

**EUROPEAN COMMUNITIES (QUALITY OF WATER INTENDED FOR HUMAN  
CONSUMPTION)  
REGULATIONS 1988**

The Minister for the Environment in exercise of the powers conferred on him by section 3 of the European Communities Act, 1972 (No. 27 of 1972) and for the purpose of giving effect to the Council Directive of 15th July, 1980 (No. 80/778/EEC)(1) hereby makes the following Regulations:

(1)O.J. No. L229/11. 30th August, 1980.

REG 1

1. (1) These Regulations may be cited as the European Communities (Quality of Water Intended for Human Consumption) Regulations, 1988.

(2) These Regulations shall come into operation on the 1st day of June, 1988.

REG 2

2. In these Regulations:

any reference to the Schedule or an article which is not otherwise identified is a reference to the Schedule or an article of these Regulations;

any reference to a sub-article which is not otherwise identified is a reference to a sub-article of the provision in which the reference occurs;

"authorised person" means a person appointed by a sanitary authority to be an authorised person for the purposes of these Regulations;

"group water installation" means a private water supply utilising a common source or sources and serving more than one dwelling;

"the Minister" means the Minister for the Environment;

"monitoring" includes inspection, measurement, sampling or analysis whether periodically or continuously;

"premises" includes any land, any waterworks as defined in section 2 of the Public Health (Ireland) Act, 1878 and any building, structure or private dwelling;

"sanitary authority" means a sanitary authority for the purposes of the Local Government (Sanitary Services) Acts, 1878 to 1964;

"water intended for human consumption" means all water used for that purpose, either in its original state or after treatment, regardless of origin, and whether:—

( a ) supplied for consumption, or

( b ) 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,

other than natural mineral waters recognised by the responsible authority as defined in the European Communities (Natural Mineral Waters) Regulations, 1986 (S.I. No. 11 of 1986).

### REG 3

3. (1) Water intended for human consumption shall meet the quality standards specified in Part 1 of the Schedule.
- (2) A sanitary authority shall take account of the comments included in the "comments" column of Tables A to F of Part 1 of the Schedule in applying the standards referred to in sub-article (1).

### REG 4

4. It shall be the duty of a sanitary authority to take the necessary measures to ensure that:—
  - ( a ) water intended for human consumption meets the requirements of these Regulations, except where a departure is granted under article 5, and
  - ( b ) any substances used in the preparation of water for human consumption do not remain, in concentrations higher than the maximum admissible concentration (if any) relating to those substances, in water made available to the user, and that they do not, directly or indirectly, constitute a public health hazard.

### REG 5

5. (1) A departure from the requirements of these Regulations may be granted by the Minister to a sanitary authority to take account of:—
  - ( a ) situations arising from the nature and structure of the ground in the area from which the water supply in question emanates,
  - ( b ) situations arising from exceptional meteorological conditions.
- (2) An application for a departure under this article shall contain such information as may be specified by the Minister.
- (3) The granting of a departure under this article shall be subject to such conditions, if any, and shall have effect for such period, as may be specified by the Minister.
- (4) A departure under this article shall not relate to toxic or microbiological parameters and shall not constitute a public health hazard.
- (5) Without prejudice to sub-article (4), nothing in this article shall preclude the Minister from granting a departure on foot of an application received before the commencement of these Regulations.

### REG 6

6. (1) In the event of an emergency, a sanitary authority may, for a limited period of time, allow a maximum admissible concentration shown in Part I of the Schedule to be exceeded provided that:—
  - ( a ) the supply of water for human consumption cannot otherwise be maintained, and
  - ( b ) the higher concentration determined by the authority does not constitute an unacceptable risk to public health.
- (2) Where, in order to enable a supply of water for human consumption to be maintained, a sanitary authority is obliged:—
  - ( a ) to use, or in the case of a private water supply to allow

use of, a surface water source which does not have the physical, chemical and microbiological characteristics required of category A3 water within the meaning of article 2 of Council Directive 75/440/EEC of 16th June, 1975, and

(2)O.J. No. L194/26. 25th July, 1975.

