

## ACT

Act No. 1 of 2005

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### CHAPTER 334B WATER QUALITY ACT

**An Act to govern matters relating to the Quality of Water Intended for Human Consumption.**  
[\[Act No. 1 of 2005.\]](#)

[7th January, 2005.]

#### 1. Short title

This Act may be cited as the Water Quality Act.

#### 2. Interpretation

In this Act—

“authorised person” means Public Health Inspectors or persons appointed by the Minister for the purpose of this Act;

“Minister” means the Minister with responsibility for Health and the Environment;

“monitoring” includes inspection, measurement, sampling or analysis whether periodically or continuously;

“NAWASA” means the National Water and Sewerage Authority established under the National Water and Sewerage Authority Act, Chapter 208;

“premises” includes lands, buildings, vehicles, structures of any kind, streams, and any standpipes, watercourses or waterworks as defined by the National Water and Sewerage Authority Act, Chapter 208;

“Sanitary Authority” means the Sanitary Authority as established by section 3 of the Public Health Act, Chapter 263;

“water intended for human consumption” means—

- (a) all water either in its original state or after treatment, intended for that purpose, regardless of its origin and whether it is supplied from a distribution network from a tanker, 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 Sanitary Authority is satisfied that the quality of the water cannot affect the wholesomeness of the foodstuff in its finished form;

“water system” means any publicly or privately owned system of pipes or other constructed conveyances, structures and facilities through which water is obtained or sold, treated, stored, supplied or distributed to the public for human consumption.

### **3. Water quality**

Water intended for human consumption shall meet the quality standards specified in Part I of the Schedule.

### **4. Minister may grant departure from Act**

(1) A departure from the requirements of this Act may be granted by the Minister to the Sanitary Authority to take account of—

- (a) situations arising from the nature and structure of the ground in the area from which the water supply in question emanates;
- (b) situations arising from exceptional meteorological conditions.

(2) An application for a departure under this section shall contain such information as may be specified by the Minister.

(3) The granting of a departure under this section shall be subject to such conditions, if any, and shall have effect for such period, as may be specified by the Minister.

### **5. Sanitary Authority may act in emergency**

(1) In the event of an emergency, the Sanitary Authority may for a limited time allow the maximum admissible concentration shown in Part I of the Schedule to be exceeded provided that—

- (a) the supply of water for human consumption cannot otherwise be maintained; and
- (b) the higher concentration allowed by the Sanitary Authority does not constitute an unacceptable risk to public health.

(2) The Sanitary Authority shall notify the Minister as soon as possible of any action taken under [subsection \(1\)](#), stating the reasons for such action, the higher concentration allowed and the period of time for which such higher concentration is allowed.

## 6. Monitoring of water quality

(1) The quality of water intended for human consumption shall be regularly monitored by an authorised person at the point where it is made available to the user and for this purpose samples shall be taken for analysis at such points as the Sanitary Authority shall determine.

(2) For the purposes of [subsection \(1\)](#), the standard analysis set out in Part II of the Schedule shall apply.

(3) In the case of a water supply servicing less than 1,000 persons or producing or distributing less than 200 cubic meters of water a day the Sanitary Authority shall monitor the quality of the water on such occasions and to such extent as they shall consider necessary, having regard to—

- (a) the pattern of standard analyses specified in Table A of Part II of the Schedule;
- (b) their knowledge of the quality of water in that functional area or any part thereof; and
- (c) any factors, coming to their attention, which are likely to cause deterioration in the quality of water.

(4) For the purpose of this section, the Sanitary Authority shall—

- (a) as far as practicable, use the methods of analysis specified in Part III of the Schedule; and
- (b) where other methods of analysis are used, ensure that the results obtained are equivalent to, or comparable with, results obtained by the methods specified in Part III of the Schedule.

(5) Notwithstanding [subsection \(3\)](#), water intended for use in a food production undertaking and affecting the wholesomeness of the foodstuff in its finished form shall be monitored at least once a year.

(6) Where frequent analysis are required, samples shall be taken as regularly as practicable.

(7) Where the values of the results obtained from samples taken during the preceding two years are constant and are significantly better than the values specified in Part I of the Schedule, and no fact likely to cause deterioration in the quality of the water has been discovered, the Sanitary Authority may reduce the minimum frequencies of analysis—

- (a) for surface waters, by a factor of two, with the exception of the minimum frequencies for microbiological analysis;
- (b) for ground waters, by a factor of four, without prejudice to [subsection \(6\)](#).

