

National Food Agency Code of Statutes

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Regulations amending the National Food Agency regulations (SLVFS 2001:30) on water intended for human consumption;

LIVSFS 2011:3

(H 90)

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adopted on 16 March 2011.

Pursuant to Sections 3, 5, 6, 11, 31 and 40 of the Foods Ordinance (2006:813), the National Food Agency prescribes¹ with respect to the Agency's regulations (SLVFS 2001:30) on water intended for human consumption

that the words “supervisory authority” in various forms shall be replaced by the word “monitoring authority” in a corresponding form in Sections 1, 11, 14, 16 and 17 and *Annexes* 2 and 3,

that the words “monitoring”, “normal monitoring” and “expanded monitoring” in various forms in Sections 9-12 and Annex 3 shall be replaced by the words “testing”, “normal testing” and “expanded testing” in corresponding forms,

that Sections 6 and 10-14, the subheadings before Section 9 and *Annexes* 1-4 shall have the following wording,

that three new sections, 2a, 2b and 14a, with the following wording, shall be introduced, and

that new subheadings with the following wording shall be introduced before Sections 2a and 2b.

The regulations will therefore have the following wording with effect from the day on which this statutory instrument enters into force.

¹ Cf. Council Directive 98/83/EC of 3 November 1998 on the quality of water intended for human consumption (correction pertaining to the whole Directive published in OJ L 305, 30.11.1999, p. 34, Celex 31998L0083). Notification has been made under Directive 98/34/EC of the European Parliament and of the Council from 22 June 1998 laying down a procedure for the provision of information in the field of technical standards and regulations and of rules on information society services (OJ L 204, 21.7.1998, p. 37, Celex 1998L0034), amended by Directive 98/48/EC of the European Parliament and of the Council (OJ L 217, 5.8.1998, p. 18, Celex 31998L0048).

Definitions

Section 1 In these regulations the following terms have the meaning set out below:

1. *water intended for human consumption*:
 - a) all water either in its original state or after treatment, intended for drinking, cooking or food preparation, regardless of its origin and whether it is supplied from a distribution network, from tanks, or in bottles or containers, and
 - 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 undertaking can show the monitoring authority that the quality of the water cannot affect the wholesomeness of the foodstuff in its finished form
2. *water treatment works*: such part of a system for supply of water intended for human consumption as pertains to extraction, preparation or similar handling of water intended for human consumption, as well as associated reservoirs or similar devices for the storage of water intended for human consumption;
3. *distribution system*: such part of a system for the distribution of water intended for human consumption as pertains to pipelines, pumps, tanks or similar pipework for the distribution of water for human consumption (*LIVSFS 2005:10*).

Scope

Section 2 These regulations apply to the handling and quality of water intended for human consumption, regardless of whether this is part of a professional activity or not.

The regulations do not, however, apply to water intended for human consumption from water treatment works

- which on average provide less than 10 m³ of water intended for human consumption per day, or
- which supply fewer than 50 persons,

unless the water is provided or used as part of a commercial or public activity.

General hygiene rules

Section 2 a Whosoever produces water intended for human consumption or provides it from a distribution system shall, when it is necessary to maintain satisfactory hygiene, fulfil the requirements contained in *Annex II* of Regulation (EC) No 853/2004 of 29 April 2004 on the hygiene of foodstuffs as follows:

1. general rules for premises in Chapter I,
2. special rules for premises in Chapter II,

3. transport in Chapter IV, with the exception of point 4,
4. equipment in Chapter V,
5. food waste in Chapter VI, with the exception of point 2,
6. water supply in Chapter VII, point 1 a,
7. personal hygiene in Chapter VIII,
8. food products in Chapter IX, points 3, 4 and 8, and
9. training in Chapter XII.

Hazard analysis and critical control points

2 b Section Whosoever produces water intended for human consumption or provides it from a distribution system shall, when necessary in order to fulfil the requirements contained in these regulations,

1. establish, implement and maintain one or more permanent procedures based upon the HACCP principles in accordance with Article 5(2) of Regulation (EC) No 853/2004 of 29 April 2004 on the hygiene of foodstuffs,
2. ensure that all documentation describing the procedures drawn up in accordance with point 1 are always up to date, and
3. keep all other documentation and all other records for a suitable period of time.

Preparation and distribution

Section 3 Such methods shall be used in the preparation of the water intended for human consumption as are required to ensure that it fulfils the requirements of these regulations when it reaches the users. Particular attention shall be paid to

- the nature of the water when is intended to be used as drinking water after preparation (raw water) and
- the risk of changes in quality during distribution. The preparation shall be provided with a sufficient number of safety barriers against microbiological contamination.

In cases where disinfection is included in the preparation of water intended for human consumption, it shall be checked that the disinfection is effective and that any contaminants originating from by-products of disinfection are kept to as low a level as possible without risk to the effectiveness of disinfection.

