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NOTE

from:	General Secretariat of the Council
to:	Delegations
No. Cion prop.:	12491/10 ATO 77 ENV 604
Subject:	Proposal for a Council Directive laying down the requirements for the protection of the health of the general public with regard to radioactive substances in water intended for human consumption

Based on the suggestions received, the Presidency prepared the attached text to be discussed at the WPAQ meeting on 7 November 2011.

The changes are in **bold underline**; deletions are marked with ~~strikethrough~~.

2011/0170 (NLE)

Proposal for a

COUNCIL DIRECTIVE

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 COUNCIL OF THE EUROPEAN UNION,

Having regard to the Treaty establishing the European Atomic Energy Community, and in particular Articles 31 and 32 thereof,

Having regard to the proposal from the Commission[1] drawn up after obtaining the opinion of a group of persons appointed by the Scientific and Technical Committee from among scientific experts in the Member States, in accordance with Article 31 of the Treaty,

Having regard to the opinion of the European Economic and Social Committee[2],

After consulting the European Parliament[3],

Whereas:

(1) The ingestion of water is one of the pathways of incorporation of radioactive substances into the human body. In accordance with Council Directive 96/29/Euratom of 13 May 1996 laying down basic safety standards for the protection of the health of workers and the general public against the dangers arising from ionizing radiation[4], the contribution to the exposure of the population as a whole from practices which involve a risk from ionizing radiation must be kept as low as reasonably achievable.

(2) In view of the importance for human health of the quality of water intended for human consumption, it is necessary to lay down at Community level quality standards which have an indicator function and provide for the monitoring of the compliance with those standards.

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1 OJ C , , p.
2 OJ C , , p.
3 OJ C , , p.
4 OJ L 159, 29.6.1996, p. 1

(3) ~~Indicator parameters have already been set out in Annex I, Part C relating to radioactive substances, as well as the related monitoring provisions in Annex II to~~ Council Directive 98/83/EC of 3 November 1998 on the quality of water intended for human consumption[1] **sets out indicator parameters in Annex I, Part C relating to radioactive substances and related monitoring provisions in Annex II.** However, those parameters fall within the scope of the basic standards defined in Article 30 of the Euratom Treaty.

(4) The requirements for monitoring levels of radioactivity in water intended for human consumption should therefore be adopted in specific legislation that ensures the uniformity, coherence and completeness of radiation protection legislation under the Euratom Treaty.

~~(4a) In order to adapt Annexes II and III of this Directive to the scientific, technical and technological progress, the power to adopt acts in accordance with Article 290 of the Treaty on the Functionning of the European Union should be delegated to the Commission. It is of particular importance that the Commission carry out appropriate consultations during its preparatory work, including at expert level. The Commission, when preparing and drawing up delegated acts should ensure a simultaneous, timely and appropriate transmission of relevant documents to the Council.~~

(5) The provisions of the present Directive adopted under the Euratom Treaty supersede those of the Directive 98/83/EC as regards the **quality** [] of []water **intended for human consumption with regards to radioactive substances** [].

(5a) As recognised by the Court of Justice in its case-law, the tasks imposed on the Community by Article 2(b) of the Treaty to lay down uniform standards to protect the health of the population and of workers does not [] ~~exclude, unless explicitly stated in the standards, that, once such standards have been defined,~~ preclude, unless explicitly stated in the standards, a Member State from ~~may not~~ provideing for more stringent measures of protection.

[1] OJ L 330, 5.12.1998, p. 32

(6) In the event of non-compliance with a parame~~ter~~**ic value** that has an indicator function, **this parametric value should be regarded as a limit value, but** the Member State concerned **shall consider** [] whether that non-compliance poses any risk to human health and, where necessary, take remedial action to **improve** [] the quality of the water **to** [] **a level which complies with the requirements for the protection of human health from a radiation protection point of view** [].

(7) **The general public** [] should be adequately and appropriately informed of the quality of water intended for human consumption.

(8) It is necessary to exclude from the scope of this Directive natural mineral waters and waters which are medicinal products, since special rules for those types of water have been established in Directive 2009/54/EC of the European Parliament and of the Council of 18 June 2009 on the exploitation and marketing of natural mineral waters[1] and Directive 2001/83/EC of the European Parliament and of the Council of 6 November 2001 on the Community code relating to medicinal products for human use[2].

