ISSN 0378-6978

L 229

Volume 23

30 August 1980

Official Journal

of the European Communities

English edition

Legislation

Contents

I *Acts whose publication is obligatory*

……

II *Acts whose publication is not obligatory*

Council

2

Acts whose titles are printed in light type are those relating to day-to-day management of agricultural matters, and are generally valid for a limited period.
The titles of all other Acts are printed in bold type and preceded by an asterisk.

II

(Acts whose publication is not obligatory)

COUNCIL

COUNCIL DIRECTIVE

of 15 July 1980

on the approximation of the laws of the Member States relating to the exploitation and marketing of natural mineral waters

(80/777/EEC)

THE COUNCIL OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Economic Community, and in particular Article 100 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 laws of the Member States define natural mineral waters; whereas differing definitions are adopted in this connection within the Community; whereas these laws lay down the terms on which natural mineral waters are recognized as such and govern the conditions for exploiting the springs; whereas they furthermore stipulate specific rules for marketing the waters in question;

Whereas the differences between these laws hinder the free movement of the natural mineral waters, creating disparate competitive situations, and consequently directly affect the establishing and functioning of the common market;

Whereas, in this particular case, the elimination of these barriers may be achieved both by an obligation on each Member State to allow the marketing in its territory of the natural mineral waters recognized as such by each of the other member States and by laying down common rules concerning in particular the microbiological requirements to be fulfilled and the conditions in which specific names must be used for certain of the mineral waters;

Whereas, pending the conclusion of agreements on mutual recognition of natural mineral waters between the Community and third countries, the terms should be laid down on which, until implementation of the said agreements, similar products imported from third countries may be allowed to enter the Community as natural mineral waters,

Whereas care should be taken to ensure that natural mineral waters retain at the marketing stage those characteristics which enabled them to be recognized as such; whereas, therefore, the containers used for packaging them should have suitable closures;

Whereas, in respect of labelling, natural mineral waters are subject to the general rules laid down by Council Directive 79/112/EEC of 18 December 1978 on the approximation of the laws of the Member States relating to the labelling, presentation and advertising of

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(1) OJ No C 69, 11. 6. 1970, p. 14.
(2) OJ No C 45, 10. 5. 1971, p. 5.
(3) OJ No C 36, 19. 4. 1971, p. 14.

foodstuffs for sale to the ultimate consumer (¹); whereas, accordingly, this Directive may be limited to laying down the additions and derogations which should be made to those general rules;

Whereas, in order to simplify and speed up the procedure, the Commission should be entrusted with the task of adopting technical implementing measures, and in particular defining the procedure for taking samples and the methods of analysis necessary to check the composition of natural mineral waters;

Whereas, in all cases in which the Council entrusts the Commission with responsibility for implementing rules laid down concerning foodstuffs intended for human consumption, provision should be made for a procedure establishing close cooperation between the Member States and the Commission within the Standing Committee for Foodstuffs, set up by Decision 69/414/EEC (²),

HAS ADOPTED THIS DIRECTIVE:

Article 1

1. This Directive concerns waters extracted from the ground of a Member State and recognized by the responsible authority of that Member State as natural mineral waters satisfying the provisions of Annex I, Section I.

2. This Directive also concerns waters extracted from the ground of a third country, imported into the Community and recognized as natural mineral waters by the responsible authority of a Member State.

The waters referred to in the first subparagraph may be so recognized only if the responsible authority in the country of extraction has certified that they satisfy Annex I, Section I, and that regular checks are made on the application of the provisions of Annex II, paragraph 2.

The validity of the certification referred to in the second subparagraph may not exceed a period of two years. It shall not be necessary to repeat the recognition procedure referred to in the first subparagraph if the certification is renewed before the end of the said period.

3. This Directive shall not apply:

— to waters which are medicinal products within the meaning of Directive 65/65/EEC (³),

— to natural mineral waters used at source for curative purposes in thermal or hydromineral establishments.

4. The grounds for granting the recognition referred to in paragraphs 1 and 2, shall be stated in due form by the responsible authority of the Member State and shall be officially published.

5. Each Member State shall inform the Commission of the cases where the recognition referred to in paragraphs 1 and 2 has been granted or withdrawn. The list of natural mineral waters so recognized shall be published in the *Official Journal of the European Communities.*

Article 2

Member States shall take the measures necessary to ensure that only the waters referred to in Article 1 which comply with the provisions of this Directive may be marketed as natural mineral waters.

Article 3

Natural mineral water springs may be exploited and their waters bottled only in accordance with Annex II.

Article 4

1. Natural mineral water, in its state at source, may not be the subject of any treatment or addition other than:

(a) the separation of its unstable elements, such as iron and sulphur compounds, by filtration or decanting, possibly preceded by oxygenation, in so far as this treatment does not alter the composition of the water as regards the essential constituents which give it its properties;

(b) the total or partial elimination of free carbon dioxide by exclusively physical methods;

(c) the introduction or the reintroduction of carbon dioxide under the conditions laid down in Annex I, Section III;

2. In particular any disinfection treatment by whatever means and, subject to paragraph 1 (c), the addition of bacteriostatic elements or any other treatment likely to change the viable colony count of the natural mineral water shall be prohibited.

3. Paragraph 1 shall not constitute a bar to the utilization of natural mineral water in the manufacture of soft drinks.

(¹) OJ No L 33, 8. 2. 1979, p. 1.

(²) OJ No L 291, 19. 11. 1969, p. 9.

(³) OJ No 22, 9. 2. 1965, p. 369/65.

Article 5

1. The revivable total colony count of a natural mineral water at source shall conform to its normal viable colony count and give satisfactory evidence of the protection of the source against all contamination. This total colony count shall be determined under the conditions laid down in Annex I, Section II, point 1.3.3.

After bottling, the total colony count at source may not exceed 100 per millilitre at 20 to 22 °C in 72 hours on agar-agar or an agar-gelatine mixture and 20 per millilitre at 37 °C in 24 hours on agar-agar. The total colony count shall be measured within the 12 hours following bottling, the water being maintained at 4 °C ± 1 °C during this 12-hour period.

At source, these values should not normally exceed 20 per millilitre at 20 to 22 °C in 72 hours and 5 per millilitre at 37 °C in 24 hours respectively, on the understanding that they are to be considered as guide figures and not as maximum permitted concentrations.

2. At source and during its marketing, a natural mineral water shall be free from:

(a) parasites and pathogenic micro-organisms;

(b) Escherichia coli and other coliforms and faecal streptococci in any 250 ml sample examined;

(c) sporulated sulphite-reducing anaerobes in any 50 ml sample examined;

(d) Pseudomonas aeruginosa in any 250 ml sample examined.

3. Without prejudice to paragraphs 1 and 2 and the conditions of exploitation laid down in Annex II, at the marketing stage:

- the revivable total colony count of a natural mineral water may only be that resulting from the normal increase in the bacteria content which it had at source,
- the natural mineral water may not contain any organoleptic defects.

Article 6

Any containers used for packaging natural mineral waters shall be fitted with closures designed to avoid any possibility of adulteration or contamination.

Article 7

1. The sales description of natural mineral waters shall be 'natural mineral water' or, in the case of an effervescent natural mineral water as defined in Annex I, Section III, as appropriate, 'naturally carbonated natural mineral water', 'natural mineral water fortified with gas from the spring' or 'carbonated natural mineral water'.

The sales description of natural mineral waters which have undergone any of the treatments referred to in Article 4 (1) (b) shall have added to it as appropriate the indication 'fully de-carbonated' or 'partially de-carbonated'.

2. Labels on natural mineral waters shall also give the following mandatory information:

(a) — either the words: 'composition in accordance with the results of the officially recognized analysis of . . . (date of analysis)',

— or a statement of the analytical composition giving its characteristic constituents;

(b) the place where the spring is exploited and the name of the spring.

3. Member States may also:

(a) retain the provisions which require the country of origin to be indicated, although this information cannot be demanded in the case of natural mineral waters from a spring in the territory of the Community;

(b) introduce provisions which require information on any treatments referred to in Article 4 (1) (a).

Article 8

1. The name of a locality, hamlet or place may occur in the wording of a trade description provided that it refers to a natural mineral water the spring of which is exploited at the place indicated by that description and provided that it is not misleading as regards the place of exploitation of the spring.

2. It shall be forbidden to market natural mineral water from one and the same spring under more than one trade description.

3. When the labels or inscriptions on the containers in which the natural mineral waters are offered for sale include a trade description different from the name of

the spring or the place of its exploitation, this place or the name of the spring shall be indicated in letters at least one and a half times the height and width of the largest of the letters used for that trade description.

The first subparagraph shall apply, *mutatis mutandis* and with the same intention as regards the importance attributed to the name of the spring or the place of its exploitation, with regard to the trade description used in advertising, in whatsoever form, relating to natural mineral waters.

Article 9

1. It shall be forbidden, both on packaging or labels and in advertising in whatsoever form, to use designations, proprietary names, trade marks, brand names, illustrations or other signs, whether emblematic or not, which:

(a) in the case of a natural mineral water, suggest a characteristic which the water does not possess, in particular as regards its origin, the date of the authorization to exploit it, the results of analyses or any similar references to guarantees of authenticity;

(b) in the of drinking water packaged in containers which does not satisfy the provisions of Annex I, Section I, are liable to cause confusion with a natural mineral water, in particular the description 'mineral water'.

2. (a) All indications attributing to a natural mineral water properties relating to the prevention, treatment or cure of a human illness shall be prohibited.

(b) However, the indications listed in Annex III to this Directive shall be authorized if they meet the relevant criteria laid down in that Annex or, in the absence thereof, criteria laid down in national provisions and provided that they have been drawn up on the basis of physico-chemical analyses and, where necessary, pharmacological, physiological and clinical examinations carried out according to recognized scientific methods, in accordance with Section I, paragraph 2 of Annex I.

(c) Member States may authorize the indications 'stimulates digestion', 'may facilitate the hepato-biliary functions' or similar indications. They may also authorize the inclusion of other indications, provided that the latter do not conflict with the principles stated in (a) and are compatible with those stated in (b).

3. Member States may adopt special provisions regarding information — both on packaging or labels and in advertising — concerning the suitability of a natural mineral water for the feeding of infants. Such provisions may also concern the properties of the water which determine the use of the said information.

Member States which intend taking such measures shall inform the other Member States and the Commission of them beforehand.

4. Not later than three years after notification of this Directive, the Commission shall submit to the Council a report and, where appropriate, suitable proposals on the application of the provisions referred to in 1.2.12 of Annex I, Section II.

Article 10

1. Member States shall adopt the measures necessary to ensure that trade in natural mineral waters which comply with the definitions and rules laid down in this Directive cannot be impeded by the application of non-harmonized national provisions governing the properties, composition, conditions of exploitation, packaging or labelling of natural mineral waters or foodstuffs in general.

2. Paragraph 1 shall not be applicable to non-harmonized national provisions justified on grounds of:

— protection of public health,

— prevention of fraud, unless such provisions are likely to impede the application of the definitions and rules laid down by this Directive,

— protection of industrial and commercial property, indications of source, designations of origin and the prevention of unfair competition.

Article 11

The sampling procedures and the methods of analysis necessary for checking the microbiological characteristics referred to in Article 5 and the compositional characteristics referred to in 1.2 of Annex I, Section II, shall be determined in accordance with the procedure laid down in Article 12.

Article 12

1. Where the procedure laid down in this Article is to be followed, the matter shall be referred to the Standing Committee on Foodstuffs, hereinafter called 'the Committee', by its Chairman, either on his own initiative or at the request of the representative of a Member State.

2. The Commission representative shall submit a draft of the measures to be taken to the Committee. The Committee shall deliver its opinion on that draft within a time limit set by the chairman having regard to the urgency of the matter. Opinions shall be arrived at by a majority of 41 votes, the votes of the Member States being weighted in accordance with Article 148 (2) of the Treaty. The chairman shall not vote.

3. (a) Where the measures envisaged are in accordance with the opinion of the Committee the Commission shall adopt them;

(b) where the measures envisaged are not in accordance with the opinion of the Committee, or if no opinion is delivered, the Commission shall forthwith submit to the Council a proposal on the measures to be taken. The Council shall act by a qualified majority;

(c) if within three months of the matter being brought before it the Council has not acted, the measures proposed shall be adopted by the Commission.

Article 13

Article 12 shall apply for a period of 18 months from the date on which the matter was first referred to the Committee under Article 12 (1).

Article 14

This Directive shall not apply to natural mineral waters intended for export to third countries.

Article 15

Member States shall make such amendments to their laws as may be necessary to comply with this Directive and shall forthwith inform the Commission thereof; the laws thus amended shall be applied in such a way as to:

— permit trade in products complying with this Directive not later than two years after its notification,

— prohibit trade in products not complying with this Directive four years after its notification.

Article 16

This Directive shall also apply to the overseas departments of the French Republic.

Article 17

This Directive is addressed to the Member States.

Done at Brussels, 15 July 1980.

For the Council

The President

J. SANTER

ANNEX I

I. DEFINITION

1. 'Natural mineral water' means microbiologically wholesome water, within the meaning of Article 5, originating in an underground water table or deposit and emerging from a spring tapped at one or more natural or bore exits.

Natural mineral water can be clearly distinguished from ordinary drinking water:

(a) by its nature, which is characterized by its mineral content, trace elements or other constituents and, where appropriate, by certain effects;

(b) by its original state,

both characteristics having been preserved intact because of the underground origin of such water, which has been protected from all risk of pollution.

2. These characteristics, which may give natural mineral water properties favourable to health, must have been assessed:

(a) from the following points of view:

   1. geological and hydrological,
   2. physical, chemical and physico-chemical,
   3. microbiological,
   4. if necessary, pharmacological, physiological and clinical;

(b) according to the criteria listed in Section II;

(c) according to scientific methods approved by the responsible authority.

The analyses referred to in (a) (4) may be optional where the water presents the compositional characteristics on the strength of which it was considered a natural mineral water in the Member State of origin prior to the entry into force of this Directive. This is the case in particular when the water in question contains, per kg, both at source and after bottling, a minimum of 1 000 mg of total solids in solution or a minimum of 250 mg of free carbon dioxide.

3. The composition, temperature and other essential characteristics of natural mineral water must remain stable within the limits of natural fluctuation; in particular, they must not be affected by possible variations in the rate of flow.

Within the meaning of Article 5 (1), the normal viable colony count of natural mineral water means the reasonably constant total colony count at source before any treatment, whose qualitative and quantitative composition taken into account in the recognition of that water is checked by periodic analysis.

II. REQUIREMENTS AND CRITERIA FOR APPLYING THE DEFINITION

1.1. **Requirements for geological and hydrological surveys**

There must be a requirement to supply the following particulars:

1.1.1. the exact site of the catchment with indication of its altitude, on a map with a scale of not more than 1 : 1 000;

1.1.2. a detailed geological report on the origin and nature of the terrain;

1.1.3. the stratigraphy of the hydrogeological layer;

1.1.4. a description of the catchment operations;

1.1.5. the demarcation of the area or details of other measures protecting the spring against pollution.

1.2. Requirements for physical, chemical and physico-chemical surveys

These surveys shall establish:

1.2.1. the rate of flow of the spring;

1.2.2. the temperature of the water at source and the ambient temperature;

1.2.3. the relationship between the nature of the terrain and the nature and type of minerals in the water;

1.2.4. the dry residues at 180 °C and 260 °C;

1.2.5. the electrical conductivity or resistivity, with the measurement temperature having to be specified;

1.2.6. the hydrogen ion concentration (pH);

1.2.7. the anions and cations;

1.2.8. the non-ionized elements;

1.2.9. the trace elements;

1.2.10. the radio-actinological properties at source;

1.2.11. where appropriate, the relative isotope levels of the constituent elements of water, oxygen (^{16}O — ^{18}O) and hydrogen (protium, deuterium, tritium);

1.2.12. the toxicity of certain constitutent elements of the water, taking account of the limits laid down for each of them.

1.3. Criteria for microbiological analyses at source

These analyses must include:

1.3.1. demonstration of the absence of parasites and pathogenic micro-organisms;

1.3.2. quantitative determination of the revivable colony count indicative of faecal contamination:

(a) absence of Escherichia coli and other coliforms in 250 ml at 37 °C and 44·5 °C;

(b) absence of faecal streptococci in 250 ml;

(c) absence of sporulated sulphite-reducing anaerobes in 50 ml;

(d) absence of Pseudomonas aeruginosa in 250 ml.