(8) Where it is found, as a result of monitoring carried out under [section 6](#), that the quality of water intended for human consumption does not meet the requirements of this Act, the Sanitary Authority shall—

- (a)

take all reasonable steps to warn users of the water supply in areas where there is an unacceptable risk to public health;

- (b) in the case of a public water supply, prepare an action programme for the improvement of the quality of the water as soon as practicable;
- (c) in the case of a private water supply, notify the person or persons responsible for the supply as soon as practicable, to prepare and implement, in consultation with the Sanitary Authority an action programme, including such interim measures as may be appropriate, for the improvement of the quality of the water.

## **7. Authorised person may enter premises**

(1) An authorised person may at all reasonable times enter any premises for the purpose of this Act.

(2) When exercising the power conferred by this section, an authorised person shall, if so required, produce evidence of his or her authority.

## **8. Fees**

(1) The Sanitary Authority may impose a fee for monitoring the quality of private water supplies intended for human consumption.

(2) A fee charged by the Sanitary Authority by virtue of [subsection \(1\)](#) shall be of such amount, as the Sanitary Authority considers appropriate but shall not exceed the cost of such monitoring.

(3) A fee charged by the Sanitary Authority by virtue of [subsection \(1\)](#) shall be payable by and recoverable from—

- (a) in the case of a group water installation, the trustees or other persons responsible for that installation; and
- (b) in any other case, the occupier or occupiers of the premises supplied.

(4) The Sanitary Authority may recover the amount of any charge made by them under this section from the person or persons by whom it is payable as a simple contract debt in any court of competent jurisdiction.

## **9. Minister may issue recommendations**

The Minister may, from time to time, issue recommendations to the Sanitary Authority in relation to the carrying out of any of their duties under this Act and the Sanitary Authority shall have regard to any such recommendations.

## **10. Measures shall not deteriorate water quality**

Measures taken under the provision of this Act shall in no case have the effect of allowing, directly or indirectly, any deterioration in the existing quality of water intended for human consumption or an increase in the pollution of waters used for the production of drinking water.

#### **11. Sanitary Authority may enter into agreement**

To carry out its function under this Act the Sanitary Authority is authorised to enter into agreements, contracts or co-operatives arrangements with any person, agency or organisation, under such terms and conditions as the Minister may approve.

#### **12. Regulations**

The Minister may make regulations for the carrying into effect the purposes of this Act.

**Schedule  
WATER QUALITY ACT**

*Water Supply Quality*

PART I

*Parameter and Parametric Values*

1A

*Microbiological parameters*

<i>Parameter</i>	<i>Parametric value (number/100ml)</i>
Escherichia coh E. con	0
Enterococci	0

2B

*Chemical Parameters*

<i>Parameter</i>	<i>Parameter value</i>	<i>Unit</i>	<i>Notes</i>
Acrylamide	0,01	ug/l	Note 1
Antimony	5,0	ug/l	
Arsenic	1,0	ug/l	
Benzene	1,0	ug/l	
Benzo (a) pyrene	0,010	ug/l	
Boron	1,0	ug/l	
Bromate	1,0	ug/l	
Cadmium	5,0	ug/l	
Chromium	50	ug/l	
Copper	2,0	mg/l	Note 2
Cyanide	50	ug/l	
1,2-dichloroethane	3,0	ug/l	
Epichlorohydrin	0,10	ug/l	Note 1
Flouride	1,5	mg/l	
Lead	10	ug/l	Note 2
Mercury	1,0	ug/l	
Nickel	20	ug/l	Note 2
Nitrate	50	mg/l	Note 3
Nitrite	0,50	mg/l	Note 3
Pesticides	0,10	ug/l	Note 4
Pesticides–Total	0,50	ug/l	Note 4
Polycyclic aromatic hydrocarbons	0,10	ug/l	Sum of concentrations of specified compounds; Note 7

Selenium	10	ug/l	
Tetrachloroethene and Trichloroethene	10	ug/l	
VinylChloride	0,50	ug/l	Note 1

*Note 1.*—The parametric value refers to the residual monomer concentration in the water as calculated according to specifications of the maximum release from the corresponding polymer in contact with the water.

*Note 2.*—The value applies to a sample of water intended for human consumption obtained by an adequate sampling method (') at the tap and taken so as to be representative of a weekly average value ingested by consumers. Where appropriate the sampling and monitoring methods must be applied in a harmonised fashion.

*Note 3.*—The Sanitary Authority must ensure that the condition that  $[\text{nitrate}]/50 + [\text{nitrite}]/3 \leq 1$ , square brackets signifying the concentrations in mg/l for nitrate (NO<sub>3</sub>) and nitrite (NO<sub>2</sub>), is complied with and that the value of 0, 10 mg/l for nitrites is complied with ex water treatment works.

