

## SCHEDULE 1

Regulation 5

## PRESCRIBED CONCENTRATIONS AND VALUES

## Wholesomeness

TABLE A

## MICROBIOLOGICAL PARAMETERS

(1) Item	(2) Parameters	(3) Concentration or Value (maximum)	(4) Unit of measurement	(5) Point of Compliance <sup>(1)</sup>
Part I: Directive requirements				
1.	Enterococci	0	number/100ml	Consumers' taps
2.	<i>Escherichia coli (E. coli)</i>	0	number/100ml	Consumers' taps
Part II: National requirements				
1.	Coliform bacteria	0	number/100ml	Service reservoirs <sup>(2)</sup> and water treatment works
2.	<i>Escherichia coli (E. coli)</i>	0	number/100ml	Service reservoirs and water treatment works

(1) Where water is supplied from a tanker see regulation 5(3)(a)

(2) Compliance required as to 95% of samples taken for coliform bacteria from each service reservoir (regulation 5(6)).

TABLE B

## CHEMICAL PARAMETERS

(1) Item	(2) Parameters	(3) Concentration or Value (maximum)	(5) Units of Measurement	(6) Point of compliance
Part I: Directive requirements				
1.	Acrylamide <sup>(1)</sup>	0.10	µg/l	
2.	Antimony	5.0	µg/l	Consumers' taps
3.	Arsenic	10	µg/l	Consumers' taps
4.	Benzene	1.0	µg/l	Consumers' taps
5.	Benzo(a)pyrene	0.010	µg/l	Consumers' taps
6.	Boron	1.0	mg/l	Consumers' taps
7.	Bromate <sup>(2)</sup>	10	µg/l	Consumers' taps
8.	Cadmium	5.0	µg/l	Consumers' taps

*Status: This is the original version (as it was originally made).*

(1) Item	(2) Parameters	(3) Concentration or Value (maximum)	(5) Units of Measurement	(6) Point of compliance
9	Chromium	50	µg/l	Consumers' taps
10	Copper <sup>(3)</sup>	2.0	mg/l	Consumers' taps
11	Cyanide	50	µg/l	Consumers' taps
12	1, 2 dichloroethane	3.0	µg/l	Consumers' taps
13	Epichlorohydrin <sup>(1)</sup>	0.10	µg/l	
14	Fluoride	1.5	mg/l	Consumers' taps
15	Lead <sup>(3)</sup>	10	µg/l	Consumers' taps
16	Mercury	1.0	µg/l	Consumers' taps
17	Nickel <sup>(3)</sup>	20	µg/l	Consumers' taps
18	Nitrate <sup>(4)</sup>	50	mg/l	Consumers' taps
19	Nitrite <sup>(4)</sup>	0.50	mg/l	Consumers' taps
		0.10		Treatment works
20	Pesticides <sup>(5)(6)</sup> Aldrin Dieldrin Heptachlor Heptachlor epoxide	0.030	µg/l	Consumers' taps
	other pesticides <sup>(5)(6)</sup>	0.10	µg/l	Consumers' taps
21	Pesticides: Total <sup>(7)</sup>	0.50	µg/l	Consumers' taps
22	Polycyclic aromatic hydrocarbons <sup>(8)</sup>	0.10	µg/l	Consumers' taps
23	Selenium	10	µg/l	Consumers' taps
24	Tetrachloroethene and Trichloroethene <sup>(9)</sup>	10	µg/l	Consumers' taps
25	Trihalomethanes: Total <sup>(10)</sup>	100	µg/l	Consumers' taps
26	Vinyl chloride <sup>(1)</sup>	0.50	µg/l	
<b>Part II: National requirements</b>				
1.	Aluminium	200	µg/l	Consumers' taps
2.	Colour	20	mg/l Pt/Co	Consumers' taps
3.	Iron	200	µg/l	Consumers' taps

(1) Item	(2) Parameters	(3) Concentration or Value (maximum)	(5) Units of Measurement	(6) Point of compliance
4.	Manganese	50	µg/l	Consumers' taps
5.	Odour	Acceptable to consumers and no abnormal change		Consumers' taps
6.	Sodium	200	mg/l	Consumers' taps
7.	Taste	Acceptable to consumers and no abnormal change		Consumers' taps
8.	Tetrachloromethane	3	µg/l	Consumers' taps
9.	Turbidity	4	NTU	Consumers' taps

