SCHEDULE 4 Regulation 18

ANALYTICAL METHODOLOGY

TABLE A

Parameters for which, subject to regulation 18(12), methods of analysis are prescribed

(1) Parameter	*(2) Method*
Clostridium perfringens (including spores)	EN ISO 14189
Coliform bacteria	EN ISO 9308-1 or EN ISO 9308-2
Colony count 22°C-enumeration of culturable microorganisms	ENISO 6222
Colony count 36°C-enumeration of culturable microoganisms	EN ISO 6222
Enterococci	EN ISO 7899-2
Escherichia coli (E. coli)	EN ISO 9308-1 or EN ISO 9308-2
Pseudomonas aeruginosa	EN ISO 16266

TABLE B

Minimum performance characteristic: "uncertainty of measurement"

(1) Parameter[(1)]	*(2) Uncertainty of measurement (% of parametric value, except pH)*[(2)]
Aluminium	25
Ammonium	40
Antimony	40
Arsenic	30
Benzo(a)pyrene[(3)]	50
Benzene	40
Boron	25
Bromate	40
Cadmium	25
Chloride	15
Chromium	30
Conductivity	20
Copper	25
Cyanide[(4)]	30
1,2-dichloroethane	40

(1) Parameter[1]	*(2) Uncertainty of measurement (% of parametric value, except pH)*[2]
Fluoride	20
Hydrogen ion concentration pH (expressed in pH units)[5]	0.2
Iron	30
Lead	25
Manganese	30
Mercury	30
Nickel	25
Nitrate	15
Nitrite	20
Oxidisability[6]	50
Pesticides[7]	30
Polycyclic aromatic hydrocarbons[8]	50
Selenium	40
Sodium	15
Sulphate	15
Tetrachloroethene[9]	30
Tetrachloromethane	30
Trichloroethene[9]	40
Trihalomethanes: total[8]	40
Total organic carbon[10]	30
Turbidity[11]	30

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

(2) 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 must be estimated at the level of the parametric value, unless otherwise specified.

(3) If the value of uncertainty of measurement cannot be met, the best available technique should be selected (up to 60%).

(4) The method determines total cyanide in all forms.

(5) Values for trueness, precision and uncertainty of measurement are expressed in pH units.

(6) Reference method EN ISO 8467.

(7) The performance characteristics for individual pesticides are given as an 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

(8) The performance characteristics apply to individual substances, specified at 25% of the parametric value in Table B in Schedule 1.

(9) The performance characteristics apply to individual substances, specified at 50% of the parametric value in Table B in Schedule 1.

(10) The uncertainty of measurement should be estimated at the level of 3 mg/l of the total organic carbon. CEN 1484 Guidelines for the determination of total organic carbon and dissolved organic carbon must be used.

(11) The uncertainty of measurement must be estimated at the level of 1.0 NTU (nephelometric turbidity units) in accordance with EN ISO 7027.

TABLE C

Minimum performance characteristics: trueness, precision and limit of detection- may be used until 31 December 2019

(1) Parameter[(1)]	*(2) Trueness*[(2)]	*(3) Precision*[(3)]	*(4) Limit of detection*[(4)]
Aluminium	10	10	10
Ammonium	10	10	10
Antimony	25	25	25
Arsenic	10	10	10
Benzene	25	25	25
Benzo(a)pyrene	25	25	25
Boron	10	10	10
Bromate	25	25	25
Cadmium	10	10	10
Chloride	10	10	10
Chromium	10	10	10
Colour	10	10	10
Conductivity	10	10	10
Copper	10	10	10
Cyanide[(5)]	10	10	10
1,2-dichloroethane	25	25	10
Fluoride	10	10	10
Hydrogen ion concentration pH (expressed in pH units)[(6)]	0.2	0.2	
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[(7)]	25	25	25

(1) Parameter[1]	*(2) Trueness[2]*	*(3) Precision[3]*	*(4) Limit of detection[4]*
Pesticides[8]	25	25	25
Polycyclic aromatic hydrocarbons[9]	25	25	25
Selenium	10	10	10
Sodium	10	10	10
Sulphate	10	10	10
Tetrachloroethene[10]	25	25	10
Tetrachloromethane	20	20	20
Trichloroethene[10]	25	25	10
Trihalomethanes: total[9]	25	25	10
Turbidity[11]	10	10	10
Turbidity[12]	25	25	25

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

(2) 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.

(3) 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.

(4) Limit of detection is either three times the standard deviation within a batch of a natural sample containing a low concentration of the parameter; or five times the standard deviation of a blank sample (within a batch).

(5) The method determines total cyanide in all forms.

(6) Values for trueness, precision and uncertainty of measurement are expressed in pH units.

(7) Reference method EN ISO 8467 1995.

(8) The performance characteristics for individual pesticides are given as an 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

(9) The performance characteristics apply to individual substances, specified at 25% of the parametric value in Table B in Schedule 1.

(10) The performance characteristics apply to individual substances, specified at 50% of the parametric value in Table B in Schedule 1.

(11) The performance characteristics apply to prescribed value 4 NTU.

(12) The performance characteristics apply to prescribed value 1 NTU for water leaving surface water treatment works.