*Note 4.*—“Pesticides” means:—

- organic insecticides,
- organic herbicides,
- organic fungicides,
- organic nematocides,
- organic acaricides,
- organic algicides,
- organic rodenticides,
- organic slimicides,
- related products (*inter alia*, growth regulators).

Only those pesticides which are likely to be present in a given supply need be monitored.

*Note 5.*—The parametric value applies to each individual pesticide. In the case of aldrin, dieldrin, heptachlor and heptachlor epoxide the parametric value is 0,030 mg/l.

*Note 6.*—“Pesticides—Total” means the sum of all individual pesticides detected and quantified in the monitoring procedure.

*Note 7.*—The specified compounds are:

- benzo (b) fluoranthene,
- benzo (k) fluoranthene,
- benzo (ghi) fluoranthene,
- indeno (1,2,3-cd), pyrene.

NAWASA must ensure that all appropriate measures are taken to reduce the concentration of THMs in water intended for human consumption as much as possible during the period needed to achieve compliance with the parametric value.

When implementing the measures to achieve this value, NAWASA must progressively give priority to those areas where THM concentrations in water intended for human consumption are highest.

### Indicator Parameters

<i>Parameter</i>	<i>Parametric value</i>	<i>Unit</i>	<i>Notes</i>
Aluminium	200	mg/l	
Ammonium	0,50	mg/l	
Chloride	250	mg/l	Note 1
Clostridium perfringens (including spores)	0	number/100 ml	Note 2
Colour	Acceptable to consumers and no abnormal change		
Conductivity	2 500	MS cm <sup>-1</sup> at 20°C	Note 1
Hydrogen ion concentration	≥ 6,5 and ≤ 9,5	PH units	Notes 1 and 3
Iron	200	Mg/l	
Manganese	50	Mg/l	
Odour	Acceptable to consumers and no abnormal change		
Oxidisability	5,0	Mg/l O <sub>2</sub>	Note 4
Sulphate	250	Mg/l	Note 1
Sodium	200	Mg/l	
Taste	acceptable to consumers and no abnormal change		
Colony count 22°	No abnormal change		
Coliform bacteria	0	Number/100 ml	Note 5
Total organic carbon (TOC)	No abnormal		Note 6
Turbidity	Acceptable to consumers and no abnormal change		Note 7

### Radioactivity

<i>Parameter</i>	<i>Parametric value</i>	<i>Unit</i>	<i>Notes</i>
Tritium	100	Bq/l	Notes 8 and 10
Total indicative dose	0, 10	mSv/year	Notes 9 and 10

*Note 1.*—The water should be aggressive.

*Note 2.*—This parameter need not be measured unless the water originates from or is influenced by surface water. In the event of non-compliance with this parametric value, the Sanitary Authority must investigate the supply to ensure that there is no potential danger to human health arising from the presence of pathogenic micro-organisms.

*Note 3.*—For still water put into bottles or containers, the minimum value may be reduced to 4,5 pH units.

For water put into bottles or containers, which is naturally rich in or artificially enriched with carbon dioxide, the minimum value may be lower.

*Note 4.*—This parameter need not be measured if the parameter TOC is analysed.

*Note 5.*—For water put into bottles or containers the unit is number/250 ml.

*Note 6.*—This parameter need not be measured for supplies of less than 10 000 m<sup>3</sup> a day.

*Note 7.*—In the case of surface water treatments, NAWASA should strive for a parametric value not exceeding 1, 0 NTU (nephelometric turbidity units) in the water ex-treatment works.

*Note 8.*—Monitoring frequencies to be set later in Part II.



*Note 9.*—Excluding tritium, potassium –40, radon and radon decay products; monitoring frequencies, monitoring methods and most relevant locations for monitoring point to be set later in Part II.

*Note 10.*—Sanitary Authority is not required to monitor drinking water for tritium of radioactivity to establish total indicative dose where it is satisfied that, on the basis of other monitoring carried out, the levels of tritium of the calculated total indicative dose are well below the parametric value. In that case, it shall communicate the grounds for its decision to the Minister including the results of this other monitoring carried out.

## PART II

### *Monitoring*

#### TABLE A

##### *Parameters to be analysed*

1.

##### Check monitoring

The purpose of check monitoring is regularly to provide information on the Organoleptic and microbiological quality of the water supplied for human consumption as well as information on the effectiveness of drinking-water treatment (particularly of disinfection) where it is used, in order to determine whether or not water intended for human consumption complies with the relevant parametric values laid down in this Directive.