- (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. This is controlled by product specification.
- (2) Where possible, without compromising disinfection, a water undertaker (in relation to a supply of water for human consumption purposes) must strive for a lower value.
- (3) See also regulation 8(5).
- (4) See also regulation 5(3)(d).
- (5) See the definition of "pesticides and related products" in regulation 2.
- (6) The parametric value applies to each individual. "other pesticide" means a pesticide other than aldrin, dieldrin, heptachlor and heptachlor epoxide.
- (7) "Pesticides: Total" means the sum of the concentrations of the individual pesticides detected and quantified in the monitoring process.
- (8) The specified compounds are benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(ghi)perylene, indeno(1,2,3-cd)pyrene and the parametric value applies to the sum of the concentrations of the individual compounds detected and quantified in the monitoring process.
- (9) The parametric value applies to the sum of the concentrations of the individual compounds detected and quantified in the monitoring process.
- (10) The specified compounds are chloroform, bromoform, dibromochloromethane, bromodichloromethane and the parametric value applies to the sum of the concentrations of the individual compounds detected and quantified in the monitoring process.

**Status:** This is the original version (as it was originally made).

## SCHEDULE 2

Regulation 2 and 5

## INDICATOR PARAMETERS

(1) Item	(2) Parameters	(3) Specification Concentration or Value (maximum unless otherwise stated) or State	(4) Units of Measurement	(5) Point of monitoring
1	Ammonium	0.50	mg/l	Consumers' taps
2	Chloride <sup>(1)(2)</sup>	250	mg/l	Supply point
3	<i>Clostridium perfringens</i> (including spores) <sup>(1)</sup>	0	Number/100ml	Supply point
4	Coliform bacteria	0	Number/100ml	Consumers' taps
5	Colony counts	No abnormal change	Number/1ml at 22°C Number/1ml at 37°C	Consumers' taps, service reservoirs and treatment works
6	Conductivity <sup>(1)(2)</sup>	2500	µS/cm at 20°C	Supply point
7	Hydrogen ion <sup>(2)</sup>	9.5 6.5 (minimum)	pH units	Consumers' taps
8	Radon radioactivity <sup>(1)(3)(6)</sup> (for	100	Bq/l	Supply point
9	Sulphate <sup>(1)(2)</sup>	250	mg/l	Supply point
10	Indicative dose (for radioactivity) <sup>(1)(4)(6)(7)</sup>	0.10	mSv	Supply point
11	Total organic carbon (TOC) <sup>(1)</sup>	No abnormal change	mg/l	Supply point
12	Tritium radioactivity <sup>(1)(5)(6)</sup> (for	100	Bq/l	Supply point
13	Turbidity	1	NTU	Treatment works

(1) May be monitored from samples of water leaving treatment works or other supply point, as no significant change during distribution.

(2) The water should not be aggressive.

(3) Where radon concentrations exceed 1000Bq/l, remedial action must be carried out on radiological protection grounds without further consideration.

(4) Excluding tritium, potassium-40, radon and radon decay products.

(5) Elevated levels of tritium may indicate the presence of other artificial radionuclides. If the tritium concentration exceeds its parametric value, an analysis of the presence of other radionuclides is required.

(6) Where treatment to reduce the level of radionuclides in water intended for human consumption has been taken, monitoring must be carried out to ensure the continued efficacy of the treatment.

(7) If the gross alpha activity exceeds 0.1Bq/l or gross beta activity exceeds 1.0Bq/l, analysis for specific radionuclides is required.

## SCHEDULE 3

Regulation 6

## MONITORING PROGRAMMES

- 1.—(1) A monitoring programme established under Part 4 of these Regulations must—
- (a) verify that—
    - (i) the measures in place to control risks to human health throughout the water supply chain (from the catchment area through abstraction, treatment and storage to distribution) are working effectively; and
    - (ii) water at the point of compliance is wholesome;
  - (b) provide information on the quality of water supplied to—
    - (i) demonstrate whether or not the water complies with prescribed concentrations and values for parameters in Schedule 1;
    - (ii) determine the organoleptic and microbiological quality of the water; and
    - (iii) establish the effectiveness of the treatment of the water, particularly of disinfection where it is used.
  - (c) identify the most appropriate means of mitigating any risk to human health; and
  - (d) have regard to Part 5.
- (2) A monitoring programme must consist of either—
- (a) the collection and analysis of discrete water samples; or
  - (b) measurement recorded by a continuous monitoring process; or
  - (c) a combination of both of the methods described in sub-paragraphs (a) and (b).
- (3) In addition, monitoring programmes may consist of—
- (a) inspections of records of the functionality and maintenance status of equipment; and/or
  - (b) inspections of the catchment area, water abstraction, treatment, storage and distribution infrastructure.
- (4) The monitoring programme may be based on a risk assessment as set out in regulation 30.
- (5) When choosing appropriate parameters and other micro-organisms, parasites or substances for monitoring programmes, local conditions for each water supply system must be taken into consideration.

