

Chapter:	358AK	TECHNICAL MEMORANDUM STANDARDS FOR EFFLUENTS DISCHARGED INTO DRAINAGE AND SEWERAGE SYSTEMS, INLAND AND COASTAL WATERS	Gazette Number	Version Date
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(Water Pollution Control Ordinance, Cap 358 section 21)

[30 November 1990]

(Special Gazette Supplement No. 5 dated 30.11.1990)

Part:	1	PRELIMINARY		30/06/1997
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PART I PRELIMINARY

1. Citation and commencement
 - 1.1 This technical memorandum is issued under section 21 of the Water Pollution Control Ordinance. It may be cited as the Technical Memorandum on Effluent Standards.
2. Application and scope
 - 2.1 The Technical Memorandum on Effluent Standards is a guide to the Authority under the Ordinance. It sets the limits that make effluents acceptable into foul sewers, storm water drains, inland and coastal waters. The limits control the physical, chemical and microbial quality of effluents.
 - 2.2 The standards apply to effluents through licences, which the Authority issues under sections 15, 16 and 20 of the Ordinance. The Authority is the Director of Environmental Protection. He will consult this memorandum when fixing the conditions that he will include in a licence. He will not normally impose conditions that are more stringent than those in the memorandum. To do so, he must have good reason.
 - 2.3 Where a user takes water from a nature water course or water body, and then returns it after use, different standards may apply. The Authority will not impose standards requiring the effluent to be cleaner than the water that the user takes.
 - 2.4 This memorandum does not apply to discharges or deposits of wastes that are controlled by the Waste Disposal (Livestock Waste) Regulations (Cap 354 sub. leg. A). Nor does it apply to dredging, dumping for land formation or solid waste disposal. Other laws and standards control them. The memorandum does apply to all other discharges and deposits.
 - 2.5 This memorandum sets standards for effluents that differ in different areas and between surface waters and sewers. The standards also vary with the rate of effluent flow, which the Authority may also limit.
 - 2.6 The flow rates the memorandum covers appear in Tables 1 to 10b. The Authority will set standards for effluents outside the listed flow ranges case by case. Standards for effluents above the highest flow band will be more stringent than those in the tables.
 - 2.7 Some effluents may have characteristics or components that are not listed and could be harmful. In these cases, the Authority may set limits case by case. There are certain general prohibitions that apply besides the tables, which are listed in paragraphs 6.2, 8.4 and 9.2.
 - 2.8 At present, the Government Chemist is the only analyst designated by the Ordinance. He alone certifies the quality of an effluent sample in a prosecution. The effluent standards refer to his analytical methods, which appear for reference only in Annex I.
3. Interpretation
 - 3.1 This memorandum uses standard scientific terms. Where the Ordinance defines a term, that definition applies.
 - 3.2 In this memorandum the following definitions also apply.
 - "Effluent" (流出物) means any discharge or deposit subject to control under the Ordinance.
 - "Coastal waters" (海岸水域) means the waters of Hong Kong except inland waters and storm water drains.
 - "Inshore waters" (沿岸水域) means all coastal waters where the water depth is less than 6m at mean

low tide, or that are within 200m of the mean low water mark, whichever position is further from the shore.

"Marine waters" (海洋水域) means all coastal waters except inshore waters.

"Flow rate" (流量率) means the measured volume per unit time of effluent from a premises, averaged over the period of operation in any day accepted by the Authority. Where the flow cannot be measured, it is determined by a method the Authority approves.

"Foul sewer" (穢水渠) means a sewer built for the carriage of foul or waste water or so designated by the Authority.

"Storm water drain" (雨水渠) means a man made conduit built for natural surface drainage or so designated by the Authority.

"Toxic metals" (有毒金屬) includes antimony, arsenic, beryllium, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, thallium, vanadium and any other metals that the Authority specifies.

4. Determining the acceptable characteristics of effluents

4.1 The Ordinance allows the Government to declare water control zones and to set water quality objectives. The objectives describe the water quality that will promote the conservation and best use of the waters in the public interest.

4.2 In deciding whether to grant a licence for an effluent, the Authority's purpose is to meet the relevant objectives. The same purpose governs the conditions that the Authority attaches to the licence. He also must consider the need to protect the drainage or sewerage system, including disposal works, treatment processes, and the health and safety of workers in them.

4.3 Each control zone contains four systems into which wastes may be discharged. They are foul sewers, storm water drains, inland waters (which include water in the ground) and coastal waters.

4.4 The effluent standards take account of the beneficial uses of the different systems, but the systems and control zones fall into convenient groups. In general terms the standards for each group are as follows.

4.4.1 Foul sewers

Effluent standards for foul sewers leading to similar Government sewage treatment plants do not differ from zone to zone. Effluents into foul sewers leading to a treatment plant with microbial processes must meet more stringent standards for some toxic metals. This is to protect the processes and ensure that they can continue to treat domestic sewage effectively.

4.4.2 Storm water drains

Most storm water drains discharge directly into inland or coastal waters. The Authority will not normally allow effluents to them. If, exceptionally, he does so, effluents to them must meet the standards for the next receiving waters downstream.