The following parameters must be subject to check monitoring. The Sanitary Authority parameters to this list if they deem it appropriate.

Aluminium (Note 1)

Ammonium

Colour

Conductivity

Clostridium perfringens (including spores) (Note 2)

Escherichia coli (E.coli)

Hydrogen ion concentration

Iron (Note 1)

Nitrite (Note 3)

Odour

Pseudomonas aeruginosa (Note 4)

Taste

Colony count 22°C and 37°C (Note 4)

Coliform bacteria

Turbidity

*Note 1.*—Necessary only when used as flocculant (\*)

*Note 2.*—Necessary only if the water originates from or is influenced by surface water (\*)

*Note 3.*—Necessary only when chloramination is used as a disinfectant (\*)

*Note 4.*—Necessary only in the case of water offered for sale in bottles or containers.

(\*) In all other cases, the parameters are in the list for audit monitoring.

2.

##### Audit monitoring

The purpose of audit monitoring is to provide the information necessary to determine whether or not all of the parametric values are being complied with. All parameters set in accordance with section 3 must be subject to audit monitoring unless it can be established by the competent authorities, for a period of time to be determined by them, that a parameter is not likely to be present in a given supply in concentrations which lead to the risk of a breach of the relevant parametric value. This paragraph does not apply to the parameters for radioactivity, which, subject to Notes 8, 9 in Part I C, will be monitored in accordance with monitoring requirements adopted under section 6.

TABLE B1

Minimum frequency of sampling and analyses for water intended for human consumption supplied from a distribution network or from a tanker or used in a food-production undertaking. Authorised persons must take samples at the points of compliance to ensure that water intended for human consumption meets the requirements of the Act. However, in case of a distribution network, authorised persons may take samples within the supply zone or at the treatment works for particular parameters if it can be demonstrated that there would be no adverse change to the measure valued of the parameters concerned.

<i>Volume of water distributed or produced each day within a supply zone (Notes 1 and 2) m<sup>3</sup></i>	<i>Check monitoring number of samples per year (Notes 3, 4, and 5)</i>	<i>Audit monitoring number of samples per year (Notes 3 and 5)</i>
≤ 100	(Note 6)	(Note 6)
> 100 ≤ 1000	4	1
> 1000 ≤ 10 000	4 +3 for each 1 000 m <sup>3</sup> /d and part thereof of the total volume	1 +1 for each 3 300 m <sup>3</sup> /d and part thereof of the total volume
		3 +1 for each 10 000 and m <sup>3</sup> /d and part thereof of the total volume
		10 +1 for each 25 000 m <sup>3</sup> /d and part thereof of the total volume
> 100 000		

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

*Note 2.*—The volumes are calculated as averages taken over a calendar year. The Sanitary Authority 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.*—In the event of intermittent short-term supply the monitoring frequency of water distributed by tankers is to be decided by the Sanitary Authority.

*Note 4.*—For the different parameters in Part I, a Member States may reduce the number of samples specified in the table if:

- (a) the values of the results obtained from samples taken during a period of at least two successive years are constant and significantly better than the limits laid down in Part I; and
- (b) no factor is likely to cause a deterioration of the quality of this water.

This lower frequency applied must not be less than 50% of the number of samples specified in the table except in the particular case of note 6.

*Note 5.*—As far as possible, the number of samples should be distributed equally in time and location.

*Note 6.*—The frequency is to be decided by the Sanitary Authority.

### PART III

#### *Specifications for the Analysis of Parameters*

The Minister [Sanitary Authority] must ensure that any laboratory at which samples are analysed has a system of analytical quality control that is subject from time to time to checking by a

person who is not under the control of the laboratory and who is approved by the competent authority for the purpose.

1.

PARAMETERS FOR WHICH METHODS OF ANALYSIS ARE SPECIFIED

The following principles for methods of microbiological parameters are given either for reference whenever an ISO method is given or for guidance, pending the possible future adoption, of further ISO international methods for these parameters. The Sanitary Authority may use alternative methods, providing the provisions of section 6 are met.

Coliform bacteria and Escherichia coli (E. coli) (ISO 9308-1)

Enterococci (ISO 7899-2)

Pseudomonas aeruginosa (prEN ISO 12780)

Enumeration of culturable micro organisms – Colony count 22°C (prEN ISO 6222)

Enumeration of culturable micro organisms – Colony count 37°C (prEN ISO 6222)

Clostridium perfringens (including spores)

Membrane filtration followed by anaerobic incubation of the membrane on m-CP agar (Note 1) at 44 ± 1°C for 21 ± 3 hours. Count opaque yellow colonies that turn pink or red after exposure to ammonium hydroxide vapours for 20 to 30 seconds.