Section 4 At water treatment works there shall be

- equipment warning when errors occur in pH adjustment and disinfection,
- an alarm which is triggered in the event of increased turbidity, if the water treatment works uses surface water as raw water and is equipped with filters to separate turbidity,
- a description of the water treatment works, and

- operating instructions.

A person shall be available who is responsible for operation at the water treatment works.

Section 5 Water intended for human consumption shall not contain any substances used in the preparation or distribution of water intended for human consumption, or contaminants related to such substances, at higher levels than is necessary to fulfil the purpose of their use.

Neither shall water intended for human consumption contain material from installations used in the preparation or distribution of drinking water, or contaminants related to such substances, at higher levels than is necessary to fulfil the purpose of use of the materials.

Annex 1 contains a list of the process chemicals which may be used in the preparation of water intended for human consumption. The purpose of and conditions for their use are also presented.

Section 6 A distribution system shall be designed, maintained and operated in such a way that the water intended for human consumption fulfils the requirements contained in these regulations when it reaches the users.

There shall be a description of the distribution system if this forms part of such a general system as is referred to in the Act (2006:412) on general water services.

Quality requirements

Section 7 Water intended for human consumption shall be wholesome and clean. It shall be deemed to be wholesome and clean if it

- does not contain microorganisms, parasites and substances in such number or at such levels that they can pose a hazard to human health, and
- fulfils the quality requirements contained in *Annex 2*.

Section 8 The quality requirements stated in *Annex 2* shall be fulfilled

- a) for outgoing water intended for human consumption from a water treatment works: after completion of preparation before it is distributed,
- b) for water intended for human consumption which is provided from a distribution system at the point in a property or a system where it is drawn from the taps normally used for drinking water,
- c) for water intended for human consumption which is provided from tanks: at the point where it is drawn from the tank,
- d) for water intended for human consumption which is used in a food-producing undertaking: at the point within the business where it is used, and

- e) for water intended for human consumption which is drawn from bottles or containers intended for sale: at the point where it is drawn from the bottle or container.

Tests etc.

Section 9 *Annex 3* presents

- the scope of normal testing of water intended for human consumption (*part A*),
- the scope of expanded testing of water intended for human consumption (*part B*), and
- minimum frequency of sampling and analysis (*section C*).

Section 10 Proposals for programmes or regular tests shall state sampling points and the frequency of normal and expanded testing as stated in the second paragraph.

Proposals shall be drawn up

- by whosoever produces water intended for human consumption, irrespective of whether this takes place professionally or not (*Annex 3, part C.I*),
- by whosoever through a distribution system or from tanks provides water intended for human consumption, irrespective of whether this takes place professionally or not (*Annex 3, part C.I*),
- by undertakings that produce packed water intended for human consumption (*Annex 3, part C.III*, and *Annex 3, part C.I* if the undertaking uses water intended for human consumption not supplied by another), and
- by other food-producing undertakings which use water intended for human consumption not supplied by another (*Annex 3, parts C.I-II*).

Section 11 When the monitoring authority establishes programmes for regular tests, it shall establish sampling points and the frequency of normal and expanded testing.

The monitoring authority may decide on restrictions on the scope of the expanded testing and the frequency of the normal testing, in comparison with what is stated in *Annex 3*. The conditions for such restrictions are stated in *parts B* and *C* of *Annex 3*.

Section 12 Whosoever is to draw up proposals for programmes for regular tests in accordance with Section 10 shall carry out such tests to check that the water intended for human consumption fulfils the requirements contained in *Annex 2*.

Sampling for microbiological analysis in tests in accordance with the first paragraph shall be carried out in accordance with SS-EN ISO 19458.

The tests shall relate at least to the parameters stated in *Annex 3, section A* (normal testing) and *Annex 3, section B* (expanded testing), unless the monitoring authority decides otherwise.

Tests of substances and microorganisms other than those stated in *Annex 2* shall be carried out if there is reason to suspect that they may occur at such levels that they may pose a hazard to human health.

Section 13 Tests in accordance with the first paragraph of Section 12 shall be performed at a laboratory accredited for such analyses referred to in this section.

The first paragraph does not apply to tests of active chlorine, pH, temperature and taste at the sampling point for outgoing water and taste at the sampling point for water intended for human consumption at the user.

Methods of analysis for tests of samples of water intended for human consumption shall fulfil the requirements contained in *Annex 4*.

Methods of analysis other than those stated in *Annex 4, part A* may be used if the National Food Agency deems them to provide at least equally reliable results.

In analysis of the parameters stated in *Annex 4, parts B and C*, the method of analysis shall fulfil the requirements stated in these parts. (*LIVSFS 2003:44*)

Section 14 In tests in accordance with the first paragraph of Section 12, the sample shall be assessed as fit for human consumption, fit for human consumption subject to comment or unfit for human consumption.

