

## ANNEX III

### SPECIFICATIONS FOR THE ANALYSIS OF PARAMETERS

[<sup>F1</sup>Member States shall ensure that the methods of analysis used for the purposes of monitoring and demonstrating compliance with this Directive are validated and documented in accordance with EN ISO/IEC 17025 or other equivalent standards accepted at international level. Member States shall ensure that laboratories or parties contracted by laboratories apply quality management system practices in accordance with EN ISO/IEC 17025 or other equivalent standards accepted at international level.]

#### Textual Amendments

- F1** Substituted by [Commission Directive \(EU\) 2015/1787 of 6 October 2015 amending Annexes II and III to Council Directive 98/83/EC on the quality of water intended for human consumption.](#)

In the absence of an analytical method meeting the minimum performance criteria set out in Part B, Member States shall ensure that monitoring is carried out using best available techniques not entailing excessive costs.]

### [<sup>F1</sup>PART A

#### **Microbiological parameters for which methods of analysis are specified]**

[<sup>F2</sup>The following principles for methods of microbiological parameters are given either for reference, whenever a CEN/ISO method is given, or for guidance, pending the possible future adoption by the Commission of further CEN/ISO international methods for those parameters. Member States may use alternative methods, providing the provisions of Article 7(5) are met.]

#### Textual Amendments

- F2** Substituted by [Regulation \(EC\) No 596/2009 of the European Parliament and of the Council of 18 June 2009 adapting a number of instruments subject to the procedure referred to in Article 251 of the Treaty to Council Decision 1999/468/EC with regard to the regulatory procedure with scrutiny Adaptation to the regulatory procedure with scrutiny — Part Four.](#)

Those measures on further CEN/ISO international methods, designed to amend non-essential elements of this Directive, *inter alia*, by supplementing it, shall be adopted in accordance with the regulatory procedure with scrutiny referred to in Article 12(3).]

[<sup>F1</sup>The methods for microbiological parameters are:

- (a) *Escherichia coli* (*E. coli*) and coliform bacteria (EN ISO 9308-1 or EN ISO 9308-2)
- (b) *Enterococci* (EN ISO 7899-2)
- (c) *Pseudomonas aeruginosa* (EN ISO 16266)
- (d) enumeration of culturable microorganisms — colony count 22 °C (EN ISO 6222)
- (e) enumeration of culturable microorganisms — colony count 36 °C (EN ISO 6222)
- (f) *Clostridium perfringens* including spores (EN ISO 14189).]

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## [<sup>F1</sup>PART B

### **Chemical and indicator parameters for which performance characteristics are specified]**

#### [<sup>F1</sup>1. **Chemical and indicator parameters**

For the parameters set out in Table 1, 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 quantification, as defined in Article 2(2) of Commission Directive 2009/90/EC<sup>(1)</sup>, of 30 % or less of the relevant parametric value and an uncertainty of measurement as specified in Table 1. The result shall be expressed using at least the same number of significant figures as for the parametric value considered in Parts B and C of Annex I.

Until 31 December 2019 Member States may allow for the use of ‘trueness’, ‘precision’ and ‘limit of detection’ as specified in Table 2, as an alternative set of performance characteristics to ‘limit of quantification’ and ‘uncertainty of measurement’ as specified respectively in the first paragraph and Table 1.

The uncertainty of measurement laid down in Table 1 shall not be used as an additional tolerance to the parametric values set out in Annex I.

TABLE 1

#### **Minimum performance characteristic ‘Uncertainty of measurement’**

<b>Parameters</b>	<b>Uncertainty of measurement(See Note 1)% of the parametric value (except for pH)</b>	<b>Notes</b>
Aluminium	25	
Ammonium	40	
Antimony	40	
Arsenic	30	
Benzo(a)pyrene	50	See Note 5
Benzene	40	
Boron	25	
Bromate	40	
Cadmium	25	
Chloride	15	
Chromium	30	
Conductivity	20	
Copper	25	
Cyanide	30	See Note 6
1,2-dichloroethane	40	

Acrylamide, epichlorohydrin and vinyl chloride to be controlled by product specification.

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Fluoride	20	
Hydrogen ion concentration pH (expressed in pH units)	0,2	See Note 7
Iron	30	
Lead	25	
Manganese	30	
Mercury	30	
Nickel	25	
Nitrate	15	
Nitrite	20	
Oxidisability	50	See Note 8
Pesticides	30	See Note 9
Polycyclic aromatic hydrocarbons	50	See Note 10
Selenium	40	
Sodium	15	
Sulphate	15	
Tetrachloroethene	30	See Note 11
Trichloroethene	40	See Note 11
Trihalomethanes — total	40	See Note 10
Total organic carbon (TOC)	30	See Note 12
Turbidity	30	See Note 13

Acrylamide, epichlorohydrin and vinyl chloride to be controlled by product specification.