1.3.3. determination of the revivable total colony count per ml of water:

(i) at 20 to 22 °C in 72 hours on agar-agar or an agar-gelatine mixture,

(ii) at 37 °C in 24 hours on agar-agar.

1.4. Requirements for clinical and pharmacological analyses

1.4.1. The analyses, which must be carried out in accordance with scientifically recognized methods, should be suited to the particular characteristics of the natural mineral water and its effects on the human organism, such as diuresis, gastric and intestinal functions, compensation for mineral deficiencies.

1.4.2. The establishment of the consistency and concordance of a substantial number of clinical observations may, if appropriate, take the place of the analyses referred to in 1.4.1. Clinical analyses may, in appropriate cases, take the place of the analyses referred to in 1.4.1 provided that the consistency and concordance of a substantial number of observations enable the same results to be obtained.

III. SUPPLEMENTARY QUALIFICATIONS RELATING TO EFFERVESCENT NATURAL MINERAL WATERS

At source or after bottling, effervescent natural mineral waters give off carbon dioxide spontaneously and in a clearly visible manner under normal conditions of temperature and pressure. They fall into three categories to which the following descriptions respectively shall apply:

(a) 'naturally carbonated natural mineral water' means water whose content of carbon dioxide from the spring after decanting, if any, and bottling is the same as at source, taking into account where appropriate the reintroduction of a quantity of carbon dioxide from the same water table or deposit equivalent to that released in the course of those operations and subject to the usual technical tolerances;

(b) 'natural mineral water fortified with gas from the spring' means water whose content of carbon dioxide from the water table or deposit after decanting, if any, and bottling is greater than that established at source;

(c) 'carbonated natural mineral water' means water to which has been added carbon dioxide of an origin other than the water table or deposit from which the water comes.

ANNEX II

CONDITIONS FOR THE EXPLOITATION AND MARKETING OF NATURAL MINERAL WATER

1. Exploitation of a natural mineral water spring shall be subject to permission from the responsible authority of the country where the water has been extracted, after it has been established that the water in question complies with the provisions laid down in point 1 of Annex I.

2. Equipment for exploiting the water must be so installed as to avoid any possibility of contamination and to preserve the properties, corresponding to those ascribed to it, which the water possesses at source.

   To this end, in particular:

   (a) the spring or outlet must be protected against the risks of pollution;

   (b) the catchment, pipes and reservoirs must be of materials suitable for water and so built as to prevent any chemical, physico-chemical or microbiological alteration of the water;

   (c) the conditions of exploitation, particularly the washing and bottling plant, must meet hygiene requirements. In particular, the containers must be so treated or manufactured as to avoid adverse effects on the microbiological and chemical characteristics of the natural mineral water;

   (d) the transport of natural mineral water in containers other than those authorized for distribution to the ultimate consumer is prohibited.

   However, point (d) need not be applied to mineral waters exploited and marketed in the territory of a Member State if, in that Member State at the time of notification of this Directive, transport of the natural mineral water in tanks from the spring to the bottling plant was authorized.

3. Where it is found during exploitation that the natural mineral water is polluted and no longer presents the microbiological characteristics laid down in Article 5, the person exploiting the spring must forthwith suspend all operations, particularly the bottling process, until the cause of pollution is eradicated and the water complies with the provisions of Article 5.

4. The responsible authority in the country of origin shall carry out periodic checks to see whether:

   (a) the natural mineral water in respect of which exploitation of the spring has been authorized complies with Section I of Annex I;

   (b) the provisions of paragraphs 2 and 3 are being applied by the person exploiting the spring.

ANNEX III

INDICATIONS AND CRITERIA LAID DOWN IN ARTICLE 9 (²)

Indications	Criteria
Low mineral content	Mineral salt content, calculated as a fixed residue, not greater than 500 mg/l
Very low mineral content	Mineral salt content, calculated as a fixed residue, not greater than 50 mg/l
Rich in mineral salts	Mineral salt content, calculated as a fixed residue, greater than 1 500 mg/l
Contains bicarbonate	Bicarbonate content greater than 600 mg/l
Contains sulphate	Sulphate content greater than 200 mg/l
Contains chloride	Chloride content greater than 200 mg/l
Contains calcium	Calcium content greater than 150 mg/l
Contains magnesium	Magnesium content greater than 50 mg/l
Contains fluoride	Fluoride content greater than 1 mg/l
Contains iron	Bivalent iron content greater than 1 mg/l
Acidic	Free carbon dioxide content greater than 250 mg/l
Contains sodium	Sodium content greater than 200 mg/l
Suitable for the preparation of infant food	—
Suitable for a low-sodium diet	Sodium content less than 20 mg/l
May be laxative	—
May be diuretic	—

COUNCIL DIRECTIVE

of 15 July 1980

relating to the quality of water intended for human consumption

(80/778/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 the proposal from the Commission,

Having regard to the opinion of the European Parliament (1),

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

Whereas, in view of the importance for public health of water for human consumption, it is necessary to lay down quality standards with which such water must comply;

Whereas a disparity between provisions already applicable or in the process of being drawn up in the various Member States relating to the quality of water for human consumption may create differences in the conditions of competition and, as a result, directly affect the operation of the common market; whereas laws in this sphere should therefore be approximated as provided for in Article 100 of the Treaty;

Whereas this approximation of laws should be accompanied by Community action designed to achieve, by more extensive rules concerning water for human consumption, one of the aims of the Community with regard to the improvement of living conditions, the harmonious development of economic activities throughout the Community and a continuous and balanced expansion; whereas certain specific provisions to this effect should therefore be laid down; whereas Article 235 of the Treaty should be invoked as the necessary powers have not been provided for by the Treaty;

Whereas the 1973 (3) and 1977 (4) programmes of action of the European Communities on the environment provide for both the setting of standards to apply to toxic chemical substances and to bacteria presenting a health hazard which are present in water intended for human consumption and the definition of physical, chemical and biological parameters corresponding to the different uses of water and, in particular, to water for human consumption;

Whereas special rules are envisaged for natural mineral waters; whereas, furthermore, it is necessary to exclude from the scope of this Directive medicinal waters and certain waters used in the food industry where such use does not constitute a hazard to public health;

Whereas by Directive 75/440/EEC (5), the Council has already laid down standards for surface water intended for the abstraction of drinking water;

Whereas the values fixed for certain parameters must be equal to or lower than a maximum admissible concentration;

Whereas, in the case of softened water intended for human consumption, the values fixed for certain parameters must be equal to or greater than a required minimum concentration;

Whereas it is desirable that he Member States should take the values adopted as a 'guide level';

Whereas, since the preparation of water for human consumption may involve the use of certain substances, rules should be drawn up to govern the use thereof in order to avoid possible harmful effects on public health due to excessive quantities of such substances;

Whereas the Member States should be authorized to make provision, under certain conditions, for derogations from this Directive, in particular to take account of certain special situations;

Whereas, in order to check the values of concentrations for the different parameters, it is necessary to provide that Member States take the steps required to ensure

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(1) OJ No C 28, 9. 2. 1976, p. 27.
(2) OJ No C 131, 12. 6. 1976, p. 13.
(3) OJ No C 112, 20. 12. 1973, p. 1.
(4) OJ No C 69, 11. 6. 1970, p. 1.
(5) OJ No L 194, 25. 7. 1975, p. 34.

regular monitoring of the quality of water intended for human consumption;

Whereas the reference methods of analysis defined in the Annexes to this Directive must be speedily adapted to scientific and technical progress; whereas, in order to facilitate application of the measures required for this purpose, provision should be made for a procedure establishing close cooperation between the Member States and the Commission within a committee responsible for the adaptation to scientific and technical progress,

HAS ADOPTED THIS DIRECTIVE:

Article 1

This Directive concerns standards for water intended for human consumption.

Article 2

For the purposes of this Directive, water intended for human consumption shall mean all water used for that purpose, either in its original state or after treatment, regardless of origin,

- whether supplied for consumption, or
- whether
  - used in a food production undertaking for the manufacture, processing, preservation or marketing of products or substances intended for human consumption and
  - affecting the wholesomeness of the foodstuff in its finished form.

Article 3

With regard to water referred to in the second indent of Article 2, Member States shall apply the values for the toxic and microbiological parameters lised in Tables D and E respectively of Annex I and the values for the other parameters which the competent national authorities consider are likely to affect the wholesomeness of the foodstuff in its finished form.

Article 4

1. This Directive shall not apply to:

(a) natural mineral waters recognized or defined as such by the competent national authorities;

(b) medicinal waters recognized as such by the competent national authorities.

2. Member States may not prohibit or impede the marketing of foodstuffs on grounds relating to the quality of the water used where the quality of such water meets the requirements of this Directive unless such marketing constitutes a hazard to public health.

Article 5

This Directive shall apply without prejudice to the specific provisions of other Community regulations.

Article 6

1. Member States shall send the Commission:

- appropriate information as to the industrial sectors in which the competent national authorities consider that the wholesomeness of the finished product, within the meaning of Article 2, is unaffected by the quality of the water used;
- national values for parameters other than the toxic and microbiological parameters referred to in Article 3.

2. The Commission shall examine this information and shall take any measures which may be appropriate. It shall periodically draw up a comprehensive report for the Member States.

Article 7

1. Member States shall fix values applicable to water intended for human consumption for the parameters shown in Annex I.

2. Member States may refrain from fixing, pursuant to the first paragraph, the values of parameters in respect of which no value is shown in Annex I, as long as these values have not been determined by the Council.

3. For the parameters given in Tables A, B, C, D, and E of Annex I:

- the values to be fixed by the Member States must be less than or the same as the values shown in the 'Maximum admissible concentration' column;

— in fixing the values, Member States shall take as a basis the values appearing in the 'Guide level' column.

4. For the parameters appearing in Table F of Annex I, the values to be fixed by Member States must be not lower than those given in the 'Minimum required concentration' column for softened water, of the kind referred to in the first indent of Article 2.

5. In the interpretation of the values shown in Annex I account shall be taken of the observations.

6. Member States shall take the steps necessary to ensure that water intended for human consumption at least meets the requirements specified in Annex I.

Article 8

Member States shall take all the necessary measures to ensure that any substances used in the preparation of water for human consumption do not remain in concentrations higher than the maximum admissible concentration relating to these substances in water made available to the user and, that they do not, either directly or indirectly, constitute a public health hazard.

Article 9

1. Member States may make provision for derogations from this Directive in order to take account of:

(a) situations arising from the nature and structure of the ground in the area from which the supply in question emanates.

Where a Member State decides to make such a derogation, it shall inform the Commission accordingly within two months of its decision stating the reasons for such derogation;

(b) situations arising from exceptional meteorological conditions.

Where a Member State decides to make such a derogation, it shall inform the Commission accordingly within 15 days of its decision stating the reasons for this derogation and its duration.

2. Member States shall report to the Commission only those derogations referred to in paragraph 1 which relate to a daily water supply of at least 1 000 m^3 or a population of at least 5 000.

3. In no case shall the derogations made by virtue of this Article relate to toxic or microbiological factors or constitute a public health hazard.

Article 10

1. In the event of emergencies, the competent national authorities may, for a limited period of time and up to a maximum value to be determined by them, allow the maximum admissible concentration shown in Annex I to be exceeded, provided that this does not constitute an unacceptable risk to public health and provided that the supply of water for human consumption cannot be maintained in any other way.

2. Without prejudice to the application of Directive 75/440/EEC, and in particular Article 4 (3) thereof, when, for its supply of drinking water, a Member State is obliged to resort to surface water which does not reach the concentrations required of category A3 water within the meaning of Article 2 of the aformentioned Directive and when it cannot devise suitable treatment to obtain drinking water of the quality laid down by this Directive, it may, for a limited period of time and up to a maximum permissible value which it shall determine, authorize the maximum admissible concentration shown in Annex I to be exceeded provided that this does not constitute an unacceptable risk to public health.

3. Member States which have recourse to the derogations referred to in this Article shall immediately inform the Commission thereof, stating the reasons for and probable duration of such derogations.

Article 11

Member States shall ensure that all necessary measures taken to apply the provisions taken pursuant to this Directive shall in no case have the effect of allowing, directly or indirectly, either any deterioration in the present quality of water intended for human consumption or an increase in the pollution of waters used for the production of drinking water.

Article 12

1. Member States shall take all necessary steps to ensure regular monitoring of the quality of water intended for human consumption.

2. All water intended for human consumption shall be monitored at the point where it is made available to the user in order to check whether it meets the requirements laid down in Annex I.

3. The points of sampling shall be determined by the competent national authorities.

4. For such monitoring, Member States shall conform with Annex II.

5. Member States shall as far as practicable use the reference methods of analysis set out in Annex III.

Laboratories using other methods shall ensure that the results thus obtained are equivalent to or comparable with the results obtained by the methods indicated in Annex III.

Article 13

Such changes as are necessary for adapting the reference methods of analysis set out in Annex III to scientific and technical progress shall be adopted in accordance with the procedure laid down in Article 15.

Article 14

(a) A Committee on the Adaptation to Scientific and Technical Progress, hereinafter called 'the Committee', is hereby set up; it shall consist of representatives of the Member States with a representative of the Commission as chairman.

(b) The Committee shall adopt its own rules of procedure.

Article 15

1. Where the procedure laid down in this Article is to be followed, the matter shall be referred to the Committee by its chairman, either on his own initiative or at the request of a representative of a Member State.

2. The representative of the Commission shall submit to the Committee a draft of the measures to be taken. The Committee shall give its opinion on that draft within a time limit set by the chairman having regard to the urgency of the matter. Opinions shall be adopted by a majority of 41 votes, the votes of the Member States being weighted as provided in Article 148 (2) of the Treaty. The chairman shall not vote.

3. (a) Where the measures envisaged are in accordance with the opinion of the Committee, the Commission shall adopt them.

   (b) Where the measures envisaged are not in accordance with the opinion of the Committee, or if no opinion is delivered, the Commission shall without delay submit to the Council a proposal on the measures to be taken. The Council shall act by a qualified majority.

   (c) If, within three months of the proposal being submitted to it, the Council has not acted, the proposed measures shall be adopted by the Commission.

Article 16

Without prejudice to Article 4 (2), Member States may lay down more stringent provisions than those provided for in this Directive for water intended for human consumption.

Article 17

Member States may adopt special provisions regarding information — both on packaging or labels and in advertising — concerning a water's suitability for the feeding of infants. Such provisions may also concern the properties of the water which determine the use of the said information.

Member States which intend taking such measures shall inform the other Member States and the Commission of them beforehand.

Article 18

1. Member States shall bring into force the laws, regulations and administrative provisions necessary to comply with this Directive and its Annexes within two years following its notification. They shall forthwith inform the Commission thereof.

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

Article 19

The Member States shall take the necessary measures to ensure that the quality of water intended for human consumption complies with this Directive within five years of its notification.

Article 20

Member States may, in exceptional cases and for geographically defined population groups, submit a special request to the Commission for a longer period for complying with Annex I.

This request, for which grounds must be duly put forward, shall set out the difficulties experienced and must propose an action programme with an appropriate timetable to be undertaken for the improvement of the quality of water intended for human consumption.

The Commission shall examine these programmes, including the timetables. In the case of disagreement with the Member State concerned, the Commission shall submit appropriate proposals to the Council.

Article 21

This Directive is addressed to the Member States.

Done at Brussels, 15 July 1980.

For the Council

The President

J. SANTER

ANNEX I

LIST OF PARAMETERS

A. ORGANOLEPTIC PARAMETERS

	Parameters	Expression of the results (1)	Guide level (GL)	Maximum admissible concentration (MAC)	Comments
1	Colour	mg/l Pt/Co scale	1	20	
2	Turbidity	mg/l SiO_2	1	10	
		Jackson units	0·4	4	— Replaced in certain circumstances by a transparency test, with a Secchi disc reading in meters: GL: 6 m MAC: 2 m
3	Odour	Dilution number	0	2 at 12 °C 3 at 25 °C	— To be related to the taste tests.
4	Taste	Dilution number	0	2 at 12 °C 3 at 25 °C	— To be related to the odour tests.