If a sample of water intended for human consumption is assessed or will probably be assessed as unfit for human consumption, the party commissioning the test and the monitoring authority shall be immediately informed thereof.

Section 14 a Whosoever produces or provides >1,000 m³ drinking water per day from a system as referred to in the General Water Services Act shall continuously compile data and evaluate how the quality of water intended for human consumption at the user changes. The compilation of data shall at least comprise the parameters stated in *Annex 3, part A* (normal testing).

Remedial action etc.

Section 15 If the quality requirements contained in *Annex 2* are not fulfilled, or if the water intended for human consumption may for some other reason pose a health risk, whosoever produces water intended for human consumption or provides it from a distribution system shall immediately investigate the cause thereof.

Section 16 Whosoever produces water intended for human consumption or provides it from a distribution system shall

- investigate whether there is any risk to human health that the quality requirements contained in *Annex 2* are not fulfilled,
- as soon as possible take the measures necessary for the quality requirements contained in *Annex 2* to be fulfilled,
- take measures even if no limit value contained in *Annex 2* has been exceeded, if the water intended for human consumption may pose a risk to health, and
- inform the monitoring authority at once if direct measures to protect human health need to be taken.

In assessing what measures need to be taken in accordance with the first paragraph, account shall be taken, *inter alia*, of the extent to which the quality requirements are not fulfilled.

The first paragraph does not apply if it is due to the property installation or maintenance thereof that the quality requirements contained in *Annex 2* are not fulfilled or that measures need to be taken on other grounds. In such cases the property owner shall be informed that there is a need for measures to be taken.

Section 17 Whosoever produces water intended for human consumption or provides it through a distribution system shall

- immediately inform the consumers and give them the advice necessary when use of the water intended for human consumption is restricted or other measures are taken to protect human health, and
- inform the consumers when necessary measures are taken in accordance with Section 16 to remediate deficiencies, unless the monitoring authority considers the deviation from the quality requirements to be of minor significance.

Section 18 Whosoever produces water intended for human consumption or provides it through a distribution system shall make adequate and up-to-date data on the quality of the water intended for human consumption available to the consumers.

Section 19 Packaged water intended for human consumption which is covered by the agreement on the European Economic Area (the EEA agreement) may be offered for sale even if it does not fulfil the requirements contained in these regulations.

Section 20 The National Food Agency may permit derogations from these regulations.

These regulations (SLVFS 2001:30) enter into force on the day on which they are published but shall be applied with effect from 25 December 2003 when the Authority's Regulations and General Guidelines (SLVFS 1989:30) on water intended for human consumption cease to apply. The second paragraph of Section 5 applies only in those cases where the installations have been made after 24 December 2003.

These regulations (LIVSFS 2003:44) enter into force on 25 December 2003.

These regulations (LIVSFS 2005:10) enter into force on the day on which they are published

These regulations (LIVSFS 2011:3) enter into force

- on 1 April 2011 with respect to the amendments to *Annex 1* and
- on 1 January 2012 in other respects.

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Process chemicals for preparation of water intended for human consumption in accordance with Section 5

Part A. List of approved process chemicals

Process chemical and purpose	Conditions
<u>For scale inhibition prior to membrane for reverse osmosis</u>	
The product “Ameroyal 363”	The dosage of the product shall not exceed 5 g/m ³ .
The product “Ameroyal 642”	The dosage of the product shall not exceed 5 g/m ³ .
<u>For scale inhibition prior to nanofiltration</u>	
The product “Ameroyal 363”	The dosage of the product shall not exceed 5 g/m ³ .
<u>For disinfection and oxidation</u>	
Calcium hypochlorite Chlorine Sodium hypochlorite	} The dosage shall not normally exceed 1.0 g/m ³ , calculated as Cl ₂ , unless there is a special preparation step for the reduction of chlorine compounds
Chlorine dioxide	
Potassium permanganate	} For oxidation only

² Latest wording of *Annex 1* of LIVSFS 2005:10.

Process chemical and purpose	Conditions		
<u>For disinfection and oxidation, cont.</u>			
Ozone	}	For production of ozone and oxidation through aeration	
Hydrogen peroxide			
Oxygen			
Ammonia	}	For production of monochloramine	
Ammonium chloride			
Ammonium sulphate			
<u>For precipitation and coagulation</u>			
Aluminium sulphate	}	May be activated with another substance approved for preparation of water intended for human consumption	
Potassium aluminium sulphate			
Iron(II) chloride/sulphate			
Iron(III) chloride/sulphate			
Calcium chloride			
Sodium aluminate			
Polyaluminium chloride silicate			
Polyaluminium chloride/sulphate			
Sodium silicate (water glasses)			
Polyacrylamide		}	The average dosage shall not exceed 0.5 g/m ³ calculated as active substance ³
Polyacrylamide-acrylic acid copolymer			
The product “Sobra 10”			
The product “Sobra 20”			
<u>For pH adjustment and alkalisiation</u>			
Calcium hydroxide (slaked lime)	}	Slurry of calcium carbonate dosed prior to chemical precipitation or infiltration may contain addition of maximum 0.5% sodium polyacrylate calculated on dry calcium carbonate. The monomer content (acrylic acid) in the sodium polyacrylate may be maximum 0.1% and the slurry dosage may be maximum 75 g/m ³ .	
Calcium carbonate (limestone, crushed marble, chalk)			

³ Cf. however limit value for acrylamide in *Annex 2*, section A II Chemical parameters.

