

II

(Acts whose publication is not obligatory)

COUNCIL

COUNCIL DIRECTIVE 92/72/EEC

of 21 September 1992

on air pollution by ozone

THE COUNCIL OF THE EUROPEAN COMMUNITIES,

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

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

Having regard to the opinion of the European Parliament ⁽²⁾,

Having regard to the opinion of the Economic and Social Committee ⁽³⁾,

Whereas the 1987 fourth Community action programme on the environment ⁽⁴⁾ provides for the possibility of action on photochemical pollution, and in particular pollution by ozone, in view of its harmful effects and the state of knowledge concerning its impact on human health and the environment;

Whereas, in order to protect human health, ozone concentrations in the air should be limited; whereas scientific and technical information needs to be utilized and promoted in order to obtain wider knowledge of this form of pollution and, in future, take effective and appropriate measures to reduce it;

Whereas as complete a knowledge as possible of ozone pollution levels is required in all Member States;

Whereas to obtain this knowledge it is necessary to set up measurement stations to provide data on ozone concentrations in the air;

Whereas in order to obtain results which are comparable in the context of this Directive, the methods used by Member States to determine concentrations need to be equivalent;

Whereas, in view of the special nature of photochemical pollution, the reciprocal exchange of information between Member States and the Commission including, once it is effectively set up, the European Environment Agency ⁽⁵⁾, is essential for a better understanding of the problem;

Whereas the setting of information or warning thresholds at which precautions should be taken by the public will make it possible to limit the impact of pollution episodes on health;

Whereas the numerical values of these levels should be based on the findings of work carried out in the framework of the World Health Organization (WHO), in particular as regards the dose-effect relationships established for the pollutant in question;

Whereas the information collected under this Directive should be regularly evaluated to make it possible to monitor the development of air pollution by ozone and the impact of national and Community provisions to reduce photochemical precursors and establish in the future new provisions concerning ozone and air quality; whereas such evaluation and information should be the subject of a report to be submitted by the Commission as soon as possible and by the end of a period of four years from the date of implementation of this Directive at the latest;

Whereas combating air pollution by ozone may also entail measures to reduce ozone precursors; whereas the Commission must therefore also submit, with the abovementioned report, proposals for controlling air

⁽¹⁾ OJ No C 192, 23. 7. 1991, p. 17.

⁽²⁾ OJ No C 150, 15. 6. 1992, p. 228.

⁽³⁾ OJ No C 49, 24. 12. 1992, p. 1.

⁽⁴⁾ OJ No C 328, 7. 12. 1987, p. 1.

⁽⁵⁾ OJ No L 120, 11. 5. 1990, p. 1.

pollution by ozone and, if necessary, reducing emissions of ozone precursors;

Whereas action by the Community and Member States against photochemical pollution should be coordinated in order for maximum effect to be achieved,

HAS ADOPTED THIS DIRECTIVE:

Article 1

1. The purpose of this Directive is to establish a harmonized procedure:

- for monitoring,
- for exchanging information,
- for informing and warning the population,

with regard to air pollution by ozone in order to enable the competent authorities of the Member States and the Commission to obtain wider knowledge of this form of air pollution in the Community, optimize the action needed to reduce ozone formation and guarantee a minimum amount of public information where concentration thresholds as referred to in points 3 and 4 of Annex I are exceeded.

2. For the purposes of this Directive:

- *health protection threshold* means the ozone concentration value given in Annex I, point 1, which should not be exceeded if human health is to be safeguarded in the event of prolonged pollution episodes,
- *vegetation protection thresholds* means the ozone concentration values given in Annex I, point 2, beyond which vegetation may be affected,
- *population information threshold* means the ozone concentration value given in Annex I, point 3, beyond which there are limited, temporary effects on human health in the event of short exposure of particularly sensitive sections of the population and at which steps must be taken by the Member States as laid down in this Directive,
- *population warning threshold* means the ozone concentration value given in Annex I, point 4, beyond which there is a risk to human health in the event of short exposure and at which steps must be taken by the Member States as laid down in this Directive.

Article 2

Each Member State shall designate a body to inform the Commission and to coordinate the implementation of the

harmonized procedure set out in Article 1 (1), and shall forthwith inform the Commission thereof.

Article 3

Member States shall where appropriate designate or establish measuring stations to supply the data necessary for the implementation of this Directive. The number and the location of these stations shall be determined by Member States in compliance with Annex II.

Article 4

1. For the measurement of ozone concentrations, Member States shall use:

- either the reference method specified in Annex V,
- or any other method of analysis shown to produce measurement results equivalent to those obtained using the reference method.

To this end, each Member State shall designate one or more laboratories responsible for evaluating the method used at national level in relation to the reference method in this Directive.

Furthermore, they shall organize at national level intercomparisons between laboratories taking part in the collection and analysis of the data.