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(1) If, on the basis of Directive 71/354/EEC as last amended, a Member State uses in its national legislation, adopted in accordance with this Directive, units of measurement other than these indicated in this Annex, the values thus indicated must have the same degree of precision.

B. PHYSICO-CHEMICAL PARAMETERS (in relation to the water's natural structure)

	Parameters	Expression of the results ( )	Guide level (GL)	Maximum admissible concentration (MAC)	Comments
5	Temperature	°C	12	25	
6	Hydrogen ion concentration	pH unit	$6{\cdot}5 \leq pH \leq 8{\cdot}5$		— The water should not be aggressive. — The pH values do not apply to water in closed containers. — Maximum admissible value: 9·5.
7	Conductivity	$\mu S\ cm^{-1}$ at 20 °C	400		— Corresponding to the mineralization of the water. — Corresponding relativity values in ohms/cm: 2 500.

	Parameters	Expression of the results	Guide level (GL)	Maximum admissible concentration (MAC)	Comments
8	Chlorides	Cl mg/l	25		— Approximate concentration above which effects might occur: 200 mg/l.
9	Sulphates	SO_4 mg/l	25	250	
10	Silica	SiO_2 mg/l			— See Article 8.
11	Calcium	Ca mg/l	100		
12	Magnesium	Mg mg/l	30	50	
13	Sodium	Na mg/l	20	175 (as from 1984 and with a percentile of 90) 150 (as from 1987 and with a percentile of 80) (these percentiles should be calculated over a reference period of three years)	— The values of this parameter take account of the recommendations of a WHO working party (The Hague, May 1978) on the progressive reduction of the current total daily salt intake to 6 g. — As from 1 January 1984 the Commission will submit to the Council reports on trends in the total daily intake of salt per population. — In these reports the Commission will examine to what extent the 120 mg/l MAC suggested by the WHO working party is necessary to achieve a satisfactory total salt intake level, and, if appropriate, will suggest a new salt MAC value to the Council and a deadline for compliance with that value. — Before 1 January 1984 the Commission will submit to the Council a report on whether the reference period of three years for calculating these percentiles is scientifically well founded.
14	Potassium	K mg/l	10	12	
15	Aluminium	Al mg/l	0·05	0·2	
16	Total hardness				— See Table F, page 23.
17	Dry residues	mg/l after drying at 180 °C		1 500	
18	Dissolved oxygen	% O_2 saturation			— Saturation value > 75 % except for underground water.
19	Free carbon dioxide	CO_2 mg/l			— The water should not be aggressive.

C. PARAMETERS CONCERNING SUBSTANCES UNDESIRABLE IN EXCESSIVE AMOUNTS (¹)

	Parameters	Expression of the results (¹)	Guide level (GL)	Maximum admissible concentration (MAC)	Comments
20	Nitrates	NO_3 mg/l	25	50	
21	Nitrites	NO_2 mg/l		0·1	
22	Ammonium	NH_4 mg/l	0·05	0·5	
23	Kjeldahl Nitrogen (excluding N in NO_2 and NO_3)	N mg/l		1	
24	(K Mn O_4) Oxidizability	O_2 mg/l	2	5	— Measured when heated in acid medium.
25	Total organic carbon (TOC)	C mg/l			— The reason for any increase in the usual concentration must be investigated.
26	Hydrogen sulphide	S µg/l		undetectable organoleptically	
27	Substances extractable in chloroform	mg/l dry residue	0·1		
28	Dissolved or emulsified hydrocarbons (after extraction by petroleum ether); Mineral oils	µg/l		10	
29	Phenols (phenol index)	C_6H_5OH µg/l		0·5	— Excluding natural phenols which do not react to chlorine.
30	Boron	B µg/l	1 000		
31	Surfactants (reacting with methylene blue)	µg/l (lauryl sulphate)		200	

(¹) Certain of these substances may even be toxic when present in very substantial quantities.

	Parameters	Expression of the results	Guide level (GL)	Maximum admissible concentration (MAC)	Comments
32	Other organochlorine compounds not covered by parameter No 55	µg/l	1		— Haloform concentrations must be as low as possibile.
33	Iron	Fe µg/l	50	200	
34	Manganese	Mn µg/l	20	50	
35	Copper	Cu µg/l	100 — at outlets of pumping and/or treatment works and their substations 3000 — after the water has been standing for 12 hours in the piping and at the point where the water is made available to the consumer		— Above 3 000 µg/l astringent tast discolouration + corrosion may occur.
36	Zinc	Zn µg/l	100 — at outlets of pumping and/or treatment works and their substations 5 000 — after the water has been standing for 12 hours in the piping and at the point where the water is made available to the consumer		— Above 5 000 µg/l astringent taste, opalescence and sand-like deposits may occur.
37	Phosphorus	P_2O_5 µg/l	400	5 000	

	Parameters	Expression of the results	Guide level (GL)	Maximum admissible concentration (MAC)	Comments
38	Fluoride	F µg/l 8 — 12 °C 25 — 30 °C		 1 500 700	— MAC varies according to average temperature in geographical area concerned.
39	Cobalt	Co µg/l			
40	Suspended solids		None		
41	Residual Chlorine	Cl µg/l			— See Article 8.
42	Barium	Ba µg/l	100		
43	Silver	Ag µg/l		10	If, exceptionally, silver is used non-systematically to process the water, a MAC value of 80 µg/l may be authorized.

D. PARAMETERS CONCERNING TOXIC SUBSTANCES

	Parameters	Expression of the results	Guide level (GL)	Maximum admissible concentration (MAC)	Comments
44	Arsenic	As µg/l		50	
45	Beryllium	Be µg/l			
46	Cadmium	Cd µg/l		5	
47	Cyanides	CN µg/l		50	
48	Chromium	Cr µg/l		50	
49	Mercury	Hg µg/l		1	
50	Nickel	Ni µg/l		50	
51	Lead	Pb µg/l		50 (in running water)	Where lead pipes are present, the lead content should not exceed 50 µg/l in a sample taken after flushing. If the sample is taken either directly or after flushing and the lead content either frequently or to an appreciable extent exceeds 100 µg/l, suitable measures must be taken to reduce the exposure to lead on the part of the consumer.

	Parameters	Expression of the results	Guide level (GL)	Maximum admissible concentration (MAC)	Comments
52	Antimony	Sb µg/l		10	
53	Selenium	Se µg/l		10	
54	Vanadium	V µg/l			
55	Pesticides and related products — substances considered separately — total	µg/l		 0·1 0·5	'Pesticides and related products' means: — insecticides: — persistent organochlorine compounds — organophosphorous compounds — carbamates — herbicides — fungicides — PCBs and PCTs
56	Polycyclic aromatic hydrocarbons	µg/l		0·2	— reference substances: — fluoranthene/benzo 3·4 — fluoranthene/benzo 11·12 — fluoranthene/benzo 3·4 — pyrene/benzo 1·12 — perylene/indeno (1, 2, 3 – cd) pyrene

E. MICROBIOLOGICAL PARAMETERS

	Parameters	Results: volume of the sample in ml	Guide level (GL)	Maximum admissible concentration (MAC)	
				Membrane filter method	Multiple tube method (MPN)
57	Total coliforms (1)	100	—	0	MPN < 1
58	Fecal coliforms	100	—	0	MPN < 1
59	Fecal streptococci	100	—	0	MPN < 1
60	Sulphite-reducing Clostridia	20	—	—	MPN ≤ 1

Water intended for human consumption should not contain pathogenic organisms.

If it is necessary to supplement the microbiological analysis of water intended for human consumption, the samples should be examined not only for the bacteria referred to in Table E but also for pathogens including:
- salmonella,
- pathogenic staphylococci,
- fecal bacteriophages,
- entero-viruses;

nor should such water contain:
- parasites,
- algas,
- other organisms such as animalcules.

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(1) Provided a sufficient number of samples is examined (95 % consistent results).

	Parameters		Results: size of sample (in ml)	Guide level (GL)	Maximum admissible concentration (MAC)	Comments
61	Total bacteria counts for water supplied for human consumption	37 °C	1	10 (1) (2)	—	
		22 °C	1	100 (1) (2)	—	
62	Total bacteria counts for water in closed containers	37 °C	1	5	20	On their own responsibility and where parameters 57, 58, 59 and 60 are complied with, and where the pathogen organisms given on page 22 are absent, Member States may process water for their internal use the total bacteria count of which exceeds the MAC values laid down for parameter 62. MAC values should be measured within 12 hours of being put into closed containers with the sample water being kept at a constant temperature during that 12-hour period.
		22 °C	1	20	100	

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(1) For disinfected water the corresponding values should be considerably lower at the point where it leaves the processing plant.

(2) If, during successive sampling, any of these values is consistently exceeded a check should be carried out.

F. MINIMUM REQUIRED CONCENTRATION FOR SOFTENED WATER INTENDED FOR HUMAN COMSUMPTION

	Parameters	Expression of the results	Minimum required concentration (softened water)	Comments
1	Total hardness	mg/l Ca	60	Calcium or equivalent cations.
2	Hydrogen ion concentration	pH		The water should not be aggressive.
3	Alkalinity	mg/l HCO_3	30	
4	Dissolved oxygen			

NB: — The provisions for hardness, hydrogen ion concentration, dissolved oxygen and calcium also apply to desalinated water.

— If, owing to its excessive natural hardness, the water is softened in acordance with Table F before being supplied for consumption, its sodium content may, in exceptional cases, be higher than the values given in the 'Maximum admissible concentration' column. However, an effort must be made to keep the sodium content at as low a level as possible and the essential requirements for the protection of public health may not be disregarded.

TABLE OF CORRESPONDENCE BETWEEN THE VARIOUS UNITS OF WATER HARDNESS MEASUREMENT

	French degree	English degree	German degree	Milligrams of Ca	Millimoles of Ca
French degree	1	0·70	0·56	4·008	0·1
English degree	1·43	1	0·80	5·73	0·143
German degree	1·79	1·25	1	7·17	0·179
Milligrams of Ca	0·25	0·175	0·140	1	0·025
Millimoles of Ca	10	7	5·6	40·08	1

ANNEX II

PATTERNS AND FREQUENCY OF STANDARD ANALYSES

A. TABLE OF STANDARD PATTERN ANALYSES (Parameters to be considered in monitoring)

	Standard analyses Parameters to be considered	Minimum monitoring (C 1)	Current monitoring (C 2)	Periodic monitoring (C 3)	Occasional monitoring in special situations or in case of accidents (C 4)
A	ORGANOLEPTIC PARAMETERS	— odour (1) — taste (1)	— odour — taste — turbidity (appearance)	Current monitoring analyses + other parameters as in footnote 4	The competent national authorities of the Member States will determine the parameters (5) according to circumstances, taking account of all factors which might have an adverse affect on the quality of drinking water supplied to consumers.
B	PHYSICO-CHEMICAL PARAMETERS	— conductivity or other physico-chemical parameter — residual chlorine (3)	— temperature (2) — conductivity or other physico-chemical parameter — pH — residual chlorine (3)		
C	UNDESIRABLE PARAMETERS		— nitrates — nitrites — ammonia		
D	TOXIC PARAMETERS				
E	MICRO-BIOLOGICAL PARAMETERS	— total coliforms or total counts of 22° and 37° — fecal coliforms	— total coliforms — fecal coliforms — total counts of 22° and 37°		

Note: An initial analysis, to be carried out before a source is exploited, should be added. The parameters to be considered would be the current monitoring analyses plus *inter alia* various toxic or undesirable substances presumed present. The list would be drawn up by the competent national authorities.

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(1) Qualitative assessment.

(2) Except for water supplied in containers.

(3) Or other disinfectants and only in the case of treatment.

(4) These parameters will be determined by the competent national authority, taking account of all factors which might affect the quality of drinking water supplied to users and which could enable the ionic balance of the constituents to be assessed.

(5) The competent national authority may use parameters other than those mentioned in Annex I to this Directive.

B. TABLE OF MINIMUM FREQUENCY OF STANDARD ANALYSES (³)

Volume of water produced or distributed in m³/day	Population concerned (assuming 200 l/day per person)	Analysis C 1	Analysis C 2	Analysis C 3	Analysis C 4
		Number of samples per year	Number of samples per year	Number of samples per year	
100	500	(¹)	(¹)	(¹)	Frequency to be determined by the competent national authorities as the situation requires
1 000	5 000	(¹)	(¹)	(¹)	
2 000	10 000	12	3	(¹)	
10 000	50 000	60	6	1	
20 000	100 000	120	12	2	
30 000	150 000	180	18	3	
60 000	300 000	360 (²)	36	6	
100 000	500 000	360 (²)	60	10	
200 000	1 000 000	360 (²)	120 (²)	20 (²)	
1 000 000	5 000 000	360 (²)	120 (²)	20 (²)	

(¹) Frequency left to the discretion of the competent national authorities. However, water intended for the food-manufacturing industries must be monitored at least once a year.

(²) The competent health authorities should endeavour to increase this frequency as far as their resources allow.

(³) (a) In the case of water which must be disinfected, microbiological analysis should be twice as frequent.
(b) Where analyses are very frequent, it is advisable to take samples at the most regular intervals possible.
(c) Where the values of the results obtained from samples taken during the preceding years are constant and significantly better than the limits laid down in Annex I, and where no factor likely to cause a deterioration in the quality of the water has been discovered, the minimum frequencies of the analyses referred to above may be reduced:
— for surface waters, by a factor of 2 with the exception of the frequencies laid down for microbiological analyses;
— for ground waters, by a factor of 4, but without prejudice to the provisions of point (a) above.

ANNEX III

REFERENCE METHODS OF ANALYSIS

A. ORGANOLEPTIC PARAMETERS

1 Colour	Photometric method calibrated on the Pt/co scale.
2 Turbidity	Silica method — Formazine test — Secchi's method.
3 Odour	Successive dilutions, tested at 12 °C or 25 °C.
4 Taste	Successive dilutions, tested at 12 °C or 25 °C.

B. PHYSICO-CHEMICAL PARAMETERS

5 Temperature	Thermometry.
6 Hydrogen ion concentration	Electrometry.
7 Conductivity	Electrometry.
8 Chlorides	Titrimetry — Mohr's method.
9 Sulphates	Gravimetry — complexometry — spectrophotometry.
10 Silica	Absorption spectrophotometry.
11 Calcium	Atomic absorption — complexometry.
12 Magnesium	Atomic absorption.
13 Sodium	Atomic absorption.
14 Potassium	Atomic absorption.
15 Aluminium	Atomic absorption — absorption spectrophotometry.
16 Total hardness	Complexometry.
17 Dry residue	Dessication at 180 °C and weighing.
18 Dissolved oxygen	Winkler's method — Specific electrode method.
19 Free carbon dioxide	Acidimetry.

C. PARAMETERS CONCERNING UNDESIRABLE SUBSTANCES

20 Nitrates	Absorption spectrophotometry — Specific electrode method.
21 Nitrites	Absorption spectrophotometry.
22 Ammonium	Absorption spectrophotometry.
23 Kjeldahl Nitrogen	Oxidation with Titrimetry or Absorption spectrophotometry.
24 Oxidizability	Boiling for 10 minutes with $KMnO_4$ in acid medium.
25 Total organic carbon (TOC)	—

26 Hydrogen sulphide	Absorption spectrophotometry.
27 Substances extractable in chloroform	Liquid/liquid extraction using purified chloroform at neutral pH, weighing the residue.
28 Hydrocarbons (dissolved or in emulsion); Mineral oils	Infra-red absorption spectrophotometry.
29 Phenols (phenol index)	Absorption spectrophotometry, paranitroaniline method and 4-aminoantipyrine method.
30 Boron	Atomic absorption — Absorption spectrophotometry.
31 Surfactants (reacting with metylene blue)	Absorption spectrophotometry with methylene blue.
32 Other organo-chlorine compounds	Gas-phase or liquid-phase chromatography after extraction by appropriate solvents and purification — Identification of the constituents of mixtures if necessary. Quantitative determination.
33 Iron	Atomic absorption — Absorption spectrophotometry.
34 Manganese	Atomic absorption — Absorption spectrophotometry.
35 Copper	Atomic absorption — Absorption spectrophotometry.
36 Zinc	Atomic absorption — Absorption spectrophotometry.
37 Phosphorus	Absorption spectrophotometry.
38 Fluoride	Absorption spectrophotometry — Specific electrode method.
39 Cobalt	—
40 Suspended solids	Method of filtration on to μ 0·45 porous membrane or centrifuging (for at least 15 minutes with an average acceleration of 2 800 to 3 200 g) dried at 105 °C and weighed.
41 Residual chlorine	Titrimetry — Absorption spectrophotometry.
42 Barium	Atomic absorption.

