**RULES ON THE MONITORING OF RADIOACTIVITY IN WATER INTENDED FOR HUMAN CONSUMPTION**

**UNOFFICIAL TRANSLATION**

*Prepared by the Slovenian Nuclear Safety Administration in June 2019.*

*The official text of these Rules is located on the pages of* [***the Legal Information System***](http://www.pisrs.si/Pis.web/pregledPredpisa?id=PRAV12359)*.*

***WARNING****: The unofficial text of these Rules is just an informative work tool, for which the Slovenian Nuclear Safety Administration does not guarantee.*

Based on the fifth paragraph of Article 123 of the Ionising Radiation Protection and Nuclear Safety Act (Official Gazette of the Republic of Slovenia, No. 102/04 – official consolidated text, 70/08 – ZVO-1B and 60/11) the minister for health hereby issues the

RULES

on the Monitoring of Radioactivity in Water Intended for Human Consumption

Article 1

(Contents)

(1) Pursuant to Council Directive 2013/51/EURATOM of 22 October 2013 laying down requirements for the protection of the health of the general public with regard to radioactive substances in water intended for human consumption (OJ L 296, 7. 11. 2013, p. 12), these Rules lay down the requirements to protect the health of the general public with regard to radioactive substances in water intended for human consumption, parametric values, methods, types of monitoring, the frequency and scale of monitoring of radioactive substances in water intended for human consumption, the drafting of a programme to monitor radioactivity in water intended for human consumption, and the method used to inform the general public on a regular basis of the results of the measurements carried out of radioactivity in water intended for human consumption.

(2) These Rules also lay down the conditions that must be met by entities monitoring radioactivity in water intended for human consumption.

Article 2

(Meaning of terms)

(1) For the purposes of these Rules, the following definitions shall apply:

1. indicative dose (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;

2. parametric value means the value of radioactive substances in water intended for human consumption above which the authority responsible for radiation protection assesses whether the presence of radioactive substances in water intended for human consumption poses a risk to human health that requires action and, where necessary, takes remedial action to improve the quality of water to a level which complies with the requirements to protect human health from a radiation protection point of view.

3. water intended for human consumption means:

– water, either in its original state or after treatment, intended for drinking, cooking, food preparation or other domestic purposes, regardless of its origin or whether it is supplied from a water distribution network or a tanker, or as pre-packaged water, and

– water used in any undertaking engaged in the production of and trade in food for the manufacture, processing, preservation or marketing of products or substances, unless the undertaking is able to prove that although it may use water that does not comply with these Rules, the quality of the water cannot affect the wholesomeness of the foodstuff in its finished form and thereby place human health at risk;

4. 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.

(2) Other terms used in these Rules shall have the meaning as defined in the Ionising Radiation Protection and Nuclear Safety Act (Official Gazette of the Republic of Slovenia, No. 102/04 – official consolidated text, 70/08 – ZVO-1B and 60/11).

Article 3

(Scope of application and exceptions)

(1) These Rules shall apply to water intended for human consumption.

(2) These Rules shall not apply to:

1. natural mineral waters placed on the market under the regulation governing natural mineral waters, spring waters and table waters;

2. waters which are medicinal products within the meaning of the regulations governing medicinal products;

3. water intended exclusively for those purposes for which the competent authorities are satisfied that the quality of the water has no influence, either directly or indirectly, on the health of the general public concerned;

4. water intended for human consumption from an individual supply system providing on average less than 10 m3 a day or serving fewer than 50 persons, unless the water is supplied to public facilities, facilities engaged in the production of and trade in food, and facilities engaged in the packaging of water intended for human consumption.

(3) Without prejudice to point 4 of the preceding paragraph, a local community whose area contains an individual system for the supply of water intended for human consumption as referred to in point 4 of the preceding paragraph shall:

1. inform the general public concerned thereof and of any action that can be taken to protect human health from the adverse effects resulting from the contamination of water intended for human consumption;

2. give the general public concerned appropriate advice promptly when a potential danger to human health arising from the quality of such water is apparent.

(4) The advice referred to in point 2 of the preceding paragraph shall be compiled by the authority responsible for radiation protection, in cooperation with the National Institute of Public Health.