( b ) the authority cannot devise, or in the case of a private water supply cannot approve, suitable treatment to obtain a water supply complying with these Regulations, the authority may allow a maximum admissible concentration shown in Part I of the Schedule to be exceeded for a limited period of time provided that the higher concentration determined by the authority does not constitute an unacceptable risk to public health.

(3) Sub-article (2) shall apply notwithstanding the provisions of Council Directive 75/440/EEC of 16th June, 1975 (2) and, in particular, article 4 (3) of that Council Directive.

(2)O.J. No. L194/26. 25th July, 1975.

(4) A sanitary authority shall notify the Minister as soon as may be of any action taken under sub-articles (1) or (2), stating the reasons for such action, the higher concentration determined and the period of time for which such higher concentration is allowed by the authority.

#### REG 7

7. (1) A sanitary authority shall regularly monitor the quality of water intended for human consumption at the point where it is made available to the user, and for this purpose samples shall be taken for analysis at such points as the sanitary authority shall determine.

(2) For the purposes of sub-article (1), a sanitary authority shall, subject to sub-article (3):—

( a ) apply the patterns of standard analyses specified in Table A of Part II of the Schedule, and

( b ) have regard to the minimum frequencies of standard analyses specified in Table B of Part II of the Schedule.

(3) Notwithstanding sub-article (2), in the case of a water supply serving less than 1,000 persons or producing or distributing less than 200 cubic metres of water a day, a sanitary authority shall monitor the quality of the water on such occasions and to such extent as they shall consider necessary, having regard to:—

( a ) the pattern of standard analyses specified in Table A of Part II of the Schedule,

( b ) their knowledge of the quality of water in their functional area or any part thereof, and

( c ) any factors, coming to their attention, which are likely to cause a deterioration in the quality of water.

(4) For the purposes of this article, a sanitary authority shall:—

( a ) as far as practicable, use the methods of analysis specified in Part III of the Schedule, and

( b ) where other methods of analysis are used, ensure that the results obtained are equivalent to, or comparable with, results obtained by the methods specified in Part III of the Schedule.

(5) Notwithstanding sub-article (3), water intended for use in a food production undertaking and affecting the wholesomeness of the foodstuff in its finished form shall be monitored at least once a

year.

(6) Where water intended for human consumption requires to be disinfected, microbiological analysis shall be twice as frequent as the minimum frequencies shown in Table B of Part II of the Schedule.

(7) Where frequent analyses are required, samples shall be taken as regularly as practicable.

(8) Where the values of the results obtained from samples taken during the preceding two years are constant and are significantly better than the values specified in Part I of the Schedule, and no factor likely to cause deterioration in the quality of the water has been discovered, a sanitary authority may reduce the minimum frequencies of analyses:—

( a ) for surface waters by a factor of two, with the exception of the minimum frequencies for microbiological analyses,

( b ) for ground waters by a factor of four, without prejudice to sub-article (6).

## REG 8

8. Where it is found, as a result of monitoring carried out under article 7, that the quality of water intended for human consumption does not meet the requirements of these Regulations, the sanitary authority shall:—

( a ) take all reasonable steps to warn users of the water supply where there is an unacceptable risk to public health,

( b ) in the case of a public water supply, prepare an action programme for the improvement of the quality of the water as soon as practicable,

( c ) in the case of a private water supply, notify the person or persons responsible for the supply as soon as practicable of the measures which should be taken for the improvement of the quality of the water.

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9. (1) An authorised person may at all reasonable times enter any premises for the purposes of these Regulations.

(2) When exercising the power conferred by this article, an authorised person shall, if so required, produce evidence of his authority.

## REG 10

10. (1) A sanitary authority may charge for monitoring the quality of private water supplies intended for human consumption.

(2) A charge made by a sanitary authority by virtue of sub-article (1) shall be of such amount as the authority considers appropriate but shall not exceed the cost of such monitoring.