TABLE 1

## PARAMETERS AND CIRCUMSTANCES FOR GROUP A MONITORING

<i>(1) Item</i>	<i>(2) Parameter</i>	<i>(3) Circumstances</i>
1	Aluminium	If used as water treatment chemicals or where the water originates from, or is influenced by, surface waters
2	Ammonium	Where chloramination is practised
3	Coliform bacteria	In all supplies
4	Colony Counts	In all supplies
5	Colour	In all supplies

(1) A supply which consists of both groundwater and surface water is deemed to be a supply which consists only of surface water.

**Status:** This is the original version (as it was originally made).

(1) Item	(2) Parameter	(3) Circumstances
6	Conductivity	In all supplies
7	Disinfectant residual	When disinfection treatment is practised
8	<i>Escherichia coli</i> ( <i>E. coli</i> )	In all supplies
9	Indicative Dose	Where there is treatment in place to reduce the level of radionuclides in water intended for human consumption.
10	Iron <sup>(1)</sup>	If used as water treatment chemicals or where the water originates from, or is influenced by, surface waters
11	Manganese <sup>(1)</sup>	Where the water originates from, or is influenced by, surface waters
12	Nitrate	Where chloramination is practised
13	Nitrite	Where chloramination is practised
14	Odour	In all supplies
15	pH (Hydrogen ion)	In all supplies
16	Radon	Where there is treatment in place to reduce the level of radionuclides in water intended for human consumption.
17	Taste	In all supplies
18	Tritium	Where there is treatment in place to reduce the level of radionuclides in water intended for human consumption.
19	Turbidity	In all supplies

(1) A supply which consists of both groundwater and surface water is deemed to be a supply which consists only of surface water.

**TABLE 2**

**Annual Sampling Frequencies: Water Supply Zones**

This table sets out the annual sampling frequencies for all the substances and parameters in column 1. These are determined for each water supply zone according to its estimated population (column 2).

**Status:** This is the original version (as it was originally made).

(1) Substances and parameters subject to monitoring	(2) Estimated population of water supply zone <sup>(1)</sup>	(3) Number of samples per year
<b>Group A monitoring</b>		
<i>Escherichia coli</i> ( <i>E. coli</i> )	< 100	4
Coliform bacteria	≥ 100	12 per 5,000 population <sup>(1)</sup>
Residual disinfectant		
Aluminium	<100	2
Ammonium	100–4,999	4
Colony counts	5,000–9,999	12
Colour		
Conductivity <sup>(2)</sup>	10,000–29,999	24
Hydrogen ion	30,000–49,999	36
Iron	50,000–79,999	52
Manganese		
Nitrate <sup>(3)</sup>	80,000–100,000	76
Nitrite <sup>(3)</sup>		
Odour		
Taste		
Turbidity		
<b>Group B monitoring</b>		
Aluminium	<100	1
Antimony	100–4,999	4
Arsenic	5,000–100,000	8
Benzene <sup>(2)</sup>		
Benzo(a)pyrene		
Boron <sup>(2)</sup>		
Bromate <sup>(4)</sup>		

(1) Where the population is not an exact multiple of 5,000, the population figure should be rounded up to the nearest multiple of 5,000.

(2) Sampling for these parameters may be within water supply zones or at supply points as specified in Table 3, subject to notes (5) and (6) below.

(3) Group A monitoring in water supply zones is required only where chloramination is practised. In other circumstances Group B monitoring is required.

(4) Group B monitoring in water supply zones is required only where sodium hypochlorite is added after water has left the treatment works. In other circumstances, Group B monitoring is required at supply points.

(5) To monitor for indicative dose (for radioactivity).

(6) In the event that a single sample is taken in a year, a further sample should be taken if there is any change in relation to that supply that could affect the concentration of radionuclides in the water supply.

