

2015 No. 366

WATER AND SEWERAGE

**The Private Water Supplies (Amendment) Regulations
(Northern Ireland) 2015**

Made - - - - *6th November 2015*

Coming into operation - *28th November 2015*

The Department of the Environment, in exercise of the powers conferred by Articles 107(2) and (3) and 118(3) and (4) of the Water and Sewerage Services (Northern Ireland) Order 2006(a) and being a Department designated(b) for the purposes of section 2(2) of the European Communities Act 1972(c) in relation to the environment in exercise of the powers conferred upon it by that section, hereby makes the following regulations:

Citation and commencement

1.—(1) These Regulations may be cited as the Private Water Supplies (Amendment) Regulations (Northern Ireland) 2015 and shall come into operation on 28th November 2015.

(2) The Interpretation Act (Northern Ireland) 1954(d) shall apply to these Regulations as it applies to an Act of the Northern Ireland Assembly.

Amendment of the Private Water Supplies Regulations (Northern Ireland) 2009

2. The Private Water Supplies Regulations (Northern Ireland) 2009(e) are amended in accordance with regulations 3 to 10.

Amendment of Regulation 2

3.—(1) For Regulation 2 substitute—

“2.—(1) The Interpretation Act (Northern Ireland) 1954(f) 54 shall apply to these Regulations as it applies to an Act of Assembly.

(2) In these Regulations—

“the 2006 Order” means the Water and Sewerage Services (Northern Ireland) Order 2006;

“the Appeals Commission” means the Water Appeals Commission for Northern Ireland as established under Part XII of the 2006 Order;

(a) S.I.2006/3336 (N.I. 21)
(b) S.I. 2008/301
(c) 1972 c.68
(d) 1954 c.33 (N.I.)
(e) S.R. 2009 No. 413
(f) 1954 c.33 (NI)

“the Department” means the Department of the Environment;

“district council” means a district council as established under Part I of the Local Government Act (Northern Ireland) 1972(a);

“indicative dose” or “ID” means the committed effective dose for one year of ingestion resulting from all the radionuclides whose presence has been detected in a supply of water intended for human consumption, of natural and artificial origin, but excluding tritium, potassium-40, radon and short-lived radon decay products;

“radioactive substance” means any substance that contains one or more radionuclides the activity or concentration of which cannot be disregarded as far as radiation protection is concerned;

a “responsible person” is—

- (a) the owner or occupier of the land supplied; and
- (b) any other person who exercises powers of management or control in relation to the supply.

“the Public Health Agency” means the Regional Agency for Public Health and Social Well-being as established under Section 12 of the Health and Social Care (Reform) Act (Northern Ireland) 2009(b);

“water intended for human consumption” means:

- (a) all water, either in its original state or after treatment, intended for drinking, cooking, food preparation or other domestic purposes, regardless of its origin and whether it is supplied from a distribution network, a tanker, or in bottles or containers;
- (b) all water used in any food-production undertaking for the manufacture, processing, preservation or marketing of products or substances intended for human consumption unless the competent national authorities are satisfied that the quality of the water cannot affect the wholesomeness of the foodstuff in its finished form.

(3) Any other expressions used in these Regulations have the same meaning as Council Directive 98/83/EC and Council Directive 2013/51/Euratom.”

Amendment of Regulation 7

4. For regulation 7 (Requirement to carry out risk assessment) substitute—

“Requirement to carry out a risk assessment

7.—(1) The Department shall carry out an assessment (“risk assessment”) of the potential risks associated with each private supply to which these Regulations apply (other than a supply under regulation 11) and subsequently review and update that risk assessment every five years (or earlier if it considers that the existing risk assessment is inadequate).

(2) The Department shall carry out a risk assessment, where the private supply is a new supply and is to be used for the first time, within six months of that supply being monitored under regulations 9 and 10.