Article 4

(General obligations)

(1) The authority responsible for monitoring the radioactivity of water intended for human consumption is the authority responsible for radiation protection.

(2) The authority responsible for radiation protection shall take all necessary measures to establish an appropriate radioactivity monitoring programme for water intended for human consumption (hereinafter: monitoring of radioactivity in water intended for human consumption) to ensure that where the parametric values of radioactive substances are exceeded:

1. an assessment is made as to whether it poses a risk to human health that requires action;

2. remedial action is taken, where necessary, to improve the quality of water to a level which complies with requirements for the protection of human health from a radiation protection point of view.

(3) The remedial action to improve the quality of water as referred to in point 2 of the preceding paragraph shall be taken by the manager of the water distribution system determined under the regulations governing the supply of water intended for human consumption.

Article 5

(Parametric values and points of compliance)

(1) The parametric values applied to the monitoring of radioactivity in water intended for human consumption are defined in Annex I, which is an integral part of these Rules.

(2) The monitoring of radioactivity in water intended for human consumption conducted in accordance with the requirements referred to in Annex 2, which is an integral part of these Rules, is intended to ensure compliance with the requirements that the parametric values referred to in Annex 1 to these Rules are not exceeded:

1. in the case of water supplied from a distribution network, at the point at which it emerges from the taps where the water is normally taken;

2. in the case of water supplied from a tanker, at the point at which it emerges from the tanker;

3. in the case of water put into bottles or containers intended for sale, at the point at which the water is put into the bottles or containers;

4. in the case of water used in an undertaking engaged in the production of and trade in food, at the point where the water is used in the production of and trade in food.

(3) The definition of the points referred to in point 1 of the preceding paragraph at which the parametric values may not be exceeded is without prejudice to the choice of a sampling point, which may be any point within the zone of supply of water intended for human consumption or at the treatment works, provided there is no adverse change in the concentration value between the sampling point and the point at which the parametric value may not be exceeded.

Article 6

(Monitoring and analysis)

(1) The authority responsible for radiation protection shall take all measures necessary to ensure that the monitoring of water intended for human consumption is undertaken in accordance with the monitoring strategies and frequencies set out in Annex 2 to these Rules in order to check whether the parametric values of the radioactive substances exceed the parametric values laid down in Annex 1 to these Rules.

(2) The authority responsible for radiation protection shall ensure that monitoring of radioactivity in water intended for human consumption is undertaken so as to ensure that the measured values obtained are representative of the quality of the water consumed throughout the year. For water intended for human consumption that is put into bottles or containers intended for sale, this shall be without prejudice to compliance with the requirements of internal control established with reference to the principles of hazard analysis and critical control points (HACCP) under the regulations governing food hygiene and to the principles of official control under the regulations governing the official control of foodstuffs.

(3) Monitoring of the indicative dose and of the analytical performance characteristics shall accord with the requirements set out in Annex 3, which is an integral part of these Rules.

Article 7

(Drafting of an annual radioactivity monitoring programme)

(1) The authority responsible for radiation protection shall draft an annual radioactivity monitoring programme for water intended for human consumption (hereinafter: the annual programme) in accordance with Annexes 2 and 3 to these Rules, with due regard to the information contained in surveys and the existing results of the monitoring of radioactivity in water intended for human consumption.

(2) The annual programme shall be drafted every year no later than by 30 November for the following year.

(3) The annual programme shall also determine the format of the electronic records of radioactivity monitoring under which the entity monitoring radioactivity in water intended for human consumption compiles a record of the results of the monitoring in the annual report referred to in Article 8 of these Rules.

(4) Sampling and the preparation of samples shall be conducted so that the losses of radionuclides between sampling and the preparation of samples for monitoring are assessed and are as low as possible.

(5) The preparation and monitoring of samples shall be carried out as soon as possible after sampling so as to establish the presence of short-lived radionuclides and enable action to be taken immediately in the event of an increase in radioactivity.