**Status:** This is the original version (as it was originally made).

(1) Substances and parameters subject to monitoring	(2) Estimated population of water supply zone <sup>(1)</sup>	(3) Number of samples per year
Cadmium		
Chromium		
<i>Clostridium perfringens</i> (including spores)		
Copper		
Cyanide <sup>(2)</sup>		
1,2 dichloroethane <sup>(2)</sup>		
Enterococci		
Fluoride <sup>(2)</sup>		
Gross alpha <sup>(2)(5)</sup>		
Gross beta <sup>(2)(5)</sup>		
Iron		
Lead		
Manganese		
Mercury <sup>(2)</sup>		
Nickel		
Nitrate <sup>(3)</sup>		
Nitrite <sup>(3)</sup>		
Pesticides and related products <sup>(2)</sup>		
Polycyclic aromatic hydrocarbons		
Radon <sup>(2)(6)</sup>		
Selenium		
Sodium		
Trichloroethene/		

- (1) Where the population is not an exact multiple of 5,000, the population figure should be rounded up to the nearest multiple of 5,000.
- (2) Sampling for these parameters may be within water supply zones or at supply points as specified in Table 3, subject to notes (5) and (6) below.
- (3) Group A monitoring in water supply zones is required only where chloramination is practised. In other circumstances Group B monitoring is required.
- (4) Group B monitoring in water supply zones is required only where sodium hypochlorite is added after water has left the treatment works. In other circumstances, Group B monitoring is required at supply points.
- (5) To monitor for indicative dose (for radioactivity).
- (6) In the event that a single sample is taken in a year, a further sample should be taken if there is any change in relation to that supply that could affect the concentration of radionuclides in the water supply.



(1) Substances and parameters subject to monitoring	(2) Estimated population of water supply zone <sup>(1)</sup>	(3) Number of samples per year
Tetrachloroethene <sup>(2)</sup>		
Tetrachloromethane <sup>(2)</sup>		
Trihalomethanes		
Chloride <sup>(2)</sup>		
Sulphate <sup>(2)</sup>		
Total organic carbon <sup>(2)</sup>		
Tritium <sup>(2)</sup>		

- (1) Where the population is not an exact multiple of 5,000, the population figure should be rounded up to the nearest multiple of 5,000.
- (2) Sampling for these parameters may be within water supply zones or at supply points as specified in Table 3, subject to notes (5) and (6) below.
- (3) Group A monitoring in water supply zones is required only where chloramination is practised. In other circumstances Group B monitoring is required.
- (4) Group B monitoring in water supply zones is required only where sodium hypochlorite is added after water has left the treatment works. In other circumstances, Group B monitoring is required at supply points.
- (5) To monitor for indicative dose (for radioactivity).
- (6) In the event that a single sample is taken in a year, a further sample should be taken if there is any change in relation to that supply that could affect the concentration of radionuclides in the water supply.

**TABLE 3****Annual Sampling Frequencies: Treatment Works or Supply Points**

Sampling is at treatment works for the substances and parameters shown in column (1) of the Table as items (1) to (6) and at supply points for the other substances and parameters, except nitrite subject to notes 2 and 3 to the Table below.

This table sets out the annual sampling frequencies for all the substances and parameters in column 2 at treatment works or supply points. The frequencies are determined according to the volume of water supplied at each treatment works or supply point (column 3).

(1) Item	(2) Substances and parameters	(3) Volume of water supplied m <sup>3</sup> /d <sup>(1)</sup>	(4) Number of samples per year <sup>(2)</sup>
1	<i>Escherichia coli</i> ( <i>E. coli</i> )	<20	4
2	Coliform bacteria	20-1,999	52
3	Colony counts	2,000-5,999	104

- (1) The water undertaker may use the number of inhabitants in a supply zone instead of the volume of water to determine the minimum frequency, assuming a water consumption of 200 l/day/capita.
- (2) The volumes are calculated as averages taken over a calendar year.
- (3) Sampling at treatment works when chloramination is practised.
- (4) Sampling at treatment works when chloramination is not practised.
- (5) Group B monitoring at supply points is required only where sodium hypochlorite is not added after water has left the treatment works. In other circumstances, Group B monitoring is required in water supply zones
- (6) To monitor for indicative dose (for radioactivity).

