SCOTTISH STATUTORY INSTRUMENTS

2015 No. 363

The Natural Mineral Water, Spring Water and Bottled Drinking Water (Scotland) Amendment Regulations 2015

Amendment of Schedules

5. After Schedule 11, insert—

"SCHEDULE 12 Regulation 16(2)(e), (f) and (h)

Monitoring for radioactive substances in spring water and bottled drinking water

PART 1

General

General

1. Each food authority must monitor spring water and bottled drinking water for radon, tritium and indicative dose in accordance with this Schedule.

Indicative dose

2. Each food authority must monitor spring water and bottled water for indicative dose if a source of artificial or elevated natural radioactivity is present and it cannot be shown on the basis of representative monitoring programmes or other investigations that the level of indicative dose is below the parametric value specified in the table in Part 3.

3. Sampling must be carried out at the frequencies specified in the table in Part 2.

4. A food authority may use various reliable screening strategies to monitor for the parametric indicator value for indicative dose.

5. Subject to paragraph 7, if a food authority screens for gross alpha activity and gross beta activity and—

(a) the screening level for gross alpha activity is or exceeds 0.1 Bq/1; or

(b) the screening level for gross beta activity is or exceeds 1.0 Bq/1,

that food authority must investigate the presence of other radionuclides as determined by the food authority, taking into account all relevant information about likely sources of radioactivity.

6. If a food authority screens for an individual radionuclide or certain radionuclides and—

(a) one of the activity concentrations exceeds 20% of the corresponding derived value; or

(b) where applicable, the concentration of tritium exceeds the parametric value specified in the table in Part 3,

the food authority must investigate the presence of radionuclides, as determined by the food authority, taking into account all relevant information about likely sources of radioactivity.

7. Paragraph 5 does not prohibit a food authority from screening at alternative levels for gross alpha activity and gross beta activity if it can demonstrate that the alternative levels are in compliance with an indicative dose of 0.1mSv.

8. If the gross alpha activity and gross beta activity are less than 0.1 Bq/l and 1.0 Bq/1 respectively, a food authority may assume that the indicative dose is less than the parametric value of 0.1 mSv in which case further radiological investigation is not required unless it is known from other sources of information that specific radionuclides are present in the water that are liable to cause an indicative dose at or in excess of 0.1 mSv.

Tritium

9. Each food authority must monitor spring water and bottled drinking water for tritium if an artificial source of tritium or other artificial radionuclide(s) is present within the catchment area and it cannot be shown on the basis of other surveillance programmes or investigations that the level of tritium is below the parametric value specified in the table in Part 3.

10. Sampling must be carried out at the frequencies specified in the table in Part 2.

11. If the concentration of tritium exceeds the parametric value specified in the table in Part 3, the food authority must investigate the presence of other artificial radionuclides.

Radon

12. Each food authority must provide representative surveys to determine the scale and nature of likely exposure to radon in spring water and bottled drinking water originating from different types of ground water sources and wells in different geological areas.

13. The representative surveys must be designed in such a way that underlying parameters, including 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.

14. Sampling must be carried out at the frequencies specified in the table in Part 2.

15. Each food authority must monitor spring water and bottled drinking water for radon if there is a reason to believe, on the basis of the results of the representative surveys or other reliable information, that the parametric value for radon specified in the table in Part 3 might be exceeded.

Exemption from monitoring

16. A food authority may apply to Food Standards Scotland for an exemption from the requirement to monitor spring water or bottled drinking water for radon, tritium or indicative dose if

(a) it is satisfied on the basis of representative surveys, monitoring data or other reliable information provided by the food business operator that, for a minimum period of five years, the parameter in question will remain below its respective parametric value specified in the table in Part 3; and

(b) it provides Food Standards Scotland with a copy of the representative surveys, monitoring data or other reliable information referred to in sub-paragraph (a),

and if it agrees with the food authority's recommendation, Food Standards Scotland may grant the exemption for such period and subject to such conditions as it thinks fit.

Treatment of bottled drinking water

17. Where bottled drinking water has been treated to reduce the level of radionuclides, the food authority must carry out monitoring at the frequencies indicated in the table in Part 2 to ensure the continued efficacy of that treatment.