2. Once the measuring stations have been established, Member States shall provide the Commission with the following information:

- the method used to determine ozone concentrations and, if it is different from the reference method in this Directive, proof of its equivalence with the latter,
- the geographical coordinates of the measuring stations, a description of the area covered by the stations, and the site-selection criteria,
- the results of any indicative measurement programmes carried out under the provisions of Annex II, point 2.

3. The Commission may organize, on a Community scale, intercomparison programmes between laboratories referred to in paragraph 1.

Article 5

In the event of the values given in Annex I, points 3 and 4, being exceeded, the Member States shall take the necessary steps for the public to be informed (e.g. by means of radio, television and the press), in accordance with Annex IV.

Article 6

1. As from 1 January 1995, Member States shall provide the Commission with the following information no later than six months following the annual reference period:

- the maximum, the median and the 98th percentile of the mean values over one hour and eight hours recorded during the year in each measuring station; the percentiles shall be calculated in accordance with the method given in Annex III,
- the number, date and duration of periods during which the thresholds laid down in Annex I, points 1 and 2, are exceeded.

A Member State may additionally submit information based on percentile 99,9.

2. Where the information threshold laid down in Annex I, point 3, is exceeded in the course of a calendar month, Member States shall inform the Commission by the end of the following month at the latest, of:

- the date(s) of occurrence(s),
- the duration thereof,
- the maximum hourly concentration recorded during each occurrence.

3. Where the warning threshold laid down in Annex I, point 4, is exceeded in the course of a week (from Monday to the following Sunday), Member States shall inform the Commission, by the end of the following month at the latest, of:

- the date(s) of the occurrence(s),
- the duration,
- the maximum hourly concentration during each occurrence.

This information shall be supplemented by relevant data which might explain the reasons for the occurrence.

4. Where the data referred to in paragraphs 1, 2 and 3 are available in the Member States for periods preceding the date referred to in Article 9, Member States shall send them to the Commission at the latest when they send the data relating to the first reference period. The duration of the reference period shall not exceed five years.

5. All the data referred to in paragraphs 1 to 4 shall be forwarded by the Commission to the European Environment Agency as soon as it is operational.

Article 7

The Commission shall regularly, and in any event at least once a year, evaluate the data collected under this Directive. The findings of that evaluation shall be forwarded to the Member States.

In order to coordinate actions by the Community and the Member States against photochemical pollution, the Commission shall organize, together with Member States, which shall involve the responsible body referred to in Article 2, consultations on the problem of photochemical air pollution, relating in particular to:

- the development of ozone concentrations throughout the Member States and whether any of the episodes recorded are of a transboundary nature,
- measures and programmes planned by the Member States to reduce air pollution by ozone,
- experience and knowledge concerning the problem of photochemical pollution.

Article 8

As soon as possible and no later than the end of a four-year period following the implementation of this Directive, the Commission shall submit to the Council a report on the information collected and on the evaluation of photochemical pollution in the Community. This report shall be accompanied by any proposals the Commission deems appropriate on the control of air pollution by ozone and, if necessary, for reducing emissions of ozone precursors.

Article 9

Member States shall bring into force the laws, regulations and administrative provisions necessary to comply with this Directive no later than 18 months after its adoption. They shall forthwith inform the Commission thereof.

When Member States adopt such provisions, they shall contain a reference to this Directive or shall be accompanied by such a reference at the time of their official publication. The procedures for making such a reference shall be laid down by the Member States.

Article 10

This Directive is addressed to the Member States.

Done at Brussels, 21 September 1992.

For the Council

The President

J. GUMMER

ANNEX I

THRESHOLDS FOR OZONE CONCENTRATIONS IN THE AIR (*)

(The values are expressed in $\mu\text{g O}_3/\text{m}^3$. The volume must be standardized at the following conditions of temperature and pressure: 293 °K and 101,3 kPa)

1. **Health protection threshold**
110 $\mu\text{g}/\text{m}^3$ for the mean value over eight hours (**)
2. **Vegetation protection thresholds**
200 $\mu\text{g}/\text{m}^3$ for the mean value over one hour
65 $\mu\text{g}/\text{m}^3$ for the mean value over 24 hours
3. **Population information threshold**
180 $\mu\text{g}/\text{m}^3$ for the mean value over one hour
4. **Population warning threshold**
360 $\mu\text{g}/\text{m}^3$ for the mean value over one hour

(*) Concentrations must be measured continuously.

(**) The mean over eight hours is a non-overlapping moving average; it is calculated four times a day from the eight hourly values between 0 and 9.00, 8.00 and 17.00, 16.00 and 1.00, 12.00 and 21.00. For the information to be provided pursuant to Article 6 (1), first indent, the mean over eight hours is a simple moving average, calculated each hour h from the eight hourly values between h and h-9.

ANNEX II

MONITORING OF OZONE CONCENTRATIONS

1. The purpose of measuring ozone concentrations in ambient air is to assess:
 - (i) as closely as possible the individual risk of exposure of human beings to values in excess of the health protection thresholds;
 - (ii) the exposure of vegetation (e.g. forests, natural ecosystems, crops, horticulture) to the values given in Annex I.
2. The measurement points must be located at geographically and climatologically representative sites where:
 - (i) the risk of approaching or exceeding the thresholds laid down in Annex I is the highest;
 - (ii) it is likely that one of the targets referred to in paragraph 1 is exposed.

