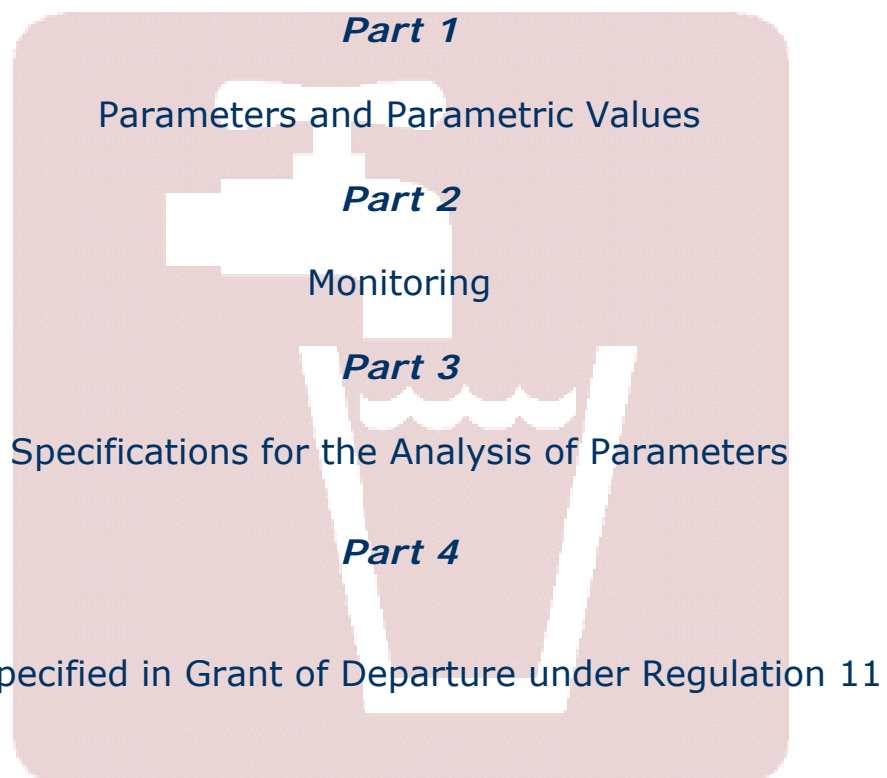


**S.I. No. 278/2007 — European Communities (Drinking Water)
(No. 2) Regulations 2007**

Schedule



Part 1 Parameters and Parametric Values

TABLE A Microbiological Parameters

	Parameter	Parametric value(number/100 ml)
1	<i>Escherichia coli (E.coli)</i>	0
2	<i>Enterococci</i>	0

TABLE B Chemical Parameters

	Parameter	Parametric value	Unit	Comments
3	Acrylamide	0.10	µg/l	Note 1
4	Antimony	5.0	µg/l	
5	Arsenic	10	µg/l	
6	Benzene	1.0	µg/l	
7	Benzo(a)pyrene	0.010	µg/l	
8	Boron	1.0	mg/l	
9	Bromate	10	µg/l	
10	Cadmium	5.0	µg/l	
11	Chromium	50	µg/l	
12	Copper	2.0	mg/l	Note 2
13	Cyanide	50	µg/l	
14	1,2-dichloroethane	3.0	µg/l	
15	Epichlorohydrin	0.10	µg/l	Note 1
16	Fluoride (a) fluoridated supplies	0.8	mg/l	
	(b) supplies with naturally occurring fluoride, not needing further fluoridation	1.5	mg/l	
17	Lead • until 24 December 2013	25	µg/l	Notes 2 and 3

