

**ENVIRONMENTAL PUBLIC HEALTH ACT
(CHAPTER 95)**

**ENVIRONMENTAL PUBLIC HEALTH (QUALITY OF PIPED DRINKING
WATER) REGULATIONS 2008**

In exercise of the powers conferred by sections 80 and 111 of the Environmental Public Health Act, the National Environment Agency, with the approval of the Minister for the Environment and Water Resources, hereby makes the following Regulations:

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DRINKING WATER QUALITY STANDARDS

Actual Provisions

**PART I
PRELIMINARY**

Citation and commencement

- 1. These Regulations may be cited as the Environmental Public Health (Quality of Piped Drinking Water) Regulations 2008 and shall come into operation on 1st August 2008.

Definitions

- 2. In these Regulations, unless the context otherwise requires —
 - "code of practice" means a code of practice issued or approved by the Director-General under regulation 4;
 - "parameter" means any property, characteristic, element, contaminant, substance or organism that is referred to in the Schedule;
 - "piped drinking water" means piped water for human consumption but does not include piped water for human consumption that is supplied solely to the Public Utilities Board;
 - "supplier" means any person who sells or supplies piped drinking water through a system of

supply that uses a water treatment plant and a distribution network main connected to the service pipes or storage tanks in any area or to any premises;

"water safety plan" means a plan describing the risk assessment and risk management measures that are or are to be used in order to minimise the likelihood of any piped drinking water failing to comply with the standards specified in the Schedule;

"water sampling plan" means a plan containing information regarding the sampling and testing of piped drinking water, including —

- (a) the parameters to be tested;
 - (b) the test methods to be used;
 - (c) the frequency of the tests;
 - (d) the sampling locations;
 - (e) the sampling protocol;
 - (f) the submission of samples of the piped drinking water to an approved testing laboratory for analysis; and
 - (g) such other information as may be required by the Director-General;
- "water treatment plant" means a plant that produces piped drinking water.

PART II QUALITY OF PIPED DRINKING WATER

Standards for quality of piped drinking water

- 3.** —(1) Piped drinking water must comply with the standards specified in the Schedule.
(2) For the purposes of sections 78 and 79 of the Act, piped drinking water that does not comply with the standards specified in the Schedule is unwholesome.
(3) Nothing in paragraph (2) shall preclude any piped drinking water from being regarded as unwholesome for the purposes of section 78 or 79 of the Act for any reason other than noncompliance with the standards specified in the Schedule.

PART III SAMPLING, TESTING AND ANALYSIS OF PIPED DRINKING WATER

Codes of practice

- 4.** —(1) The Director-General may issue or approve, and may from time to time modify, a code of practice setting out —
- (a) the requirements for water sampling plans and water safety plans; and
 - (b) other procedural requirements for the purposes of these Regulations.
- (2) A copy of the code of practice issued or approved by the Director-General under paragraph (1) —
- (a) is obtainable from the National Environment Agency, 40 Scotts Road, Singapore 228231 during such hours as that office is open for business; and
 - (b) is available on the Internet website of the Agency at <http://www.nea.gov.sg>.

Water sampling plans and water safety plans

- 5.** —(1) Every supplier shall prepare and implement a water safety plan and a water sampling plan for the purpose of ensuring that the piped drinking water that is being supplied by him complies with the standards specified in the Schedule.
(2) The water safety plan and water sampling plan shall be —
- (a) prepared in accordance with the relevant code of practice; and
 - (b) submitted to the Director-General for approval before being implemented.
- (3) Where the Director-General is of the opinion that any water safety plan or water sampling plan submitted to him by a supplier under paragraph (2) (b) —
- (a) does not comply with the relevant code of practice; or
 - (b) is otherwise inadequate for the purposes of minimising the likelihood of any piped drinking water failing to comply with the standards specified in the Schedule,

the Director-General may direct the supplier to review and, if necessary, amend the water safety plan or water sampling plan in such manner as the Director-General considers fit, and the supplier shall accordingly review and, if so directed, amend the water safety plan or water sampling plan (as the case may be).