Process chemical and purpose**Conditions**

For pH adjustment and alkalisation,
cont.

Calcium carbonate magnesium oxide
(half-burnt dolomite)

Calcium magnesium carbonate
(dolomite)

Calcium oxide (burnt lime)

Calcium carbonate

Carbon dioxide (carbonic acid)

Sodium hydroxide (lye, caustic soda)

Sodium carbonate (soda)

Sodium hydrogen carbonate
(bicarbonate)

Hydrochloric acid

Sulphuric acid

For other purposes

Activated charcoal

Potassium permanganate

Sodium chloride

For adsorption purposes

} For regeneration of iron and manganese
filters

For regeneration of iron exchange filters

Part B. Maximum permitted level of contaminants in chemicals for precipitation, pH adjustment and alkalisation

	Cadmium	Lead	Chromium	Mercury	Arsenic
Maximum level (mg/kg active substance)	1	10	20	0.5	10

Part C. Maximum permitted monomer contents in polyacrylamide

Monomer contents in polyacrylamide shall be no higher than 500 mg/kg⁴.

⁴ Cf however limit value *Annex 2*, Part A.II Chemical parameters.

Limit values⁵

Part A. Limit values where the water intended for human consumption is to be deemed unfit for consumption

I. Microbiological parameters

Parameter	Limit value for unfit for consumption at sampling point (unit)	Comment
	Outgoing water intended for human consumption and water intended for human consumption at the user (Section 8 a, b, c, d)	Packed water intended for human consumption (Section 8 e)
Culturable microorganisms at 22°C		100 (count/ml)
Culturable microorganisms at 37 °C		20 (count/ml)
<i>Escherichia coli</i> (<i>E. coli</i>)	Detected (in 100 ml)	Detected (in 250 ml)
Intestinal enterococci	Detected (in 100 ml)	Detected (in 250 ml)
Coliform bacteria	10 (number/100 ml)	10 (number/250 ml)

⁵ Latest wording of Annex 2 LIVSFS 2003:44.

Parameter	Limit value for unfit for consumption at sampling point (unit)	Comment
	Outgoing water intended for human consumption and water intended for human consumption at the user (Section 8 a, b, c, d)	Packed water intended for human consumption (Section 8 e)
<i>Pseudomonas aeruginosa</i>		Detected (in 250 ml)

II. Chemical parameters

Parameter	Limit value for unfit for consumption at sampling point (unit)	Comment
	Water intended for human consumption at the user and packaged water intended for human consumption (Section 8 b, c, d, e)	
Acrylamide, calculated	0.10 (µg/l)	The limit value shall be applied to the content of residual monomer in the water intended for human consumption. The parameter shall be tested through theoretical calculation based on data on the level and maximum migration from the corresponding polymer in contact with the water intended for human consumption.
Antimony	5.0 (µg/l Sb)	
Arsenic	10 (µg/l As)	

Parameter	Limit value for unfit for consumption at sampling point (unit)	Comment
	Water intended for human consumption at the user and packaged water intended for human consumption (Section 8 b, c, d, e)	
Pesticides – individual	0.10 (µg/l)	<p>The limit value shall be applied to the level of each individual pesticides detected and quantified in a sample.</p> <p>A limit value of 0.030 µg/l shall be applied for aldrin, dieldrin, heptachlor and heptachlor epoxide.</p> <p>'Pesticides' means organic substances used as insecticides, herbicides, fungicides, nematocides, acaricides, algicides, slimicides, growth regulators and similar products, as well as relevant metabolites and degradation and reaction products.</p>
Pesticides, total level	0.50 (µg/l)	<p>The limit value shall be applied to the level of each individual pesticides detected and quantified in a sample.</p> <p>'Pesticides' means organic substances used as insecticides, herbicides, fungicides, nematocides, acaridies, algicides, slimicides, growth regulators and similar products, as well as relevant metabolites and degradation and reaction products.</p>