	• from 25 December 2013	10	µg/l	
18	Mercury	1.0	µg/l	
19	Nickel	20	µg/l	Note 2
20	Nitrate	50	mg/l	Note 4
21	Nitrite	0.50	mg/l	Note 4
22	Pesticides	0.10	µg/l	Notes 5 and 6
23	Pesticides — Total	0.50	µg/l	Note 5 and 7
24	Polycyclic aromatic hydrocarbons	0.10	µg/l	Sum of concentrations of specified compounds; Note 8
25	Selenium	10	µg/l	
26	Tetrachloroethene and Trichloroethene	10	µg/l	Sum of concentrations of specified parameters.
27	Trihalomethanes — Total	100	µg/l	Sum of concentrations of specified compounds; Note 9
28	Vinyl chloride	0.50	µg/l	Note 1

Notes

Note 1 The parametric value refers to the residual monomer concentration in the water as calculated according to specifications of the maximum release from the corresponding polymer in contact with the water.

Note 2 The value applies to a sample of water intended for human consumption obtained by an adequate sampling method at the tap and taken so as to be representative of a weekly average value ingested by consumers and that takes account of the occurrence of peak levels that may cause adverse effects on human health.

Note 3 All appropriate measures shall be taken to reduce the concentration of lead in water intended for human consumption as much as possible during the period needed to achieve compliance with the parametric value.

When implementing the measures priority shall be progressively given to achieve compliance with that value where lead concentrations in water intended for human consumption are highest.

Note 4 Compliance must be ensured with the conditions that $\frac{[\text{nitrate}]}{50} + \frac{[\text{nitrite}]}{3} \leq 1$, the square brackets signifying the concentrations in mg/l for nitrate (NO₃) and nitrite (NO₂) and the value of 0.10mg/l for nitrites ex water treatment works.

**Note
5**

Only those pesticides which are likely to be present in a given supply require to be monitored.

“Pesticides” means —

- organic insecticides,
- organic herbicides,
- organic fungicides,
- organic nematocides,
- organic acaricides,
- organic algicides,
- organic rodenticides,
- organic slimicides,
- related products (*inter alia*, growth regulators)

and their relevant metabolites, degradation and reaction products.

**Note
6**

The parametric value applies to each individual pesticide. In the case of aldrin, dieldrin, heptachlor and heptachlor epoxide the parametric value is 0.030 µg/l.

**Note
7**

“Pesticides — Total” means the sum of all individual pesticides detected and quantified in the course of the monitoring procedure;

**Note
8**

The specified compounds are—

- benzo(*b*)fluoranthene
- benzo(*k*)fluoranthene
- benzo(*ghi*)perylene
- indeno(1,2,3-*cd*)pyrene.

**Note
9**

The specified compounds are: chloroform, bromoform, dibromochloromethane and bromodichloromethane.

All appropriate measures must be taken to reduce the concentration of trihalomethanes in water intended for human consumption as much as possible during the period needed to achieve compliance with the parametric value.

When implementing the measures to achieve this value, priority must progressively be given to those areas where trihalomethane concentrations in water intended for human consumption are highest

Table C Indicator Parameters

	Parameter	Parametric value	Unit	Comment
29	Aluminium	200	µg/l	
30	Ammonium	0.30	mg/l	
31	Chloride	250	mg/l	Note 1
32	<i>Clostridium perfringens</i> (including spores)	0	number/100 ml	Note 2
33	Colour	Acceptable to consumers and no abnormal change		
34	Conductivity	2,500	µS cm ⁻¹ at 20 ° C	Note 1
35	Hydrogen ion concentration	6.5 and 9.5	pH units	Note 1
36	Iron	200	µg/l	
37	Manganese	50	µg/l	
38	Odour	Acceptable to consumers and no abnormal change		
39	Oxidisability	5.0	mg/l O ₂	Note 3
40	Sulphate	250	mg/l	Note 1
41	Sodium	200	mg/l	
42	Taste	Acceptable to consumers and no abnormal change		
43	Colony count 22 °	No abnormal change		
44	Coliform bacteria	0	number/100 ml	
45	Total organic carbon (TOC)	No abnormal change		Note 4
46	Turbidity	Acceptable to consumers and no abnormal change		Note 5