(9) Each Member State should establish monitoring programmes to check that water intended for human consumption meets the requirements of this Directive.

(10) The methods used to analyse the quality of water intended for human consumption should be such as to ensure that the results obtained are reliable and comparable.

(11) **Taking into consideration the large geographical variability in the natural occurance of radon the European Commission has adopted** Commission Recommendation 2001/928/Euratom of 20 December 2001 on the protection of the public against exposure to radon in **drinking** water supplies[3]**, which deals with the quality of water intended for human consumption supplies regarding radon and long-lived radon decay products, and it is appropriate to include these radionuclides in the scope of this Directive.**

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1 OJ L 164, 26.6.2009, p. 45
2 OJ L 311, 28.11.2001, p. 67
3 OJ L 344, 28.12.2001, p.85

~~(11a) In accordance with the Joint Political Declaration of Member States and the Commission on explanatory documents of 28 September 2011, Member States have undertaken to accompany, in justified cases, the notification of their transposition measures with one or more documents explaining the relationship between the components of a directive and the corresponding parts of national transposition instruments. With regard to this Directive, the legislator considers the transmission of such documents to be justified[1].~~

HAS ADOPTED THIS DIRECTIVE:

Article1

Subject matter

This Directive lays down requirements for the protection of the health of the general public with regard to [] radioactive substances in water intended for human consumption. It sets out parametric values, frequencies and methods for monitoring [] radioactive substances.

Article 2

Definitions

For the purposes of this Directive **the following** definitions [] shall apply**:**

(1) "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, from 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.

~~[1] see doc. 14603/11.~~

(2) "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.

(3) "~~Total~~ Indicative Dose" means the committed effective dose for one year of ingestion resulting from all the radionuclides whose presence in a water supply has been detected, both of natural and artificial origin, excluding tritium, potassium–40, radon and short-lived radon decay products.

(4) "Parametric value" means the value above which Member State shall assess whether the presence of radioactive substances in water intended for human consumption poses any risk to human health and, where necessary, shall take remedial action to improve the quality of water to a level which complies with the requirements for the protection of human health from a radiation protection point of view.

Article 3

*Scope **and exemptions***

(1) This Directive shall apply to water intended for human consumption[].

(2) This Directive shall not apply to:

(a) natural mineral waters recognised as such by the competent national authorities, in accordance with Directive 2009/54/EC of the European Parliament and of the Council of 18 June 2009 on the exploitation and marketing of natural mineral waters;

(b) waters which are medicinal products within the meaning of Directive 2001/83/EC of the European Parliament and of the Council of 6 November 2001 on the Community code relating to medicinal products for human use.

(3) Member States may exempt from the provisions of this Directive:

(a) 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;

(b) water intended for human consumption from an individual supply providing less than 10 m³ a day as an average or serving fewer than 50 persons, unless the water is supplied as part of a commercial or public activity.

(4) Member States that have recourse to the exemptions provided for in paragraph 3(b) shall ensure that the general public concerned is informed thereof and of any action that can be taken to protect human health from the adverse effects resulting from any contamination of water intended for human consumption. In addition, when a potential danger to human health arising out of the quality of such water is apparent, the general public concerned shall promptly be given appropriate advice.

Article 4
General obligations

Without prejudice to the provisions laid down in Article 6(3)a of Directive 96/29/Euratom, Member States shall take all measures necessary to establish an appropriate monitoring programme **of water intended for human consumption,** to ensure that **in the event of non-compliance** [] with the parametric values established in accordance with **this** [] Directive ~~**the Member State**~~ **it shall be assessed whether that non-compliance poses a~~ny~~ risk to human health and, where necessary, ~~shall take~~ that remedial action shall be taken 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 []**.

Article 5
*Parametric values **and points of compliance***

(1) Member States shall set parametric values applicable for the monitoring [] of radioactive substances in water intended for human consumption in accordance with Annex I.