Parameter	Limit value for unfit for consumption at sampling point (unit)	Comment
	Water intended for human consumption and packaged water intended for human consumption (Section 8 b, c, d, e)	
Benzene	1.0 (µg/l)	
Benzo(a)pyrene	0.010 (µg/l)	See also the parameter polycyclic aromatic hydrocarbons (PAHs) below.
Lead	10 (µg/l Pb)	The limit value shall be applied to samples which represent the average weekly intake of water intended for human consumption by consumers.
Boron	1.0 (mg/l B)	
Bromate	10 (µg/l BrO ₃)	
Cyanide	50 (µg/l CN)	The limit value relates to the total level of cyanide.
Epichlorohydrin, calculated	0.10 (µg/l)	The parameter shall be tested through theoretical calculation based on data on the level in and maximum migration from the corresponding polymer in contact with the water intended for human consumption.
1,2-dichloroethane	3.0 (µg/l)	

Parameter	Limit value for unfit for consumption at sampling point (unit)	Comment
	Water intended for human consumption and packaged water intended for human consumption (Section 8 b, c, d, e)	
Fluoride	1.5 (mg/l F)	
Cadmium	5.0 (µg/l Cd)	
Copper	2.0 (mg/l Cu)	The limit value shall be applied to samples which represent the average weekly intake of water intended for human consumption by consumers.
Chromium	50 (µg/l Cr)	
Mercury	1.0 (µg/l Hg)	
Odour	Clear or Very strong	The limit value relates to testing at 20°C. The limit value shall be applied when a clear foreign odour indicates that the water is no contaminated that it is not to be used as water intended for human consumption or when a very strong odour makes the water evidently repellent.
Nickel	20 (µg/l Ni)	The limit value shall be applied to samples which represent the average weekly intake of water intended for human consumption by consumers.

Parameter	Limit value for unfit for consumption at sampling point (unit)	Comment
	Water intended for human consumption and packaged water intended for human consumption (Section 8 b, c, d, e)	
Nitrate	50 (mg/l NO ₃)	
Nitrite	0.50 (mg/l NO ₂)	The parameter $\frac{NO_3}{50} + \frac{NO_2}{0.5}$, based on the levels of NO ₃ and NO ₂ in mg/l, shall be ≤1.
pH (hydrogen ion concentration)	10.5 (pH units)	The limit value shall also be applied to outgoing water intended for human consumption if pH adjustment forms part of preparation.
Polycyclic aromatic hydrocarbons (PAHs)	0.10 (µg/l)	The limit value shall be applied to the sum of the levels of the following substances: benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(ghi)perylene and indeno(1,2,3-cd)pyrene. See also the parameter benzo(a)pyrene above.
Radon	>1000 (Bq/l)	
Selenium	10 (µg/l Se)	

Parameter	Limit value for unfit for consumption at sampling point (unit)	Comment
	Water intended for human consumption and packaged and intended for human consumption (Section 8 b, c, d, e)	
Taste	Clear or Very strong	The limit value relates to testing at 20°C. The limit value shall be applied when a clear foreign taste indicates that the water is no contaminated that it is not to be used as water intended for human consumption or when a very strong taste makes the water evidently repellent.
Tetrachloroethene and trichloroethene	10 (µg/l)	The limit value shall be applied to the sum of the levels of stated substances.
Trihalomethanes (THM) – total	100 (µg/l)	The limit value shall be applied to the sum of the levels of chloroform, bromoform, dibromochloromethane and bromodichloromethane.
Vinyl chloride, calculated	0.50 (µg/l)	The parameter shall be tested through theoretical calculation based on data on the level of and migration from the corresponding polymer in contact with the water intended for human consumption.

Part B. Limit values where the water intended for human consumption is to be deemed fit for consumption subject to comment

I. Microbiological parameters

Parameter	Limit value for fit for human consumption subject to comment at sampling point (unit)			Comment
	Outgoing water intended for human consumption (Section 8 a)	Water intended for human consumption at the user (Section 8 b, c, d)	Packaged water intended for human consumption (Section 8 e)	
Actinomycetes		100 (count/100 ml)		
Culturable microorganisms at 22°C	10 (count/ml)	100 (count/ml)		The limit value for outgoing drinking water shall be applied to disinfected water intended for human consumption. The cause of abnormal changes shall always be investigated.
Slow-growing bacteria		5000 (count/ml)		
<i>Clostridium perfringens</i>		Detected (in 100 ml)	Detected (in 250 ml)	The limit value shall be applied to the count of <i>Clostridium perfringens</i> including spores.
Coliform bacteria	Detected (in 100 ml)	Detected (in 100 ml)	Detected (in 250 ml)	

Parameter	Limit value for fit for human consumption subject to comment at sampling point (unit)			Comment
	Outgoing water intended for human consumption (Section 8 a)	Water intended for human consumption at the user (Section 8 b, c, d)	Packaged water intended for human consumption (Section 8 e)	

Microfungus	100 (count/100 ml)			
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II. Chemical parameters