D. PARAMETERS CONCERNING TOXIC SUBSTANCES

43 Silver	Atomic absorption.
44 Arsenic	Absorption spectrophotometry — Atomic absorption.
45 Beryllium	—
46 Cadmium	Atomic absorption.
47 Cyanides	Absorption spectrophotometry.
48 Chromium	Atomic absorption — Absorption spectrophotometry.
49 Mercury	Atomic absorption.
50 Nickel	Atomic absorption.
51 Lead	Atomic absorption.
52 Antimony	Absorption spectrophotometry.

53 Selenium	Atomic absorption.
54 Vanadium	—
55 Pesticides and related products	See method 32.
56 Polycyclic aromatic hydrocarbons	Measurement of intensity of fluorescence ultraviolet after extraction using hexane — gas-phase chromatography or measurement in ultraviolet after thin layer chromatography — Comparative measurements against a mixture of six standard substances of the same concentration (1).

E. MICROBIOLOGICAL PARAMETERS

57 (2) Total coliforms	Fermentation in mutliple tubes. Subculturing of the positive tubes on a confirmation medium. Count according to MPN (most probable number) or Membrane filtration and culture on an appropriate medium such as Tergitol lactose agar, endo agar, 0·4 % Teepol broth, subculturing and identification of the suspect colonies — Incubation temperature for total coliforms: 37 °C Incubation temperature for fecal coliforms: 44 °C
58 (2) Fecal coliforms	
59 (2) Fecal streptococci	Sodium azide method (Litsky). Count according to MPN — Membrane filtration and culture on an appropriate medium.
60 (2) Sulphite-reducing Clostridia	A spore count, after heating the sample to 80 °C by: — seeding in a medium with glucose, sulphite and iron, counting the black-halo colonies; — membrane filtration, deposition of the inverted filter on a medium with glucose, sulphite and iron covered with agar, count of black colonies; — distribution in tubes of differential reinforced clostridial medium (DRCM), subculturing of the black tubes in a medium of litmus-treated milk, count according to MPN.
61/62 (2) Total counts	Inoculation by placing in nutritive agar.

ADDITIONAL TESTS

Salmonella	Concentration by membrane filtration. Inoculation on a pre-enriched medium. Enrichment, subculturing on isolating agar. Identification.
Pathogenic staphylococci	Membrane filtration and culture on a specific medium (e.g. Chapman's hypersaline medium). Test for pathogenic characteristics.

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(1) Standard substances to be considered: fluoranthene/benzo-3,4, fluoranthene/benzo-11,12, fluoranthene/benzo-3,4, pyrene/benzo-1,12, perylene and indeno (1,2,3-cd)pyrene.

(2) Comments: The incubation period is generally 24 or 48 hours except for total counts, when it is 48 or 72 hours.

Fecal bacteriophages	Guelin's process.
Enteroviruses	Concentration by filtration, flocculation or centrifuging, and identification.
Protozoa	Concentration by filtration on a membrane, microscopic examination, test for pathogenicity.
Animalcules (worms — larvae)	Concentration by filtration on a membrane. Microscopic examination. Test for pathogenicity.

F. MINIMUM REQUIRED CONCENTRATION

Alkalinity	Acidimetry with Methyl orange

COUNCIL DIRECTIVE

of 15 July 1980

on air quality limit values and guide values for sulphur dioxide and suspended particulates

(80/779/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 the proposal from the Commission,

Having regard to the opinion of the European Parliament (1),

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

Whereas the European Communities' programmes of action on the environment of 1973 (3) and 1977 (4) provide that priority is to be given to measures against sulphur dioxide and suspended particulates because of their toxicity and the current state of knowledge of their effects on human health and the environment;

Whereas, since any discrepancy between the provisions already applicable or being prepared in the various Member States with regard to sulphur dioxide and suspended particulates could give rise to unequal conditions of competition and could consequently directly affect the functioning of the common market, the legislative provisions in this area should be harmonized as prescribed in Article 100 of the Treaty;

Whereas one of the basic tasks of the European Economic Community is to promote throughout the Community a harmonious development of economic activities and a continued and balanced expansion; whereas such an achievement is inconceivable without measures to combat pollution, improve the quality of life and protect the environment; whereas, since the Treaty has not provided the necessary powers in this field, Article 235 of the Treaty must be invoked;

Whereas, in order to protect human health in particular, it is necessary to set for these two pollutants limit values which must not be exceeded in the territory of the Member States during specified periods; whereas these values should be based on the findings reached in the framework of the WHO, particularly with regard to the dose/effect relationships established for sulphur dioxide and suspended particulates taken together;

Whereas, despite the measures taken, it may not be possible to comply with these limit values in certain zones; whereas the Member States must therefore be allowed temporary derogations on condition that they forward to the Commission plans for the progressive improvement of the quality of the air in those zones;

Whereas guide values should also be set to serve as long-term precautions for health and the environment and as reference points for the establishment of specific schemes within zones determined by the Member States;

Whereas the measures taken pursuant to this Directive must be economically feasible and compatible with balanced development;

Whereas it is necessary to establish suitable monitoring of air quality and particularly of observance of the limit values; whereas the Member States should therefore be obliged to establish measuring stations to supply the data necessary for the application of the Directive;

Whereas since different sampling and analysis methods are applied in the Member States, it is necessary to permit, under certain conditions, the use of sampling and measurement methods other than the reference methods laid down in the Directive;

Whereas, since some Member States use particular methods of sampling and analysis which cannot easily be correlated with the reference methods, it is necessary that the Directive specify different limit values which are to be respected where such methods are used; whereas the Member States concerned should also carry out parallel measurements at a series of representative

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(1) OJ No C 83, 4. 4. 1977, p. 44.
(2) OJ No C 204, 30. 8. 1976, p. 34.
(3) OJ No C 112, 20. 12. 1973, p. 1.
(4) OJ No C 139, 13. 6. 1977, p. 1.

stations using the reference methods in addition to their own methods of measurement; whereas the Commission must make further proposals in the light of these parallel measurements and of the need to avoid discriminatory provisions;

Whereas the subsequent development of reference methods of sampling and analysis referred to in this Directive may be desirable in the light of technical and scientific progress in this area; whereas in order to facilitate implementation of the work necessary to this end, a procedure should be set up to establish close cooperation between the Member States and the Commission within a Committee on Adaptation to Scientific and Technical Progress,

HAS ADOPTED THIS DIRECTIVE:

Article 1

The purpose of this Directive is to fix limit values (Annex I) and guide values (Annex II) for sulphur dioxide and suspended particulates in the atmosphere and the conditions for their application in order to improve:

- the protection of human health,
- the protection of the environment.

Article 2

1. 'Limit values' means:

- the concentrations of sulphur dioxide and suspended particulates considered simultaneously in accordance with Table A in Annex I, and
- the concentrations of suspended particulates considered separately in accordance with Table B in Annex I,

which, in order to protect human health in particular, must not be exceeded throughout the territory of the Member States during specified periods and under the conditions laid down in the following Articles.

2. 'Guide values' means the concentrations of sulphur dioxide and suspended particulates over specified periods which are given in Annex II and are intended to serve as:

- long-term precautions for health and the environment,
- reference points for the establishment of specific schemes within zones determined by the Member States.

Article 3

1. Member States shall take appropriate measures to ensure that as from 1 April 1983 the concentrations of sulphur dioxide and suspended particulates in the atmosphere are not greater than the limit values given in Annex I, without prejudice to the following provisions.

2. Where a Member State considers that there is a likelihood that, despite the measures taken, the concentrations of sulphur dioxide and suspended particulates in the atmosphere might, after 1 April 1983, exceed in certain zones the limit values given in Annex I, it shall inform the Commission thereof before 1 October 1982.

It shall at the same time forward to the Commission plans for the progressive improvement of the quality of the air in those zones. These plans, drawn up on the basis of relevant information on the nature, origin and evolution of the pollution, shall describe in particular the measures taken or to be taken and the procedures implemented or to be implemented by the Member State concerned. These measures and procedures must bring the concentrations of sulphur dioxide and suspended particulates in the atmosphere within these zones to values below or equal to the limit values given in Annex I as soon as possible and by 1 April 1993 at the latest.

Article 4

1. In the zones in which the Member State concerned considers it necessary to limit or prevent a foreseeable increase in pollution by sulphur dioxide and suspended particulates in the wake of development, in particular urban or industrial development, the Member State shall, taking the guide values in Annex II as a reference point, fix values which must be lower than the limit values in Annex I.

2. In zones on its territory which the Member State concerned considers should be afforded special environmental protection, the Member State shall fix values which are generally lower than the guide values in Annex II.

3. Member States shall inform the Commission of the values, deadlines and timetables they have laid down for the zones referred to in paragraphs 1 and 2, and of any appropriate measures they have taken.

Article 5

In addition to the provisions referred to in Article 3 (1) and Article 4 (1), Member States shall, with the object of taking further precautions for the protection of health and the environment, endeavour to move towards the guide values in Annex II wherever the measured concentrations are higher than these values.

Article 6

Member States shall establish measuring stations designed to supply the data necessary for the application of this Directive, in particular in zones where the limit values referred to in Article 3 (1) are likely to be approached or exceeded and in the zones referred to in Article 3 (2); the stations must be located at sites where pollution is thought to be greatest and where the measured concentrations are representative of local conditions.

Article 7

1. Following the entry into force of this Directive, Member States shall inform the Commission, not later than six months after the end (31 March) of the annual reference period, of instances in which the limit values laid down in Annex I have been exceeded and of the concentrations recorded.

2. They shall also notify the Commission, not later than one year after the end of the annual reference period, of the reasons for such instances and of the measures they have taken to avoid their recurrence.

3. In addition, Member States shall forward information to the Commission, at its request, on the concentrations of sulphur dioxide and suspended particulates in any zones they have designated pursuant to Article 4 (1) and (2).

Article 8

The Commission shall each year publish a summary report on the application of this Directive.

Article 9

Application of the measures taken pursuant to this Directive must not bring about a significant deterioration in the quality of the air where the level of pollution by sulphur dioxide and suspended particulates at the time of implementation of this Directive is low in relation to the limit values set out in Annex I.

Article 10

1. For the purposes of applying this Directive, the Member States shall use either the reference methods of sampling and analysis referred to in Annex III or any other method of sampling and analysis in respect of which they demonstrate to the Commission at regular intervals:

— either that it ensures satisfactory correlation of results with those obtained using the reference method;

— or that measurements taken in parallel with the reference method at a series of representative stations chosen in accordance with the requirements laid down in Article 6 show that there is a reasonably stable relationship between the results obtained using that method and those obtained using the reference method.

2. Without prejudice to the provisions of this Directive, a Member State may also use, pending the decision of the Council on the proposals from the Commission referred to in paragraph 4, the sampling and analysis methods laid down in Annex IV and the values associated with these methods also laid down in Annex IV in substitution for the limit values set out in Annex I.

3. A Member State which decides to avail itself of the provisions of paragraph 2 must however take measurements in parallel at a series of representative measuring stations, chosen in accordance with the requirements of Article 6, in order to verify the corresponding stringency of the limit values set out in Annex IV and Annex I. The results of these parallel measurements, including in particular instances in which the limit values laid down in Annex I have been exceeded and the concentrations recorded, shall be forwarded to the Commission at regular intervals, and at least twice a year, for incorporation in the annual report provided for in Article 8.

4. The Commission shall, after five years, but within six years of the expiry of the limit of 24 months specified in Article 15 (1), submit a report to the Council on the results of the parallel measurements carried out under paragraph 3 and shall, having regard in particular to these results and to the need to avoid discriminatory provisions, make proposals relating to paragraph 2 and Annex IV. In the report provided for in Article 8 the Commission will indicate whether it has noted instances in which the limit values fixed in Annex I have been exceeded to a significant extent on repeated occasions.

5. The Commission shall, in selected locations in the Member States and in cooperation with the latter, carry out studies on the sampling and analysis of sulphur dioxide, and of black smoke and suspended particulates. These studies shall be designed in particular to promote the harmonization of methods of sampling and analysis of these pollutants.

Article 11

1. Where Member States fix in border regions values for concentrations of sulphur dioxide and suspended particulates in the atmosphere in accordance with Article 4 (1) and (2), they shall hold prior consultations. The Commission may attend such consultations.

2. Where the limit values given in Annex I or the values referred to in Article 4 (1) and (2), inasmuch as

the latter values have been the subject of consultations in accordance with paragraph 1, are or might be exceeded following significant pollution which originates or may have originated in another Member State, the Member States concerned shall hold consultations with a view to remedying the situation. The Commission may attend such consultations.

Article 12

The procedure laid down in Articles 13 and 14 for the adaptation on this Directive to technical progress shall cover the subsequent development of the reference methods of sampling and analysis referred to in Annex III. This adaptation must not result in any direct or indirect modification of effective concentration values given in Annexes I and II.

Article 13

1. For the purpose of Article 12 a Committee on the adaptation of this Directive to scientific and technical progress, hereinafter called 'the Committee', shall be set up; it shall consist of representatives of the Member States, with a Commission representative as chairman.

2. The Committee shall adopt its own rules of procedure.

Article 14

1. Where the procedure laid down in this Article is invoked, the Committee shall be convened by the chairman, either on his own initiative or at the request of the representative of a Member State.

2. The Commission representative shall submit a draft of the measures to be taken to the Committee. The Committee shall give its opinion on the draft within a time limit set by the chairman having regard to the urgency of the matter. Decisions shall be taken by a majority of 41 votes, the votes of the Member States being weighted as provided in Article 148 (2) of the Treaty. The chairman shall not vote.

3. The Commission shall adopt the proposed measures if they are consistent with the opinion of the Committee.

Where the proposed measures are not consistent with the opinion of the Committee, or if no opinion is delivered, the Commission shall without delay submit to the Council a proposal on the measures to be taken. The Council shall decide by a qualified majority.

If within three months of the proposal being submitted to it the Council has not acted, the proposed measures shall be adopted by the Commission.

Article 15

1. Member States shall bring into force the laws, regulations and administrative provisions necessary to comply with this Directive within 24 months of its notification and shall forthwith inform the Commission thereof.

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

Article 16

This Directive is addressed to the Member States.

Done at Brussels, 15 July 1980.

For the Council

The President

J. SANTER

ANNEX I

LIMIT VALUES FOR SULPHUR DIOXIDE AND SUSPENDED PARTICULATES

(As measured by the black-smoke method)

TABLE A

Limit values for sulphur dioxide expressed in µg/m³ with the associated values for suspended particulates (as measured by the black-smoke method (¹)) expressed in µg/m³

Reference period	Limit value for sulphur dioxide	Associated value for suspended particulates
Year	80 (median of daily mean values taken throughout the year)	> 40 (median of daily mean values taken throughout the year)
	120 (median of daily mean values taken throughout the year)	≤ 40 (median of daily mean values taken throughout the year)
Winter (1 October to 31 March)	130 (median of daily mean values taken throughout the winter)	> 60 (median of daily mean values taken throughout the winter)
	180 (median of daily mean values taken throughout the winter)	≤ 60 (median of daily mean values taken throughout the winter)
Year (made up of units of measuring periods of 24 hours)	250 (²) (98 percentile of all daily mean values taken throughout the year)	> 150 (98 percentile of all daily mean values taken throughout the year)
	350 (²) (98 percentile of all daily mean values taken throughout the year)	≤ 150 (98 percentile of all daily mean values taken throughout the year)

(¹) The results of the measurements of black smoke taken by the OECD method have been converted into gravimetric units as described by the OECD (see Annex III).

(²) Member States must take all appropriate steps to ensure that this value is not exceeded for more than three consecutive days. Moreover, Member States must endeavour to prevent and to reduce any such instances in which this value has been exceeded.

TABLE B

Limit values for suspended particulates (as measured by the black-smoke method (¹)) expressed in $\mu g/m^3$

Reference period	Limit value for suspended particulates
Year	80 (median of daily mean values taken throughout the year)
Winter (1 October to 31 March)	130 (median of daily mean values taken throughout the winter)
Year (made up of units of measuring periods of 24 hours)	250 (²) (98 percentile of all daily mean values taken throughout the year)

(¹) The results of the measurements of black smoke taken by the OECD method have been converted into gravimetric units as described by the OECD (see Annex III).

