
WELSH STATUTORY INSTRUMENTS

2016 No. 410 (W. 128)

WATER, ENGLAND AND WALES

**The Water Supply (Water Quality)
(Amendment) Regulations 2016**

<i>Made</i>	- - - -	<i>21 March 2016</i>
<i>Laid before Parliament</i>		<i>23 March 2016</i>
<i>Laid before National Assembly for Wales</i>	- - - -	<i>23 March 2016</i>
<i>Coming into force</i>	- -	<i>14 April 2016</i>

The Welsh Ministers are designated⁽¹⁾ for the purposes of section 2(2) of the European Communities Act 1972⁽²⁾ in relation to the quality of water intended for domestic purposes or for use in a food production undertaking.

The Welsh Ministers make these Regulations in exercise of the powers conferred upon them by section 2(2) of the European Communities Act 1972 and section 67, 69, 77(3) and (4) and 213(2) of the Water Industry Act 1991⁽³⁾:

(1) [S.I. 2004/3328](#), as amended by [S.I. 2005/850](#), [S.I. 2007/1349](#), [S.I. 2008/301](#), [S.I. 2012/1759](#) and [S.I. 2014/1362](#).; the functions conferred on the National Assembly for Wales by means of that Order are now exercisable by the Welsh Ministers by virtue of section 162 of, and paragraphs 28 and 30 of Schedule 11 to, the Government of Wales Act 2006 ([c.32](#)).

(2) [1972 c.68](#).

(3) [1991 c.56](#); the functions of the Secretary of State under section 67 were transferred to the National Assembly for Wales (“the Assembly”) (a) for the making of regulations concerning water supplied using the supply system of a water undertaker, in relation to the supply system of any water undertaker whose area is wholly or mainly in Wales; and (b) for the making of regulations concerning water supplied other than using the supply system of a water undertaker, in relation to Wales, by article 2 of, and Schedule 1 to, the National Assembly for Wales (Transfer of Functions) Order 1999 ([S.I. 1999/672](#)) (“the 1999 Order”); the functions of the Secretary of State under section 69 (as amended) of that Act were, in relation to any water undertaker whose area is wholly or mainly in Wales and any licensed water supplier so far as relating to licensed activities using the supply system of any such water undertaker, transferred to the Assembly by the same provisions of the 1999 Order; the functions of the Secretary of State under section 77 of that Act were transferred to the Assembly in relation to Wales by the same provision of the 1999 Order; the functions of the Secretary of State under section 213 (as amended) of that Act were made exercisable by the Assembly to the same extent as the powers to which that section applies were made exercisable by the Assembly by virtue of the same provisions of the 1999 Order: *see* the entry in Schedule 1 to the 1999 Order for the Water Industry Act 1991 as substituted by paragraph (e) of Schedule 3 to the National Assembly for Wales (Transfer of Functions) Order 2000 ([S.I. 2000/253](#)) and amended by section 100(2) of the Water Act 2003 ([c.37](#)); there are other amending instruments but none are relevant.

References in Schedule 1 to the 1999 Order to specific sections of the Water Industry Act 1991 are treated by section 100(6) of the Water Act 2003 as referring to those sections as amended by the Water Act 2003. *See* section 219 (as amended) of the Water Industry Act 1991 for the definitions of “supply system” and “licensed water supplier”. By virtue of section 162 of, and paragraphs 28 and 30 of Schedule 11 to, the Government of Wales Act 2006, the functions conferred on the Assembly are now exercisable by the Welsh Ministers.

Title, commencement and interpretation

1.—(1) The title of these Regulations is the Water Supply (Water Quality) (Amendment) Regulations 2016 and they come into force on 14 April 2016.

(2) In these Regulations, “the 2010 Regulations” means the Water Supply (Water Quality) Regulations 2010(4).

Amendments to regulation 6 (monitoring: general provisions)

2. In regulation 6 of the 2010 Regulations—

- (a) in paragraph (6), omit the words “and, subject to paragraph (7), the parameters relevant to radioactivity (total indicative dose and tritium),”; and
- (b) omit paragraphs (7) to (9).

New regulation 6A (monitoring: radioactive substances)

3. After regulation 6 of the 2010 Regulations, insert—

“Monitoring: radioactive substances

6A.—(1) A water undertaker must monitor each water supply zone within its area of supply for the parameters contained in the radioactive substances parameters table in accordance with this regulation and Schedule 3A.