Article 8

(Reporting on implementation of the annual programme)

(1) The entity monitoring radioactivity in water intended for human consumption shall report to the authority responsible for radiation protection in the form of an annual report on the implementation of the annual programme no later than by 15 November for the current year.

(2) The annual report shall contain:

1. a tabular presentation of the prescribed monitoring programme;

2. an indication of the sampling, sample preparation and monitoring methodologies deployed;

3. the results of the monitoring and their measurement uncertainty;

4. the geographical coordinates of the sampling or monitoring points;

5. an evaluation of the results of the monitoring;

6. the results of the comparative measurements conducted by entities monitoring radioactivity in water intended for human consumption.

(3) The annual report shall also contain an electronic record of the monitoring of radioactivity in water intended for human consumption, the format of which is prescribed in the annual programme.

Article 9

(Keeping of records)

(1) Records on the results of the monitoring of radioactivity in water intended for human consumption shall be kept by the authority responsible for radiation protection and by the entities monitoring radioactivity in water intended for human consumption.

(2) The records referred to in the preceding paragraph shall contain:

1. information on sampling and the preparation of samples;

2. information on monitoring performance that could influence a result;

3. information on the parameters used in the analysis and on any interim results; and

4. the results of the monitoring and their measurement uncertainty.

(3) The entity monitoring radioactivity in water intended for human consumption shall ensure that records on monitoring are kept in an electronic form suitable for incorporation into the environmental radiation database and determined by the authority responsible for radiation protection in the annual programme. A monitoring entity shall establish its own monitoring records/register.

(4) The authority responsible for radiation protection shall keep the records referred to in the first paragraph of this Article in perpetuity, while the entity monitoring radioactivity in water intended for human consumption shall keep the records for five years following performance of the monitoring.

Article 10

(Remedial action and notification of the general public)

(1) The authority responsible for radiation protection shall ensure that any instance where a parametric value for radioactive substances laid down in Annex 1 to these Rules is exceeded is immediately investigated in order to identify the cause.

(2) Where a parametric value for radioactive substances is exceeded, the authority responsible for radiation protection shall assess whether this poses a risk to human health and whether action is required.

(3) Where a risk is posed to human health as referred to in the preceding paragraph, the authority responsible for radiation protection shall:

1. take remedial action in order to comply with requirements for the protection of human health from a radiation protection point of view; and

2. ensure that the general public concerned is:

– notified of the risk to human health and the remedial action taken, and

– advised on any additional precautionary measures that may be required to protect human health in respect of radioactive substances.

Article 11

(Requirements relating to the performance of monitoring of radioactivity in water intended for human consumption)

(1) The entity monitoring radioactivity in water intended for human consumption shall meet the following conditions:

1. it is a company, institute or sole trader;

2. it is registered to carry out the activity in question;

3. it has been accredited by the national accreditation service to conduct tests in accordance with the SIST ISO/IEC 17025 standard for measuring radioactivity in water intended for human consumption;

4. it has monitoring equipment that meets the requirements laid down in these Rules;

5. it ensures that its monitoring equipment has sufficient capabilities so as to exceed the envisaged scale of monitoring by at least one third;

6. it meets the requirements regarding the limits of detection defined in Annex 3 to these Rules;

7. it undertakes a comparative monitoring programme and takes part in the international comparative monitoring of radioactivity in water intended for human consumption.

(2) In exceptional cases, where a special monitoring method is involved for which no monitoring entity in the Republic of Slovenia has acquired the appropriate accreditation, compliance with the condition referred to in point 3 of the preceding paragraph shall not be required. In this case, the monitoring shall be carried out within a quality assurance system whose adequacy has been evaluated by the authority responsible for radiation protection.

Article 12

(Other obligations of the entity monitoring radioactivity)

(1) Where the entity monitoring radioactivity in water intended for human consumption finds that the parametric values referred to in Annex 1 to these Rules have been exceeded, it shall notify the manager of the water distribution system and the authority responsible for radiation protection without delay.

(2) The entity monitoring radioactivity in water intended for human consumption shall notify the authority responsible for radiation protection of any significant increase detected in the concentration of radionuclides relative to the previous measurements, and provide details of any abnormal results.