(3) The Department may enter into an arrangement for any person to carry out a risk assessment on its behalf for the purposes of this regulation.

(4) The Department may provide for any such person to be reimbursed.

(5) The Department shall not enter into an arrangement under paragraph (3) unless it is satisfied that the task will be carried out promptly by a person competent to perform it.”

5. After regulation 7 (Requirement to carry out risk assessment), insert—

(a) 1972 c.9 (NI)
(b) 2009 c.1 (NI)

“(7A) The Department shall carry out a representative survey in accordance with the following to determine the likelihood of a supply failing the radon maximum concentration or value specified in Schedule 1 Part 2;

A representative survey must be designed in such a way—

- (a) as to be capable of determining the scale and nature of likely exposures to radon in water intended for human consumption originating from different types of groundwater sources and wells in different geological areas; and
- (b) that underlying parameters, especially the geology and hydrology of the area, radioactivity of rock or soil, and well type, can be identified and used to direct further action to areas of likely high exposure.”

Amendment of Regulation 8 Monitoring

6. Substitute Regulation 8 (Monitoring)—

“8.—(1) The Department shall monitor all private supplies in accordance with this Part.

(2) Samples required to be taken in accordance with this Part shall be taken at regular intervals so as to be representative of the quality of the water consumed throughout the year”

Amendment of Schedule 1 Concentrations and Values

7. For Schedule 1 Part 2 (Indicator Parameters) substitute—

“PART 2

Indicator Parameters

<i>Parameters</i>	<i>Maximum concentration or value or state (unless otherwise stated)</i>	<i>Units of measurement</i>
Ammonium Chloride ⁽¹⁾	0.50 250	mgNH ₄ /l mgCl/l
<i>Clostridium perfringens</i> (including spores)	0	Number/100ml
Coliform bacteria Colony counts	0 No abnormal change	Number/100ml Number/1ml at 22°C
Conductivity ⁽¹⁾	2,500	µS/cm at 20°C
Hydrogen ion ⁽¹⁾	9.5 6.5 (minimum)	pH value pH value
Sulphate ⁽¹⁾	250	mgSO ₄ /l
Indicative dose (for radioactivity) ^{(2) (3) (4)}	0.10	mSv/year
Radon (for radioactivity) ^{(3) (5)}	100	Bq/l
Total organic carbon(TOC)	No abnormal change	mgC/l
Tritium (for radioactivity) ^{(3) (6)}	100	Bq/l
Turbidity ⁽⁷⁾	1	NTU

⁽¹⁾ The water should not be aggressive.

⁽²⁾ Excluding tritium, potassium-40, radon and radon decay products.

(3) Where treatment to reduce the level of radionuclides in water intended for human consumption has been taken, monitoring must be carried out under Schedule 3 Part 1 to ensure the continued efficacy of treatment.

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

(5) Remedial action is deemed to be justified on radiological protection grounds, without further consideration, where radon concentrations exceed 1000Bq/l.

(6) If tritium concentration exceeds its parametric value an investigation (which may include analysis) of the presence of other artificial radionuclides must be carried out.

(7) Only in the case of surface water treatment where the parametric value should be strived for the water ex-treatment works.”

Amendment of Schedule 2 Requirements for Risk Assessment

8. Schedule 2 (Requirements for Risk Assessment) ceases to have effect.

Amendment of Schedule 3 Monitoring

9. For Schedule 3 Part 1 (Check Monitoring) substitute—

“PART 1

Check Monitoring

Sampling

1. Check monitoring means sampling for each parameter listed in Table A in the circumstances listed in that table.

Table A

Check Monitoring

<i>Parameter</i>	<i>Circumstances</i>
Aluminium	When used as flocculant or where the water originates from, or is influenced by, surface waters
Ammonium	In all supplies
<i>Clostridium perfringens</i> (including spores)	Where the water originates from, or is influenced by, surface waters
Coliform bacteria	In all supplies
Colour	In all supplies
Conductivity	In all supplies
<i>Escherichia coli</i> (<i>E. coli</i>)	In all supplies
Hydrogen ion	In all supplies
ID	Where treatment to reduce the level of radionuclides in water intended for human consumption has been taken
Iron	When used as flocculant or where the water originates from, or is influenced by, surface waters
Manganese	Where the water originates from, or is influenced by, surface waters
Nitrate	When chloramination is practised
Nitrite	When chloramination is practised