(2) Where monitoring of water intended for human consumption is undertaken in accordance with the requirements of Annex II of this Direcive, compliance with parametric values shall be []:

(a) in the case of water supplied from a distribution network, at the point [] at which it emerges from the taps [] where the water is ~~are~~ normally taken [];

(b) in the case of water supplied from a tanker, at the point at which it emerges from the tanker;

(c) 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;

(d) in the case of water used in a food-production undertaking, at the point where the water is used in the undertaking.

(3) The definition of points of compliance in (2a) is without prejudice to the choice of a sampling point, which may be any point within the supply zone or at the treatment works provided there is no adverse change of the concentration value from that point to the point of compliance.

Article 6

Monitoring

Member States shall **take all measures necessary to** ensure **that** regular monitoring of water intended for human consumption **is carried out** in accordance with Annex II in order to check **whether** [] the concentrations of radioactive substances **meet** [] the parametric values laid down in **Annex I** [].

Article 8

Sampling and analysis

1. **Member States shall undertake monitoring for radioactive substances in water intended for human consumption in accordance with the monitoring strategies and frequencies set out in annex II. Monitoring shall be undertaken so as to ensure that measured ~~parametric~~ values obtained are** [] representative of the quality of the water consumed throughout the year**.**
2. ~~**Screening**~~ **Sampling and analytical methods** shall be [] in accordance with the **requirements []** set out in Annex III.
3. Member States shall ensure that **any** [] laboratory [] **at which samples are** analys**ed** [] **has** [] a system of analytical quality control **that** [] ~~**from time to time**~~ is subject to [] check**ing** by **a person who is external to the laboratory and who is** [] approved by the competent authority for that purpose.

Article 9

Remedial action and notification of ***the general public*** *[]*

1. Member States shall ensure that any failure to comply with **a** parametric value~~s~~ laid down in accordance with Article 5 is immediately investigated in order to identify **the** [] cause.
2. Where a failure to comply with **a** parametric value~~s laid down in accordance with Article 5~~ occurs, the Member State shall assess whether the failure poses a risk to human health**. In case of prolonged non-compliance with the parametric values an assessment of doses to infants and children may be considered.**
3. **In the event that there is such a risk,** the Member State shall
   a) take remedial action **in order to comply with requirements for the protection of human health from a radiation protection point of view, and** ~~to **improve** []the [] quality of [] water **intended for human consumption to a level that does not constitute a risk to [] human health in accordance with the parametric values laid down [] in Annex I.**~~
   b) ~~4. Where the risk to human health cannot be regarded as **acceptable**[], the Member State shall~~ ensure that **the general public is** [] notified **of the risk and ~~to human health, of~~ the remedial action taken and ~~any advice on further protective measures []~~ furthermore is advised on any additional precautionary measures that may be needed to safeguard human health**.

~~***Article 9a***~~

~~**The Commission shall be empowered to adopt delegated acts in accordance with Article 9b in order to amend Annexes II and III by adapting them to the scientific, technical and technological progress.**~~

~~***Article 9b***~~

~~***Exercise of the delegation***~~

~~**1. The power to adopt delegated acts is conferred on the Commission subject to the conditions laid down in this Article.**~~

~~2. DURATION~~

~~*OPTION 1:*~~

~~The power to adopt delegated acts referred to in Article 9a shall be conferred on the Commission for an indeterminate period of time from [date of entry into force of this Directive or any other date set by the legislator].~~

~~*OPTION 2:*~~

~~The power to adopt delegated acts referred to in Article 9a shall be conferred on the Commission for the period of [5] years from [date of entry into force of this Directive or any other date set by the legislator] The Commission shall draw up a report in respect of the delegation of power not later than nine months before the end of the [5] year period. The delegation of power shall be tacitly extended for periods of an identical duration, unless the Council opposes such extension not later than three months before the end of each period.~~

~~*OPTION 3:*~~

~~The power to adopt delegated acts referred to in Article 9a shall be conferred on the Commission for a period of [5] years from [date of entry into force of this Directive or any other date set by the legislator].~~

~~3. The delegation of power referred to in Article 9a may be revoked at any time by the Council. A decision to revoke shall put an end to the delegation of the power specified in that decision. It shall take effect the day following the publication of the decision in the Official Journal of the European Union or at a later date specified therein. It shall not affect the validity of any delegated act already in force.~~