(²) Member States must take all appropriate steps to ensure that this value is not exceeded for more than three consecutive days. Moreover, Member States must endeavour to prevent and to reduce any such instances in which this value has been exceeded.

ANNEX II

GUIDE VALUES FOR SULPHUR DIOXIDE AND SUSPENDED PARTICULATES

(as measured by the black-smoke method)

TABLE A

(Guide values for sulphur dioxide expressed in µg/m³

Reference period	Guide value for sulphur dioxide
Year	40 to 60 (arithmetic mean of daily mean values taken throughout the year)
24 hours	100 to 150 (daily mean value)

TABLE B

Guide values for suspended particulates (as measured by the black-smoke method (1)) expressed in µg/m³

Reference period	Guide value for suspended particulates
Year	40 to 60 (arithmetic mean of daily mean values taken throughout the year)
24 hours	100 to 150 (daily mean value)

(1) The results of the measurements of black smoke taken by the OECD method have been converted into gravimetric units as described by the OECD (see Annex III).

ANNEX III

REFERENCE METHODS OF SAMPLING AND ANALYSIS TO BE EMPLOYED WITHIN THE CONTEXT OF THIS DIRECTIVE

A. SULPHUR DIOXIDE

The reference method of sampling for the determination of sulphur dioxide uses the equipment described in International Standard ISO-4219, first edition 1979/09/15. The sampling period is normally 24 hours.

The reference method of analysis is that described in detail in Annex V; it is based on Draft International Standard ISO DP-6767, revised February 1979 : 'Air quality — determination of the mass concentration of sulphur dioxide in ambient air — tetrachloromercurate (TCM)/pararosaniline'. This method of analysis is based on the principle of the colorimetric reaction with pararosaniline.

B. SUSPENDED PARTICULATES

For the determination of black smoke and its conversion into gravimetric units, the method standardized by the OECD working party on methods of measuring air pollution and survey techniques (1964) is considered to be the reference method.

For the above-noted methods, standardized respectively by ISO and OECD, the linguistic versions published by these organizations will be regarded as authentic together with the other versions which the Commission will certify as being in conformity therewith.

ANNEX IV

LIMIT VALUES FOR SULPHUR DIOXIDE AND SUSPENDED PARTICULATES (AS MEASURED BY A GRAVIMETRIC METHOD) APPLICABLE WITHIN THE CONTEXT OF ARTICLE 10 (2)

TABLE A

Limit values for sulphur dioxide expressed in µg/m^3

Reference period	Limit value for sulphur dioxide
Year	140 (arithmetic mean of 30 minute values taken throughout the year)
Year (made up of units of measuring periods of 30 minutes)	400 (95 percentile of all 30 minute values taken throughout the year)

TABLE B

Limit values for suspended particulates (as measured by the gravimetric method described in (ii) below) expressed in µg/m^3

Reference period	Limit value for suspended particulates
Year	150 (arithmetic mean of daily mean values taken throughout the year)
Year (made up of units of measuring periods of 24 hours)	300 (95 percentile of all daily mean values taken throughout the year)

The methods of sampling and analysis applicable within the context of Article 10 (2) are with respect to:

(i) **Sulphur dioxide**

— *Method of sampling:* measuring stations permitting 'random' sampling are used with a grid network of the type represented by Figure 1. At each point of the network at least 13 samples per year are taken between 8 a.m. and 4 p.m. on working days. The different samples are collected for 30 minutes continuous duration at regular intervals throughout the year, for example as follows:

On the first day, samples are taken at the points marked 'a' in Figure 1, on the second day on the points marked 'b', on the third day at the points marked 'c' and on the fourth day at the points marked 'd'. These samplings are repeated for each point at intervals of four weeks for different periods of 30 minutes chosen 'at random'.

— Evaluation period:	one year,
— number of points:	16 in a grid network,
— sampling duration:	30 minutes continuous between 8 a.m. and 4 p.m. on working days,
— number of samples per point:	at least 13,
— total number of samples:	at least 208.

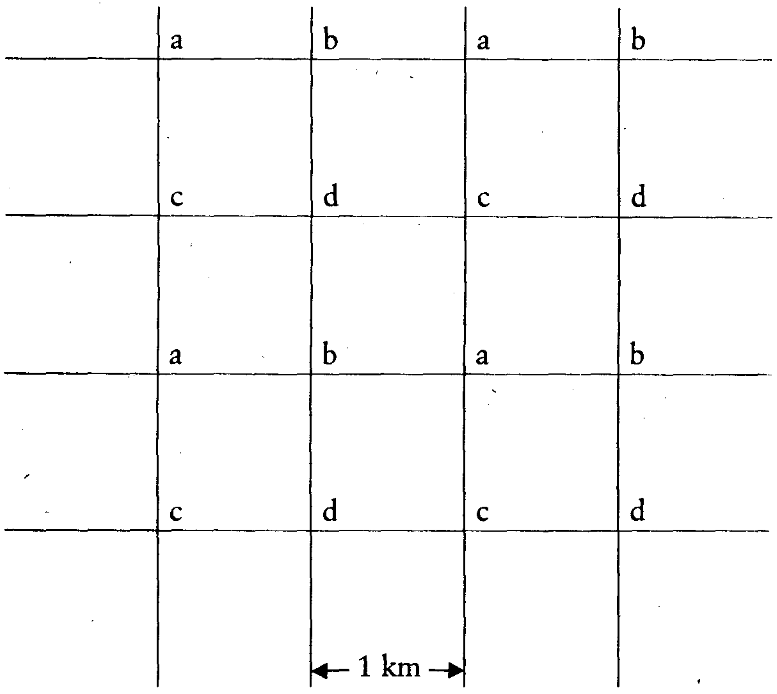


Figure 1

Sampling scheme

— *Method of analysis:* the reference method of Annex III. The procedure set out in Article 10 (1) applies.

(ii) **Suspended particulates**

— *Method of sampling:*

1. The suspended particulates are collected on a filter composed of either membrane or glass-fibre.
2. The sampling system consists of:
   - — a filter,
   - — a filter support,
   - — a pump,
   - — a volumetric gasmeter.
3. The sampling system does not include a fractionating device.
4. The sampling duration is 24 hours.
5. The filter is protected against direct deposition of particles by sedimentation and against the direct influence of atmospheric conditions.
6. The filters used should have an efficiency of more than 99 % for particles having an aerodynamic diameter of 0·3 µm.
7. The air velocity at the surface of the filter is between 33 and 55 cm/sec inclusive. The reduction in the speed throughout the sampling duration must not exceed 5 % if glass-fibre filters are used or 25 % if membrane filters are used.
8. The number of samplings made throughout the year must be at least 100, uniformly spread throughout this period.

— *Method of analysis:*

(a) Analysis is by weighing.

(b) 1. Membrane filters are to be conditioned, before and after sampling, by holding them at a constant temperature between 90 and 100 °C for two hours and subsequently storing them in a dessicator for two hours before weighing.

(b) 2. Glass-fibre filters are to be conditioned, before and after sampling, by holding them for a period of 24 hours in an atmosphere at 20 °C and 50 % relative humidity before weighing.

ANNEX V

REFERENCE METHOD OF ANALYSIS FOR SULPHUR DIOXIDE

Air quality — Determination of the mass concentration of sulphur dioxide in ambient air — Tetrachloromercurate (TCM)/pararosaniline method

1. SCOPE

This draft international standard specifies a spectrophotometric method for the determination of the mass concentration of sulphur dioxide in ambient air. The standard comprises methods for both sampling and analysis.

2. FIELD OF APPLICATION

With the procedure described in this standard, atmospheric sulphur dioxide concentrations between 7 and 1 150 µg/m³ can be determined.

Note

If higher concentrations have to be determined aliquots of the sample solution or smaller air samples than specified in this standard can be taken. In this case the absorption efficiency of the concentrations under study.

Interferences from heavy metals, oxides of nitrogen, ozone and reduced sulphur compounds (e.g. hydrogen sulphide and mercaptanes) are eliminated or minimized. Sulphuric acid and sulphates do not interfere. No interference of sulphur trioxide has been experimentally ascertained, since this presumably becomes hydrated to sulphuric acid in the absorbing solution.

3. PRINCIPLE

A measured air sample is drawn through a solution of sodium tetrachloromercurate (TCM) and the sulphur dioxide present in the air is absorbed by formation of a dichlorosulphitomercurate complex.

The sample solution is treated with a solution of sulphamic acid to destroy the nitrite anion formed by the oxides of nitrogen present in the air. It is then treated with solutions of formaldehyde and acid-bleached pararosaniline containing phosphoric acid to obtain a pH of 1·6 ± 0·1.

Pararosaniline, formaldehyde and the bisulphite anion react to form the intensely coloured pararosaniline methyl sulphonic acid, which behaves as a two-colour indicator (λ_{max} = 548 nm at pH 1·6 ± 0·1).

The concentration of sulphur dioxide is taken from a calibration graph prepared on the basis of calibration gas mixtures (6.3.1). According to the equipment available in the laboratory it may be convenient in certain cases, for routine checks to replace the calibration gas mixtures by sodium bisulphite solutions of known concentration. However, this procedure should only be used after a proper calibration with a permeation device.

4. REAGENTS

4.1. All reagents shall be of analytical quality (pro analysi).

Unless otherwise indicated, references to water shall mean distilled water. The water must be free from oxidants and should preferably be double-distilled from an all-glass apparatus.

4.2. Absorbing solution: 0·04 moles/l sodium tetrachloromercurate (TCM).

Dissolve 10·9 g of mercury (II) chloride, 4·7 g of sodium chloride and 0·07 g of ethylendiamine tetracetic acid disodium salt (EDTA) in water and dilute to 1 litre.

The solution is stable for several months and should be discarded if a precipitate is formed.

Notes

1. The amount of EDTA added eliminates possible interferences from heavy metals up to 60 µg of iron (III), 10 µg of manganese (II), 10 µg of chromium (III), 10 µg of copper (II) and 22 µg of vanadium (V) in 10 ml of absorbing solution.
2. The solution is highly poisonous and should be handled as such. A method for recovering the mercury after the analysis is given in Annex C. If any absorbing solution is spilt on the skin, it must be flushed off with water immediately.

4.3. **Hydrochloric acid, 1 mole/l**

Dilute 86 ml of concentrated hydrochloric acid, HCl ($\rho = 1{\cdot}19$ g/ml, to 1 litre.

4.4. **Pararosaniline hydrochloride, 0·2 % stock solution**

Dissolve 0·2 g of pararosaniline hydrochloride, $C_{19}H_{17}N_3{\cdot}HCl$ in 100 ml of hydrochloric acid (4.3).

Note

Pararosaniline hydrochloride used in the preparation of the stock solution must have a purity higher than 95 % (see Annex D) and exhibit a maximum absorption at 540 nm in acetic acid — sodium acetate buffer (0·1 moles/l). Furthermore, the absorbance of the reagent blank should not exceed 0·10 when the blank is prepared according to the procedure described in section 6.2.

Reagents that do not meet these requirements must be rejected or purified. The purification can be achieved by crystallization or extraction (see Annex D).

4.5. **Phosphoric acid, 3 moles/l**

Dilute 205 ml of concentrated phosphoric acid, H_3PO_4, ($\rho = 1{\cdot}69$ g/ml) with water to 1 litre.

4.6. **Pararosaniline reagent solution**

Pipet 20 ml of the pararosaniline hydrochloride stock solution (4.4) and 25 ml of phosphoric acid (4.5) into a 250 ml volumetric flask and make up to the mark with water.

This reagent is stable for several months if stored in the dark.

4.7. **Formaldehyde, working solution**

Pipet 5 ml of a 40 % formaldehyde solution, $HCHO$, into a 1 litre volumetric flask and make up to the mark with water. Prepare daily.

4.8. **Sulphamic acid, 0·6 % working solution**

Dissolve 0·6 g of sulphamic acid, NH_2SO_3H, in 100 ml water. This solution is stable for a few days if protected from air.

4.9. **Sodium bisulphite solution. Stock solution**

Dissolve 0·3 g of sodium metabisulphite, $Na_2S_2O_5$, in 500 ml of freshly boiled and cooled distilled water (double-distilled water that has been deaerated is preffered). The solution contains from 320 to 400 µg of sulphur dioxide equivalents per millilitre. The actual concentration is determined by adding an excess of iodine to an aliquot of the solution and back titrating with standardized sodium thiosulphate solution (see Annex B).

The solution is unstable.

4.10. **Sodium bisulphite standard solution**

Immediately after the standardization of the sodium bisulphite stock solution (4.9), pipet 2·0 ml of the solution into a 100 ml volumetric flask and make up to the mark with the sodium tetrachloromercurate solution (4.2).

This solution is stable for 30 days if stored at 5 °C. Stored at room temperature, it will be stable for one day only.

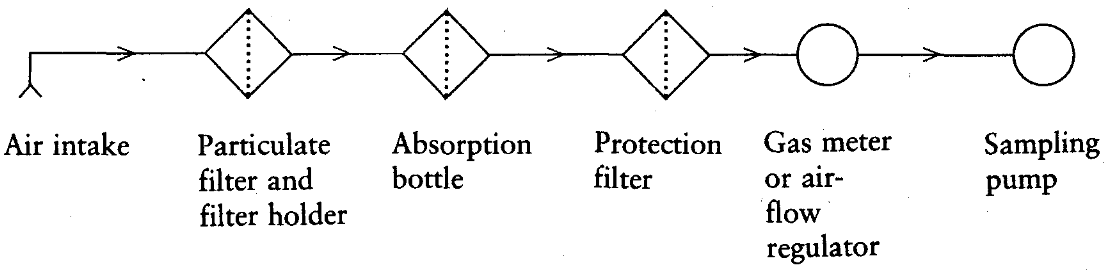
5. APPARATUS

5.1. Sampling equipment

The equipment to be used for sampling is specified in ISO/DIS 4219, Air Quality — Determination of gaseous compounds in ambient air — Sampling equipment as shown in Figure 1.

Figure 1

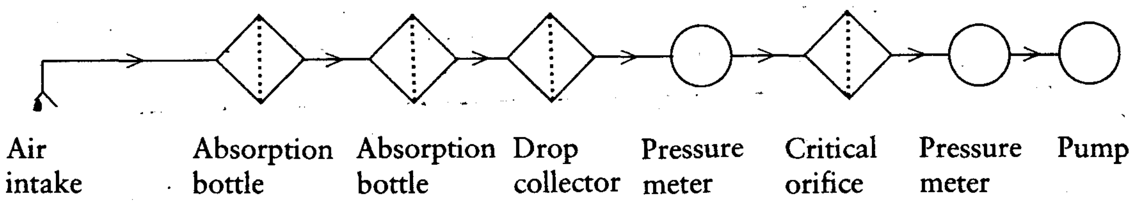
Block diagram of sampling equipment



Alternatively to the gas meter a hypodermic needle can be used as a critical orifice in a thermostated box. In this case, the pump must be able to reach $p_d/p_u \leq 0{\cdot}5$, p_d and p_u being the pressures downstream and upstream the needle respectively (see 5.5).

Figure 2

The equipment is shown in Figure 2.



5.2. Absorption bottles

Satisfactory absorption bottles should have an absorption efficiency for sulphur dioxide of at least 95 %. Examples of suitable absorption bottles are given in Annex A.

The absorption efficiency varies with the geometry of the bottle, the size of the gas bubbles and their contact time with the solution. It can be determined by inserting a second absorption bottle in series to the first one into the sampling system and relating the amount of sulphur dioxide found in the first bottle to the sum of the sulphur dioxide amount in the two bottles. When working with midget impingers under the conditions described in section 6.1, the absorption efficiency has been found to be better than 98 %.

The use of mixtures of sulphur dioxide and air for calibration, as described in clause 6.3.1, automatically gives the absorption efficiency of the system.

5.3. Hydrogen sulphide absorber

A glass tube filled with quarz wool impregnated with a solution containing 0·5 % of silver sulphate, Ag_2SO_4, and 2·5 % of potassium hydrogen sulphate, $KHSO_4$. The impregnation is made by passing the solution twice through the tube and then drying the quartz wool by heating in a nitrogen stream.