**Status:** This is the original version (as it was originally made).

(1) Item	(2) Substances and parameters	(3) Volume of water supplied m <sup>3</sup> /d <sup>(1)</sup>	(4) Number of samples per year <sup>(2)</sup>
4	Nitrite <sup>(3)</sup>	6,000-11,999	208
5	Residual disinfectant	≥ 12,000	365
6	Turbidity		
<b>Group A monitoring</b>			
7	Conductivity	<20	2
		20-999	4
		1,000-1,999	12
		2,000-5,999	24
		6,000-9,999	36
		10,000-15,999	52
		16,000-32,999	104
		33,000-49,999	156
		50,000-67,999	208
		68,000-84,999	260
		85,000-101,999	312
		102,000-119,999	365
	120,000-241,999	730	
	242,000-484,999	1,460	
	485,000-728,999	2,190	
<b>Group A monitoring</b>			
8	Gross alpha <sup>(6)</sup>	<20	1
9	Gross beta <sup>(6)</sup>	20-999	4
10	Radon	1,000-49,999	8

(1) The water undertaker may use the number of inhabitants in a supply zone instead of the volume of water to determine the minimum frequency, assuming a water consumption of 200 l/day/capita.

(2) The volumes are calculated as averages taken over a calendar year.

(3) Sampling at treatment works when chloramination is practised.

(4) Sampling at treatment works when chloramination is not practised.

(5) Group B monitoring at supply points is required only where sodium hypochlorite is not added after water has left the treatment works. In other circumstances, Group B monitoring is required in water supply zones

(6) To monitor for indicative dose (for radioactivity).

(1) Item	(2) Substances and parameters	(3) Volume of water supplied m <sup>3</sup> /d <sup>(1)</sup>	(4) Number of samples per year <sup>(2)</sup>
11	Tritium	50,000-89,999	12
		90,000-299,999	24
		300,000-649,999	36
		≥ 650,000	48
<b>Group B monitoring</b>			
12	Benzene	<20	1
13	Boron	20-999	4
14	Bromate <sup>(5)</sup>	1,000-49,999	8
15	Clostridium perfringens (including spores)	50,000-89,999	12
16	Cyanide	90,000-299,999	24
17	1,2,dichloroethane	300,000-649,999	36
18	Fluoride	≥650,000	48
19	Mercury		
20	Nitrite <sup>(4)</sup>		
21	Pesticides and related products		
22	Trichloroethene/ Tetrachloroethene		
23	Tetrachloromethane		
24	Chloride		
25	Sulphate		
26	Total Organic Carbon		
27	Radon		
28	Tritium		
29	Gross alpha <sup>(6)</sup>		

(1) The water undertaker may use the number of inhabitants in a supply zone instead of the volume of water to determine the minimum frequency, assuming a water consumption of 200 l/day/capita.

(2) The volumes are calculated as averages taken over a calendar year.

(3) Sampling at treatment works when chloramination is practised.

(4) Sampling at treatment works when chloramination is not practised.

(5) Group B monitoring at supply points is required only where sodium hypochlorite is not added after water has left the treatment works. In other circumstances, Group B monitoring is required in water supply zones

(6) To monitor for indicative dose (for radioactivity).

**Status:** This is the original version (as it was originally made).

(1) Item	(2) Substances and parameters	(3) Volume of water supplied $m^3/d^{(1)}$	(4) Number of samples per year <sup>(2)</sup>
30	Gross beta <sup>(6)</sup>		

- (1) The water undertaker may use the number of inhabitants in a supply zone instead of the volume of water to determine the minimum frequency, assuming a water consumption of 200 l/day/capita.
- (2) The volumes are calculated as averages taken over a calendar year.
- (3) Sampling at treatment works when chloramination is practised.
- (4) Sampling at treatment works when chloramination is not practised.
- (5) Group B monitoring at supply points is required only where sodium hypochlorite is not added after water has left the treatment works. In other circumstances, Group B monitoring is required in water supply zones
- (6) To monitor for indicative dose (for radioactivity).