Note 1.—The composition of m-CP agar is—

Basal medium

Tryptose	30 g
Yeast extract	20 g
Sucrose	5 g
L-cysteine hydrochloride	1 g
MgSO 7H O	0,1 g
Bromocresol purple	40 mg
Agar	15 g
Water	1 000 ml

Dissolve the ingredients of the basal medium, adjust pH to 7, 6 and autoclave at 121°C for 15 minutes. Allow the medium to cool and add:

D-cyclosene	400 mg
Polymyxne-B sulphate	25 mg
Indoxyl-B-D-glucoside	60 mg
to be dissolved in 8 ml sterile water before addition	
Filter – sterilised 0,5% phenolphthalein	20 ml
Diphosphate solution	
Filter – sterilised 4, 5 % FeCl, 6H O	2 ml

2.

PARAMETERS FROM WHICH PERFORMANCE CHARACTERISTICS ARE SPECIFIED

2.1

For the following 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 trueness, precision and limit of detection specified. Whatever the sensitivity of the method of analysis used, the result must be expressed using at least the same number of decimals as for the parametric value considered in Part I, Parts B and C.

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

<i>Volume of water produced for offering for sale in bottles or containers each day (l) m<sup>3</sup></i>	<i>Checking monitoring number of samples per year</i>	<i>Audit monitoring number of samples per year</i>
≤ 10	1	1
> 10                      ≤ 60	12	1

> 60	1 for each 5 m <sup>3</sup> and part thereof of the total volume	1 for each 100 m <sup>3</sup> and part thereof of the total volume
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(<sup>1</sup>) the volumes are calculated as averages taken over a calendar year.

<i>Parameters</i>	<i>Trueness % of parametric value (Note 1)</i>	<i>Precision % of parametric value (Note 2)</i>	<i>Limit of detection % of parametric value (Note 3)</i>	<i>Conditions</i>	<i>Notes</i>
Acryl amide				To be controlled by product specification	
Aluminium	10	10	10		
Ammonium	10	10	10		
Antimony	25	25	25		
Arsenic	10	10	10		
Benzo(a)prene	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		Note 4
1,2-dichloroethane	25	25	10		
Epichlorohydrin				To be controlled by product specification	
Fluoride	10	10	10		
Iron	10	10	10		
Lead	10	10	10		
Manganese	10	10	10		
Mercury	20	10	10		
Nickel	10	10	10		
Nitrate	10	10	10		
Nitrite	10	10	10		
Oxidisability	25	25	10		Note 5
Pesticides	25	25	25		Note 6
Polycyclic aromatic hydrocarbons	25	25	25		Note 7

Selenium	10	10	10		
Sodium	10	10	10		
Sulphate	10	10	10		
Tetrachloroethene	25	25	10		Note 8
Trichloroethene	25	25	10		Note 8
Trihalomethanes – total	25	25	10		Note 7
Vinyl chloride				To be controlled by product specification	

## 2.2

For hydrogen ion concentration the specified performance characteristics are that the method of analysis used must be capable of measuring concentrations equal to the parametric value with a trueness of 0.2 pH unit and a precision of 0.2 pH unit.

*Note 1* (\*).—Trueness is the systematic error and is the difference between the mean value of the large number of repeated measurements and the true value.

*Note 2* (\*).—Precision is the random error and is usually expressed as the standard deviation (within and between batch) of the spread of results about the mean. Acceptable precision is twice the relative standard deviation.

(\*). These terms as further defined in ISO 5725.

*Note 3*.—Limit of detection is either:

- three times the relative within batch standard deviation of a natural sample containing a low concentration of the parameter, or
- five times the relative within batch standard deviation of a blank sample.

*Note 4*.—The method should determine total cyanide in all forms.

*Note 5*.—Oxidation should be carried out for 10 minutes at 100°C under acid conditions using permanganate.

*Note 6*.—The performance characteristics apply to each individual pesticide and will depend on the pesticide concerned. The limit of detection may not be achievable for all pesticides at present, but Member States should strive to achieve this standard.

*Note 7*.—The performance characteristics apply to the individual substances specified at 25 % of the parametric value in Part I.

*Note 8*.—The performance characteristics apply to the individual substances specified at 50 % of the parametric value in Part I.

3.

## PARAMETERS FOR WHICH NO METHOD OF ANALYSIS IS SPECIFIED

Colour

Odour

Taste

Total organic carbon

Turbidity (Note 1)

*Note*.—For turbidity monitoring in treated surface water 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 trueness of 25%, precision of 25% and a 25% limit of detection.