(3) The entity monitoring radioactivity in water intended for human consumption shall ensure that the scale of the monitoring is increased if the authority responsible for the monitoring of radioactivity in water intended for human consumption so requires in response to an established increase in contamination in the samples tested.

**TRANSITIONAL AND FINAL PROVISIONS**

Article 13

(Implementation of the monitoring programme for water intended for human consumption)

(1) Pursuant to these Rules, the annual programme shall be drawn up for the first time for 2016.

(2) The authority responsible for radiation protection shall publish the results of the monitoring of radioactivity in water intended for human consumption on its website on an annual basis.

Article 14

(Cessation of application)

On the day these Rules enter into force, the ‘Radioactivity’ table and Notes 8, 9 and 10 in PART C (Indicative parameters) of Annex I (Parameters and parameter limit values) to the Rules on Water Intended for Human Consumption (Official Gazette of the Republic of Slovenia, No. 19/04, 35/04, 26/06, 92/06 and 25/09) shall cease to apply.

Article 15

(Entry into force)

These Rules shall enter into force on the fifteenth day following that of their publication in the Official Gazette of the Republic of Slovenia.

No. 0070-40/2015

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**Milojka Kolar Celarc**

**Minister for Health**

**ANNEX 1**

**PARAMETRIC VALUES FOR RADON, TRITIUM AND INDICATIVE DOSE OF WATER INTENDED FOR HUMAN CONSUMPTION**

|  |  |  |  |
| --- | --- | --- | --- |
| Radioactivity parameter | Parametric value | Unit | Remarks |
| Radon | 100 | Bq/l | (Note 1) |
| Tritium | 100 | Bq/l | (Note 2) |
| Indicative dose | 0.10 | mSv |  |

Note 1:

(a) The parametric value determined for radon which may not be exceeded and below which optimisation of radiation protection procedures should be ensured may not compromise water supply on a national or regional scale. The authority responsible for radiation protection may therefore adjust the parametric value to this level, i.e. set a parametric value for radon higher than 100 Bq/l but no higher than 1 000 Bq/l.

(b) Remedial action is deemed to be justified on radiation protection grounds, without further consideration, where radon concentrations exceed 1 000 Bq/l.

Note 2:

Note 2: Elevated levels of tritium may indicate the presence of other artificial radionuclides. If tritium concentration exceeds its parametric value, an analysis of the presence of other artificial radionuclides is required.

**ANNEX 2**

**MONITORING RADIOACTIVITY IN WATER INTENDED FOR HUMAN CONSUMPTION**

1. General principles and monitoring frequencies

All parameters for which parametric values must be set pursuant to Annex 1 of these Rules shall be subject to monitoring. However, no monitoring of a specific radioactivity parameter shall be required where the authority responsible for radiation protection is able to establish that, for a period of time to be determined by them, that parameter is not likely to be present in a given supply of water intended for human consumption in concentrations that could exceed the corresponding parametric value for the radioactivity parameter.

In the case of naturally occurring radionuclides, where previous results have shown that the concentration of radionuclides is stable, the authority responsible for radiation protection may opt for a lower frequency of sampling than that determined in point 6 of this Annex, with due regard to the risk to human health. The monitoring of radon or tritium in water intended for human consumption or the determination of an indicative dose shall not be required where the authority responsible for radiation protection is satisfied, on the basis of representative surveys, monitoring data or other reliable information that, for a period of time to be determined by them, the levels of radon, tritium or of the calculated ID will remain below the respective parametric values listed in Annex 1 to these Rules. In that case, it shall communicate the grounds for its decision to the European Commission and provide the Commission with the necessary documentation supporting that decision, including the findings of any surveys, monitoring or investigations carried out. In this context, the provisions of these Rules regarding the minimum sampling and analysis frequency set out in point 6 of this Annex shall not need to be applied.

2. Radon

The authority responsible for radiation protection shall ensure that representative surveys are undertaken to determine the scale and nature of any likely exposure to radon in water intended for human consumption originating from different types of ground water source and wells in different geological areas. The surveys shall be designed in such a way that the underlying parameters, and especially the geology and hydrology of the area, the radioactivity of the rock or soil, and the well type, can be identified and used to direct further action to areas of likely high exposure. The monitoring of radon concentrations shall be undertaken where there is reason to believe, on the basis of the results of the representative surveys or other reliable information, that the parametric value set out in Annex 1 to these Rules might be exceeded.