(4) Where the Director-General has approved a water safety plan or a water sampling plan submitted to him by a supplier under paragraph (2) (b), the supplier shall not thereafter amend or substitute the water safety plan or water sampling plan without the prior written approval of the Director-General.

(5) Any supplier who contravenes paragraph (1), (2) (b), (3) or (4) shall be guilty of an offence and shall be liable on conviction to a fine not exceeding \$10,000 and, in the case of a continuing offence, to a further fine not exceeding \$500 for every day or part thereof during which the offence continues after conviction.

Review of water safety plan

6. —(1) Every supplier shall, at least once a year, conduct a review of the water safety plan implemented by him under regulation 5.

(2) The review referred to in paragraph (1) shall be conducted in accordance with the relevant code of practice.

(3) Every supplier shall, within 2 weeks of the completion of the review conducted under paragraph (1) or within such longer period as the Director-General may allow, submit to the Director-General in such form and manner as the Director-General may require, a report stating the results of the review and such other information as may be required by the Director-General.

(4) Where the Director-General is of the opinion that a supplier has not conducted the review of his water safety plan in accordance with the relevant code of practice or in an otherwise satisfactory manner, the Director-General may direct the supplier to conduct a further review of the water safety plan and submit a further report to him within such time as the Director-General may allow, and the supplier shall accordingly conduct the further review and submit the further report to the Director-General.

(5) Any supplier who contravenes paragraph (1), (3) or (4) shall be guilty of an offence and shall be liable on conviction to a fine not exceeding \$10,000 and, in the case of a continuing offence, to a further fine not exceeding \$500 for every day or part thereof during which the offence continues after conviction.

Sampling, testing, analysis, etc., of piped drinking water

7. —(1) Every supplier shall monitor the quality of the piped drinking water being supplied by him and ensure that —

(a) the piped drinking water is sampled, tested and analysed in accordance with the water sampling plan approved by the Director-General under regulation 5;

(b) adequate measures are put in place to prevent the contamination or adulteration of the samples taken for testing and analysis; and

(c) the testing of the samples is carried out —

(i) in a testing laboratory approved by the Director-General; or

(ii) at such other place as the Director-General may allow.

(2) Where, pursuant to paragraph (1) (c) (ii), the testing of the samples is carried out at a place

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that is not a testing laboratory, the supplier shall ensure that the kit or equipment used for testing the samples —

(a) is adequate for the proper and efficient performance of any category of analysis as required by the Director-General;

(b) is regularly checked for proper calibration and accuracy; and

(c) is maintained in good working condition.

(3) A supplier shall, if so required by the Director-General in writing, submit to the Director-General for further testing and analysis samples of the piped drinking water being supplied by the supplier.

(4) A supplier shall bear the costs of sampling, testing and analysing any piped drinking water

under this regulation.

(5) Any supplier who contravenes paragraph (1), (2) or (3) shall be guilty of an offence and shall be liable on conviction to a fine not exceeding \$10,000.

PART IV MISCELLANEOUS

Power to require information

8. —(1) The Director-General may, by notice in writing, require a supplier to furnish him, within the time specified in the notice, with such information or document as the Director-General may require concerning —

(a) the processes and operations that are or are to be employed by the supplier in the production and supply of piped drinking water;

(b) the materials and chemicals that are or are to be used by the supplier in the production and supply of piped drinking water;

(c) the water safety plan that has been prepared and implemented by the supplier for the purposes of regulation 5;

(d) the monitoring of the quality of the piped drinking water being supplied by the supplier, the sampling and testing of such piped drinking water and the results of the analysis carried out thereon; and

(e) such other matter as the Director-General thinks necessary, relevant or useful for the purpose of ascertaining whether the piped drinking water being supplied by the supplier complies with the standards specified in the Schedule.

