

COMMISSION OF THE EUROPEAN COMMUNITIES

COM(76) 401 final.

Brussels, 26 July 1976.

PROPOSAL FOR A COUNCIL DIRECTIVE ON THE QUALITY REQUIREMENTS FOR

WATERS CAPABLE OF SUPPORTING FRESHWATER FISH

(submitted to the Council by the Commission)

COM(76) 401 final.

EXPLANATORY MEMORANDUM

1. Introduction

Degradation in the quality of water due to the discharge of pollutants has adverse effects on certain fish populations, particularly the reduction in the overall number of certain species or even, in some cases, the disappearance of some of these species.

In order to protect fishing interests and ensure that fresh water is protected against pollution, the European Communities' action programme on the environment¹ stipulates that Community measures must provide for the definition of quality objectives for waters and in particular the establishment of a number of reference parameters and limit values in respect of the various uses and functions of water, with special reference to waters capable of supporting freshwater fish.

2. Aim pursued

The quality objectives contained in this Directive aim at allowing fish belonging to indigenous species presenting a natural diversity or fish belonging to species whose presence is considered desirable for water management to live in favourable conditions. When laying down parameters and numerical values for determining water quality as much attention as possible has been paid to the effects of each parameter not only for the survival of fish at different stages in their life cycle but also for their growth, reproduction and performance and for other components of the aquatic ecosystem which may provide them with shelter or food.

These quality objectives are not incompatible with the water quality requirements for commercial or recreational fishing.

To allow for differences in the fish sensitivity to harmful substances, the waters capable of supporting them have been divided into two categories namely salmonid waters and cyprinid waters.

For the purposes of this proposal

- Salmonid waters are waters which support or are capable of supporting fish belonging to species such as salmon, trout, grayling, coregonidae.
- Cyprinid waters are waters which support or are capable of supporting the cyprinidae or other species which normally share the same habitat as the latter, such as pike, perch and eels.

¹ OJ N° C 112 of 20 December 1973

This proposal for a Directive considers only those problems concerning the quality requirements for waters intended to support the life of freshwater fish. It does not relate to health or consumer protection which is covered by other Community or national provisions.

3. Existing conditions and Legislation

A review of the legal situation in the Member States has shown that national laws make no mention of criteria defining the quality requirements for waters capable of supporting fish and refer only to standards for discharges into public watercourses.

In Belgium a Royal Decree pursuant to the law of 1971 on the protection of surface waters as regards effluents specifies in particular that inland fisheries must be protected. The provisions in question relate particularly to temperature, pH value, oxygen, hydrocarbons and detergents.

In Denmark a special environmental protection law (N° 372 of 13 June 1973) states that authorization for any discharge must be obtained from the authority responsible.

French legislation includes a number of provisions affording various forms of protection as regards the use of water. The most important are

- the Fisheries Acts of 1829 and 1949 (Code rural)
- and the Act of 16 December 1964 (implementation of a comprehensive water management policy).

The latter act provides for the establishment of quality objectives for various types of water, including fishing waters. Up to now quality objectives have not been defined for fishing waters.

In the United Kingdom there are in certain cases laws relating specifically to the control of pollution when this affects fishing. In England and Wales the 1975 Salmon and Freshwater Fisheries Act prohibits the discharge of substances harmful to fishing. Different types of authorities administer fishing in England and Wales, Scotland and Northern Ireland. Despite differences in the provisions and in the methods of pollution control, these laws are largely similar in effect.

In Italy the standards laid down under the Fisheries Act (RD 8 October 1931 N° 1604 amended by the DPR of 10 June 1955 n° 987 and the departmental order of the Ministry of Agriculture and Forestry of 15 February 1956) are designed to ensure that aquatic fauna are fully safeguarded and protected, in particular, from risks arising out of the discharge of industrial effluents.

In Ireland the discharge into the water of any substance likely to prove harmful or toxic to fish life is prohibited under the Fisheries (Consolidation) Act 1959, Sections 171 and 172 amended by the Fisheries (Amendment) Act 1962.