3. Tritium

The authority responsible for radiation protection shall ensure that monitoring of the presence of tritium in water intended for human consumption is carried out where an anthropogenic source of tritium or of other artificial radionuclides 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 listed in Annex 1 to these Rules. Where the monitoring of tritium is required, it shall be carried out at the frequencies indicated in the table that appears in point 6 of this Annex. If the concentration of tritium exceeds its parametric value, an investigation of the presence of other artificial radionuclides shall be required.

4. Indicative dose

Monitoring of the indicative dose in water intended for human consumption shall be carried out where a source of artificial or elevated natural radioactivity is present and it cannot be shown on the basis of other representative monitoring programmes or other investigations that the level of the indicative dose is below the parametric value listed in Annex 1 to these Rules. Where monitoring of artificial radionuclide levels is required, it shall be carried out at the frequency set out in the table that appears in point 6 of this Annex. Where monitoring of natural radionuclide levels is required, the authority responsible for radiation protection shall define the frequency of the monitoring of either gross alpha activity, gross beta activity or individual natural radionuclides, depending on the screening strategy adopted by it in accordance with Annex 3 to these Rules. Monitoring of natural radionuclide levels may be conducted as a single check measurement or at the frequencies referred to in the table that appears in point 6 of this Annex. Where only a single check for natural radioactivity is required, a recheck shall be required at least where any change occurs in relation to the supply likely to influence the concentrations of radionuclides in water intended for human consumption.

5. Reducing radionuclide levels in water intended for human consumption

Where action to reduce radionuclide levels in water intended for human consumption has been taken, monitoring shall be carried out at the frequencies indicated in the table that appears in point 6 of this Annex in order to ensure that the continued efficacy of that action is monitored.

6. Minimum sampling and analysis frequencies

The minimum sampling and analysis frequency for the monitoring of water intended for human consumption supplied from a distribution network or from a tanker or used in a food production undertaking shall be as set out in the following table:

Table: Minimum sampling and analysis frequencies for monitoring of water intended for human consumption supplied from a distribution network or from a tanker or used in a food production undertaking

|  |  |
| --- | --- |
| Volume of water distributed or produced each day within a supply zone (m3)(Notes 1 and 2) | Number of samples per year (Notes 3 and 4) |
| volume ≤ 100 | (Note 5) |
| 100 < volume ≤ 1 000 | 1 |
| 1 000 < volume ≤ 10 000 | 1 + 1 for each 3 300 m3/d and part thereof |
| 10 000 < volume ≤ 100 000 | 3 + 1 for each 10 000 m3/d and part thereof |
| volume > 100 000 | 10 + 1 for each 25 000 m3/d and part thereof |

Note 1: A supply zone is a geographically defined area within which water intended for human consumption comes from one or more sources and within which water quality may be considered as being approximately uniform.

Note 2: The volumes are calculated as averages taken over a calendar year. The competent administrative authority may use the number of inhabitants in a supply zone instead of the volume of water to determine the minimum frequency, assuming water consumption of 200 l/day/capita.

Note 3: As far as possible, the number of samples should be distributed equally in time and location.

Note 4: In the event of intermittent short-term supply, the authority responsible for radiation protection shall decide on the frequency of monitoring of water distributed by tankers.

Note 5: Frequency to be decided by the authority responsible for radiation protection.

7. Averaging

Where a parametric value for radioactive substances is exceeded in a particular sample, the authority responsible for radiation protection shall define the extent of re-sampling necessary to ensure that the measured values are representative of an average activity concentration for a full year.

**ANNEX 3**

**MONITORING FOR INDICATIVE DOSE AND ANALYTICAL PERFORMANCE CHARACTERISTICS OF RADIOACTIVITY IN WATER INTENDED FOR HUMAN CONSUMPTION**

1. Monitoring of the indicative dose value

Screening may be employed to indicate the presence of certain radionuclides, an individual radionuclide, or gross alpha activity or gross beta activity in water intended for human consumption.