## SCHEDULE 4

Regulation 18

## ANALYTICAL METHODOLOGY

## TABLE A

**Parameters for which, subject to regulation 18(12), methods of analysis are prescribed**

(1) Parameter	(2) Method
<i>Clostridium perfringens</i> (including spores)	EN ISO 14189
Coliform bacteria	EN ISO 9308-1 or EN ISO 9308-2
Colony count 22°C-enumeration of culturable microorganisms	EN ISO 6222
Colony count 36°C-enumeration of culturable microorganisms	EN ISO 6222
Enterococci	EN ISO 7899-2
<i>Escherichia coli</i> ( <i>E. coli</i> )	EN ISO 9308-1 or EN ISO 9308-2
<i>Pseudomonas aeruginosa</i>	EN ISO 16266

## TABLE B

**Minimum performance characteristic: “uncertainty of measurement”**

(1) Parameter <sup>(1)</sup>	(2) Uncertainty of measurement (% of parametric value, except pH) <sup>(2)</sup>
Aluminium	25
Ammonium	40
Antimony	40
Arsenic	30
Benzo(a)pyrene <sup>(3)</sup>	50

<i>(1) Parameter<sup>(1)</sup></i>	<i>(2) Uncertainty of measurement (% of parametric value, except pH)<sup>(2)</sup></i>
Benzene	40
Boron	25
Bromate	40
Cadmium	25
Chloride	15
Chromium	30
Conductivity	20
Copper	25
Cyanide <sup>(4)</sup>	30
1,2-dichloroethane	40
Fluoride	20
Hydrogen ion concentration pH (expressed in pH units) <sup>(5)</sup>	0.2
Iron	30
Lead	25
Manganese	30
Mercury	30
Nickel	25
Nitrate	15
Nitrite	20
Oxidisability <sup>(6)</sup>	50
Pesticides <sup>(7)</sup>	30
Polycyclic aromatic hydrocarbons <sup>(8)</sup>	50
Selenium	40
Sodium	15
Sulphate	15
Tetrachloroethene <sup>(9)</sup>	30
Tetrachloromethane	30
Trichloroethene <sup>(9)</sup>	40
Trihalomethanes: total <sup>(8)</sup>	40
Total organic carbon <sup>(10)</sup>	30
Turbidity <sup>(11)</sup>	30

**Status:** This is the original version (as it was originally made).

- (1) Acrylamide, epichlorohydrin and vinyl chloride to be controlled by product specification.
- (2) Uncertainty of measurement is a non-negative parameter characterising the dispersion of the quantity values being attributed to a measurand, based on the information used. The performance criterion for measurement uncertainty ( $k = 2$ ) is the percentage of the parametric value stated in the table or better. Measurement uncertainty must be estimated at the level of the parametric value, unless otherwise specified.
- (3) If the value of uncertainty of measurement cannot be met, the best available technique should be selected (up to 60%).
- (4) The method determines total cyanide in all forms.
- (5) Values for trueness, precision and uncertainty of measurement are expressed in pH units.
- (6) Reference method EN ISO 8467.
- (7) The performance characteristics for individual pesticides are given as an indication. Values for the uncertainty of measurement as low as 30 % can be achieved for several pesticides, higher values up to 80 % may be allowed for a number of pesticides
- (8) The performance characteristics apply to individual substances, specified at 25% of the parametric value in Table B in Schedule 1.
- (9) The performance characteristics apply to individual substances, specified at 50% of the parametric value in Table B in Schedule 1.
- (10) The uncertainty of measurement should be estimated at the level of 3 mg/l of the total organic carbon. CEN 1484 Guidelines for the determination of total organic carbon and dissolved organic carbon must be used.
- (11) The uncertainty of measurement must be estimated at the level of 1.0 NTU (nephelometric turbidity units) in accordance with EN ISO 7027.

**TABLE C**

**Minimum performance characteristics: trueness, precision and limit of detection- may be used until 31 December 2019**

<i>(1) Parameter<sup>(1)</sup></i>	<i>(2) Trueness<sup>(2)</sup></i>	<i>(3) Precision<sup>(3)</sup></i>	<i>(4) Limit of detection<sup>(4)</sup></i>
Aluminium	10	10	10
Ammonium	10	10	10
Antimony	25	25	25
Arsenic	10	10	10
Benzene	25	25	25
Benzo(a)pyrene	25	25	25
Boron	10	10	10
Bromate	25	25	25
Cadmium	10	10	10
Chloride	10	10	10
Chromium	10	10	10
Colour	10	10	10
Conductivity	10	10	10
Copper	10	10	10
Cyanide <sup>(5)</sup>	10	10	10
1,2-dichloroethane	25	25	10