In Luxembourg the Fisheries Act of 21 March 1947 totally prohibits the discharge into waterways of any substances and residues likely to prove harmful to fish life or to destroy the aquatic flora or fauna. Another Act of 16 May 1929 prohibits the discharge of any substance likely to prove harmful, among other things, to water used for animal-feeding purposes, for fish-farming or for the conservation of edible fish or crustaceans.

In the Netherlands the "Wet Verontreiniging Oppervlaktewateren" (Surface Waters Pollution Act) of 1969 establishes a system of concessions for the qualitative protection of water. Specific laws govern the discharge of various substances, e.g., "Hinderwet" (Nuisances Act) (1952), "Ontgrondingewet" (Excavation Act) (1965), "Bestrijdingsmiddelenwet" (Pesticides Act) (1962), "Wet Gevaarlijke Stoffen" (Dangerous Substances Act) (1965), "Wet op de lijkbezorging" (Disposal of Corpses Act) (1896).

In the Federal Republic of Germany the latest version, dated 2 March 1974, of a special Bill concerning the management of national water resources (Water Resources Act) lays down minimum water quality requirements and lists the specific substances which must not be discharged into the water and those which adversely affect water quality. The 1957 Water Resources Law prohibits the unauthorized discharge of pollutants.

In view of the legal situation in the Member States and the fact that the Treaty has not provided all the powers necessary for achieving these objectives, Articles 100 and 235 must be invoked as a legal basis for the proposal for a Directive.

Under the provisions of these Articles the opinion of the European Parliament and the Economic and Social Committee must be sought.

4. Comments on the proposal for a Directive

4.1. General comments

Pursuant to the European Communities' Environment Programme, the Commission set up a Working Party of national experts to assist with the preparation of the Directive. In six meetings, this Working Party has supplied the necessary information on the legal situation in the Member States and has helped the Commission define the properties of the waters in question. During its work, the Working Party consulted the technical documents published by the European Inland Fisheries Advisory Commission (FAO) and the technical reports from national laboratories sent to the Commission by the various delegations.

These reports and the results of the consultations with the experts are contained in working document ENV/330/75.

Data on many pollutants is still lacking and research must be conducted in this field to determine the water quality requirements for these pollutants.

4.2. Scope

The proposal for a Directive relates to all standing or running freshwater which has or is to be designated by a decision of the competent authorities in the Member States as requiring protection to enable fish to live in favourable conditions.

The Directive does not apply to the waters of natural or artificial ponds where fish are intensively farmed for commercial purposes.

4.3. Parameters and their numerical values

Although the parameters listed in the Annex to this proposal have been considered in isolation, the interaction of their effects with other water quality characteristics has sometimes been pointed out and quantified.

However, this interaction with factors as pH, temperature and water hardness does not take account of other synergic effects due to the simultaneous presence of various harmful substances.

In this case, the parametric values may be substantially modified in comparison with the values listed in the proposal for a Directive. Certain harmful substances may have sublethal effects, even at levels substantially lower to those known to be directly harmful. The competent authorities will have to take account of this and lay down specific provisions in these particular cases.

The mixing of harmful substances has been taken into consideration, albeit only roughly; The method of calculation which considers that the toxicity of a mixture of harmful substances equals the sum of the toxicity levels of the various substances has been adopted.

The radioactivity parameters have not been included in the list given in the proposal for a Directive. They must conform to the provisions the Member States have adopted pursuant to the basic standards of the Euratom Treaty.

The list of parameters contained in the Annex cannot be considered as exhaustive. The data available on certain pollutants is too incomplete to enable numerical levels to be proposed. The absence of certain parameters from the list does not therefore mean that they do not have a harmful effect on fish.

As already pointed out, the values contained in the Annex to this proposal apply only in those cases where the levels of other environmental factors are favourable which implies in particular that the concentrations of harmful substances are nil or very low. For all these reasons the provisions referred to in Article 8 about the non-degradation of good-quality waters must be applied with the utmost stringency and without any exceptions.

The meaning of the letters used in the Annex to this proposal is as follows :

- I. The values correspond to good living conditions for fish. Where a parametric value is given in column I, that value is binding. The Member States may not fix a less stringent value. They may however lay down more stringent values.
- G. The values correspond to living conditions which are in harmony with the biogeographical features of the environment.