5.4. Sample bottles

Polyethylene bottles, 100 ml, for transferring the exposed absorption solutions to the laboratory.

5.5. Manometer

Two manometers accurate to 1 000 Pa, for measurement of pressures when using a critical orifice instead of a gas meter.

5.6. Spectrophotometer or colorimeter

A spectrophotometer or colorimeter suitable for measuring the absorbance at about 550 nm. With a spectrophotometer, a wavelength of 548 nm should be used. If a colorimeter is used, the filter should have its transmittance maximum at about 550 nm. Reagent blank problems may occur with apparatus having a greater spectral band width than 20 nm.

When measuring the absorbance use the same cell for samples and standard solutions. If more than one cell is used, the cells must be spectrophotometrically matched.

6. PROCEDURE

6.1. Sampling

Transfer 10 ml of the TCM solution (4.2) to an absorption bottle and insert it into the sampling system (Figure 1). Shield the absorbing solution from direct sunlight during the sampling by covering the absorption bottle with a suitable wrapping, such as aluminium foil, to prevent decomposition. The duration and flow rate of the aspiration depend on the concentration of sulphur dioxide in the air.

With midget impingers, the volume flow rate should be between 0·5 l/min and 1 l/min. The minimum quantity of air aspirated should be 25 litres.

To obtain the best results, flow rate and sampling time should be chosen to achieve an absorption of 0·5 to 3·0 µg (0·2 to 1·2 µl at 25 °C and 101·325 kPa) of sulphur dioxide per ml of absorbing solution.

If the air is believed to contain hydrogen sulphide this must be removed by a hydrogen sulphide absorber (5.3). Place the absorber between the particulate filter and the absorption bottle.

After sampling, determine the volume of air sampled, and note the atmospheric temperature and pressure (7.1, Note). If the sample must be stored for more than 24 hours before analysis, keep it at 5 °C.

Note

If the sample solution shows a precipitate, it is probably due to the reaction of Hg II with a reduced sulphur compound. Remove the precipitate by filtration or centrifugation before the analysis.

6.2. Analysis

Samples must be left for at least 20 minutes after sampling to allow trapped ozone to decompose. Then transfer the sample solution quantitatively to a 25 ml volumetric flask, using about 5 ml of water for rinsing.

Prepare a blank by adding 10 ml of unexposed absorbing solution (4.2) to a 25 ml volumetric flask, add the reagents as described below and read the absorbance against distilled water using 10 mm cells. Compare this value with the one recorded for the blank obtained when preparing the calibration curve. Differences of more than 10 % between the two values indicate contamination of the distilled water or the reagents or decomposition of the latter, in which case fresh reagents must be prepared.

Add 1 ml of the sulphamic acid solution (4.8) to each flask and allow to react for 10 minutes to destroy the nitrate from oxides of nitrogen. Then accurately pipet 2 ml of the formaldehyde solution (4.7) and 5 ml of the pararosaniline reagent (4.6) into the flasks. Make up to the mark with freshly boiled and cooled distilled water and store in a thermostat at 20 °C. After 30 to 60 minutes measure the absorbance of the sample and the blank with distilled water in the reference cell.

Do not let the coloured solution remain in the cell as a film of dye will then be deposited on the walls.

Note

Fixed time intervals between the addition of each reagent e.g. one minute ensure a better reproducibility of the colour development.

Solutions with absorbances exceeding that of the highest concentration used for calibration can be diluted up to sixfold with the reagent blank in order to obtain an on-scale reading. This reading, however, is only an indicative within ± 10 % of the true absorbance value.

6.3. Calibration

6.3.1. Calibration with a mixture of sulphur dioxide and air

Mixtures of sulphur dioxide and air are prepared according to ISO/DIS 6349.

In order to prepare the calibration graph, which is a plot of absorbance versus sulphur dioxide concentration, at least four different concentration levels of sulphur dioxide within the range prescribed in section 2 are needed.

The sampling procedure and the analytical procedure as described under 6.1 and 6.2, respectively, are applied to each of the calibration gas mixtures. The absorbance values are plotted against the given sulphur dioxide concentrations, and a calibration graph is prepared.

6.3.2. *Calibration with sodium bisulphite solution*

Pipet graduated amounts of the sodium bisulphite standard solution (4.10), 0, 1·0, 2·0, 3·0, 4·0 and 5·0 ml, into a series of 25 ml volumetric flasks. Add sufficient sodium tetrachloromercurate solution (4.2) to each flask to bring the volume to approximately 10 ml. Then add the reagents as described in 6.2. Measure the absorbances with distilled water in the reference cell. For higher precision it is necessary to use a constant-temperature bath. The temperature at the calibration should not differ from the temperature at the analysis by more than ± 1 °C.

Plot the absorbances of the solutions (as ordinates) against the microgrammes of sulphur dioxide calculated according to Annex B. A linear relationship is obtained. The intercept with the vertical axis of the line best fitting the points is usually within 0·02 absorbance units of the blank (zero standard) reading if 10 mm cells are used. Evaluate the calibration factor (reciprocal of the slope of the line). This calibration factor can be used for calculating the results, provided there are no radical changes in temperature or pH. At least one control sample is recommended per series of determinations to ensure the reliability of this factor.

7. EXPRESSION OF RESULTS

7.1. Calculation

Calculate the mass concentration of sulphur dioxide as follows:

$$SO_2 = \frac{f(a_s - a_b)}{V}$$

where

SO_2 = mass concentration of sulphur dioxide in micrograms per cubic metre

f = calibration factor (see 6.3.2)

a_s = Absorbance of the sample solution

a_b = absorbance of the blank

V = volume of air sampled, in cubic metres

Note

If the mass sulphur dioxide concentration at reference conditions (25 °C, 1 bar) is needed, the volume of air sampled, V, must be replaced by the corresponding value of volume under reference conditions, V_R:

$$V_R = \frac{298\ V\ p}{273 + T}$$

where

p = barometric pressure, in bar

T = Temperature of air sample, in °C.

7.2. Detection limit

The detection limit of sulphur dioxide in 10 ml of TCM sampling solution is between 0·2 and 1·0 μg (based on twice the standard deviation). This corresponds to mass concentrations of sulphur dioxide of between 7 and 33 μg/m^3 (0·02 — 0·011 ppm) in air sample of 30 litres (e.g. one hour sampling at 0·5 l/min).

7.3. Precision and accuracy

The precision and accuracy of the method has not yet been determined to any degree of certainty over a variety of concentrations of sulphur dioxide, nor is the absolute collection efficiency known for the wide variety of possible systems of sampling and testing.

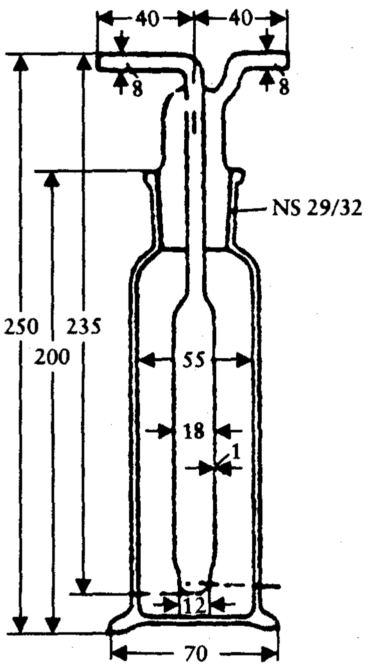
The relative standard deviation of a comparable TCM-method for replication has been found to be 17 μg/m^3 at a concentration of 1 000 μg/m^3 (1).

8. LITERATURE

(1) H. C. McKee, R. E. Childers, O. Saenz: Collaborative Study of Reference Method for Determination of Sulphur Dioxide in the Atmosphere (Pararosaniline Method). Contract CPA 70—40, SwRI Project 21—2811. Environmental Protection Agency, Research Triangle Park, N. C., September 1971.

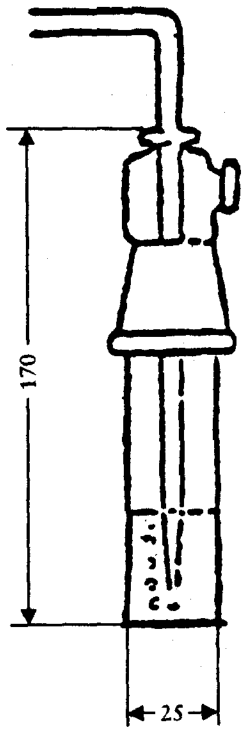
ANNEX A

ABSORBER MODELS



Muenke-flask

75 ml four holes, one in bottom, each 1·5 Ø



Midget impinger

ANNEX B

STANDARDIZATION OF THE SODIUM BISULPHITE STOCK SOLUTION (4.9)

B.1. Reagents

B.1.1. *Iodine solution, 0·05 moles/l*

Stock solution

Weigh 12·7 g of iodine, I_2, into a 250 ml beaker, add 40 g of potassium iodide, KI, and 25 ml of water. Stir until all is dissolved and transfer the solution quantitatively to a 1 litre volumetric flask. Dilute to the mark with water.

B.1.2. *Iodine working solution, approximately 0·005 moles/l*

Dilute 50 ml of the iodine stock solution (B. 1.1) to 500 ml with water.

B.1.3. *Starch indicator solution, 0·2 %*

Triturate 0·4 g of soluble starch and 0·002 g of mercury (II) iodide, HgI_2 (preservative), with a little water, and add the paste slowly to 200 ml of boiling water. Continue the boiling until the solution is clear, cool and transfer to a glass stoppered bottle.

B.1.4. *Sodium thiosulphate solution, approximately 0·1 moles/l*

Dissolve 25 g of sodium thiosulphate, $Na_2S_2O_3 \cdot 5\ H_2O$, in 1 litre of freshly boiled and distilled water and add 0·1 g of sodium carbonate to the solution. Allow the solution to stand for one day before standardizing.

To standardize, weigh 1·5 g of potassium iodate, KIO_3, primary standard grade, dried at 180 °C into a 500 ml volumetric flask and dilute to the mark with water. To a 500 ml iodine flask, pipet 50 ml of the iodate solution. Add 2 g of potassium iodide and 10 ml of a 1 : 10 dilution of concentrated hydrochloric acid. Stopper the flask. After five minutes titrate with sodium thiosulphate solution to a pale yellow colour. Add 5 ml of the starch indicator and complete the titration. Calculate the molarity of the sodium thiosulphate solution, M, as follows

$$M = \frac{\text{g } KIO_3 \times 10^3 \times 0{\cdot}1}{\text{ml sodium thiosulphate solution} \times 35{\cdot}67}$$

B.1.5. *Sodium thiosulphate solution, approximately 0·01 moles/l*

Dilute 50·0 ml of the sodium thiosulphate solution (B.1.4) to 500 ml with water and mix. The solution is not stable and must be prepared fresh on the day it is to be used by diluting the standardized sodium thiosulphate solution (B.1.4).

B.2. Procedure

Add 25 ml of water to a 500 ml flask and pipet 50 ml of the iodine solution (B 1.2) into the flask (here designated flask A/blank). Pipet 25 ml of the sodium bisulphite stock solution (4.9) to a second 500 ml flask and pipet 50 ml of iodine solution (B.1.2) into this flask (here designated B/sample). Stopper the flasks and allow to react for five minutes. By means of a burette containing sodium thiosulphate solution (B.1.5), titrate each flask in turn to a pale yellow colour. Then add 5 ml of starch solution (B.1.3) and continue the titration until the blue colour disappears. Calculate the concentration of sulphur dioxide in the sodium bisulphite stock solution (4.9):

$$SO_2\ (\mu g/ml) = \frac{(A - B) \times M \times K}{V}$$

A = volume of sodium thiosulphate solution (B.1.5) required for the titration of the blank, in millilitres.

B = volume of sodium thiosulphate solution (B.1.5) required for the titration of the sample, in millilitres.

M = Molarity of the sodium thiosulphate solution (= 0·01).

K = micro equivalent weight for sulphur dioxide = 32·030.

V = sodium bisulphite stock solution taken, in millilitres.

The concentration of sulphur dioxide in the bisulphite standard solution (4.10) is found by dividing the result by 50.

ANNEX C

REMOVAL OF MERCURY FROM RESIDUAL SOLUTIONS

This Annex describes a method for the removal of mercury from the residual solutions received when using the absorbing solution (4.2).

C.1. **Reagents**

C.1.1. Sodium hydroxide solution, approximately 400 g of NaOH per litre

C.1.2. Hydrogen peroxide, H_2O_2, approximately 30 %, technical quality

C.1.3. Sodium sulphide, $Na_2S \cdot 9H_2O$ technical quality

C.2. **Procedure**

Collect in a polyethylene container with a volume of about 50 litres the residual solutions, whose mercury content is too high to allow them to be discarded through the sink. When the collected volume reaches approximately 40 litres, add in the following order, while stirring by means of air bubbling through the solution, a volume of sodium hydroxide solution (C.1.1) sufficient for neutralizing followed by 400 ml more. Add 100 g of sodium sulphide (C.1.3) and after 10 minutes, slowly 400 ml of hydrogen peroxide solution (C.1.2).

Leave the mixture for 24 hours and then draw off and discard the clear liquid. Transfer the residue to another container.

ANNEX D

PROPERTIES AND PURIFICATION OF PARAROSANILINE HYDROCHLORIDE

D.1. **Test for the purity of the reagent**

Dilute 1 ml of the PRA solution (4.4) to 100 ml with distilled water. Transfer 5 ml to a 50 ml volumetric flask and add 5 ml of a 0·1 M acetic acid-sodium acetate buffer solution. Dilute to the mark with water and mix.

Wait one hour and then measure the absorbance of the solution in a spectrophotometer at 540 nm in a 10 mm cell.

Calculate the concentration of pararosaniline (PRA) as follows:

$$\% \text{ PRA} = \frac{\text{absorbance} \times K}{100 \text{ mg}}$$

where:

K = 21 300.

If the purity of the pararosaniline is below 95 %, the reagent must be purified by one of the procedures described in D.2 and D.3.

D.2. Purification by extraction

In a 250 ml separatory funnel, equilibrate 100 ml each of 1-butanol and 1 M HCl. Weigh 0·1 g of pararosaniline hydrochloride (PRA) into a beaker. Add 50 ml of the equilibrated acid and let stand for several minutes. Add 50 ml of the equilibrated 1-butanol to a 125 ml separatory funnel. Transfer the acid solution containing the dye to the funnel and extract. The violet impurity will transfer to the organic phase. Transfer the lower (aqueous) phase into another separatory funnel and add 20 ml portions of 1-butanol. This is usually sufficient to remove almost all the violet impurity which contributes to the reagent blank. If the violet impurity still appears in the 1-butanol phase after five extractions, discard this batch of dye.

After the final extraction, filter the aqueous phase through a cotton plug into a 50 ml volumetric flask and bring to volume with 1 M HCl. This stock reagent will be yellowish red.

Note

Certain batches of 1-butanol contain oxidants that create a sulphur dioxide demand. Check by shaking 20 ml of 1-butanol with 5 ml of a 15 % potassium-iodide solution. If a yellow colour appears in the alcohol phase, redistill the 1-butanol from silver oxide.

D.3. Purification by recrystallization

Dissolve 1 g of pararosaniline hydrochloride in 250 ml of 2·5 M hydrochloric acid. Let the solution stand for two hours at room temperature. After filtration, the pararosaniline is reprecipitated by addition of a small excess of 2·5 M sodium hydroxide solution.

Collect the precipitate on a filter funnel (porosity 3). The filtrate should be colourless. Wash the precipitate with distilled water to remove excess sodium hydroxide and the sodium chloride formed.

Dissolve the precipitate in 70 ml of methanol heated to boiling and finally add 300 ml of water at 80 °C. Let the solution stand at room temperature. The pararosaniline reprecipitates slowly. The yield of recrystallization is about 64 %. Pararosaniline gets dark between 200 and 205 °C and decomposes at 285 °C.