**Status:** This is the original version (as it was originally made).

(1) Parameter <sup>(1)</sup>	(2) Trueness <sup>(2)</sup>	(3) Precision <sup>(3)</sup>	(4) Limit of detection <sup>(4)</sup>
Fluoride	10	10	10
Hydrogen ion concentration pH (expressed in pH units) <sup>(6)</sup>	0.2	0.2	
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 <sup>(7)</sup>	25	25	25
Pesticides <sup>(8)</sup>	25	25	25
Polycyclic aromatic hydrocarbons <sup>(9)</sup>	25	25	25
Selenium	10	10	10
Sodium	10	10	10
Sulphate	10	10	10
Tetrachloroethene <sup>(10)</sup>	25	25	10
Tetrachloromethane	20	20	20
Trichloroethene <sup>(10)</sup>	25	25	10
Trihalomethanes: total <sup>(9)</sup>	25	25	10
Turbidity <sup>(11)</sup>	10	10	10
Turbidity <sup>(12)</sup>	25	25	25

(1) Acrylamide, epichlorohydrin and vinyl chloride to be controlled by product specification.

(2) Trueness is a measure of systematic error, i.e. the difference between the mean value of the large number of repeated measurements and the true value. Further specifications are those set out in ISO 5725.

(3) Precision is a measure of random error and is usually expressed as the standard deviation (within and between batches) of the spread of results from the mean. Acceptable precision is twice the relative standard deviation. This term is further specified in ISO 5725.

(4) Limit of detection is either three times the standard deviation within a batch of a natural sample containing a low concentration of the parameter; or five times the standard deviation of a blank sample (within a batch).

(5) The method determines total cyanide in all forms.

(6) Values for trueness, precision and uncertainty of measurement are expressed in pH units.

(7) Reference method EN ISO 8467 1995.

(8) The performance characteristics for individual pesticides are given as an indication. Values for the uncertainty of measurement as low as 30% can be achieved for several pesticides, higher values up to 80% may be allowed for a number of pesticides

(9) The performance characteristics apply to individual substances, specified at 25% of the parametric value in Table B in Schedule 1.

**Status:** This is the original version (as it was originally made).

- (10) The performance characteristics apply to individual substances, specified at 50% of the parametric value in Table B in Schedule 1.
- (11) The performance characteristics apply to prescribed value 4 NTU.
- (12) The performance characteristics apply to prescribed value 1 NTU for water leaving surface water treatment works.

## SCHEDULE 5

Regulation 8

### MONITORING FOR INDIVIDUAL RADIONUCLIDES

1. A water undertaker may use a screening strategy for gross alpha and gross beta to monitor for the parametric indicator value for indicative dose(1). The recommended screening value for gross alpha is 0.1Bq/l and for gross beta is 1.0Bq/l.

If the gross alpha activity exceeds 0.1Bq/l or the gross beta activity exceeds 1.0Bq/l, analysis for specific radionuclides is required.

The radionuclides to be measured must be based on all relevant information about likely sources of radioactivity.

#### 2. Calculation of the ID

The ID must be calculated from the measured radionuclide concentrations and the dose coefficients laid down in Annex III, Table A of Directive 96/29/Euratom or more recent information recognised by the Department, on the basis of the annual intake of water (730l for adults). Where the following formula is satisfied, it can be assumed that the ID is less than the parametric value if 0.1mSv and no further investigation is required.

$$\sum_{i=1}^n \frac{C_i(\text{obs})}{C_i(\text{der})} \leq 1$$

where

$C_i(\text{obs})$  = observed concentration of radionuclide  $i$

$C_i(\text{der})$  = derived concentration of radionuclide  $i$  (see Table 1)

$n$  – number of radionuclides detected.

**TABLE 1**

#### **Derived concentration for radioactivity in water intended for human consumption<sup>(1)</sup>**

<i>Origin</i>	<i>Radionuclide</i>	<i>Derived concentration<sup>(2)</sup></i>
Natural	U-238 <sup>(3)</sup>	3.0 Bq/l

- (1) This table includes value for the most common natural and artificial radionuclides; these are precise values, calculated for a dose of 0.1mSV, an annual intake of 730 litres and using the dose coefficients laid down in Annex III of Directive 96/29/Euratom; derived concentration for other radionuclides can be calculated on the same basis, and values can be updated on the basis of more recent information recognised by the competent authorities.
- (2) Where appropriate gross beta activity may be replaced by residual beta activity after subtraction of the K-40 concentration.
- (3) This table allows only for the radiological properties of uranium, not for its chemical toxicity.