(3) A charge made by a sanitary authority by virtue of sub-article (1) shall be payable by and recoverable from:—

( a ) in the case of a group water installation, the trustees or other persons responsible for that installation, and

( b ) in any other case, the occupier or occupiers of the premises supplied.

(4) A sanitary authority may recover the amount of any charge made by them under this article from the person or persons by whom it is payable as a simple contract debt in any court of competent jurisdiction.

#### REG 11

11. The Minister may, from time to time, issue recommendations to sanitary authorities in relation to the carrying out of any of their duties under these Regulations, and sanitary authorities shall have regard to any such recommendations.

#### REG 12

12. Measures taken to apply the provisions of these Regulations shall in no case have the effect of allowing, directly or indirectly, any deterioration in the existing quality of water intended for human consumption or an increase in the pollution of waters used for the production of drinking water.

### SCHEDULE

#### PART I

#### QUALITY STANDARDS

##### A. ORGANOLEPTIC PARAMETERS

Parameters Expression  
of the

Results Maximum Admissible Concentration

(MAC) Comments 1 Colour mg/1 Pt/Co Scale 202 Turbidity mg/l SiO<sub>2</sub> 10 Jackson units

Nephelometric units } 43 Odour Dilution number 2 at 12°C To be related to

the taste tests. 3 at 25°C 4 Taste Dilution number 2 at 12°C To be

related to the odour tests. 3 at 25°C

##### B. PHYSICO-CHEMICAL PARAMETERS

(In relation to the water's natural structure)

Parameters Expression  
of the

Results Maximum Admissible Concentration

(MAC) Comments 5 Temperature °C 25 6 Hydrogen ion concentration pH unit 6.0 < pH < 9.0 The water

should not be aggressive. The pH values do not apply to water in closed containers. 7 Conductivity  $\mu$ S

cm<sup>-1</sup> at 20°C 1,500 Corresponding to 1,650

at 25°C 8 Chlorides Cl mg/12 509 Sulphates SO<sub>4</sub> mg/12 5010 Calcium Ca

mg/12 0011 Magnesium Mg mg/15 012 Sodium Na mg/11 50 If, owing to its excessive

natural hardness, water is softened in accordance with Table F

before being supplied for consumption, its sodium content may, in

exceptional cases, be higher than the MAC value. The sodium content

in such cases should be kept at as low a level as possible and

the essential requirements for the protection of public health may

not be disregarded. (with a percentile of 80) (This percentile should

be calculated over a reference period of three years) 13 Potassium K

mg/11 214 Aluminium Al mg/10. 21 5 Dry residues mg/l after drying at 180°C 1,000

## C. PARAMETERS CONCERNING SUBSTANCES UNDESIRABLE IN EXCESSIVE AMOUNTS

Parameters Expression  
of the

Results Maximum Admissible Concentration

(MAC) Comments 16 Nitrates  $\text{NO}_3$  mg/150 Equivalent to 11.3 mg/l as N. 17 Nitrites  $\text{NO}_2$  mg/10.1 Equivalent to 0.03 mg/l as N. 18 Ammonium  $\text{NH}_4$  mg/10.3 Equivalent to 0.23 mg/l as N. 19 Kjeldahl Nitrogen (excluding N in  $\text{NO}_2$  and  $\text{NO}_3$ ) N mg/120 (K MN O4)  $\text{O}_2$  mg/15 Measured when heated in acid medium. 21 Hydrogen sulphide S ugh/1 Undetectable organoleptically. 22 Substances extractable in chloroform mg/l dry residue No significant increase above background level. 23 Dissolved or emulsified hydrocarbons (after extraction by petroleum ether); Mineral oils ug/110 24 Phenols (phenol index)  $\text{C}_6\text{H}_5\text{OH}$  ug/10.5 Excluding natural phenols which do not react to chlorine. 25 Boron B ug/12,000 26 Surfactants (reacting with methylene blue) ug/l (lauryl sulphate) 200 27 Other organochlorine compounds not covered by parameter No. 46 ug/1100 Haloform concentrations must be as low as possible. 28 Iron Fe ug/1200 29 Manganese Mn ug/150 30 Copper Cu ug/1500— at outlets of pumping and/or treatment works and their substations. 3,000— 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. 31 Zinc Zn ug/11,000— 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 where the water is made available to the consumer. 32 Phosphorus  $\text{P}_2\text{O}_5$  Ug/15,000 33 Fluoride F ug/11,000 34 Suspended solids mg/l No persistently visible suspended solids. 35 Barium Ba ug/1500 36 Silver Ag ug/110 If, exceptionally, silver is used non-systematically to process the water, a MAC value of 80 ug/l shall apply.