Literature

H. G. C. King and U. G. Pruden: The determination of sulphur dioxide with rosaline dyes. Analyst 94, 43—48 (1969).

COUNCIL DIRECTIVE

of 22 July 1980

on the approximation of the laws of the Member States relating to rear-view mirrors for two-wheeled motor vehicles with or without a side-car and to their fitting on such vehicles

(80/780/EEC)

THE COUNCIL OF THE EUROPEAN COMMUNITIES,

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

Having regard to the proposal from the Commission,

Having regard to the opinion of the European Parliament (¹),

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

Whereas the technical requirements which two-wheeled vehicles must satisfy pursuant to national laws relate *inter alia* to their rear-view mirrors;

Whereas these requirements, whether already in force or merely in draft, differ from one Member State to another; whereas to eliminate the barriers to trade arising therefrom, all Member States should adopt the same requirements either in addition to or in place of their existing requirements;

Whereas the number and use of two-wheeled vehicles is increasing; whereas it is therefore necessary for these vehicles to be fitted with one or two rear-view mirrors designed to give a view to the rear and to the sides of the vehicle;

Whereas a harmonized type-approval procedure for such rear-view mirrors makes it possible for each Member State to check compliance with the common construction and testing requirements and to inform the other Member States of its findings by sending them copies of the EEC component type-approval certificate completed for each type of rear-view mirror; whereas the placing of an EEC type-approval mark on all mirrors manufactured in conformity with the approved type obviates any need for technical checks on these mirrors in the other Member States,

HAS ADOPTED THIS DIRECTIVE:

Article 1

1. Each Member State shall grant EEC component type-approval for any type of rear-view mirror intended to be fitted on the vehicles referred to in Article 7, which satisfies the construction and testing requirements laid down in Annex I.

2. A Member State which has granted EEC, component type-approval shall take the measures required to verify, in so far as is necessary and if need be in cooperation with the competent authorities in the other Member States, that production models conform to the approved type. Such verification shall be limited to spot checks.

Article 2

Member States shall, for each type of rear-view mirror which they approve pursuant to Article 1, issue to the manufacturer or to his authorized representative an EEC component type-approval mark conforming to the model shown in the Appendix to Annex I.

Member States shall take all appropriate measures to prevent the use of marks liable to create confusion between rear-view mirrors which have been component type-approved pursuant to Article 1 and other mirrors.

Article 3

1. No Member State may prohibit the placing on the market of rear-view mirrors on grounds relating to their construction or method of functioning if they bear the EEC component type-approval mark.

2. Nevertheless, this provision shall not prevent a Member State from taking such measures in respect of rear-view mirrors bearing the EEC component type-approval mark which consistently fail to conform to the approved type.

That State shall forthwith inform the other Member States and the Commission of the measures taken, specifying the reasons for its decision.The provisions of Article 5 shall also apply.

(¹) OJ No C 197, 4. 8. 1980, p. 66.

(²) OJ No C 182, 21. 7. 1980, p. 2.

There shall be failure to conform to the approved type, within the meaning of paragraph 1, where the requirements of Annex I are not observed.

Article 4

The competent authorities of each Member State shall within one month send to the competent authorities of the other Member States copies of the EEC component type-approval certificates completed for each type of rear-view mirror which they approve or refuse to approve.

Article 5

1. If the Member State which has granted EEC component type-approval finds that a number of rear-view mirrors bearing the same EEC component type-approval mark do not conform to the type which it has approved, it shall take the necessary measures to ensure that production models conform to the approved type. The competent authorities of that State shall advise those of the other Member States of the measures taken, which may, if necessary, extend to withdrawal of EEC component type-approval. The said authorities shall take the same measures if they are informed by the competent authorities of another Member State of such failure to conform.

2. The competent authorities of the Member States shall within one month inform each other of any withdrawal of EEC component type-approval, and of the reasons for any such measure.

3. If the Member State which has granted EEC component type-approval disputes a failure to conform notified to it, the Member States concerned shall endeavour to settle the dispute. The Commission shall be kept informed and shall, where necessary, hold appropriate consultations for the purpose of reaching a settlement.

Article 6

Any decision taken pursuant to the provisions adopted in implementation of this Directive to refuse or withdraw component type-approval for a rear-view mirror or to prohibit its placing on the market or use shall set out in detail the reasons on which it is based. Such decision shall be notified to the party concerned, who shall at the same time be informed of the remedies available to him under the laws in force in the Member States and of the time limits allowed for the exercise of such remedies.

Article 7

For the purposes of this Directive, 'vehicle' means any two-wheeled vehicle with or without a side-car, fitted with an engine, intended for use on the road and having a maximum design speed of more than 25 km/h.

Article 8

For the purposes of this Directive, 'national type-approval' means the administrative procedure known as:

- 'agréation par type/aanneming' in Belgian law,
- 'standardtypegodkendelse' in Danish law,
- 'allgemeine Betriebserlaubnis' in German law,
- 'réception par type' in French law,
- 'type-approval' in Irish law,
- 'omologazione' or 'approvazione del tipo' in Italian law,
- 'agréation' in Luxembourg law,
- 'typegoedkeuring' in Dutch law,
- 'type-approval' in United Kingdom law.

Article 9

1. At the request of a manufacturer or his authorized representative, Member States shall check that a type of vehicle complies with the requirements of Annex II. No application in respect of any one type of vehicle may be submitted to more than one Member State.

2. When the checks have been completed, the Member State shall issue a rear-view mirror certificate for the vehicle, hereinafter called 'the certificate', using the model given in the Appendix to Annex II, and specifying in particular whether or not the type of vehicle complies with the requirements of this Directive.

3. The Member State which issued the certificate stating that a type of vehicle complies with the requirements of this Directive shall take the necessary measures to verify, in so far as is necessary and if need be in cooperation with the competent authorities of the other Member States, that production models conform to the type for which the certificate was issued. Such verification shall be limited to spot checks.

Article 10

The competent authorities of a Member State shall within one month send to the competent authorities of the Member States a copy of the certificates for each type of vehicle which they have checked. The applicant shall also be issued with a copy of the certificate. The other Member States shall treat this document as proof that the requirements of this Directive have been met.

Article 11

1. In those Member States where vehicles or certain categories thereof are subject to national type-approval, that approval shall be based on the requirements of this Directive instead of the corresponding national requirements if the manufacturer or his authorized representative so requests.

2. No Member State where vehicles or certain categories thereof are not subject to national type-approval may refuse the registration or prohibit the sale, entry into service or use of such vehicles on the grounds that the requirements of this Directive have been complied with instead of the corresponding national requirements.

Article 12

1. The Member State which has issued the certificate stating that a type of vehicle complies with the requirements of this Directive shall take the necessary measures to ensure that it is informed of any modification to the type of vehicle or if production of the type of vehicle has ceased.

2. If the State in question considers that such a modification does not require an amendment to the data on the basis of which the certificate was issued, the competent authorities of that State shall so inform the manufacturer or his authorized representative.

3. If, however, the State in question finds that a modification warrants fresh checks and that it is accordingly necessary to amend the existing certificate or draw up a fresh certificate, the competent authorities of that State shall so inform the manufacturer or his authorized representative, and shall, within one month from the date on which the new documents were drawn up, forward these documents to the competent authorities of the other member States, together with a note of the frame number of the last vehicle manufactured in conformity with the old certificate and, where appropriate, of the frame number of the first vehicle manufactured in conformity with the amended or new certificate.

Article 13

Any amendments necessary to adapt the requirements of the Annexes to technical progress shall be adopted in accordance with the procedure provided for in Article 13 of Council Directive 70/156/EEC of 6 February 1970 on the approximation of the laws of the Member States relating to the type-approval of motor vehicles and their trailers (1), as last amended by Directive 78/547/EEC (2).

Article 14

1. Member States shall bring into force the provisions necessary to comply with this Directive within 18 months of its notification and shall forthwith inform the Commission thereof.

2. Member States shall ensure that the texts of the main provisions of national law which they adopt in the field covered by this Directive are communicated to the Commission.

Article 15

This Directive is addressed to the Member States.

Done at Brussels, 22 July 1980.

For the Council

The President

G. THORN

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(1) OJ No L 42, 23. 2. 1970, p. 1.

(2) OJ No L 168, 26. 6. 1978, p. 39.

ANNEX I

REQUIREMENTS RELATING TO EEC COMPONENT TYPE-APPROVAL FOR REAR-VIEW MIRRORS

1. The rear-view mirrors of all vehicles must comply with the requirements relating to EEC type-approval in Council Directive 71/127/EEC of 1 March 1971 on the approximation of the laws of the Member States relating to the rear-view mirrors of motor vehicles (1), as amended by Directive 79/795/EEC (2), to which the following amendments are made:

1.1. **Class of rear-view mirrors covered by this Directive**

These rear-view mirrors are placed in class L, for which EEC component type-approval is defined in 1.2.

1.2. **EEC component type-approval for class L rear-view mirrors**

Class L rear-view mirrors are component type-approved in accordance with the requirements for class III rear-view mirrors, with the exception of the following requirements:

1.2.1. The average 'r' of the radii of curvature measured over the reflecting surface must be not less than 1 000 mm or more than 1 200 mm.

1.2.2. The dimensions of the reflecting surface must be such that:

- in the case of circular rear-view mirrors, the diameter of the reflecting surface must be between 100 and 150 mm;
- in the case of non-circular rear-view mirrors, it is possible to inscribe a circle of at least 100 mm in diameter between the outside edges of the reflecting surface. This reflecting surface must fit into a square of 150 mm side.

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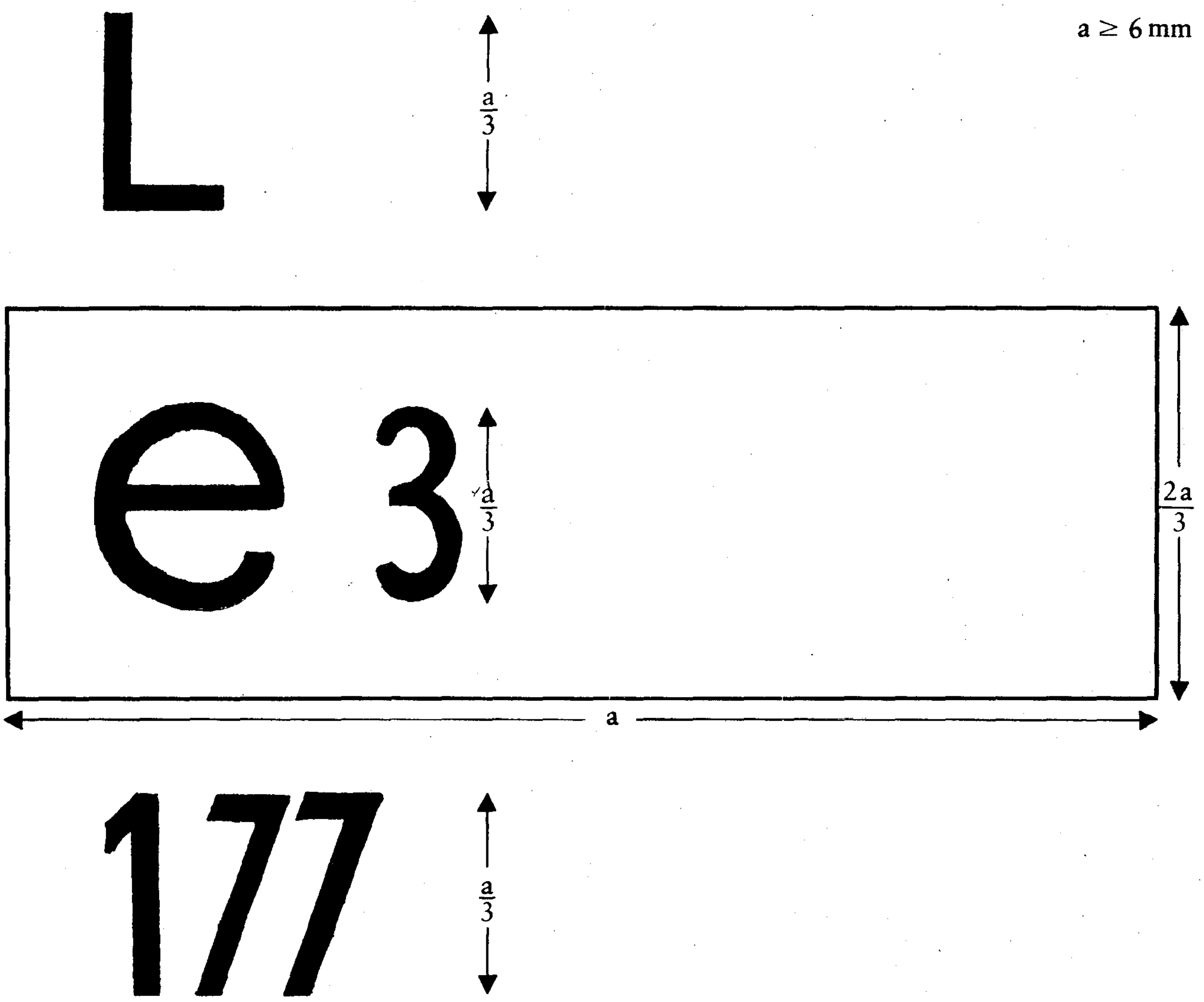
(1) OJ No L 68, 22. 3. 1971, p. 1.
(2) OJ No L 239, 22. 9. 1979, p. 1.

1.3. **Example of an EEC component type-approval mark for a class L rear-view mirror**



Legend

The mirror bearing the EEC type-approval mark shown above is a class L mirror which has been component type-approved in Italy (e 3) under number 177.

APPENDIX

MODEL EEC COMPONENT TYPE-APPROVAL CERTIFICATE

Name of administration

NOTIFICATION CONCERNING THE GRANTING, REFUSAL OR WITHDRAWAL OF EEC COMPONENT TYPE-APPROVAL OF A TYPE OF REAR-VIEW MIRROR

EEC component type-approval No ....

1. Trade name or mark ....
2. Class of rear-view mirror ....
3. Name and address of manufacturer ....

   ....

   ....
4. Name and address of manufacturer's authorized representative, if any ....

   ....

   ....
5. Date of submission for EEC component type-approval ....
6. Technical service ....
7. Date and number of laboratory report ....
8. Date of granting/refusal/withdrawal of EEC component type-approval (¹) ....
9. Place ....
10. Date ....
11. The following documents, bearing the EEC component type-approval number shown above, are annexed to this certificate: ....

    ....

    (descriptive notes, drawings, diagrams and plans of the rear-view mirror)

    These documents must be supplied to the competent authorities of the other Member States at their express request.
12. Remarks ....

    ....

    ....

....
(Signature)

(¹) Delete where inapplicable.

ANNEX II

REQUIREMENTS FOR FITTING REAR-VIEW MIRRORS TO VEHICLES

Number and requirements concerning fitting

1. All two-wheeled vehicles with a maximum design speed not exceeding 100 km/h must be fitted with a rear-view mirror bearing the EEC component type-approval mark. This rear-view mirror must be situated on the left of the vehicle in Member States where traffic moves on the right and on the right of the vehicle in Member States where traffic moves on the left.

2. All two-wheeled vehicles with a maximum design speed exceeding 100 km/h must be equipped with two rear-view mirrors bearing the EEC component type-approval mark, one on the left and one on the right of the vehicle.

3. Rear-view mirrors must be fixed in such a way that they remain steady under normal conditions of use.

4. Rear-view mirrors must be so placed that when the driver is sitting on the driving seat in a normal driving position, he has a clear view of the road to the rear and to the sides of the vehicle.

5. The driver must be able to adjust the rear-view mirrors from his driving position.

6. The requirements in Council Directive 71/127/EEC concerning field of vision do not apply to class L mirrors.

Appendix

MODEL

Name of administration

REAR-VIEW MIRRORS FOR TWO-WHEELED VEHICLES CERTIFICATE

(in accordance with Council Directive 80/780/EEC on the approximation of the laws of the Member States relating to rear-view mirrors for two-wheeled motor vehicles with or without a side-car and to their fitting on such vehicles)

Drawn up on the basis of:

Report No .... Name of technical service .... Date ....

1. Two-wheeled vehicle

1.1. Manufacturer: ....

1.1.1. Authorized representative (if any) ....

1.2. Type: ....

1.3. Model: ....

1.3.1. Version: ....

1.4. Frame No: ....

2. Engine

2.1. Manufacturer: ....

2.2. Type: ....

2.3. Model: ....

2.4. Maximum design speed below or equal to/above (1) 100 km/h

3. Rear-view mirror(s)

The vehicle is fitted with (a) rear-view mirror(s) which meet(s) the requirements of Council Directive 80/780/EEC.