At places where the Member States do not have information concerning the sites referred to in (i) and (ii), they must carry out indicative measurement programmes in order to determine the siting of the measurement points to supply the data necessary for the implementation of this Directive.

3. Member States must establish or designate additional measurement points in order to:
 - (i) contribute towards the identification and description of the formation and transport of ozone and its precursors;
 - (ii) monitor changes in ozone concentrations in areas affected by background pollution.

Mandatory measurement of oxides of nitrogen and that recommended for volatile organic compounds be carried out in order to provide information on ozone formation, to monitor transboundary flows of volatile organic compounds and to make it possible to identify links between the different pollutants.

4. The final reading of the ozone measurement instruments must be carried out in such a way that the mean values over one hour and eight hours can be calculated, in accordance with Annexes I and III.

ANNEX III

CALCULATION OF THE MEASUREMENT RESULTS FOR THE ANNUAL REFERENCE PERIOD

1. Concentrations must be measured continuously.
2. The annual reference period will begin on 1 January and end on 31 December in any given calendar year.
3. For the validity of the calculation of the percentiles ⁽¹⁾ to be recognized, 75 % of the possible values must be available and, as far as possible, distributed uniformly throughout the period in question for the particular measurement site. If that is not the case, this fact must be mentioned when the results are communicated.

The calculation of the 50th (98th) percentile on the basis of the values recorded throughout the year must be carried out as follows: the 50th (98th) percentile must be calculated from the values actually measured. The measured values must be rounded off to the nearest $\mu\text{g}/\text{m}^3$. All the values are to be listed in increasing order for each site:

$$X_1 \leq X_2 \leq X_3 \leq \dots \leq X_k \leq \dots \leq X_{N-1} \leq X_N.$$

The 50th (98th) percentile is the value of k , to be calculated from the following formula:

$$k = 0,50(0,98) \cdot N$$

N being the number of values actually measured. The value of $0,50(0,98) \cdot N$ must be rounded off to the nearest whole number.

ANNEX IV

The following information must be circulated on a sufficiently large scale as soon as possible to enable the population concerned to take all appropriate preventive protective action. The information in question must be communicated to the media.

List of minimum details to be supplied to the public in the event of the occurrence of high ozone levels in the air

1. Date, hour and place of the occurrence of concentrations in excess of the thresholds defined in Annex I, points 3 and 4.
2. Reference to the type(s) of Community values exceeded (information or warning).
3. Forecasts: — change in concentrations (improvement, stabilization or deterioration),
— geographical area concerned,
— duration.
4. Population concerned.
5. Precautions to be taken by the population concerned.

⁽¹⁾ The median must be calculated as the 50th percentile.

ANNEX V

REFERENCE METHOD OF ANALYSIS TO BE USED FOR THE PURPOSES OF THIS DIRECTIVE

The reference method of analysis to be used in the context of this Directive to determine ozone is the UV absorption method. This method is being standardized by the ISO. Once the latter has published the standard in question, the method described therein will constitute the reference method in this Directive.

The following points must be taken into consideration when the measurement methods and instruments are used by the Member States in the field:

1. the conformity of the operating characteristics of the measurement instrument with those indicated by the manufacturer, in particular background noise, response time and linearity, must be verified initially in the laboratory and in the field;
2. the instrument must be totally calibrated regularly, using a reference UV photometer as recommended by the ISO;
3. in the field, the instruments must be calibrated regularly, e.g. every 23 or 25 hours. In addition, the validity of the calibration must be verified by regularly operating in parallel an instrument calibrated in accordance with paragraph 1.

If the instrument inlet filter is changed before calibration, calibration must be carried out after an appropriate period of exposure (from 30 minutes to several hours) of the filter to ambient ozone concentrations;

4. the sampling head must be placed at least 1 m away from vertical screens in order to avoid any screening effect;
5. the sampling head opening must be protected against rain and insects.
No prefilter is to be used;
6. sampling must not be influenced by adjoining installations (air-conditioning or data-transmission equipment);
7. the sampling line must be of inert material (e.g. glass, PTFE, stainless steel) which is not affected by the presence of ozone. It must be exposed beforehand to appropriate ozone concentrations;
8. the sampling line between the sampling head and the analysis instrument must be as short as possible. In particular, the time taken for the gas volume sample to pass through the sampling line must be as short as possible (e.g. of the order of a few seconds in the presence of other reagents such as NO);
9. condensation in the sampling line must be avoided;
10. the sampling line must be cleaned regularly, taking local conditions into account;
11. the sampling line must be tight and the flow rate must be inspected regularly;
12. sampling must not be influenced by gas discharges from the instrument or from the calibration system;
13. all necessary precautions must be taken to prevent temperature variations from producing measurement errors.