1993                  |
| d) Chlorofluorocarbon production <sup>(5)</sup>                                       | Monthly               | —                               | —                                       | —                           |
|   | Daily                 | —                               | —                                       | —                           |

<sup>(1)</sup> A simplified monitoring procedure may be introduced where annual discharges do not exceed 30 kg/year.

<sup>(2)</sup> For sectors (a) and (b) the limit values for PER discharges relate either to overall TRI + PER production capacity or to overall TETRA + PER capacity.

Production or processing capacity is the capacity authorized by the administration or, failing that, the highest annual quantity produced or processed over the four years prior to the granting or review of the authorization. The capacity authorized by the administration should not differ greatly from actual production.

<sup>(3)</sup> Without prejudice to the provisions of heading A (4) in Annex I, PER limit concentrations relate to the following reference volumes:

- (a), 5 m<sup>3</sup>/tonne of TRI + PER production,
- (b), 2 m<sup>3</sup>/tonne of TETRA + PER production.

<sup>(4)</sup> These limit values apply only to industrial plants the annual discharges from which exceed 30 kg/year.

<sup>(5)</sup> It is not possible at present to adopt limit values for this sector. The Council shall adopt them at a later stage, acting on a proposal from the Commission. In the meantime, Member States will apply national emission standards in accordance with Annex I, heading A, point 3.

▼ M4▼ M2*Heading C (111): reference method of measurement*

1. The reference method of measurement to be used for determining the presence of perchloroethylene (PER) in effluents and the water environment is gas chromatography with electron capture detection after extraction by means of an appropriate solvent.

The limit of determination for PER is 10 µg/litre for effluents and 0,1 µg/litre for the water environment.

<sup>(1)</sup> Article 5 of Directive 86/280/EEC applies in particular to PER used as solvent for dry-cleaning for the extraction of grease or odours and for degreasing metals where annual discharges amount to less than 30 kg/year. Such small discharges may be exempted from the requirements of Article 3 of Directive 76/464/EEC. Notwithstanding Article 5 (3) of Directive 86/280/EEC, Member States must implement their specific programmes no later than 1 January 1993. They must communicate them to the Commission at the same time.

<sup>(2)</sup> In view of the volatility of perchloroethylene and in order to ensure compliance with Article 3 (6) of Directive 86/280/EEC, where the process used involves open-air agitation of the effluents containing perchloroethylene, the Member States must require compliance with the limit values upstream of the plants concerned; they must ensure that all waters likely to be polluted are properly taken into account.

▼ M2

2. The accuracy and precision of the method must be plus or minus 50 % at a concentration which represents twice the value of the limit of determination.
3. Member States may determine concentration of PER by reference to the quantity of AOX, EOX or VOX, provided that the Commission is first satisfied that these methods give equivalent results and until the general solvent Directive is adopted.

The Member States concerned will establish regularly the relationship in concentration between PER and the parameter used.

#### XI. Specific provisions relating to trichlorobenzene <sup>(1)</sup> (TCB) (117, 118) <sup>(2)</sup>

*Heading A (117, 118): limit values for emission standards*

Standstill: There must be no significant direct or indirect increase over time in pollution arising from discharges of TCB and affecting concentrations in sediments and/or molluscs and/or shellfish and/or fish.

| Type of industrial plant  | Type of average value | Limit values expressed as       |   | To be complied with as from |
|---|-----------------------|---------------------------------|---|-----------------------------|
|   |                       | weight (g/tonne) <sup>(1)</sup> | concentration (mg/litre) <sup>(2)</sup> |                             |
| a) Production of TCB via dehydrochlorination of HCH and/or processing TCB                   | Monthly               | 25                              | 2,5                                     | 1. 1. 1993                  |
|   |                       | 10                              | 1                                       | 1. 1. 1995                  |
|   | Daily                 | 50                              | 5                                       | 1. 1. 1993                  |
|   |                       | 20                              | 2                                       | 1. 1. 1995                  |
| b) Production and/or processing of chlorobenzene via chlorination of benzene <sup>(3)</sup> | Monthly               | 5                               | 0,5                                     | 1. 1. 1993                  |
|   |                       | 0,5                             | 0,05                                    | 1. 1. 1995                  |
|   | Daily                 | 10                              | 1                                       | 1. 1. 1993                  |
|   |                       | 1                               | 0,1                                     | 1. 1. 1995                  |

<sup>(1)</sup> The limit values for discharges of TCB (sum of the three isomers) are given:

- for sector (a): in relation to the total TCB production capacity,
  - for sector (b): in relation to the total production or processing capacity for mono- and dichlorobenzenes.
- Production or processing capacity is the capacity authorized by the administration or, failing that, the highest annual quantity produced or processed over the four years prior to the granting or review of the authorization. The capacity authorized by the administration should not differ greatly from actual production.

<sup>(2)</sup> Without prejudice to the provisions of heading A (4) in Annex I, limit concentrations relate to the following reference volumes:

- sector (a): 10 m<sup>3</sup>/tonne of TCB produced or processed,
- sector (b): 10 m<sup>3</sup>/tonne of mono- and dichlorobenzene produced or processed.

<sup>(3)</sup> For the existing plants discharging less than 50 kg/year by 1 January 1995, the limit values which are to be complied with at this date are equal to half of the limit values which are to be complied with as from 1 January 1993.

▼ M4▼ M2

*Heading C (117, 118): reference method of measurement*

1. The reference method of measurement to be used for determining the presence of trichlorobenzene (TCB) in effluents and the water environment is gas chromatography with electron capture (SIC! electron-capture) detection after extraction by means of an appropriate solvent. The limit of determination for

<sup>(1)</sup> Article 5 of Directive 86/280/EEC applies in particular to TCB used as a solvent or colouring support in the textile industry, or as component of the oils used in transformers until such time as there is specific Community legislation on this subject. Notwithstanding Article 5 (3), Member States must implement their specific programmes no later than 1 January 1993. They must communicate them to the Commission at the same time.

<sup>(2)</sup> TCB may occur as one of the following three isomers:

- 1, 2, 3-TCB — CAS 87/61-6;
- 1, 2, 4-TCB — CAS 120-82-1 (No 118 of the EEC list);
- 1, 3, 5-TCB — CAS 180-70-3.

Technical TCB (No 117 of EEC list) is a mixture of these three isomers, with a preponderance of 1,2,4-TCB, and may also contain small quantities of di-and-tetrachlorobenzene.

In any case, these provisions apply to the total TCB (the sum of the three isomers).

**▼M2**

each isomer separately is 1 µg/litre for effluents and 10 ng/litre for the water environment.

2. The reference method to be used for determining TCB in sediments and organisms is gas chromatography with electron capture detection after appropriate preparation of the sample. The limit of determination for each isomer separately is 1 µg/kg of dry matter.
3. Member States may determine concentrations of TCB by reference to the quantity of AOX or EOX, provided that the Commission is first satisfied that these methods give equivalent results and until the general solvent Directive is adopted.

The Member States concerned will establish regularly the relationship in concentration between TCB and the parameter used.

4. The accuracy and precision of the method must be plus or minus 50 % at a concentration which represents twice the value of the limit of determination.