## D. PARAMETERS CONCERNING TOXIC SUBSTANCES

Parameters Expression  
of the

Results Maximum Admissible Concentration

(MAC) Comments 37 Arsenic As ug/150 38 Cadmium Cd ug/15 39 Cyanides CN ug/150 40 Chromium Cr ug/150 41 Mercury Hg ug/11 42 Nickel Ni ug/150 43 Lead Pb ug/150 (in running water) Where lead pipes are present, the lead content should not exceed 50 ug/l in a sample is taken either directly or after flushing and the lead content either frequently or to an appreciable extent exceeds 100 ug/l, suitable measures must be taken to reduce the exposure to lead on the part of the consumer. 44 Antimony Sb ug/110 45 Selenium Se ug/110 46 Pesticides and related products —substances considered separately ug/10.1 "Pesticides and related products" means:  
—insecticides  
—persistent organochlorine compounds  
—organophosphorous compounds  
—carbamates—total 0.5—herbicides  
—fungicides  
—PCBs (Polychlorinated Biphenyls) and PCTs (Polychlorinated Terphenyls). 47 Polycyclic

aromatic hydrocarbons/10.2 "Reference substances" means:  
 —fluoranthene  
 —3, 4  
 benzofluoranthene  
 —11, 12  
 benzofluoranthene  
 —3, 4 benzpyrene  
 —1, 12 benzperylene  
 —Indeno (1, 2, 3 - cd)  
 pyrene.

#### E. MICROBIOLOGICAL PARAMETERS

Parameters Results:

volume of the sample in ml Maximum

Admissible

Concentration

(MAC) Comments Membrane

Filter

Method Multiple

tube

Method

(MPN) Water intended for human consumption should not contain pathogenic organisms, nor should such water contain parasites, algae or other organisms such as animalcules. Where it is necessary to supplement the microbiological analysis of water intended for human consumption, the samples should also be examined for pathogens including salmonella, pathogenic staphylococci, fecal bacteriophages, and entero-viruses. 48 Total

coliforms (1) 1000 MPN < 149 Fecal

coliforms 1000 MPN < 150 Fecal

coliforms 1000 MPN < 151 Sulphite

reducing

Clostridia 20 — MPN £ 1 Results:

size of sample in

ml Maximum

Admissible

Concentration

(MAC) 52 Total bacteria counts for water supplied for human consumption 37° 1 No significant increase above background level. 22° C 153 Total bacteria counts for water in closed containers 37° C 120 Where parameters 48, 49, 50 and 51 are complied with, and where the pathogen organisms referred to thereat are absent, water may be processed for internal use within the State the total bacterial count of which exceeds the MAC values laid down for parameter 53. MAC values should be measured within 12 hours of being put unto closed containers with the sample water being kept at a constant temperature during that 12 hour period. 22° C 1100 (1) Provided a sufficient number of samples is examined (95% consistent results).

#### F. MINIMUM REQUIRED CONCENTRATION FOR SOFTENED WATER INTENDED FOR HUMAN CONSUMPTION

Parameters Expression  
 of the

Results  
Minimum Required Concentration  
(MRC) Comments  
1 Total hardness mg/l Ca60 Calcium or equivalent cations.  
2 Alkalinity mg/l HCO<sub>3</sub>30 The water should not be aggressive.