4. Place: ....

5. Date: ....

6. Signature: ....

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(1) Delete where inapplicable.

COUNCIL DIRECTIVE

of 22 July 1980

amending Directive 73/173/EEC on the approximation of the laws, regulations and administrative provisions of the Member States relating to the classification, packaging and labelling of dangerous preparations (solvents)

(80/781/EEC)

THE COUNCIL OF THE EUROPEAN COMMUNITIES,

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

Having regard to the proposal from the Commission,

Having regard to the opinion of the European Parliament (¹),

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

Whereas, for the better protection of the general public and, in particular, of persons who come into contact with dangerous solvent preparations in the course of their work or in the pursuit of a hobby, it is necessary to extend the scope of Council Directive 73/173/EEC of 4 June 1973 on the approximation of the laws, regulations and administrative provisions of the Member States relating to the classification, packaging and labelling of dangerous preparations (solvents) (³);

Whereas the Directive will henceforth apply to not only mixtures of two or more dangerous solvents but also mixtures of solvents with other non-dangerous substances when they are intended to be used as solvents; whereas corrosive, irritant, highly flammable and flammable solvents are now likewise brought within the scope of the Directive;

Whereas it is desirable that the scope of this Directive be more clearly defined with respect to other Directives relating to products which likewise contain dangerous solvents;

Whereas the provisions concerning the information appearing on the label, the dimensions of the label and the assignment of the various danger symbols have also to be brought into line with Council Directive 67/548/EEC of 27 June 1967 on the approximation of the laws, regulations and administrative provisions of the Member States relating to the classification, packaging and labelling of dangerous substances (⁴), as last amended by Directive 79/831/EEC (⁵);

Whereas the necessary amendment and amplification of the Annex to Directive 73/173/EEC will be carried out under the procedure provided for in Article 10 thereof,

HAS ADOPTED THIS DIRECTIVE:

Article 1

Articles 1 to 10 of Directive 73/173/EEC shall be replaced by the following:

'*Article 1*

1. This Directive shall concern:

— the classification

— the packaging

— the labelling

of the following preparations which are placed on the market in the Member States of the Community and are considered as dangerous within the meaning of Article 2:

(a) preparations intended for use as solvents and containing only the substances listed in the Annex hereto, including those which contain impurities or additives as defined in Article 2 (5);

(b) preparations intended for use as solvents and containing, in addition to the substances listed in the Annex hereto, liquid substances classified as extremely flammable, highly flammable or flammable as defined in Article 2 (2) of Directive 67/548/EEC of 27 June 1967 (hereinafter referred to as "the Directive of 27 June 1967") and/or substances not defined as dangerous in the same Article of that Directive.

(¹) OJ No C 182, 31. 7. 1978, p. 62.
(²) OJ No C 269, 13. 11. 1978, p. 35.
(³) OJ No L 189, 11. 7. 1973, p. 7.
(⁴) OJ No 196, 16. 8. 1967, p. 1/67.
(⁵) OJ No L 259, 15. 10. 1979, p. 10.

2. This Directive shall not apply to cosmetic preparations coming under Council Directive 76/768/EEC of 27 July 1976 on the approximation of the laws of the Member States relating to cosmetic products (¹).

3. Furthermore, this Directive shall not apply to the following:

(a) medicines, narcotics, radioactive substances, foodstuffs and animal feed;

(b) additives for foodstuffs and animal feed, fertilizers, pesticides and paints, varnishes, printing inks, adhesives and similar products where Community Directives on the classification, packaging and labelling of such preparations are in force, except where the Directives in question refer specifically to this Directive;

(c) the carriage of dangerous preparations (solvents) by rail, road, inland waterway, sea or air;

(d) munitions and explosives placed on the market with a view to producing a practical effect by explosion or a pyrotechnic effect;

(e) dangerous preparations exported to third countries;

(f) preparations in transit subject to customs supervision, provided that they do not undergo any treatment or processing;

(g) substances which are in the form of waste and which are covered by Council Directive 75/442/EEC of 15 July 1975 relating to waste (²) and Council Directive 78/319/EEC of 20 March 1978 relating to toxic and dangerous waste (³).

4. Articles 4 to 6 of this Directive shall not apply to containers for gaseous preparations which are compressed, liquefied or dissolved under pressure, with the exception of aerosols as defined in Article 2 of Council Directive 75/324/EEC of 20 May 1975 on the approximation of the laws of the Member States relating to aerosol dispensers (⁴).

5. The definitions specified in Article 2 of the Directive of 27 June 1967 shall apply to this Directive, with the exception of those in (1) (c) and (d) and in (2) (k).

Article 2

1. Dangerous substances as defined in the Directive of 27 June 1967 and used as solvents shall be divided into classes and sub-classes in accordance with the Annex hereto.

Very toxic and toxic substances are under class I, harmful substances under class II. Each sub-class shall be given a classification index I_1 and an exemption index I_2, as in the table below:

Class of substance		Classification index I_1	Exemption index I_2
Very toxic and toxic	I/a	500	500
	I/b	100	100
	I/c	25	25
Harmful	II/a	5	20
	II/b	2	8
	II/c	1	4
	II/d	0·5	2

2. Preparations containing one or more of the substances listed in the Annex hereto shall be considered toxic if the sum of the products obtained by multiplying the weight percentage of each toxic or harmful substance in a preparation by its respective I_1 index exceeds 500, that is:

$$\Sigma [P \times I_1] > 500;$$

where,

P is the weight percentage of each substance in the preparation, I_1 is the index corresponding to the class of the substance.

3. Preparations containing one or more substances listed in the Annex hereto shall be considered harmful if:

(a) the sum of the products specified in paragraph 2 is less than or equal to 500 that is:

$$\Sigma [P \times I_1] \leq 500$$

and

(b) the sum of the products obtained by multiplying the weight percentage of each toxic or harmful

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(¹) OJ No L 262, 27. 9. 1976, p. 169.
(²) OJ No L 194, 25. 7. 1975, p. 39.
(³) OJ No L 84, 31. 3. 1978, p. 43.
(⁴) OJ No L 147, 9. 6. 1975, p. 40.

substance in a preparation by its respective I_2 index exceeds 100, that is:

$$\sum [P \times I_2] > 100;$$

where,

P is the weight percentage of each substance in the preparation, I_1 and I_2 are the indices corresponding to the class of the substance.

4. Preparations containing one or more of the substances listed in the Annex hereto shall not be classified as toxic or harmful if the sum of the products obtained by multiplying the weight percentage of each toxic or harmful substance in a preparation by its respective I_2 index is less than or equal to 100, that is:

$$\sum [P \times I_2] \leq 100;$$

where,

P is the weight percentage of each substance in the preparation, I_2 is the index corresponding to the class of the substance.

5. No account shall be taken of substances listed in the Annex hereto, whether existing as impurities or as additives in preparations covered by this Directive, if their concentration by weight is less than the following values:

— 0·2 % in the case of class I substances;

— 1 % in the case of class II substances or substances classified as corrosive;

— 2 % in the case of substances classified as irritant.

Impurities or additives which are not mentioned in the Annex to this Directive but which are given in Annex I to the Directive of 27 June 1967 shall be considered as follows:

— as belonging to class I/a, in the case of substances classified as very toxic or toxic;

— as belonging to class II/a, in the case of substances classified as harmful.

6. Preparations shall be considered

(a) corrosive:

if they contain one or more of the substances classified as corrosive in the Annex in an individual concentration which exceeds the limit specified therein or in a total concentration which exceeds the limits also specified therein;

(b) irritant:

if they contain one or more of the substances classified as irritant or corrosive in the Annex in an individual concentration which exceeds the limit specified therein or in a total concentration which exceeds the limits also specified therein.

7. Preparations shall be considered extremely flammable:

if they are in liquid form and their flash point, as determined by one of the methods laid down in Annex V (A) to the Directive of 27 June 1967, is below 0 °C and their boiling point is less than 35 °C.

8. Preparations shall be considered highly flammable:

if they are in liquid form and their flash point, as determined by one of the methods laid down in Annex V (A) to the Directive of 27 June 1967, is below 21 °C.

9. Preparations shall be considered flammable:

if they are in liquid form and their flash point, as determined by one of the abovementioned methods, is equal to or greater than 21 °C and less than or equal to 55 °C.

10. Preparations in the form of aerosols shall be subject to the flammability criteria set out in paragraphs 1.8 and 2.2 (c) of the Annex to Directive 75/324/EEC.

Article 3

Member States shall take all necessary measures to ensure that dangerous preparations (solvents) are not placed on the market unless they comply with the provisions of this Directive and the Annex thereto.

Article 4

Member States shall take all necessary measures to ensure that dangerous preparations (solvents) are not placed on the market unless their packages and fastenings comply with the requirements of Article 15 of the Directive of 27 June 1967.

Article 5

1. Member States shall take all necessary measures to ensure that preparations classified as dangerous

in accordance with Article 2 are not placed on the market unless the labelling on the package complies with the following requirements.

2. The following information shall be clearly and indelibly inscribed on the package of any preparation considered to be dangerous in accordance with Article 2:

(a) the trade name or designation of the preparation;

(b) — the chemical name(s) of the very toxic or toxic substance(s) of which more than 0·2 % is present and the percentage or percentage zone on the following scale:

$$\text{conc.} \leq 1\ \%$$
$$1 < \text{conc.} \leq 5\ \%$$
$$5 < \text{conc.} \leq 20\ \%$$
$$20 < \text{conc.} \leq 50\ \%$$
$$\text{conc.} > 50\ \%$$

Indication of the name of the substance(s) and of the percentage(s) shall not, however, be necessary if the preparation is neither toxic nor harmful;

— the chemical name(s) of the harmful substance(s) if the concentration thereof exceeds the following values:

  - — 3 % by weight in the case of class II/a substances
  - — 6 % by weight in the case of class II/b substances
  - — 10 % by weight in the case of class II/c substances
  - — 20 % by weight in the case of class II/d substances

Indication of the chemical name shall not, however, be necessary if the preparation is neither toxic nor harmful;

— the chemical name of the corrosive substance(s) if the concentration thereof exceeds the lowest values mentioned in the Annex;

— the chemical name of the irritant substances if they are accompanied by the risk indications R 42, R 43 or R 42/43 given in Annex I to the Directive of 27 June 1967 and if their concentration exceeds the limits laid down in the Annex;

— the words 'irritant solvents' if the preparation contains irritant substances other than those defined in the preceding indent in a concentration exceeding the value laid down in the Annex; such indication shall not be necessary if the preparation is already classified as corrosive.

The chemical name shall be the designation listed in Annex I to the Directive of 27 June 1967.

The chemical name(s) of the substance(s) need not be stated if the preparation is classified as highly flammable or flammable only.

(c) the name and address of the manufacturer or of any other person placing the preparation on the market;

(d) symbols where specified in this Directive and indications of danger involved in the use of the preparation in accordance with Article 16 (2) (c) of the Directive of 27 June 1967, read in conjunction with Annex V thereto, and in the case of aerosol preparations, in accordance with paragraphs 1.8 and 2.2 (c) of the Annex to Directive 75/324/EEC where flammability hazards are concerned;

(e) one or more standard phrases indicating the special risks involved in the use of the preparation;

(f) oe or more standard phrases indicating the safety advice relating to the use of the preparation.

3. The indications concerning special risks shall conform to the wording in Annex III to the Directive of 27 June 1967 and shall be selected by the manufacturer or any other person placing the preparation on the market.

No more than four standard indications need be shown. If the preparation falls within several danger categories, these standard indications shall cover all the principal hazards associated with the preparation.

4. The indications concerning safety advice shall conform to the wording in Annex IV to the Directive of 27 June 1967 and shall be selected by the manufacturer or any other person placing the preparation on the market. No more than four standard indications need be shown.

5. The package shall be accompanied by safety advice on the use of the preparation where it is physically impossible for this to be given on the label or package itself.

6. For irritant, highly flammable and flammable preparations, it is not necessary to indicate the special risks and safety advice if the package contains no more than 125 ml. This shall also apply in the case of harmful preparations of the same volume not retailed to the general public.

7. The provisions of Article 2 (5) of this Directive shall apply by analogy to labelling.

8. When more than one danger symbol is assigned to a preparation, the following shall apply:

— the obligation to indicate the symbol T makes the symbols X and C optional;

— the obligation to indicate the symbol C makes the symbol X optional;

— the obligation to indicate the symbol E makes the symbols F and O optional.

9. If a preparation is classified as both harmful and irritant, it shall be labelled harmful and attention shall be drawn to its harmful and irritant characteristics by appropriate warnings in accordance with Annex III to the Directive of 27 June 1967.

Article 6

1. Where the particulars required by Article 5 appear on a label, that label shall be firmly affixed to one or more surfaces of the packaging so that these particulars can be read horizontally when the package is set down normally. The dimensions of the label shall be as follows:

Capacity of the package	Dimensions (in millimetres) if possible
— not exceeding 3 litres	at least 52 × 74
— greater than 3 litres but not exceeding 50 litres	at least 74 × 105
— greater than 50 litres but not exceeding 500 litres	at least 105 × 148
— greater than 500 litres	at least 148 × 210.

Each symbol shall cover at least one tenth of the surface area of the label but not be less than 1 cm². The entire surface of the label shall adhere to the package immediately containing the preparation.

These dimensions are intended solely for provision of the information required by this Directive and if necessary of any supplementary health or safety indications.

2. A label is not required where the particulars are clearly shown on the package itself, as specified in paragraph 1.

3. The colour and presentation of the label — or, in the case of paragraph 2, of the package — shall be such that the danger symbol and its background stand out clearly from it.

4. Member States may make the placing on the market of dangerous preparations in their territories subject to the use of the official language or languages in respect of the labelling thereof.

5. For the purpose of this Directive, labelling requirements shall be deemed to be satisfied:

(a) in the case of an outer package containing one or more inner packages, if the outer package is labelled in accordance with international rules on the transport of dangerous substances and the inner package or packages are labelled in accordance with this Directive;

(b) in the case of a single package, if such a package is labelled in accordance with international rules on the transport of dangerous substances and with Article 5 (2) (a), (b), (c), (e) and (f).

Where dangerous preparations do not leave the territory of a Member State, labelling may be permitted which complies with national rules instead of with international rules on the transport of dangerous substances.

Article 7

1. Member States may:

(a) permit the labelling required by Article 5 to be applied in some other appropriate manner on packages which are either too small or otherwise unsuitable for labelling in accordance with Article 6 (1) and (2);

(b) by way of derogation from Articles 5 and 6, permit the packaging of dangerous preparations which are neither explosive nor toxic to be unlabelled or to be labelled in some other way if they contain such small quantities that there is no reason to fear any danger to persons handling such preparations or to other persons.

2. If a Member State makes use of the options provided for in paragraph 1, it shall forthwith inform the Commission thereof.

Article 8

Member States shall not prohibit, restrict or impede on the grounds of classification, packaging or labelling as defined in this Directive, the placing on the market of dangerous preparations which satisfy the requirements of this Directive and the Annex thereto.

Article 9

1. Where a Member State establishes that a dangerous preparation, although satisfying the requirements of this Directive, presents a health or safety risk necessitating a classification or labelling other than those provided for by this Directive, it may, for a period not exceeding six months, prohibit the distribution, sale or use of that preparation in its territory. It shall immediately inform the other Member States and the Commission thereof and give reasons for its decision.

2. The Commission shall, within six weeks, consult with the Member States concerned, express its opinion without delay and take the appropriate steps. Where it deems an amendment referred to in Article 10 to be necessary, the period provided for in paragraph 1 shall be extended until the procedure laid down in Article 21 of the Directive of 27 June 1967 has been completed.

Article 10

The amendments required for adapting the Annexes to technical progress shall be adopted in accordance with the procedure laid down in Article 21 of the Directive of 27 June 1967.'

Article 2

1. Member States shall adopt and publish within 12 months of notification of the first Directive based on Article 10 of Directive 73/173/EEC the laws, regulations and administrative provisions needed to comply with this Directive. They shall apply these provisions within 18 months of notification of the first Directive based on Article 10 of Directive 73/173/EEC.

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

Article 3

This Directive is addressed to the Member States.

Done at Brussels, 22 July 1980.

For the Council

The President

G. THORN