Odour	In all supplies
Radon	Where treatment to reduce the level of radionuclides in water intended for human consumption has been taken
Taste	In all supplies
Tritium	Where treatment to reduce the level of radionuclides in water intended for human consumption has been taken
Turbidity	In all supplies
Disinfectant residual	When disinfection treatment is practised

Frequency of sampling

2.—(1) Sampling for non-radioactive substances shall be carried out at frequencies specified in table B of this Schedule and sampling for radioactive substances shall be carried out at frequencies specified in table B1 of this Schedule.

TABLE B

Sampling frequency for check monitoring

<i>Volume m³/day</i>	<i>Sampling frequency per year</i>
≤10	1
> 10 ≤ 100	2
> 100 ≤ 1,000	4
> 1,000 ≤ 2,000	10
> 2,000 ≤ 3,000	13
> 3,000 ≤ 4,000	16
> 4,000 ≤ 5,000	19
> 5,000 ≤ 6,000	22
> 6,000 ≤ 7,000	25
> 7,000 ≤ 8,000	28
> 8,000 ≤ 9,000	31
> 9,000 ≤ 10,000	34
> 10,000	4 + 3 for each 1,000 m ³ /day of the total volume (rounding up to the nearest multiple of 1,000 m ³ /day)

TABLE B1

<i>Volume m³ /day</i>	<i>Sampling frequency per year</i>
≤ 1000	1
> 1000 ≤ 10,000	1 + 1 for each 3,300 m ³ /day of the total volume (rounding up to the nearest multiple of 3,300 m ³ /day)
> 10,000 ≤ 100,000	3 + 1 for each 10,000 m ³ /day of the total volume (rounding up to the nearest multiple of 10,000 m ³ /day)
> 100,000	10 + 1 for each 25,000 m ³ /day of the total volume (rounding up to the nearest multiple of 25,000 m ³ /day)

(2) The Department may reduce the frequency of sampling for a parameter within Table B to a frequency not less than half if—

- (a) it is of the opinion that the quality of water in the supply is unlikely to deteriorate;
- (b) in the case of hydrogen ion the parameter has had a pH value that is not less than 6.5 and not more than 9.5; and
- (c) in all other cases, in each of two successive years the results of samples taken for the purposes of monitoring the parameter in question are constant and significantly lower than the concentrations or values laid down in Schedule 1.

(3) The Department may set a higher frequency for any parameter if it considers it appropriate taking into account the findings of any risk assessment, and in addition may monitor anything else identified in the risk assessment.”

10. After paragraph 3 (2) of Part 2 of Schedule 3, insert—

“(2A) The Department shall communicate to the European Commission notice along with supporting evidence of the decision to exclude any radioactive parameters listed in Schedule 1 from the audit monitoring of a private water supply.”

Amendment of Schedule 4 Sampling and Analysis

11. For Schedule 4 After Part 2 (Analytical Methods), insert—

“PART 3

Monitoring for Indicative Dose and Analytical Performance Characteristics

Monitoring for Compliance with the ID

6. Screening strategy for gross alpha activity and gross beta activity (a) may be used to monitor for the parametric indicator value for indicative dose.

If the gross alpha activity is less than 0.1 Bq/l and the gross beta activity is less than 1.0 Bq/l, it may be assumed that the total indicative dose is less than 0.1 mSv and radiological investigation is not needed unless it is known from other sources of information that specific radionuclides are present in water that are liable to cause an excess of 0.1 mSv.