## PART II

### PATTERNS AND FREQUENCY OF STANDARD ANALYSES

#### A. TABLE OF STANDARD PATTERN ANALYSES

(Parameters to be considered in monitoring)

Standard analyses Minimum monitoring (1)

(analysis C1) Current monitoring (1)

(Analysis C2) Periodic monitoring

(Analysis C3) Occasional monitoring in special situations or in case of accidents

(Analysis C4) Parameters to be considered AORGANOLEPTIC PARAMETERS—odour (2)

—taste (2)—odour

—taste

—turbidity

(appearance)

Current monitoring analyses and other parameters as in footnote 4.

The sanitary authority shall determine the parameters (5) according to circumstances, taking account of all factors which might have an adverse effect on the quality of drinking water supplied to consumers. BPHYSICO-

CHEMICAL

PARAMETERS—Conductivity or other physico-chemical parameter—temperature (3)

—conductivity or other physico-chemical parameter

—pHCUNDESIRABLE PARAMETERS—nitrates

—nitrates

—ammonia DTOXIC PARAMETER SEMICRO-

BIOLOGICAL PARAMETERS—total coliforms or total counts of 22° and 37°

—fecal coliforms—total coliforms

—fecal coliforms

—total counts of 22° and 37

(1) Residual chlorine or other disinfectants used in treatment must also be monitored having regard to public health requirements in accordance with article 4 (b).

(2) Qualitative assessment.

(3) Except for water supplied in containers.

(4) These parameters shall be determined by the sanitary authority, having regard to all factors which may affect the quality of drinking water supplied to users and which may enable the ionic balance of the constituents to be assessed.

(5) A sanitary authority may consider parameters other than those included in Part I of the Schedule to these Regulations.

#### B. TABLE OF MINIMUM FREQUENCY OF STANDARD ANALYSES

Volume of water produced or distributed in m<sup>3</sup>/day Population concerned  
(assuming 200 l/day per person) Analysis C1 Analysis C2 Analysis C3 Analysis C4  
Minimum No. of samples per year. Frequency to be determined by the sanitary authority as the situation



requires.2001,00021(1)5002,50031(1)1,0005,0006212,00010,000123110,00050,000606120,000100,00012012230,000150,00018018360,000300,000360366100,000500,0003606010200,0001,000,00036012020

(1)Frequency to be determined by the sanitary authority but the requirement in article 7 (5) shall also apply.

### PART III

#### METHODS OF ANALYSIS(1)

A. ORGANOLEPTIC PARAMETERS1ColourPhotometric method calibrated on the Pt/co scale.2TurbiditySilica method - Formazine test.3OdourSuccessive dilutions, tested at 12°C or 25°C.4TasteSuccessive dilutions, tested at 12°C or 25°C.B. PHYSICO-CHEMICAL

PARAMETERS5TemperatureThermometry6Hydrogen ion concentrationElectrometry.7ConductivityElectrometry.8ChloridesTitrimetry — Mohr's method.9SulphatesGravimetry — complexometry — spectrophotometry.10CalciumAtomic absorption—

complexometry.11MagnesiumAtomic absorption.12SodiumAtomic Absorption.13PotassiumAtomic absorption.14AluminiumAtomic absorption — absorption spectrophotometry.15Dry residuesDessication at 180°C and weighing.C. PARAMETERS CONCERNING UNDESIRABLE

SUBSTANCES16NitratesAbsorption spectrophotometry — Specific electrode method.17NitritesAbsorption spectrophotometry.18Ammonium Absorption spectrophotometry.19Kjeldahl NitrogenOxidation with Titrimetry or Absorption spectrophotometry.20Oxidizability Boiling for 10 minutes with KMnO<sub>4</sub> in acid medium.21Hydrogen sulphideAbsorption

spectrophotometry.22Substances extractable in chloroform Liquid/liquid extraction using purified chloroform at neutral pH, weighing the residue.23Hydrocarbons (dissolved or in emulsion); Mineral oilsInfra-red

absorption spectrophotometry.24Phenols (phenol index)Absorption spectrophotometry, paranitro-aniline method and 4-aminoantipyrine method.25BoronAtomic absorption — Absorption

spectrophotometry.26Surfactants (reacting with methylene blue)Absorption spectrophotometry with methylene blue.27Other organochlorine compoundsGas-phase or liquid-phase chromatography after extraction by appropriate solvents and purification — identification of the constituents of mixtures if necessary. Quantitative determination.