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(1) Where appropriate gross beta activity may be replaced by residual beta activity after subtraction of the K-40 activity concentration.



**Status:** This is the original version (as it was originally made).

<i>Origin</i>	<i>Radionuclide</i>	<i>Derived concentration<sup>(2)</sup></i>
	U-234 <sup>(3)</sup>	2.8 Bq/l
	Ra-226	0.5 Bq/l
	Ra-228	0.2 Bq/l
	Pb-210	0.2 Bq/l
	Po-210	0.1 Bq/l
Artificial	C-14	240 Bq/l
	Sr-90	4.9 Bq/l
	Pu-239/Pu-240	0.6 Bq/l
	Am-241	0.7 Bq/l
	Co-60	40 Bq/l
	Cs-134	7.2 Bq/l
	Cs-137	11 Bq/l
	I-131	6.2 Bq/l

- (1) This table includes value for the most common natural and artificial radionuclides; these are precise values, calculated for a dose of 0.1mSV, an annual intake of 730 litres and using the dose coefficients laid down in Annex III of Directive 96/29/Euratom; derived concentration for other radionuclides can be calculated on the same basis, and values can be updated on the basis of more recent information recognised by the competent authorities.
- (2) Where appropriate gross beta activity may be replaced by residual beta activity after subtraction of the K-40 concentration.
- (3) This table allows only for the radiological properties of uranium, not for its chemical toxicity.

### 3. Performance characteristics and method of analysis.

For the following parameters and radionuclides, the method of analysis used must, as a minimum be capable of measuring activity concentrations with a limit of detection specified in Table 2 below:

**TABLE 2**

<i>Parameters and radionuclides</i>	<i>Limit of detection<sup>(1)(2)</sup></i>
Tritium <sup>(3)</sup>	10 Bq/l
Radon <sup>(3)</sup>	10 Bq/l
gross alpha activity <sup>(4)</sup>	0.04 Bq/l
gross beta activity <sup>(4)</sup>	0.4 Bq/l
U-238	0.02 Bq/l
U-234	0.02 Bq/l
Ra-226	0.04 Bq/l
Ra-228 <sup>(5)</sup>	0.02 Bq/l
Pb-210	0.02 Bq/l
Po-210	0.01 Bq/l

**Status:** This is the original version (as it was originally made).

<i>Parameters and radionuclides</i>	<i>Limit of detection<sup>(1)(2)</sup></i>
C-14	20 Bq/l
Sr-90	0.4 Bq/l
Pu-239/Pu-240	0.04 Bq/l
Am-241	0.06 Bq/l
Co-60	0.5 Bq/l
Cs-134	0.5 Bq/l
Cs-137	0.5 Bq/l
I-131	0.5 Bq/l

- (1) The limit of detection must be calculated according to the ISO standard 11929: Determination of the characteristic limits (decision threshold, detection limit, and limits of confidence interval) for measurements of ionising radiation– Fundamentals and application, with probabilities of error of 1st and 2nd kind of 0.05 each.
- (2) Measurement uncertainties must be calculated and reported as complete standard uncertainties or as expanded uncertainties with an expansion factor of 1.96 according the ISO Guide for the Expression of Uncertainty in Measurement.
- (3) The limit of detection for tritium and for radon is 10% of its parametric value of 100 Bq/l.
- (4) The limit of detection for gross alpha activity and gross beta activities are 40% of the screening values of 0.1 and 1.0 Bq/l respectively.
- (5) This limit of detection applies only to initial screening for ID for a new water source, if initial checking indicates that is not plausible that Ra-228 exceeds 20% of the derived concentration, the limit of detection may be increased to 0.8 Bq/l for routine Ra-228 nuclide specific measurements until a subsequent re-check is required.

## SCHEDULE 6

Regulation 39

### REVOCATIONS

Revocations coming into operation on the 27th October 2017

<i>No.</i>	<i>Regulations revoked</i>	<i>Extent of revocation</i>
1.	The Water Supply (Water Quality) Regulations (Northern Ireland) 2007	The whole Regulations
2.	The Water Supply (Water Quality) (Amendment) Regulations (NI) 2009	The whole Regulations
3.	The Water Supply (Water Quality) (Amendment) Regulations (NI) 2010	The whole Regulations
4.	The Water Supply (Water Quality) (Amendment) Regulations (NI) 2015	The whole Regulations