Parameter	Limit value for fit for human consumption subject to comment at sampling point (unit)		Comment
	Outgoing water intended for human consumption (Section 8 a)	Water intended for human consumption and packaged water intended for human consumption (Section 8 b, c, d, e)	
Aluminium		0.100 (mg/l Al)	The limit value relates to the total level of aluminium.
Ammonium		0.50 (mg /l NH ₄)	
Colour	15 (mg/l Pt)	30 (mg/l Pt)	The cause of abnormal changes shall always be investigated.
Iron	0.100 (mg/l Fe)	0.200 (mg/l Fe)	

Parameter	Limit value for fit for human consumption subject to comment at sampling point (unit)	Comment
	Outgoing water intended for human consumption (Section 8 a)	Water intended for human consumption and packaged and intended for human consumption (Section 8 b, c, d, e)
Calcium	100 (mg/l Ca)	
Chlorine, total active	0.4 (mg/l Cl ₂)	
Chloride	100 (mg/l Cl)	The water should not be corrosive (aggressive).
Conductivity	250 (mS/m)	The limit value relates to testing at 20°C. The water should not be corrosive (aggressive).
Copper	0.20 (mg/l Cu)	
Odour	Weak	The limit value relates to testing at 20°C. The cause of abnormal changes shall always be investigated.
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Parameter	Limit value for fit for human consumption subject to comment at sampling point (unit)	Comment
	Outgoing water intended for human consumption (Section 8 a)	Water intended for human consumption and packaged water intended for human consumption (Section 8 b, c, d, e)
Magnesium	30 (mg/l Mg)	
Manganese	0.050 (mg/l Mn)	
Sodium	100 (mg/l Na)	The water intended for human consumption shall not be considered fit for human consumption subject to comment at levels lower than 200 mg/l Na if the cause is that the water intended for human consumption has been prepared through ion exchange with sodium.
Nitrate	20 (mg/l NO ₃)	
Nitrite	0.10 (mg/l NO ₂)	
Oxidisability (permanganate index)	4.0 (mg/l O ₂)	

Parameter	Limit value for fit for human consumption subject to comment at sampling point (unit)	Comment
	Outgoing water intended for human consumption (Section 8 a)	Water intended for human consumption and packaged water intended for human consumption (Section 8 b, c, d, e)
pH (hydrogen ion concentration)	< 7 . 5 > 9.0 (pH units)	< 4.5 pH units shall be applied as a lower limit value for still (non-carbonated) packaged water intended for human consumption. The lower limit shall not be applied to packaged water intended for human consumption which is naturally rich in or has added carbon dioxide. The water should not be corrosive (aggressive).

Parameter	Limit value for fit for human consumption subject to comment at sampling point (unit)	Comment
	Outgoing water intended for human consumption (Section 8 a)	Water intended for human consumption and packaged water intended for human consumption (Section 8 b, c, d, e)
Radioactivity		
Tritium	100 (Bq/l)	
Total indicative dose	0.10 (mSv/year)	Tritium, potassium-40 and radon and their degradation products are not included in the total indicative dose.
Radon	>100 (Bq/l)	
Taste	Weak	The limit value relates to testing at 20°C. The cause of abnormal changes shall always be investigated.
Sulphate	100 (mg/l SO ₄)	The water should not be corrosive (aggressive).
Temperature	20 (°C)	

Parameter	Limit value for fit for human consumption subject to comment at sampling point (unit)		Comment
	Outgoing water intended for human consumption (Section 8 a)	Water intended for human consumption and packaged water intended for human consumption (Section 8 b, c, d, e)	
Total organic carbon (TOC)		Established by the monitoring authority	The limit value for TOC shall correspond to the limit value for oxidisability, and shall be calculated by measuring the relationship between TOC and oxidisability in the water intended for human consumption concerned over a period of at least 2 years.
Trihalomethanes (THM) – total		50 (µg/l)	The limit value shall be applied to the sum of chloroform, bromoform, dibromochloromethane and bromodichlormethane.
Turbidity	0.5 (FNU, NTU)	1.5 (FNU, NTU)	The cause of abnormal changes shall always be investigated.

Testing

Part A. Normal testing *Table I.*

Microbiological parameters

Parameters at sampling point			Comment
Outgoing water intended for human consumption (Section 8 a)	Water intended for human consumption at the user (Section 8 b, c, d)	Packaged water intended for human consumption (Section 8 e)	
Culturable microorganisms at 22°C	Culturable microorganisms at 22°C	Culturable microorganisms at 22°C	The parameter need only be analysed on outgoing water intended for human consumption if this is disinfected
	Slow-growing bacteria	Culturable microorganisms at 37 °C	
	<i>Clostridium perfringens</i>	<i>Clostridium perfringens</i>	In normal testing the parameter only needs to be analysed if the raw water comes from or is influenced by surface water.
<i>Escherichia coli</i> (<i>E. coli</i>) Coliform bacteria	<i>Escherichia coli</i> (<i>E. coli</i>) Coliform bacteria	<i>Escherichia coli</i> (<i>E. coli</i>) Coliform bacteria <i>Pseudomonas aeruginosa</i>	

¹ Latest wording of Annex 3 LIVSFS 2005:10.