(2) Any supplier who —

(a) refuses or fails, without reasonable excuse, to comply with a notice under paragraph (1); or

(b) in compliance or purported compliance with a notice under paragraph (1), furnishes the Director-General with any information or document which he knows to be false in a material particular, or recklessly makes a statement which is false in a material particular, shall be guilty of an offence and shall be liable on conviction to a fine not exceeding \$10,000.

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Remedial measures

9. —(1) Where a supplier becomes aware or has reason to suspect that the piped drinking water being supplied by him does not or might not comply with the standards specified in the Schedule, he shall, as soon as practicable but within 24 hours —

(a) notify the Director-General of the situation; and

(b) take such appropriate measures as may be necessary to remedy the situation.

(2) The notification referred to in paragraph (1)(a) shall be made in such form and manner as the Director-General may require and shall include —

(a) an explanation of the situation (including the possible causes of the non-compliance and details of the non-compliance of the piped drinking water with the standards specified in the Schedule);

(b) the potential adverse effects on public health that have arisen or can arise from the situation;

(c) the measures that the supplier is taking to remedy the situation; and

(d) such other information as the Director-General may require.

(3) The Director-General may, by notice in writing, require the supplier to take, within the time specified in the notice, such additional remedial measures as the Director-General considers necessary, and the supplier shall comply with such notice.

(4) Any supplier who contravenes paragraph (1), (2) or (3) shall be guilty of an offence and shall be liable on conviction to a fine not exceeding \$10,000.

Maintenance of records

10. —(1) Every supplier shall keep and maintain, in such form and manner as the Director-

General may require, complete and accurate records of —

- (a) the water sampling plan and water safety plan implemented by the supplier for the purposes of regulation 5;
- (b) every water sampling exercise and the result of every test and analysis undertaken by the supplier under regulation 7;
- (c) every remedial measure and other action taken by the supplier under regulation 9; and
- (d) such other matter as the Director-General may specify in relation to the supply of piped drinking water by the supplier.

(2) For the purposes of paragraph (1), every supplier shall, unless the Director-General otherwise directs, keep and maintain —

(a) the record of the results of any test relating to any chemical parameter for a minimum period of 10 years from the date of the test;

(b) the record relating to the supplier's water sampling plan for a minimum period of 10 years from —

(i) the date of its implementation; or

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(ii) where the water sampling plan has been amended or substituted, the date of the amendment or substitution, as the case may be; and

(c) any other record for a minimum period of 5 years from the date of the taking of the measure or action to which the record relates.

(3) Every supplier shall, if so required by the Director-General, submit any record maintained by him under paragraph (1) to the Director-General for inspection.

(4) Any supplier who contravenes paragraph (1), (2) or (3) shall be guilty of an offence and shall be liable on conviction to a fine not exceeding \$10,000.

THE SCHEDULE

Regulations 2, 3, 5, 8 and 9

DRINKING WATER QUALITY STANDARDS

Part I — Microbial parameters:

1. *Escherichia coli* (or alternatively, thermotolerant coliform bacteria) : shall not be detectable in any 100 millilitre sample

Part II — Physico-chemical parameters:

1. Colour : shall not exceed 15 True Colour Units
2. Turbidity : shall not exceed 5 Nephelometric Turbidity Units
3. pH : 6.5-9.5

Part III — Radiological parameters:

1. Gross Alpha activity : shall not exceed 0.5 becquerel/litre
2. Gross Beta activity : shall not exceed 1 becquerel/litre
3. Radon 222 concentration : shall not exceed 100 becquerel/litre

Part IV — Chemical parameters:

	Maximum prescribed quantity (milligrams/litre)
Acrylamide	0.0005
Alachlor	0.02
Aldicarb Sulfoxide and Aldicarb Sulfone combined Aldrin and Dieldrin	0.01 0.00003