(1) The method of analysis to be used for residual chlorine is titrimetry — absorption spectrophotometry.

28IronAtomic absorption — Absorption spectrophotometry.29ManganeseAtomic absorption — Absorption spectrophotometry.30CopperAtomic absorption — Absorption spectrophotometry31ZincAtomic absorption — Absorption

spectrophotometry.32PhosphorusAbsorption spectrophotometry.33FluorideAbsorption spectrophotometry — Specific electrode method.34Suspended solidsMethod of filtration on to u 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.35BariumAtomic absorption.36SilverAtomic absorption.D. PARAMETERS

CONCERNING TOXIC SUBSTANCES37ArsenicAbsorption spectrophotometry — Atomic absorption.38CadmiumAtomic absorption.39CyanidesAbsorption spectrophotometry.40ChromiumAtomic absorption — Absorption

spectrophotometry.41MercuryAtomic absorption.42NickelAtomic absorption.43LeadAtomic absorption.44AntimonyAbsorption spectrophotometry.45SeleniumAtomic absorption.46Pesticides and related productsSee method 27.47Polycyclic aromatic hydrocarbonsMeasurement of

intensity of fluorescence ultraviolet after extraction using hexane — gas-phase — chromatography or measurement in ultra-violet after thin layer chromatography — Comparative measurements against a mixture of six standard substances of the same concentration(1)E. MICROBIOLOGICAL PARAMETERSFermentation in multiple tubes. Subculturing of the positive tubes on a confirmation medium. Count according to MPN (most probable number)48(2)

49(2)Total coliforms

Fecal coliformsMembrane filtration and culture on an appropriate medium such as Tergitol lactose agar, endo agar, 0.4% Teepol broth, sub-culturing and identification of the suspect colonies—Incubation temperature for total coliforms: 37°C

Incubation temperature for fecal coliforms: 44°C

(1)Standard substances to be considered: fluoranthene, 3, 4 — benzofluoranthene, 11, 12 — benzofluoranthene, 3, 4 — benzpyrene, 1, 12 — benzperylene, Indeno (1, 2, 3 — cd) pyrene.

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

50(2)Fecal streptococciSodium azide method (Litsky). Count according to MPN—Membrane filtration and culture on an appropriate

medium.51(2)Sulphite-reducing ClostridiaA 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.52/53(2) Total countsInnoculation by placing in nutritive agar.

#### ADDITIONAL TESTS

SalmonellaConcentration by membrane filtration. Innoculation on a pre-enriched medium. Enrichment, subculturing on isolating agar. Identification.Pathogenic staphylococciMembrane filtration and culture on a specific medium (e.g. Chapman's hypersaline medium). Test for pathogenic characteristics.Fecal bacteriophagesGuélin's process.Entero-virusesConcentration by filtration, flocculation or centrifuging, and identification.ProtozoaConcentration 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

CONCENTRATIONTotal hardness ComplexometryAlkalinityAcidimetry with Methyl orange

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

GIVEN under the Official Seal of the Minister for the Environment this 29th day of April, 1988.

PADRAIG FLYNN,  
Minister for the Environment.

#### EXPLANATORY NOTE.

These Regulations prescribe standards for water intended for human

consumption and the patterns and frequency of analyses required in order to monitor such standards. The Regulations give effect to Council Directive No. 80/778/EEC of 15th July, 1980 (O.J. No. L229/11, 30th August, 1980) relating to the quality of water intended for human consumption.