The parametric values given in column G are intended solely as information and must be considered as guidelines. Where a value appears in both column I and column G the Member States have the option of laying down more stringent values based on the G value. If the Member States adopt these guidelines they become binding in the countries where they have been adopted.

0. In the case of parametric values designated by the letter O, certain derogations are possible on the grounds of abnormal meteorological conditions and special natural conditions.

Waters capable of supporting freshwater fish shall be taken as complying with the parametric values laid down in the Annex (with the exception of the values laid down for dissolved oxygen, pH and temperature) where they meet the following conditions :

- in the case of the parameters given in column I, when the values given by 95 % of the samples analysed are less than or equal to the values shown in this column;
- in the case of the parameters given in column G, when the values from 90 % of the samples analysed are less than or equal to the value shown in this column.

For the 5 or 10 % of samples which, according to the circumstances, do not comply :

- (a) the values measured in the water must not deviate by more than 50 % from the limit value of the parameters in question;
- (b) consecutive samples of water taken at statistically appropriate intervals must not deviate from the relevant parametric values.

As far as dissolved oxygen is concerned, the levels given are expressed as minimum concentrations fixed for 50 %, 95 % and 100 % of the samples examined in the course of one year (cumulative frequency).

As far as pH and temperature are concerned, the permissible limit for variation has been explicitly fixed in the Annex.

PROPOSAL FOR A COUNCIL DIRECTIVE ON THE QUALITY
REQUIREMENTS FOR WATERS CAPABLE OF SUPPORTING
FRESHWATER FISH

The Council of the European Communities,

Having regard to the Treaty establishing the European Communities, 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,

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

Whereas the protection and improvement of the environment necessitates concrete measures to protect waters against pollution, including waters capable of supporting freshwater fish;

Whereas it is necessary from the ecological and economic viewpoint to safeguard fish populations from various harmful consequences resulting from the discharge of harmful substances into the waters, such as the reduction in number of fish belonging to a certain species and even in some cases the disappearance of a number of these species;

Whereas the programme of action of the European Communities on the environment (1) provides that quality objectives are to be jointly drawn up fixing the various requirements which an environment must meet inter alia the definition of parameters for water, including waters capable of supporting fish;

Whereas differences between the provisions already in force or in preparation in the various Member States as regards the quality requirements for waters capable of supporting the life of freshwater fish may distort conditions of competition and thus have a direct effect on the functioning of the common market; whereas laws in the field must be harmonized as provided for by Article 100 of the Treaty;

Whereas it is necessary to couple this approximation of laws with Community measures aiming to achieve, by means of wider-ranging provisions, one of the Community's objectives in the field of environmental protection and the improvement of the quality of life; whereas certain specific provisions must be laid down in this connection; whereas, since the powers of action required to this end have not been provided for in the Treaty, it is necessary to invoke Article 235 of the Treaty;

¹ C No C 112 of 20 December 1973

Whereas, in order to attain these quality objectives, the Member States must lay down limit values corresponding to certain parameters; whereas waters capable of supporting freshwater fish must be made to conform to these values within 5 years following the notification of this Directive;

Whereas it should be provided that waters capable of supporting freshwater fish will, under certain conditions, be deemed to conform to the relevant parametric values even if a certain percentage of samples taken does not comply with the limits specified in the Annex;

Whereas to ensure that the required standard for waters capable of supplying freshwater fish is checked, samples should be taken regularly and the measures relating to parameters set out in the Annex should be carried out;

Whereas the Member States are unable to control certain circumstances and it is therefore necessary to provide for the possibility of having recourse to certain derogations; whereas the Commission must be notified of these derogations;

Whereas technical progress necessitates rapid adaptation of the technical requirements laid down in the Annex of this Directive; whereas, in order to facilitate the introduction of the measures required for this purpose, a procedure should be provided for whereby close cooperation would be established between the Member States and the Commission within a Committee on Adaptation to Technical Progress set up by virtue of the Council Directive of 8 December 1975 concerning the quality of bathing water.¹

¹ OJ N° L 31 of 5 February 1976 (76/160/EEC)

HAS ADOPTED THIS DIRECTIVE :

Article 1

1. This Directive concerns the quality requirements for waters capable of supporting freshwater fish.
2. For the purposes of this Directive, Waters capable of supporting freshwater fish means any running or standing fresh water which supports or is capable of supporting fish belonging to :
 - indigenous species presenting a natural diversity or
 - species whose presence is judged desirable for water management purposes.