Table II. Chemical parameters

Parameters at sampling point

Parameters at sampling point			Comment
Outgoing	Water intended for human consumption:	Packaged	
water intended for human consumption (Section 8 a)	at the user (Section 8 b, c, d)	water intended for human consumption (Section 8 e)	
	Aluminium	Aluminium	In normal testing the parameter only needs to be analysed if aluminium compounds are used in preparation.
	Ammonium	Ammonium	
Colour	Colour	Colour	
Iron	Iron	Iron	
Chlorine, total active			The parameter only needs to be analysed on drinking water disinfected with chlorine compounds
	Conductivity	Conductivity	
	Odour	Odour	
	Manganese	Manganese	
Nitrite	Nitrite	Nitrite	In normal testing the parameter only needs to be analysed if chloramination is used as a method of disinfection.
pH	pH	pH	pH of outgoing water intended for human consumption is analysed only if pH adjustment forms part of the preparation
	Taste	Taste	
Temperature			
Turbidity	Turbidity	Turbidity	

Part B. Expanded testing

Expanded testing shall be performed on water intended for human consumption at the user and on packaged water intended for human consumption (Section 8 b, c, d, e) and cover all the parameters contained in *Annex 2* which have a limit value at the sampling points concerned, with the following exceptions:

- tritium and total indicative dose of radioactivity
- individual parameters for a specifically stated period of time if the monitoring authority deems that it will probably not occur in a source which could pose a risk of the limit value in *Annex 2* being exceeded
- parameters indicated below, if the following conditions are met:

Parameter	Conditions
Acrylamide, epichlorohydrin, vinyl chloride	The parameter need only be calculated if the water intended for human consumption comes into contact with the corresponding polymer
Pesticides - individual	Only those pesticides assumed to occur in a water source need be analysed.
Oxidisability	The parameter does not need to be analysed if total organic carbon (TOC) is analysed
Radon	The parameter need only be tested if the water intended for human consumption comes from groundwater or surface water-influenced groundwater

Part C. Minimum frequency of sampling and analysis

The monitoring authority may decide to reduce the frequency of sampling and analysis for normal testing

- if the values obtained in testing during a period of at least two consecutive years are constant and clearly better than the limit values stated in *Annex 2*, and
- a deterioration in water quality is deemed unlikely.

However, the frequency shall not be less than 50% of the number of samples stated in this part.

With regard to outgoing water intended for human consumption $\leq 100 \text{ m}^3$ per day in Table II, no sampling is needed if the water producer can show the monitoring authority that no change in quality takes place between outgoing water intended for human consumption and water intended for human consumption at the user.

I. Outgoing water intended for human consumption (Section 8 a)

Produced volume of water intended for human consumption per day (m^3)		Normal testing (number of samples per year)	
		Microbiological parameters	Chemical parameters
		Groundwater	Surface water and surface water-influenced groundwater
≤ 400		4	12
> 400	≤ 600	6	24
> 600	≤ 800	9	36
> 800	$\leq 1,000$	12	48
$> 1,000$	$\leq 2,000$	12	52
$> 2,000$	$\leq 4,000$	12	52
$> 4,000$	$\leq 10,000$	12	52
$> 10,000$	$\leq 15,000$	12	52
$> 15,000$	$\leq 20,000$	12	52
$> 20,000$	$\leq 100,000$	12	52
$> 100,000$		24	52

¹The volumes are calculated as a mean value over a calendar year. The number of supply persons can be used as a basis for calculating produced volume of water intended for

human consumption. If this is done, it is assumed that consumption of water intended for human consumption is 100 l per person per day.

²The sampling shall as far as possible be distributed equally in time and location.

II. Water intended for human consumption at the user (Section 8 b, c, d)

Distributed or produced volume of water intended for human consumption per day in a water supply area (m³)⁶		Normal testing (number of samples per year)²	Expanded testing (number of samples per year)²
≤ 10		2	1 every three years
> 10	$\leq 1\ 00$	4	1 every other year
> 100	≤ 800	4	1
> 800	$\leq 1,000$	6	1
$> 1,000$	$\leq 4,000$	4 + (3 per 1000 m per day and part thereof calculated on the total volume)	1 + (1 per 3,300 m ³ per day and part thereof calculated on the total volume)
$> 4,000$	$\leq 10,000$	1 per 200 m per day and part thereof calculated on the total volume)	1 + (1 per 3,300 m ³ per day and part thereof calculated on the total volume)
$> 10,000$	$\leq 100,000$	³ 1 per 200 m per day and part thereof calculated on the total volume)	3 + (1 per 10,000 m ³ per day and part thereof calculated on the total volume)
$> 100,000$		³ 1 per 200 m per day and part thereof calculated on the total volume)	10 + (1 per 25,000 m ³ per day and part thereof calculated on the total volume)

In the case of irregular and short-term emergency water supply in tanks, normal testing shall be performed at least once within one week after the period of supply has commenced. In the case of emergency water supply lasting longer than one week, normal testing shall be performed at least once per week.