(2) In this regulation and Schedule 3A, “the radioactive substances parameters table” means the table in Schedule 2A.

(3) The Welsh Ministers may, by notice to a water undertaker, confirm that they have established (on the basis of representative surveys, monitoring data or other reliable information) that, for a period specified in the notice, one or more of the parameters listed in the radioactive substances parameters table is not likely to be present in a water supply zone for human consumption purposes in concentrations which could exceed the prescribed concentration or value for the relevant parameter in that table.

(4) Where a notice is given to a water undertaker under paragraph (3), the water undertaker is not required to monitor the water supply zone for the parameter (or parameters) during the period specified in the notice.

(5) Where paragraph (3) applies, the Welsh Ministers must communicate the grounds for their decision to the European Commission with the necessary documentation supporting the decision (including the findings of any surveys, monitoring or investigations carried out).

(6) Where a notice has previously been given under paragraph (3) and the Welsh Ministers are no longer satisfied that the levels of radon, tritium or the calculated ID in relation to the water supply zone specified in the notice will remain below the respective parametric values in the radioactive substances parameters table, the Welsh Ministers must inform the water undertaker in writing accordingly, and the exemption under paragraph (4) will no longer apply.

(7) In case of naturally occurring radionuclides, where previous monitoring results show that the concentration of radionuclides in the supply is stable, the minimum sampling and analysis frequencies are to be decided by the Welsh Ministers, and confirmed by notice in writing to the water undertaker, taking into consideration the risk to human health.

(4) S.I. 2010/994 (W. 99) amended by S.I. 2011/14, 2013/235 and 2013/1387.

(8) The additional requirements in Schedule 5 apply to monitoring for compliance with the indicative dose parameter.”

Amendment of Schedule 2 (indicator parameters)

- 4. In the table in Schedule 2 to the 2010 Regulations, omit—
 - (a) the entry in relation to total indicative dose (for radioactivity);
 - (b) the entry in relation to tritium (for radioactivity); and
 - (c) note (ii).

Insertion of new Schedule 2A (radioactive substances parameters)

5. After Schedule 2 (indicator parameters) to the 2010 Regulations, insert the schedule set out in Schedule 1 to these Regulations.

Amendment of Schedule 3 (monitoring)

- 6. In Schedule 3 to the 2010 Regulations—
 - (a) in Table 2 (annual sampling frequencies: water supply zones) under the “subject to audit monitoring” heading—
 - (i) insert in the appropriate place —

“Radon ^(b) ”				
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- (ii) for the entries relating to gross alpha and gross beta, substitute—

“Indicative dose (for radioactivity) ^(b) ”				
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; and

- (iii) omit note (v); and

- (b) in Table 3 (annual sampling frequencies: treatment works or supply points) under the “subject to audit monitoring” heading—

- (i) insert in the appropriate place—

“17A	Radon”			
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- (ii) for the entries relating to gross alpha and gross beta, substitute—

“Indicative dose (for radioactivity) ^(b) ”				
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; and

- (iii) omit note (v).

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Insertion of new Schedule 3A (monitoring of radioactive substances)

7. After Schedule 3 (monitoring) to the 2010 Regulations insert the schedule set out in Schedule 2 to these Regulations.

Insertion of new Schedule 5 (monitoring for indicative dose and analytical performance characteristics)

8. After Schedule 4(analytical methodology) to the 2010 Regulations insert the schedule set out in Schedule 3 to these Regulations.

21 March 2016

Carl Sargeant
Minister for Natural Resources, one of the Welsh
Ministers

SCHEDULE 1

Regulation 5

“SCHEDULE 2A

Regulation 6A

Radioactive substances parameters

Parametric values for radon, tritium and ID of water intended for human consumption

<i>Parameters</i>	<i>Maximum concentration or value</i>	<i>Units of measurement</i>
Indicative dose (for radioactivity)	0,10	mSv
Radon ⁽ⁱ⁾	100	Bq/l
Tritium (for radioactivity) ⁽ⁱⁱ⁾	100	Bq/l”

(i) Enforcement action by the Welsh Ministers is deemed justified on radiological protection grounds without further consideration where radon concentrations exceed 1,000 Bq/l.