Radioactivity

	Parameter	Parametric value	Unit	Comments
47	Tritium	100	Bq/l	Notes 6 and 8
48	Total indicative dose	0.10	mSv/year	Notes 7 and 8

Notes

Note 1	The water should not be aggressive.
Note 2	This parameter need not be measured unless the water originates from or is influenced by surface water. In the event of non-compliance with this parametric value, the supply shall be investigated to ensure that there is no potential danger to human health arising from the presence of pathogenic micro-organisms, e.g. cryptosporidium.
Note 3	This parameter need not be measured if the parameter TOC is analysed.
Note 4	This parameter need not be measured for supplies of less than 10,000m ³ a day.
Note 5	In the case of surface water treatment, a parametric value not exceeding 1.0 NTU (nephelometric turbidity units) in the water ex treatment works must be strived for.
Note 6	Monitoring frequencies to be set at a later date in Part 2 of the Schedule.
Note 7	Excluding tritium, potassium-40, radon and radon decay products; monitoring frequencies, monitoring methods and the most relevant locations for monitoring points to be set at a later date in Part 2 of the Schedule.
Note 8	<ul style="list-style-type: none">A. The proposals required by Note 6 on monitoring frequencies, and Note 7 on monitoring frequencies, monitoring methods and the most relevant locations for monitoring points in Part 2 of the Schedule shall be adopted in accordance with the Committee procedure laid down in Article 12 of the Directive.B. Drinking water need not be monitored for tritium or radioactivity to establish total indicative dose where, on the basis of other monitoring carried out, the levels of tritium of the calculated total indicative dose are well below the parametric value.

Part 2 Monitoring

Table A Parameters to be Analysed

1. Check monitoring

The purpose of check monitoring is regularly to provide information on the organoleptic and microbiological quality of the water supplied for human consumption as well as information on the effectiveness of drinking-water treatment (particularly of disinfection) where it is used, in order to determine whether or not water intended for human consumption complies with the relevant parametric values laid down in Part 1 of this Schedule

<p>The following parameters must be subject to check monitoring</p>	<ul style="list-style-type: none"> ▪ Aluminium (Note 1) ▪ Ammonium ▪ Colour ▪ Conductivity ▪ <i>Clostridium perfringens</i> (including spores) (Note 2) ▪ <i>Escherichia coli</i> (<i>E. coli</i>) ▪ Hydrogen ion concentration ▪ Iron (Note 1) ▪ Nitrite (Note 3) ▪ Odour ▪ Taste ▪ Coliform bacteria ▪ Turbidity
<p>Notes</p>	
<p>Note 1</p>	<p>Necessary only when used as flocculant (*).</p>
<p>Note 2</p>	<p>Necessary only if the water originates from or is influenced by surface water (*).</p>
<p>Note 3</p>	<p>Necessary only when chloramination is used as a disinfectant.</p>
<p>(*) In all other cases, the parameters shall be included under audit monitoring.</p>	

2. Audit monitoring

The purpose of audit monitoring is to provide the information necessary to determine whether or not all the parametric values specified in Part 1 of this Schedule are being complied with. All such parameters must be subject to audit monitoring unless it can be established by a supervisory authority, for a period of time to be determined by it, that a parameter is not likely to be present in a given supply in concentrations which could lead to the risk of a breach of the relevant parametric value. This paragraph does not apply to the parameters for radioactivity, which, subject to Notes 6, 7 and 8 in Table C in Part 1 of the Schedule will be monitored in accordance with monitoring requirements adopted under the Committee procedure set out in Article 12 of the Directive.

TABLE B

Minimum frequency of sampling and analyses for water intended for human consumption supplied from a distribution network or from a tanker or used in a food-production undertaking

Samples must be taken at the points of compliance as defined in Regulation 5 to ensure that water intended for human consumption meets the requirements of these Regulations. However, in the case of a distribution network, samples may be taken within the supply zone or at the treatment works for particular parameters if it can be demonstrated that there would be no adverse change to the measured value of the parameters concerned.