Antimony	0.02
Arsenic	0.01
Atrazine	0.002
Barium	0.7
Benzene	0.01
Benzo[<i>a</i>]pyrene	0.0007
Boron	0.5
Bromate	0.01
Bromodichloromethane	0.06
Bromoform	0.1
Cadmium	0.003
Carbofuran	0.007
Carbon tetrachloride	0.004
Chlorate	0.7
Chlordane	0.0002
Chlorine ₁	5
<p>¹Where disinfection with chlorine is carried out, there should be a residual concentration of free chlorine of 0.5 mg/litre after at least 30 minutes contact time at pH<8.0 at the water treatment plant.</p>	
Chlorite	0.7
Chloroform	0.3
Chlorotoluron	0.03
Chlorpyrifos	0.03
Chromium, in all forms as a total	0.05
Copper	2
Cyanazine	0.0006
Cyanide	0.07
Cyanide in Cyanogen Chloride form as part of total cyanogenic compounds	0.07
2,4-D (2,4-dichlorophenoxyacetic acid) in free acid form	0.03
2,4-DB [4-(2,4-Dichlorophenoxy) butyric acid]	0.09
DDT and metabolites	0.001
Di(2-ethylhexyl)phthalate	0.008
Dibromoacetonitrile	0.07
Dibromochloromethane	0.1
1,2-Dibromo-3-chloropropane	0.001
1,2-Dibromoethane	0.0004
Dichloroacetate	0.05
Dichloroacetonitrile	0.02
Dichlorobenzene,	1,2- 1
Dichlorobenzene,	1,4- 0.3
Dichloroethane,	1,2- 0.03
Dichloroethene,	1,2 0.05
Dichloromethane	0.02
1,2-Dichloropropane (1,2-DCP)	0.04
1,3-Dichloropropene	0.02
Dichlorprop	0.1
Dimethoate	0.006
Dioxane, 1,4-	0.05
Edetic acid (EDTA-Ethylene Diamine Tetraacetic Acid) in free acid form	0.6
Endrin	0.0006
Epichlorohydrin	0.0004
Ethylbenzene	0.3
Fenoprop (2,4,5-TP; 2,4,5-trichlorophenoxy propionic acid)	0.009
Fluoride	0.7
Hexachlorobutadiene (HCBD)	0.0006

Isoproturon	0.009
Lead	0.01
Lindane	0.002
Manganese	0.4
MCPA (4-Chloro-2-methylphenoxyacetic acid)	0.002
Mecoprop (MCP; [2(2-methyl-chlorophenoxy) propionic acid])	0.01
Mercury, in inorganic form	0.006
Methoxychlor	0.02
Metolachlor	0.01
Microcystin-LR, in free and cellbound forms as a total	0.001
Molinate	0.006
Molybdenum	0.07
Monochloramine	3
Monochloroacetate	0.02
Nickel	0.07
Nitrate (as NO ₃ ⁻)	50
Nitrate plus nitrite combined	The sum of the ratios of the concentrations of each to their maximum prescribed quantity should not exceed 1
Nitrotriacetic acid (NTA)	0.2
Nitrite (as NO ₂ ⁻)	3
Pendimethalin	0.02
Pentachlorophenol (PCP)	0.009
Permethrin, where used as a larvicide for public health purposes	0.3
Pyriproxyfen	0.3
Selenium	0.01
Simazine	0.002
Styrene	0.02
2,4,5-T (2,4,5-Trichlorophenoxyacetic acid)	0.009
Terbutylazine (TBA)	0.007
Tetrachloroethene	0.04
Toluene	0.7
Trichloroacetate	0.2
Trichloroethene	0.02
Trichlorophenol, 2,4,6-	0.2
Trifluralin	0.02
Trihalomethanes	The sum of the ratio of the concentration of each Trihalomethane ² to its respective maximum prescribed quantity should not exceed 12 Refers to bromoform, bromodichloromethane, dibromochloromethane and chloroform.
Uranium (only chemical aspects of uranium addressed)	0.015
Vinyl chloride	0.0003
Xylenes	0.5

Made this 29th day of January 2008.

SIMON TAY SEONG CHEE

Chairman,

National Environment Agency,

Singapore.

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