~~4. As soon as it adopts a delegated act, the Commission shall notify it to the Council.~~

~~5. A delegated act adopted pursuant to Article 9a shall enter into force only if no objection has been expressed by the Council within a period of [two months] of notification of that act to the Council or if, before expiry of that period, the Council has informed the Commission that it will not object. That period shall be extended by [two months] at the initiative of the Council.~~

~~***Article 9c***~~

~~**The European Parliament shall be informed of the adoption of delegated acts by the Commission, of any objection formulated to them, or of the revocation of the delgation of powers by the Council.**~~

Article 10

Transposition into national law

1. Member States shall bring into force the laws, regulations and administrative provisions necessary to comply with this Directive by []**two** year**s** after the date referred to in Article 11 at the latest. They shall forthwith communicate to the Commission the text of those provisions [].

   When Member States adopt those provisions, they shall contain a reference to this directive or be accompanied by such a reference on the occasion of their official publication. Member States shall determine how such reference is to be made.

2. The Member States shall communicate to the Commission the texts of the main provisions of national law which they adopt in the field covered by this Directive.

Article 11

Entry into force

This Directive shall enter into force on the twentieth day following that of its publication in the Official Journal of the European Union.

Article 12

Addressees

This Directive is addressed to the Member States.

Done at Brussels, [...]

For the Council

The President

ANNEX I

Parametric values for radon, tritium and ~~Total~~ Indicative Dose of [] water intended for human consumption

Radioactivity

Parameter	Parametric value	Unit	Notes
Radon	**100**	**Bq/l**	**(Note 1)**
Tritium	100	Bq/l	**(Note 2)**
~~Total~~ **I**ndicative dose	0.10	mSv	(Note **3**)

Note 1

*(a) Member States **may in addition set a level for radon which is judged inappropriate to be exceeded and below which optimisation of protection should be continued, without compromising water supply on a national or regional scale**. ~~Member States must set a level for radon to be used for considering if remedial action is needed to protect human health.~~ The level set by a Member State may be higher than 100 Bq/l **but lower than 1000 Bq/l** ~~is necessary in order to implement a practical radon programme.~~*

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

*Note 2: **E**levated levels of tritium may indicate the presence of other artificial radionuclides. **I**f the tritium concentration exceeds its parametric value, an analysis of the presence of other artificial radionuclides shall be required*

Note 3: Excluding radon, tritium, potassium -40, ~~radon~~ and short-lived radon decay products. The parametric value of ~~T~~ID is for one year of ingestion.

ANNEX II

Monitoring of radioactive substances

1. General principles and monitoring frequencies

All parameters set in accordance with Article 5(1) shall be subject to monitoring unless it can be established by the competent authorities that, for a period of time to be determined by them, a parameter is not likely to be present in a given supply in concentrations which could exceed the corresponding parametric value.

A Member State is not required to monitor [] water **intended for human consumption** for **radon,** tritium or radioactivity to establish ~~total~~ **the** indicative dose where it is satisfied on the basis of **representative surveys, []** monitoring **data or other reliable information** that the levels of **radon,** tritium **or []** of the calculated ~~total~~ indicative dose are [] below the **respective** parametric value**s listed in Annex I**. In that case, it shall communicate the grounds for its decision to the Commission **and provide the Commission with the necessary documentation supporting that decision**, including the **findings []** of **any surveys, []** monitoring **or investigations** carried out.

2. Radon

Representative surveys shall be undertaken to determine the scale and nature of likely exposures to radon ~~and long-lived radon decay products~~ in water intended for human consumption originating from different types of ground water sources and wells in different geological areas. The surveys shall be designed in such a way that underlying parameters, and 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. Measurements of radon concentration 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 might be exceeded.

3. Tritium

Monitoring of drinking water **intended for human consumption** for tritium shall be carried out where a**n anthropogenic** source of tritium is present within the catchment and it cannot be shown on the basis of other surveillance programmes or investigations that the level of tritium is [] below its parametric [] value 100 Bq/l. Where monitoring for tritium is required, it shall be carried out at the [] frequen**cies indicated in tables A or B**.