Waters intended for intensive fish-farming in natural or artificial fishponds are excluded.

Salmonid waters are waters which support or are capable of supporting fish belonging to the following species : salmon, trout, grayling, coregonidae.

Cyprinid waters are waters which support or are capable of supporting the cyprinidae or other species which normally share the same habitat as the latter, such as pike, perch and eels.

Article 2

1. The physical and chemical parameters laying down the quality requirements for waters intended to support the life of freshwater fish are listed in the Annex which forms an integral part of this Directive.
2. For the application of these parameters freshwater is divided into salmonid waters and cyprinid waters.

Article 3

1. The Member States shall set, for the waters capable of supporting freshwater fish, the parametric values given in the Annex.
2. The values set pursuant to paragraph 1 may not be less stringent than those given in column I of the Annex.
3. Where values appear in column G of the Annex, whether or not there is a corresponding value in column I of the Annex, Member States shall endeavour, subject to Article 8, to observe them as guidelines.

Article 4

For the purposes of applying this Directive, the Member States shall specify those waters capable of supporting freshwater fish.

Article 5

Member States shall adopt all necessary provisions to ensure that the quality requirements for waters capable of supporting freshwater fish conform to the parametric values laid down in accordance with Article 3 within five years after the entry into force of this Directive.

Article 6

1. For the purposes of Article 5, water capable of supporting freshwater fish shall be deemed to conform to the provisions of this Directive if samples of that water, taken at the intervals specified in the Annex, at the same sampling point and over a period of 12 months, show that it conforms to the parametric values for the quality of the water concerned, in the case of :

- 95 % of the samples for parameters corresponding to those specified in column I of the Annex, except for temperature, dissolved oxygen and pH which must conform to the percentages given in the Annex;
- 90 % of the samples in all other cases, except for dissolved oxygen which must conform to the percentages given in the Annex;

and if, in the case of the 5 and 10 % of the samples which do not comply :

- the values measured in the water do not deviate by more than 50 % from those of the parameters in question;
- consecutive water samples taken at statistically suitable intervals do not deviate from the relevant parametric values.

2. Deviations from the values referred to in Article 3 shall not be taken into consideration in the calculation of the percentage provided for in paragraph 1 when they are the result of floods or natural disasters.

Article 7

1. The competent authorities in the Member States shall carry out sampling operations, the minimum frequency of which is laid down in the Annex.

2. The exact sampling point, the distance from this point to the nearest point where pollutants are discharged and the depth at which the samples are to be taken shall be fixed by the competent authority of each Member State on the basis of local environmental conditions in particular.

3. The reference methods of analysis to be used for the various parameters in question are listed in the Annex. The Member States shall take the necessary measures to ensure that laboratories using other methods prove to the Commission that the results obtained are equivalent or comparable to those specified in the Annex.

Article 8

1. Implementation of the measures taken pursuant to this Directive may under no circumstances lead to degradation of the present quality of waters capable of supporting freshwater fish.
2. Member States may at any time fix more stringent values than those laid down in this Directive, in respect of waters capable of supporting freshwater fish.

Article 9

When waters capable of supporting freshwater fish cross national frontiers, the riparian States shall collaborate in determining the transfrontier freshwaters to which the Directive relates and the values to be used for defining the joint quality objectives applicable to these waters. The Commission shall participate in this collaboration.

Article 10

This Directive may be waived :

- (a) in the case of certain parameters marked (O) in the Annex, because of exceptional weather or geographical conditions;
- (b) when water capable of supporting freshwater fish undergoes natural enrichment in certain substances causing a deviation from the values prescribed in the Annex.

Natural enrichment means the process whereby, without human intervention, a given body of water receives from the soil certain substances contained therein.