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

SCHEDULE 2

Regulation 7

“SCHEDULE 3A

Regulation 6A

Monitoring of radioactive substances

Radon

1.—(1) In relation to the radon parameter in the radioactive substances parameters table, a water undertaker—

- (a) must ensure that a representative survey is carried out in accordance with subparagraph (2) to determine the likelihood of a supply failing to comply with the relevant parametric concentration or value specified in the radioactive substances parameters table; and
 - (b) must carry out monitoring where there is reason to believe, on the basis of the results of the representative surveys or other reliable information, including any risk assessment carried out in accordance with regulation 28, that the parametric value for the radon parameter laid down in the radioactive substances parameters table might be exceeded.
- (2) A representative survey must be designed in such a way—
- (a) as to be capable of determining the scale and nature of likely exposure 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.

Tritium

2.—(1) In relation to the tritium parameter in the radioactive substances parameters table, a water undertaker—

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- (a) must carry out monitoring where an anthropogenic source of tritium or other artificial radionuclides is present within a water supply zone and it cannot be shown on the basis of other surveillance programmes or investigations, including any risk assessment carried out in accordance with regulation 28, that the level of tritium is below the parametric value listed in the radioactive substances parameters table; and
 - (b) must carry out an investigation of the presence of other artificial radionuclides if the concentration of tritium exceeds the parametric value listed in the radioactive substances parameters table.
- (2) Where monitoring is required by sub-paragraph (1) samples must be taken in accordance with regulation 9(1) and (3).

Indicative Dose

3.—(1) In relation to the indicative dose (“ID”) parameter in the radioactive substances parameters table, a water undertaker must carry out monitoring where a source of artificial radioactivity or elevated natural radioactivity is present in a water supply zone and it cannot be shown on the basis of other surveillance programmes or investigations, including any risk assessment carried out in accordance with regulation 28, that the level of ID is below the parametric value listed in the radioactive substances parameters table.

(2) Where monitoring is required by sub-paragraph (1) in relation to artificial radionuclides samples must be taken in accordance with regulation 9(1) and (3).

(3) Where monitoring is required by sub-paragraph (1) in relation to a source of elevated natural radioactivity—

(a) the Welsh Ministers must specify, by notice in writing to the water undertaker, the frequency of the monitoring required of—

- (i) gross alpha activity;
- (ii) gross beta activity; or
- (iii) individual natural radionuclides,

depending on the screening strategy adopted by the water undertaker pursuant to Schedule 5; and

(b) the frequency of monitoring required under sub-paragraph (a) may vary from a single check measurement to the frequencies required for sampling in accordance with regulation 9(1).

(4) Where a single check for natural radioactivity is specified under paragraph (3)(a), the water undertaker must carry out a further check if any change occurs in relation to the supply which is likely to influence the concentrations of radionuclides in the supply.

Water treatment

4. Where treatment to reduce the level of radionuclides in a water supply zone has been undertaken, to verify the continued efficacy of that treatment, the water undertaker must—

- (a) monitor the supply for total indicative dose, radon and tritium in accordance the provisions of this Schedule; and
- (b) take samples in accordance with regulation 9(1) and (3).

Averaging

5. Where a parametric value in the radioactive substances parameters table is exceeded in relation to a particular sample taken by a water undertaker, the Welsh Ministers must specify, by notice in

writing to the water undertaker, the extent of resampling necessary to ensure that the measured values are representative of an average activity concentration for a full year.”

SCHEDULE 3

Regulation 8

“SCHEDULE 5

Regulation 6A

Monitoring for indicative dose and analytical performance characteristics

Monitoring for compliance with the indicative dose

1. A water undertaker may use reliable screening strategies to indicate the presence of radioactivity in water intended for human consumption.
2. The strategies referred to in paragraph 1 may include screening for—
 - (a) certain radionuclides or individual radionuclide; or
 - (b) gross alpha activity or gross beta activity (where appropriate gross beta activity may be replaced by residual beta activity after subtraction of the K-40 activity concentration).

Screening for certain radionuclides, or screening for an individual radionuclide

3. If one of the activity concentrations exceeds 20% of the corresponding derived value or the tritium concentration exceeds its parametric value listed in Schedule 2A an analysis of additional radionuclides is required.
4. A water undertaker must, in deciding which radionuclides require to be measured for each supply, take into account all relevant information about likely sources of radioactivity.