4. ~~Total~~ Indicative Dose

Monitoring of [] water **intended for human consumption** for ~~Total~~ Indicative Dose (~~T~~ID) shall be carried out where a source of artificial or **elevated** [] natural radioactivity is present [] and it cannot be shown on basis of ~~**representative**~~ [] programmes**, other representative monitoring programmes** or **other** investigations that the level of ~~T~~ID is [] below its parametric [] value 0.1 mSv []. Where monitoring for artificial radionuclide levels is required, it shall be carried out at the [] frequency indicated in ~~the~~ table**s A or B**. Where monitoring for natural radionuclide levels is required, Member States shall define the frequency of the monitoring **of gross alpha activity, gross beta activity**[1] **and individual natural radionuclides** having regard to all relevant information available on temporal variations of natural radionuclide levels in different types of waters. Depending on the expected variations, monitoring frequency may vary from a single check measurement to the [] frequenc**ies indicated in ~~the~~ table**s **A or B**. Where only a single check for natural radioactivity is required, a re-check 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. Water treatment

Where **treatment to reduce the level of** [] radionuclides **in** [] water **intended for human consumption** has been **undertaken,** [] monitoring shall be carried out at the [] frequenc**ies indicated in tables A or B to ensure the continued efficacy of this treatment** [].

[]

~~5.~~**6. Minimum sampling and analysis frequencies**

The **minimum sampling and analysis** [] frequency **for** [] monitoring shall be as set out in the following table**s**:

[1] **For most naturally occurring radionuclides a nuclide-specific analysis is more effective than gross beta activity measurements.**

TABLE **A**

[] **Minimum sampling and analysis** frequency of monitoring for 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 (Notes 1 and 2) m^3	Number of samples per year (Notes 3 **and 4**)
≤ 100	(Note [] **5**)
> 100 ≤ 1 000	1 **(Note 6)**
> 1 000 ≤ 10 000	1 + 1 for each 3 300 m^3/d and part thereof of the total volume **(Note 6)**
> 10 000 ≤ 100 000	3 + 1 for each 10 000 m^3/d and part thereof of the total volume
> 100 000	10 + 1 for each 25 000 m^3/d and part thereof of the total volume **(Note 6)**

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. A Member State 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.

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 monitoring frequency of water distributed by tankers is to be decided by the Member State concerned.

Note [] **5**: The frequency is to be decided by the Member State concerned.

Note 6: In case of naturally occuring radionuclides, when previous results have shown that the concentration of radionuclides is stable, the frequency is to be decided by the Member State taking into consideration the ~~concerned after considering~~ risk to human health.

TABLE B

Minimum frequency of sampling and analysis for water put into bottles or containers intended for sale

Volume of water produced for offering for sale in bottles or containers each day (*) m^3	**Number of samples per year**
~~<10~~	**~~1~~**
~~>10≤~~60	**1**
>60	**1 for each 100 m^3 and part thereof of the total volume (**)**

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

(**) Not more than 12 samples per year.

7. Averaging

Where a parametric value is exceeded in a particular sample, Member States shall check whether the radionculides are persistently present at similar activity concentrations for a full year. Member States shall define the extent of resampling necessary to ensure that the measured values are representative of an average activity concentration for a full year.

ANNEX III

[] ~~Screening~~ Sampling and analysis methods

1. ~~Screening~~ **Monitoring** for compliance with **the** ~~total~~ indicative dose (~~T~~ID)

Member States may use screening methods for gross alpha activity and gross beta activity to monitor for the parametric indicator value for ~~T~~ID~~, excluding tritium, potassium-40, radon and short-lived radon decay products~~.

If the gross alpha activity and gross beta activity are less than 0.1 Bq/l and 1.0 Bq/l respectively, the Member State may assume that the ~~T~~ID is less than the parametric ~~indicator~~ value of 0.1 mSv [] and [] radiological investigation 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 a ~~T~~ID in excess of 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 radionuclides to be measured shall be defined by Member States taking into account all relevant information about 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.