Where a Member State waives the provisions of this Directive, it shall forthwith notify the Commission thereof, stating its reasons and the periods anticipated.

Article 11

Such amendments as are necessary for adapting :

- the parameters
- the G and I values for these parameters, and
- the methods of analysis

contained in the Annex to technical progress, shall be adopted by the Committee set up by virtue of Article 10 of the Council Directive of 8 December 1975 concerning the quality of bathing water pursuant to the procedure laid down in Article 11 of that Directive.

Article 12

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

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

3 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 13

This Directive is addressed to the Member States.

Done at Brussels,

For the Council

The President

ANNEX 4

General observation : The values shown in the table for each parameter correspond to situations in which the levels of the other parameters, whether or not considered in this annex, are favourable, which implies, in particular, that the concentrations of harmful substances are zero or very low.

PARAMETER	Salmonid waters		Cyprinid waters		Methods of analysis or inspection	Minimum sampling and measuring frequency	OBSERVATIONS
	G	I	G	I			
1) <u>Temperature</u> °C - during the warm season - during the cold season		#) $\leq 20(0)$ #) $\leq 10(0)$		#) $\leq 20(0)$ #) $\leq 10(0)$	Thermometry	- quarterly - weekly if thermal discharge is suspected	Too rapid an increase in temperature must be avoided so that fish reproduction is not affected
2) - Dissolved oxygen	$50\% \geq 9$ $100\% \geq 7$	$50\% \geq 9$ $95\% \geq 7$ $100\% \geq 5$	$50\% \geq 8$ $100\% \geq 5$	$50\% \geq 7$ $95\% \geq 5$ $100\% \geq 3$	Electrochemical method	Monthly 24-hour variation with at least one sample an hour	In order to take account of seasonal variations in oxygen content, the levels to be adhered to are expressed as minimum concentrations fixed for 50%, 95% and 100% of the samples examined in the course of one year (cumulative frequency). I values : The periods during which the dissolved oxygen concentration is lower than 7 mg/l (salmonid waters) or 5 mg/l (cyprinid waters) must be short enough not to harm the fish.

PARAMETER	Salmonid waters			Cyprinid waters			Methods of analysis or inspection	Minimum sampling and measuring frequency	OBSERVATIONS
	G	I	I	G	I	I			
3) pH		5-9 (0) ≡	6-9 (0) ≡				Electrometry Calibration by means of two solutions with known pH values, preferably on either side of the pH value being measured and proximate to it.	quarterly weekly if chemical discharge is suspected	
4) Suspended solids	<< 25 (0)			<< 25 (0)			Filtration through a 0.45 μ porous membrane or centrifugation; drying at 105°C and weighing		The values shown are average concentrations and do not apply to suspended solids with harmful chemical properties. Floods are liable to cause particularly high concentrations.

≡) Artificial pH variations with respect to the "natural" values must not exceed + 0.5 of a pH unit in limits falling between 6.0 and 9.0 provided that these variations do not increase the harmfulness of other substances present in the water.

ANNEX

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PARAMETER	Salmonid waters			Cyprinid waters			METHODS OF ANALYSIS OR INSPECTION	MINIMUM SAMPLING AND IRL-SURING FREQUENCY	OBSERVATIONS
	G	I	I	G	I	I			
5) DO ₅ mg/l O ₂	≤ 3			≤ 6			Determination of O ₂ by the Winkler method before and after 5-day incubation in complete darkness at 20±1°C		
6) Phosphates mg/l PO ₄	≤ 0,2			≤ 0,4			Absorption spectrophotometry after reduction of the phospholybdic complex		
7) Nitrates mg/l NO ₃	≤ 3			≤ 6			Absorption spectrophotometry, with or without prior reduction of the nitrates into nitrites		
Nitrate mg/l NO ₂	≤ 0,05			≤ 0,5			Absorption spectrophotometry		
Total ammonia mg/l NH ₄	≤ 0,04	≤ 1		≤ 0,2	≤ 1		Absorption spectrophotometry using indophenol blue	monthly	