Averaging

18. If a parametric value specified in the table in Part 3 is exceeded in a sample of spring water or bottled drinking water, the food authority must take further samples, as appropriate, having regard to any guidance issued by Food Standards Scotland to ensure that the measured values are representative of an average activity concentration for a full year.

Remedial action

19.—(1) If a food authority determines that spring water or bottled drinking water does not comply with the parametric concentrations or values set out in this Schedule, the food authority must—

(a) immediately investigate the non-compliance in order to identify the cause;

(b) assess whether the non-compliance poses a risk to human health which requires action;

(c) require the business operator to take remedial action as soon as possible to restore the quality of the water and, where necessary, protect human health;

(d) in respect of any parameter specified in the tables in Parts 2 and 3, notify the general public of the remedial action taken, unless the food authority considers that non-compliance with the parametric value is trivial; and

(e) in respect of any parameter specified in the table in Part 2, notify the general public of the risks and remedial action taken and advise the general public of any additional precautionary measures that may be needed for the protection of human health in respect of radioactive substances.

(2) If spring water or bottled drinking water constitutes a potential danger to human health, irrespective of whether it meets the relevant parametric values in this Schedule, a food authority must—

(a) prohibit or restrict the supply of that water in its area or take such other action as is necessary to protect human health; and

(b) inform the general public promptly of that fact and provide advice where necessary.

(3) In performing the functions in paragraph (2), the food authority must have regard to any risks to human health which would be caused by an interruption of the supply or a restriction in the use of water intended for human consumption.

PART 2

Minimum sampling and analysis frequencies

Volume of water bottled each day	*Number of samples per year*[(2)]
m^{3}[(1)]	

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

(2) As far as possible, the number of samples should be distributed equally in time and location.

volume ≤ 100	1
100 < volume ≤ 1,000	1
1,000 < volume ≤ 10,000	1 +1 for each 3,300 m^3/d and part thereof of the total volume
10, 000 < volume ≤ 100,000	3 +1 for each 10,000 m^3/d and part thereof of the total volume
volume > 100,000	10 +1 for each 25,000 m^3/d and part thereof of the total volume

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

(2) As far as possible, the number of samples should be distributed equally in time and location.

PART 3

Parametric values for radon, tritium and indicative dose

Item	*Parameter*	*Unit of Measurement*	*Parametric Value*
1.	Radon	Bq/l	100 **(1)**
2.	Tritium	Bq/l	100 **(2)**
3.	indicative dose	mSv	0.10

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

(2) 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 artificial radionuclides shall be required.

SCHEDULE 13

Regulation 16(2)(f)

Sampling and analysis for indicative dose in spring water and bottled drinking water

PART 1

General

Analysis of samples

1. Each food authority must ensure that each sample is analysed and indicative dose calculated in accordance with Annex III to Directive 2013/51 and this Schedule.

2. For each radionuclide specified in the second column of Table 1 in Part 2, the derived concentration is shown in the third column of that table and the dose coefficient for calculating the indicative dose is specified in Table A of Annex III to Directive 96/29 as referenced in Annex III to Directive 2013/51.

3. For each parameter specified in the first column of Table 2 in Part 2, the method of analysis must be one that is capable of detecting the parameter at the limit of detection specified in the second column of that table.

PART 2

Methods of analysis and performance characteristics[1]

Table 1

Derived concentrations for radioactivity in spring water or bottled drinking water

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 litres and using the dose coefficients laid down in Table A of Annex III to Directive 96/29; 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 competent authorities in the Member State.

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

Table 2

Performance characteristics and methods of analysis

Parameters radionuclides	Limit of detection[1][2]
Tritium	10 Bq/l[3]
Radon	10 Bq/l[3]

gross alpha activity	0.04 Bq/l[(4)]
gross beta activity	0.4 Bq/l[(4)]
U-238	0.02 Bq/l
U-234	0.02 Bq/l
Ra-226	0.04 Bq/l
Ra-228	0.02 Bq/l[(5)]
Pb-210	0.02 Bq/l
Po-210	0.01 Bq/l
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 is 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 errors of 1st and 2nd kind of 0.05 each.

(2) Measurement uncertainties are 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 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 it is not plausible that Ra-228 exceeds 20% of the derived concentration, the limit of detection may be increased to 0.08 Bq/l for routine Ra-228 nuclide specific measurements, until a subsequent re-check is required.