(a) Screening for the presence of certain radionuclides or an individual radionuclide

If one of the activity concentrations exceeds 20 % of the corresponding derived value or the tritium concentration exceeds the parametric value listed in Annex 1 to these Rules, an analysis of additional radionuclides shall be required. The radionuclides to be measured shall be defined by the authority responsible for radiation protection, taking into account all relevant information about the likely sources of radioactivity.

(b) Screening strategies for gross alpha activity and gross beta activity

The authority responsible for radiation protection may measure gross alpha activity and gross beta activity(1) to monitor the parametric value for the indicative dose.

Gross alpha activity or gross beta activity screening levels shall be set for this purpose. The recommended screening level for gross alpha activity is 0.1 Bq/l. The recommended screening level for gross beta activity is 1.0 Bq/l.

If the gross alpha activity and gross beta activity are less than 0.1 Bq/l and 1.0 Bq/l respectively, the authority responsible for radiation protection may assume that the indicative dose is less than the parametric value of 0.1 mSv and additional monitoring is not needed, unless it is known from other sources of information that specific radionuclides are present in the water that are liable to cause an increase in the indicative dose above 0.1 mSv.

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

The authority responsible for radiation protection may set alternative screening levels for gross alpha activity and gross beta activity where they can demonstrate that these alternative levels correspond to a parametric value for an indicative dose of less than 0.1 mSv.

The radionuclides to be measured shall be defined by the authority responsible for radiation protection, taking into account all relevant information about the likely sources of radioactivity. Since elevated levels of tritium may indicate the presence of other artificial radionuclides, tritium, gross alpha activity and gross beta activity should be measured in the same sample.

2. Calculation of the indicative dose

The indicative dose shall be calculated from the measured radionuclide concentrations and the dose coefficients laid down in the table in Annex F to ICRP 119, or more recent information on the basis of the annual intake of water (730 l for adults). Where the following formula is satisfied, it may be assumed that the indicative dose is less than the parametric value of 0.1 mSv and no additional measurements shall be required.

$$\sum\_{i=1}^{n}\frac{Ci(obs)}{Ci(der)}\leq 1$$

where:

Ci(obs) = observed concentration of radionuclide i

Ci(der) = derived concentration of radionuclide i

n = number of radionuclides detected.

Derived concentration of radioactivity in water intended for human consumption(2)

|  |  |  |
| --- | --- | --- |
| Origin | Nuclide | Derived concentration |
| Natural | U-234 (3) | 3.0 Bq/l |
| U-234 (3) | 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 |

(2) This table includes values for the most common natural and artificial radionuclides; these are values calculated for a dose of 0.1 mSv and an annual intake of 730 litres, and use the dose coefficients laid down in the table in Annex F (Effective dose coefficients for ingestion of radionuclides for members of the public) to ICRP 119 (International Commission on Radiological Protection, Publication 119 Compendium of Dose Coefficients Based on ICRP Publication 60, Published by Elsevier Ltd 2012 ISBN 978-1-4557-5430-4), or its updated versions. The derived concentrations for other radionuclides can be calculated on the same basis, and values may be updated on the basis of more recent information recognised by the authority responsible for radiation protection.

(3) This table allows only for the radiological properties of uranium, not for its chemical toxicity. 3.

3. Performance characteristics and methods of analysis

The measurement method used must be capable of measuring the activity concentrations of the following parameters and radionuclides with a minimum limit of detection as specified in the table below, or lower than the values indicated:

|  |  |  |
| --- | --- | --- |
| Parameters and radionuclides | Limit of detection (Notes 1, 2) | Remarks |
| Tritium | 10 Bq/l | Note 3 |
| Radon | 10 Bq/l | Note 3 |
| gross alpha activity | 0.04 Bq/l | Note 4 |
| gross beta activity | 0.4 Bq/l | Note 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 | Note 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 |  |

Note 1: The limit of detection shall be calculated according to 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.

Note 2: Note 2: Measurement uncertainties shall 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.

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

Note 4: 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/l respectively.

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