OBSERVATION

PARAMETER	Salmonid waters		Cyprinid waters		METHODS OF ANALYSIS OR INSPECTION	MINIMUM SAMPLING AND TESTING FREQUENCY	OBSERVATION
	G	I	G	I			
10) Phenolic compounds mg/l C6 H5 OH	$\leq 0,005(0)$ *)	$\leq 0,005(0)$ *)	$\leq 0,005(0)$ *)	$\leq 0,005(0)$ *)	Absorption spectrophotometry : - Method using paranitraniline; - Method using 4-aminoantipyrine.	Twice a month	The levels shown take account of the presence of chlorophenols. The levels may be exceeded if five chlorine is present.
11) Petroleum hydrocarbons	*) Petroleum products must not be present in the water in such quantities that they : - Form a visible film on the surface of the water or form coatings on the beds of watercourses and lakes; - Impart a detectable "hydrocarbon" taste to fish; - Produce harmful effects in fish.				Visual and by taste	Twice a month	
12) non-ionized ammonium NH ₃ mg/l	$\leq 0,005$	$\leq 0,025$			Messler method associated with pH determination	Twice a month	
13) Chlorine mg/l HOCl non-ionized	$\leq 0,004$	$\leq 0,004$			Palin method	Twice a month	

PARAMETER	Salmonid waters			Cyprinid waters			METHODS OF ANALYSIS OR INSPECTION	MINIMUM SAMPLING AND REASURING FREQUENCY	OBSERVATIONS
	G	I	I	G	I	I			
13) Zinc $\mu\text{g/l}$ Zr water hardness (mg/l CaCO_3)		$\leq 0,03$ $\leq 0,2$ $\leq 0,3$ $\leq 0,5$				$\leq 0,3$ $\leq 0,7$ $\leq 1,0$ $\leq 2,0$	Atomic absorption	Twice a month	The concentration limits corresponding to the water hardness values lying between 10 and 500 mg/l CaCO_3 are to be calculated by interpolation. For hardness levels lower than 10 mg/l CaCO_3 , the calculation of the concentration limits by extrapolation does not give reliable results.

15) Other harmful substances (I value applicable to salmonid and cyprinid waters)

a) Non-persistent substances

The concentration of non-persistent substances, the half-life of which is less than 96 hours or which do not have cumulative effects, must not exceed 0.1 of the lethal concentration threshold anywhere or at any time.

Moreover, the average concentration of such substances in 24 hours must not exceed 0.05 of the lethal concentration threshold.

b) Persistent substances

The concentration of substances which are persistent or have cumulative effects must be such that it does not produce unwanted bio-accumulations; for some substances, this concentration must not exceed 0.05 of the lethal concentration threshold anywhere or at any time. Moreover, the average concentration of these substances in 24 hours must not exceed 0.01 of the lethal concentration threshold. For other highly persistent substances, the "application factor" (the factor by which the values of the lethal concentration threshold must be multiplied to obtain the safe concentration) must be determined from case to case. Thus the concentration of cadmium for instance may not exceed 0.002 of the lethal concentration threshold anywhere or at any time.

Examples of substances which are persistent or which have cumulative effects are :

- organohalogen compounds
- organophosphorus compounds
- organostannic compounds
- carcinogenic substances
- mercury
- cadmium

Minimum sampling and measurement frequency : twice a month.

16) Mixtures of harmful substances (I value applicable to salmonid and cyprinid waters)

Substances having synergic or antagonistic effects must be discounted in the calculation below. Only the case of harmful substances having additive effects is considered here.

If

A_s, B_s, \dots, Z_s represent the concentrations of the different mixed substances and

A_a, I_a, \dots, Z_a represent the permissible concentrations [#] of the different substances when they are present singly, the concentrations of the different harmful substances in the mixture are considered to be permissible when :

$$\frac{A_s}{A_a} + \frac{B_s}{B_a} + \dots + \frac{Z_s}{Z_a} \ll 1$$

Any fractions such as $\frac{X_s}{X_a}$ which are less than 0.2 should be eliminated from the sum of fractions given above.

Minimum control frequency : monthly.

For certain parameters these concentrations are defined in the Annex; they should be laid down from case to case for the other parameters that are not specifically mentioned.