In replacement of gross alpha activity **or** [] gross beta activity screening discussed above[1], Member States may decide to use other reliable screening methods [] to indicate the presence of radioactivity in [] water **intended for human consumption**. **These methods may include screening for certain radionuclides, or screening for an individual radionuclide.** ~~**Where screening is based solely on a specific radionuclide and**~~ **I**f one of the activity concentrations exceeds 20% of its reference concentration or the tritium concentration exceeds its parametric value of 100 Bq/l, an analysis of additional radionuclides shall be required. The radionuclides to be measured shall be defined by Member States taking into account all relevant information about likely sources of radioactivity.

2. Calculation of the ~~Total~~ Indicative Dose (~~T~~ID)

~~The TID is the committed effective dose for one year of **ingestion** [] resulting from all the radionuclides whose presence in a water supply has been detected, both of natural and artificial origin, excluding tritium, potassium-40, radon and **short-lived** radon decay products.~~ The ~~T~~ID shall be calculated from the **measured** radionuclide concentrations and the dose coefficients for adults laid down in Annex III, Table A of Directive 96/29/Euratom or more recent information recognised by the competent authorities in the Member State**, on the basis of the annual intake of water (730 l)**. Where the following formula is satisfied, Member States may assume that the ~~T~~ID is less than the parametric ~~indicator~~ value of 0.1 mSv~~/year~~ and no further investigation shall be required:

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

where

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

$C_i(ref)$ = reference concentration of radionuclide i

n = number of radionuclides detected.

~~Where the formula is not satisfied, the parametric value shall only be regarded as having been exceeded if the radionuclides are persistently present at similar activity concentrations for a full year. Member States shall define the extent of resampling necessary to ensure that the measured values are representative for an average activity concentration for a full year.~~

[1] **This does not preclude complementary gross activity screening, where appropriate with higher thresholds for specific responses, as part of an alternative monitoring strategy.**

Reference concentrations for radioactivity in []water **intended for human consumption**[1]

Origin	Nuclide	Reference 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 ~~per year~~ and [] using the dose coefficients for adults laid down in Annex III, Table A of Directive 96/29/Euratom; reference concentrations for other radionuclides can be calculated on the same basis, and values can be updated on the ~~is~~ basis, or 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.

3. Performance characteristics and methods of analysis

For the following radioactivity parameters, the specified performance characteristics are that the method of analysis used must, as a minimum, be capable of measuring concentrations equal to the parametric value with a limit of detection specified.

Parameters	Limit of detection (Note 1)	Notes
Tritium	10 Bq/l	Note 2, 3
Radon	**10 Bq/l**	**Note 2, 3**
gross alpha	0.04 Bq/l	Note 2, 4
gross beta	0.4 Bq/l	Note 2, 4
U-238	0.02 Bq/l	Note 2~~, 6~~
U-234	0.02 Bq/l	Note 2~~, 6~~
Ra-226	0.04 Bq/l	Note 2
Ra-228	0.08 Bq/l	Note 2, 5
Pb-210	**0.02 Bq/l**	**Note 2**
Po-210	**0.01 Bq/l**	**Note 2**
C-14	20 Bq/l	Note 2
Sr-90	0.4 Bq/l	Note 2
Pu-239/Pu-240	0.04 Bq/l	Note 2
Am-241	0.06 Bq/l	Note 2
Co-60	0.5 Bq/l	Note 2
Cs-134	0.5 Bq/l	Note 2
Cs-137	0.5 Bq/l	Note 2
I-131	0.5 Bq/l	Note 2

Note 1: the limit of detection shall be calculated according to ISO 11929-7, Determination of the detection limit and decision thresholds for ionizing radiation measurements-Part 7: Fundamentals and general applications, with probabilities of errors of 1st and 2nd kind of 0.05 each

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 (ISO, Geneva 1993, corrected reprint Geneva, 1995)

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

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 routine screening; for a new water source for which it is plausible that Ra-228 exceeds 20% of the reference concentration, the limit of detection for the first check shall be 0.02 Bq/l for Ra-228 nuclide specific measurements. This shall also apply where a subsequent re-check is required.

Note 6:~~ The low value of the specified detection limit for U is due to taking into account the chemotoxicity of uranium.~~ For natural uranium these limits of detection should be achieved through the determination of the elemental concentration.