Volume of water distributed or produced each day within a supply zone (Notes 1 and 2)m ³	Check monitoring — number of samples per year (Notes 3, 4 and 5)	Audit monitoring — number of samples per year (Notes 3 and 5)
< 10 where water is supplied as part of a commercial or public activity	Note 6	Note 6
>10 ≤ 100	2	Note 6
> 100 ≤ 1,000	4	1
> 1,000 ≤ 10,000	4 + 3 for each 1,000 m ³ /d and part thereof of the total volume	1 + 1 for each 3,300 m ³ /d and part thereof of the total volume
> 10,000 ≤ 100,000		3 + 1 for each 10,000 m ³ /d and part thereof of the total volume
> 100,000		10 + 1 for each 25,000 m ³ /d and part thereof of the total volume

Notes	
Note 1	A supply zone is a geographically defined area within which water intended for human consumption comes from one or more sources and water quality may be considered as being approximately uniform.
Note 2	The volumes are calculated as averages taken over a calendar year. The number of inhabitants in a supply zone may be used instead of the volume of water to determine the minimum frequency, assuming a water consumption of 200 l/day/capita.
Note 3	In the event of intermittent short-term supply the monitoring frequency of water distributed by tankers is to be decided by the sanitary authority concerned.
Note 4	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 1 of the Schedule, and no factor is likely to cause deterioration in the quality of the water, the number of samples specified in Table B of Part 2 of the Schedule may be reduced, and the number of samples taken shall be reduced by not more than 50% (except in the case of a supply where the volume of water distributed or produced each day within a supply zone does not exceed 100m ³).
Note 5	As far as possible, the number of samples should be distributed equally in time and location.
Note 6	To be determined by supervisory authority, subject to any relevant guidance issued by the Agency.

Part 3 Specifications for the Analysis of Parameters

Each laboratory at which samples are analysed must have a system of analytical quality control that is subject from time to time to checking by a person who is not under the control of the laboratory and who is approved by the Agency for that purpose.

Section 1 Parameters for which Methods of Analysis are Specified

The following principles for methods of analysis of microbiological parameters are given either for reference whenever CEN/ISO method is given or for guidance, pending the possible future adoption (in accordance with the Committee procedure laid down in Article 12 of the Directive) of further CEN/ISO international methods for these parameters. Alternative methods may be used, providing the provisions of Regulations 7(8)(a) and 7(8)(b) are adhered to.

Coliform bacteria and *Escherichia coli* (*E.coli*) (ISO 9308-1)

Enterococci (ISO 7899-2)

Clostridium perfringens (including spores)

Membrane filtration followed by anaerobic incubation of the membrane on m-CP agar (Note 1) at $44 \pm 1^\circ\text{C}$ for 21 ± 3 hours. Count opaque yellow colonies that turn pink or red after exposure to ammonium hydroxide vapours for 20 to 30 seconds.

Notes

Note 1: The composition of m-CP agar is—

Basal medium	
Tryptose	30 g
Yeast extract	20g
Sucrose	5 g
L-cysteine hydrochloride	1 g
MgSO ₄ .7H ₂ O	0.1g
Bromocresol purple	40 mg
Agar	15 g
Water	1,000 ml

Dissolve the ingredients of the basal medium, adjust pH to 7.6 and autoclave at 121°C for 15 minutes. Allow the medium to cool and add—

D-cycloserine	400 mg
Polymyxine-B sulphate	25 mg
Indoxyl--D-glucoside to be dissolved in 8 ml sterile water before addition	60 mg
Filter — sterilised 0.5% phenolphthaleindiphosphate solution	20 ml
Filter — sterilised 4.5 % FeCl ₃ .6H ₂ O	2 ml

Section 2 Parameters for which Performance Characteristics are Specified

For the following parameters, the specified performance characteristics are that the method of analysis used must, as a minimum, be capable of measuring concentrations equal to the parametric value with a trueness, precision and limit of detection specified. Whatever the sensitivity of the method of analysis used, the result must be expressed using at least the same number of decimals as for the parametric value considered in Tables B and C in Part 1 of the Schedule.