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.

Calculation of the ID

7. 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(b) or more recent information recognised by the Department, on the basis of the annual intake of water (730 l for adults).

Where the following formula is satisfied, it can be assumed that the ID is less than the parametric value of 0.1mSv and no further investigation is required.

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

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

(b) O.J. No. L159, 29.6.96, P. 27

where

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

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

n = number of radionuclides detected.

Table C

Derived concentrations for radioactivity in water intended for human consumption⁽¹⁾		
<i>Origin</i>	<i>Nuclide</i>	<i>Derived concentration</i>
Natural	U-238 ⁽²⁾	3.0 Bq/l
	U-234 ⁽²⁾	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
Artificial	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 values for the most common natural and artificial radionuclides; these are precise values, calculated for a dose of 0.1mSV, an annual intake of 730 litre and using the dose coefficients laid down in Annex III Table A 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 Department.

⁽²⁾ This table allows only for the radiological properties of uranium, not for its chemical toxicity.

Performance characteristics and method of analysis.

8. 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 below in Table D:

Table D

<i>Parameters and radionuclides</i>	<i>Limit of detection^{(1) (2)}</i>
Tritium	10 Bg/l ⁽³⁾
Radon	10 Bg/l ⁽³⁾
gross alpha activity	0.04 Bg/l ⁽⁴⁾
gross beta activity	0.4 Bg/l ⁽⁴⁾
U-238	0.02 Bg/l
U-234	0.02 Bg/l
Ra-226	0.04 Bg/l
Ra-228	0.02 Bg/l ⁽⁵⁾
Pb-210	0.02 Bg/l
Po-210	0.01 Bg/l
C-14	20 Bg/l
Sr-90	0.4 Bg/l
Pu-239/Pu-240	0.04 Bg/l

Am-241	0.06 Bg/l
Co-60	0.5 Bg/l
Cs-134	0.5 Bg/l
Cs-137	0.5 Bg/l
I-131	0.5 Bg/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 the 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 standard uncertainties with an expansion factor of 1.96 according to 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 Bg/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 Bg/l respectively.

(5) This limit of detection applies only to initial screening for ID for a new water source, if initial checking indicates that it is not plausible that Ra-228 exceeds 20% of the derived concentration, the limit of detection may be increased to 0.08 Bg/l for routine Ra-228 nuclide specific measurements until a subsequent re-check is required.”

Sealed with the Official Seal of the Department of the Environment on 6th November 2015



Dave Foster

A senior officer of the Department of the Environment

EXPLANATORY NOTE

(This note is not part of the Regulations)

These Regulations amend the Private Water Supplies Regulations (Northern Ireland) 2009 (“the Principal Regulations”) with the aim of further protecting human health from the adverse effects of any contamination of water supplied for human consumption purposes. In particular, they make further provision to implement Council Directive 2013/51/Euratom laying down requirements for the protection of the health of the general public with regard to radioactive substances in water intended for human consumption. The Principal Regulations are amended in the following ways.

Regulation 2 is amended to include definitions and expressions.

Regulation 7 is amended to include details on the requirements of a risk assessment.

Regulation 7A is inserted to include radon survey requirements.

Regulation 8 is amended to include that required sampling is distributed equally in time.

Schedule 1 is amended to include Radon to the list of indicator parameters and to set a Radon parametric value of 100 Bq/l.

Schedule 2 ceases to have effect.

Schedule 3 is amended to include check monitoring for ID, Radon and Tritium and to require the Department to communicate the decision to exclude any radioactive parameters from monitoring to the European Commission along with supporting evidence for the decision.

Schedule 4 is amended to include details for monitoring of indicative dose using gross alpha and gross beta as a screening strategy and to outline the additional analysis required if either gross alpha or gross beta is found to exceed the screening level. It also sets minimum limits of detection for analysis of a range of radionuclides.

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