Screening strategies for gross alpha activity and gross beta activity

5. Subject to paragraph 6 the recommended screening values are—
 - (a) 0,1Bq/l for gross alpha activity; and
 - (b) 1,0Bq/l for gross beta activity.
6. If the gross alpha activity exceeds 0,1Bq/l or the gross beta activity exceeds 1,0Bq/l, analysis for specific radionuclides is required.
7. The Welsh Ministers may set alternative screening levels for gross alpha activity and gross beta activity where it can be demonstrated by the water undertaker that the alternative levels are in compliance with an indicative dose of 0,1 mSv.
8. The radionuclides to be measured must be based on all relevant information about likely sources of radioactivity.

Calculation of the indicative dose

9. The indicative dose must be calculated from—
 - (a) the measured radionuclide concentrations and the dose coefficients laid down in Annex III, Table A of Directive 96/29/Euratom(5); or

(5) OJNo. L 159, 29.6.1996, p. 1.

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- (b) more recent information recognised by the Welsh Ministers, on the basis of the annual intake of water (730 l for adults).

10. Where the following formula is satisfied, it can be assumed that the indicative dose is less than the parametric value of 0,1 mSv and no further investigation is required—

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

where:

$C_i(obs)$ = observed concentration of radionuclide i

$C_i(der)$ = derived concentration of radionuclide i

n = number of radionuclides detected.

Derived concentrations for radioactivity in water intended for human consumption()

Origin	Nuclide	Derived concentration
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	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 values for the most common natural and artificial radionuclides; these are precise values, calculated for a dose of 0,1 mSV, an annual intake of 730 litre and using the dose coefficients laid down in Annex III, Table A of Directive 96/29/ Euratom; derived concentrations 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 Welsh Ministers.
- (2) This table allows only for the radiological properties of uranium, not for its chemical toxicity.

Performance characteristics and methods of analysis

11. 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:

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Parameters and radionuclides	Limit of detection (Notes 1,2)	Notes
Tritium	10 Bq/1	Note 3
Radon	10 Bq/1	Note 3
gross alpha	0,04 Bq/1	Note 4
gross beta	0,4 Bq/1	Note 4
U-238	0,02 Bq/1	
U-234	0,02 Bq/1	
Ra-226	0,04 Bq/1	
Ra-228	0,02 Bq/1	Note 5
Pb-210	0,02 Bq/1	
Po-210	0,01 Bq/1	
C-14	20 Bq/1	
Sr-90	0,4 Bq/1	
Pu-239/Pu-240	0,04 Bq/1	
Am-241	0,06 Bq/1	
Co-60	0,5 Bq/1	
Cs-134	0,5 Bq/1	
Cs-137	0,5 Bq/1	
I-131	0,5 Bq/1	

Note 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 errors of 1st and 2nd kind of 0,05 each.

Note 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.

Note 3: The limit of detection for tritium and for radon is 10% of its parametric value of 100 Bq/1.

Note 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/1 respectively.

Note 5: This limit of detection applies only to initial screening for indicative dose 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 Bq/1 for routine Ra-228 nuclide specific measurements, until a subsequent re-check is required.”

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EXPLANATORY NOTE

(This note is not part of the Regulations)

These Regulations amend the Water Supply (Water Quality) Regulations 2010 (“the 2010 Regulations”) so as to implement Council Directive 2013/51/EURATOM on the protection of the health of the general public with regard to the radioactive substances in water intended for human consumption in relation to water supplied by water undertakers whose areas are wholly or mainly in Wales.

Regulation 3 of these Regulations inserts new regulation 6A (monitoring of radioactive substances) into the 2010 Regulations. New regulation 6A makes provision for new requirements in relation to monitoring for radon, tritium and indicative dose (“the radioactive substances parameters”).

Regulation 5 of these Regulations inserts a new Schedule 2A (radioactive substances parameters) into the 2010 Regulations. The new Schedule 2A sets parametric values for the radioactive substances parameters.

Regulation 7 of these Regulations inserts new Schedule 3A (monitoring of radioactive substances) into the 2010 Regulations which includes further monitoring requirements for the radioactive substances parameters.

Regulation 8 of these Regulations inserts new Schedule 5 (monitoring for indicative dose and analytical performance characteristics) into the 2010 Regulations. The new Schedule 5 makes provision for additional sampling and analysis requirements in relation to the radioactive substances parameters listed in the new Schedule 2A.

Regulations 2, 4 and 6 of these Regulations make consequential amendments in light of the above.

The Welsh Ministers’ Code of Practice on the carrying out of Regulatory Impact Assessments was considered in relation to these Regulations. As a result, it was not considered necessary to carry out a regulatory impact assessment as to the likely costs and benefits of complying with these Regulations.