Parameters	Trueness % of parametric value (Note 1)	Precision % of parametric value (Note 2)	Limit of detection % of parametric value (Note 3)	Conditions	Notes
Acrylamide				To be controlled by product specification	
Aluminium	10	10	10		
Ammonium	10	10	10		
Antimony	25	25	25		
Arsenic	10	10	10		
Benzo(a)pyrene	25	25	25		
Benzene	25	25	25		
Boron	10	10	10		
Bromate	25	25	25		
Cadmium	10	10	10		
Chloride	10	10	10		
Chromium	10	10	10		
Conductivity	10	10	10		
Copper	10	10	10		
Cyanide	10	10	10		Note 4
1,2-dichloroethane	25	25	10		
Epichlorohydrin				To be controlled by product specification	
Fluoride	10	10	10		
Iron	10	10	10		
Lead	10	10	10		
Manganese	10	10	10		
Mercury	20	10	20		
Nickel	10	10	10		
Nitrate	10	10	10		
Nitrite	10	10	10		
Oxidisability	25	25	10		Note 5
Pesticides	25	25	25		Note 6
Polycyclic aromatic hydrocarbons	25	25	25		Note 7
Selenium	10	10	10		
Sodium	10	10	10		
Sulphate	10	10	10		
Tetrachloroethene	25	25	10		Note 8
Trichloroethene	25	25	10		Note 8
Trihalomethanes — Total	25	25	10		Note 7
Vinyl chloride				To be controlled by product specification	

For hydrogen ion concentration the specified performance characteristics are that the method of analysis used must be capable of measuring concentrations equal to the parametric value with a trueness of 0.2 pH unit and a precision of 0.2 pH unit.

Notes

Note 1 (*) Trueness is the systematic error and is the difference between the mean value of the large number of repeated measurements and the true value.

Note 2 (*) Precision is the random error and is usually expressed as the standard deviation (within and between batch) of the spread of results about the mean. Acceptable precision is twice the relative standard deviation.

(*) These terms are further defined in ISO 5725, issued by the ISO.

Note 3 Limit of detection is either:

- three times the relative within batch standard deviation of a natural sample containing a low concentration of the parameter, or
- five times the relative within batch standard deviation of a blank sample.

Note 4 The method should determine total cyanide in all forms.

Note 5 Oxidation should be carried out for 10 minutes at 100°C under acid conditions using permanganate.

Note 6 The performance characteristics apply to each individual pesticide and will depend on the pesticide concerned. The limit of detection may not be achievable for all pesticides at present, but sanitary authorities should strive to achieve this standard.

Note 7 The performance characteristics apply to the individual substances specified at 25% of the parametric value in Part 1 of the Schedule.

Note 8 The performance characteristics apply to the individual substances specified at 50% of the parametric value in Part 1 of the Schedule.

Section 3 Parameters for which no Method of Analysis is Specified

- Colour
- Odour
- Taste
- Total organic carbon
- Turbidity (see note)

Note: For turbidity monitoring in treated surface water the specified performance characteristics are that the method of analysis used must, as a minimum, be capable of measuring concentrations equal to the parametric value with a trueness of 25%, precision of 25% and a 25% limit of detection.

Part 4 Matters to be Specified In Grant of Departure Under Regulation 11

1. The grounds for the departure.
2. The parameter concerned, previous relevant monitoring results, and the maximum permissible value under the departure.
3. The geographical area, the quantity of water supplied each day, the population concerned and whether or not any relevant food-production undertaking would be affected.
4. An appropriate monitoring scheme, with an increased monitoring frequency where necessary.
5. A summary of the plan for the necessary remedial action, including a timetable for the work and an estimate of the cost and provisions for reviewing.
6. The required duration of the departure.