TABLE 2

**Minimum performance characteristics ‘Trueness’, ‘precision’ and ‘limit of detection’ — may be used until 31 December 2019**

Parameters	Trueness(See Note 2)% of the parametric value (except for pH)	Precision(See Note 3)% of the parametric value (except for pH)	Limit of detection(See Note 4)% of the parametric value (except for pH)	Notes
Aluminium	10	10	10	
Ammonium	10	10	10	
Antimony	25	25	25	

Acrylamide, epichlorohydrin and vinyl chloride to be controlled by product specification.]

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Arsenic	10	10	10	
Benzo(a)pyrene	25	25	25	
Benzene	25	25	25	
Boron	10	10	10	
Bromate	25	25	25	
Cadmium	10	10	10	
Chloride	10	10	10	
Chromium	10	10	10	
Conductivity	10	10	10	
Copper	10	10	10	
Cyanide	10	10	10	See Note 6
1,2-dichloroethane	25	25	10	
Fluoride	10	10	10	
Hydrogen ion concentration pH (expressed in pH units)	0,2	0,2		See Note 7
Iron	10	10	10	
Lead	10	10	10	
Manganese	10	10	10	
Mercury	20	10	20	
Nickel	10	10	10	
Nitrate	10	10	10	
Nitrite	10	10	10	
Oxidisability	25	25	10	See Note 8
Pesticides	25	25	25	See Note 9
Polycyclic aromatic hydrocarbons	25	25	25	See Note 10
Selenium	10	10	10	
Sodium	10	10	10	
Sulphate	10	10	10	
Tetrachloroethene	25	25	10	See Note 11
Trichloroethene	25	25	10	See Note 11

Acrylamide, epichlorohydrin and vinyl chloride to be controlled by product specification.]

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Trihalomethanes total	25	25	10	See Note 10
Turbidity	25	25	25	

Acrylamide, epichlorohydrin and vinyl chloride to be controlled by product specification.]

## [<sup>F</sup>12. Notes to Tables 1 and 2

<i>Note 1</i>	Uncertainty of measurement is a non-negative parameter characterising the dispersion of the quantity values being attributed to a measurand, based on the information used. The performance criterion for measurement uncertainty ( $k = 2$ ) is the percentage of the parametric value stated in the table or better. Measurement uncertainty shall be estimated at the level of the parametric value, unless otherwise specified.
<i>Note 2</i>	Trueness is a measure of systematic error, i.e. the difference between the mean value of the large number of repeated measurements and the true value. Further specifications are those set out in ISO 5725.
<i>Note 3</i>	Precision is a measure of random error and is usually expressed as the standard deviation (within and between batches) of the spread of results from the mean. Acceptable precision is twice the relative standard deviation. This term is further specified in ISO 5725.
<i>Note 4</i>	Limit of detection is either: <ul style="list-style-type: none"> <li>— three times the standard deviation within a batch of a natural sample containing a low concentration of the parameter, or</li> <li>— five times the standard deviation of a blank sample (within a batch).</li> </ul>
<i>Note 5</i>	If the value of uncertainty of measurement cannot be met, the best available technique should be selected (up to 60 %).
<i>Note 6</i>	The method determines total cyanide in all forms.
<i>Note 7</i>	Values for trueness, precision and uncertainty of measurement are expressed in pH units.
<i>Note 8</i>	Reference method: EN ISO 8467
<i>Note 9</i>	The performance characteristics for individual pesticides are given as an

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	indication. Values for the uncertainty of measurement as low as 30 % can be achieved for several pesticides, higher values up to 80 % may be allowed for a number of pesticides.
<i>Note 10</i>	The performance characteristics apply to individual substances, specified at 25 % of the parametric value in Part B of Annex I.
<i>Note 11</i>	The performance characteristics apply to individual substances, specified at 50 % of the parametric value in Part B of Annex I.
<i>Note 12</i>	The uncertainty of measurement should be estimated at the level of 3 mg/l of the total organic carbon (TOC). CEN 1484 Guidelines for the determination of TOC and dissolved organic carbon (DOC) shall be used.
<i>Note 13</i>	The uncertainty of measurement should be estimated at the level of 1,0 NTU (nephelometric turbidity units) in accordance with EN ISO 7027.]

<sup>F3</sup>. PARAMETERS FOR WHICH NO METHOD OF ANALYSIS IS SPECIFIED

[<sup>F3</sup>.....]

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**Textual Amendments**

**F3** Deleted by Commission Directive (EU) 2015/1787 of 6 October 2015 amending Annexes II and III to Council Directive 98/83/EC on the quality of water intended for human consumption.

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- (1) [<sup>F1</sup>Commission Directive 2009/90/EC of 31 July 2009 laying down, pursuant to Directive 2000/60/EC of the European Parliament and of the Council, technical specifications for chemical analysis and monitoring of water status (OJ L 201, 1.8.2009, p. 36).]

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**Textual Amendments**

- F1** Substituted by Commission Directive (EU) 2015/1787 of 6 October 2015 amending Annexes II and III to Council Directive 98/83/EC on the quality of water intended for human consumption.