⁶The volumes are calculated as a mean value over a calendar year. The number of supplied persons in a water supply area can be used as a basis for calculating volume of distributed or produced water intended for human consumption. If so it is assumed that consumption of water intended for human consumption is 200 l per person per day. A water supply area is a geographically limited area within which water intended for human consumption comes from one or more water sources and within which the quality of water intended for human consumption can be regarded as largely uniform.

²The sampling shall as far as possible be distributed equally in time and location.

III. Packed water intended for human consumption (Section 8 e)

Produced volume of water intended for human consumption per day (m ³) ¹		Normal testing (number of samples per year)	Expend testing (number of samples per year)
≤ 10		4	1
>10	≤ 60	12	1
> 60		1 per 5 m ³ per day and part thereof calculated on the total volume)	1 per 100 m ³ per day and part thereof calculated on the total volume)

¹Produced volume of water intended for human consumption is calculated as mean value during a calendar year.

Analysis

Section A. Parameters for which methods of analysis are stated

Parameter	Method
Actinomycetes	SS 02 82 12
<i>Clostridium perfringens</i> (including spores)	ISO/CD 6461-2
Intestinal enterococci	SS-EN ISO 7899-2
Coliform bacteria and <i>Escherichia coli</i> (<i>E. coli</i>)	SS-EN ISO 9308-1, SS 02 81 67
Slow-growing bacteria	SS-EN ISO 6222⁸
Microfungus	SS 02 81 92
Culturable microorganisms at 22°C	SS-EN ISO 6222
Culturable microorganisms at 37 °C	SS-EN ISO 6222
<i>Pseudomonas aeruginosa</i>	SS-EN ISO 16266⁹

Section B. Parameters for which values for measurement uncertainty are stated

B1. For the following parameters, the stated values for measurement uncertainty signify that the method of analysis used shall be capable at least of measuring concentrations which are equal to the parameter value with a stated accuracy, precision and detection limit. Irrespective of the sensitivity of the method of analysis used, the result shall be expressed with at least the same number of decimal places as the chemical limit values in *Annex 2*.

Parameter	Accuracy (% of limit value)	Precision (% of limit value)	Detection limit (% of limit value)
Aluminium	10	10	10
Ammonium	10	10	10
Antimony	25	25	25
Arsenic	10	10	10

⁷ Latest wording of Annex 4 of LIVSFS 2003:44.

⁸ Supersedes SS 02 81 71

⁹ Supersedes SS-EN 12780.

Parameter	Accuracy (% of limit value)	Precision (% of limit value)	Detection limit (% of limit value)
Pesticides			
(individual)	25	25	25
Benzo(a)pyrene	25	25	25
Benzene	25	25	25
Lead	10	10	10
Boron	10	10	10
Bromate	25	25	25
Cyanide	10	10	10
1,2-dichloroethane	25	25	10
Fluoride	10	10	10
Iron	10	10	10
Cadmium	10	10	10
Calcium	10	10	10
Chloride	10	10	10
Conductivity	10	10	10
Copper	10	10	10
Chromium	10	10	10
Mercury	20	10	20
Magnesium	10	10	10
Manganese	10	10	10
Sodium	10	10	10
Nickel	10	10	10
Nitrate	10	10	10
Nitrite	10	10	10
Oxidisability (permanganate index)	25	25	10
Polycyclic aromatic hydrocarbons (PAHs)	25	25	25
Selenium	10	10	10

Parameter	Accuracy (% of limit value)	Precision (% of limit value)	Detection limit (% of limit value)
Sulphate	10	10	10
Tetrachloroethene ¹	25	25	10
Trihalomethanes (THM) - total ²	25	25	10
Trichloroethene ¹	25	25	10
Turbidity	25	25	25

¹The quality requirements apply to the individual substances with 50% of the limit value in *Annex 2*.

²The quality requirements apply to the individual substances stated with 25% of the limit value in *Annex 2*.

B2. For pH (hydrogen ion concentration), the method of analysis used shall have an accuracy of 0.2 pH units and a precision of 0.2 pH units.

B3. For temperature, the method of analysis used shall have an accuracy of 0.2 pH units and a precision of 0.2 pH units.

Section C. Parameters for which no method of analysis is stated

Acrylamide (checked through product specification)

Epichlorohydrin (checked through product specification)

Colour

Colour

Odour

Radon

Taste

Total organic carbon (TOC)

Vinyl chloride (checked through product specification)