4.4.3 Inland waters

The beneficial use of inland waters is the only factor governing the effluent quality and quantity that the Authority will license. There is no distinction between zones. There are four groups of inland waters.

Inland water grouping	Beneficial use
Group A	abstraction for potable water supply
Group B	irrigation
Group C	pond fish culture
Group D	general amenity and secondary contact recreation

There are four sets of effluent standards corresponding to these groups. Streams which enter the sea at gazetted beaches need special attention; they belong to Group D.

4.4.4 Coastal waters

4.4.4.1 The water quality and beneficial uses of coastal waters vary in different water control zones. They need separate effluent standards. In practice this memorandum groups together zones with similar objectives.

4.4.4.2 The memorandum makes a distinction between inshore and marine waters, except in Tolo Harbour, Port Shelter and Deep Bay where tidal flow is restricted. This results in six sets of standards.

Coastal water group	Control Zones
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Group I	Tolo Harbour, Port Shelter
Group II	Deep Bay
Group IIIa	Victoria Harbour inshore
Group IIIb	Victoria Harbour marine
Group IVa	Southern, Mirs Bay, Western Buffer, Eastern Buffer, Junk Bay, North Western inshore
Group IVb	Southern, Mirs Bay, Western Buffer, Eastern Buffer, Junk Bay, North Western marine

- 4.4.4.3 Within the coastal waters are special areas that need specific restrictions. These areas include bathing beaches, sites of special scientific interest, marinas and mariculture sites. Paragraph 9.1 lists the restrictions.
5. Charges for effluent disposal
- 5.1 Some effluent components can be treated much more efficiently in big communal treatment plants than in individual premises. In some cases, factories do not have the space to treat their own effluents properly.
- 5.2 The components that can be treated in this way are measured as biochemical oxygen demand, chemical oxygen demand, and suspended solids. The allowable levels of these determinands in effluents to foul sewers are high; this reflects their treatability in the public sewage disposal system.
- 5.3 All other effluent components have stricter standards. Those who produce effluents must control these other components in their own premises.
- 5.4 A charge will be levied to pay for the safe disposal of the treatable effluent components. It will be the actual extra cost of treating strong industrial and commercial effluents to the same level as domestic sewage. This charge will be independent of any other fees and charges that may be introduced under the Ordinance.

(Enacted 1990)

Part:	2	EFFLUENT STANDARDS	30/06/1997
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PART II EFFLUENT STANDARDS

6. Discharges to foul sewers
- 6.1 Table 1 lists the standards for effluents to foul sewers leading to Government sewage disposal works. If the works include microbial treatment, there are extra requirements. Table 2 lists them. Information on the catchments of sewage disposal works is available for inspection in the Drainage Services Department.
- 6.2 In addition to the effluent standards, there are some substances that are harmful to the sewers, or resistant to removal by treatment processes. The Authority will not permit them to be discharged into foul sewers. They are listed below.

<p>Prohibited substances-FOUL SEWERS</p> <p>polychlorinated biphenyls (PCB) polyaromatic hydrocarbon (PAH) fumigant or pesticide radioactive substances chlorinated hydrocarbons flammable or toxic solvents petroleum oil or tar calcium carbide wastes liable to form scum or deposits in any part of the public sewer any substance of a nature and quantity likely to damage the sewer or to interfere with any of the treatment processes</p>

- 6.3 The Authority will not normally allow sludge discharges to sewers. To avoid overloading the foul sewers, the Authority will not allow unpolluted water to be discharged into them.
- 6.4 The Authority will not allow dilution as a means of meeting effluent standards. This would cause excessive hydraulic loading on the disposal system. For this purpose the licence may specify an instantaneous peak flow. This does not necessarily prohibit mixing different effluent streams within the premises.
7. Discharges to storm water drains
- 7.1 The Authority will not normally allow effluent to storm water drains. In exceptional circumstances, he may do so, in which case the effluent standards will be as for the downstream environmental waters. This may be inland waters or inshore waters. The Authority will also take the advice of the Director of Drainage Services on the available capacity of the storm water drain.
- 7.2 In a few areas, the foul sewerage is not adequate for existing sewage flows, and storm water drains may serve as combined sewers. The Authority will, after consulting the Director of Drainage Services, declare these combined sewers to be foul sewers for the purpose of fixing effluent standards. This will continue until the effluents can be diverted to separate foul sewers. The Government is working on a territory wide sewerage improvement programme to make this possible.
8. Discharges to inland waters
- 8.1 Tables 3, 4, 5 and 6 list the standards for effluents to Group A, B, Group C and Group D inland waters respectively. The standards apply to groundwater as to other inland waters.
- 8.2 For general guidance, Group A inland waters include all waters in water gathering grounds and within the boundaries of country parks. Group B waters are mainly those draining agricultural areas in the New Territories. Group C waters are those running through areas where there are large numbers of fish ponds, mostly in the Yuen Long area. Group D waters are those large enough to permit secondary contact recreation and those draining urban and semi-urban areas.
- 8.3 The Authority will not allow new effluents to rivers, streams or storm water drains that are within 100m of a gazetted bathing beach and flow through the beach area. This is to protect the health and comfort of bathers.
- 8.4 They are some substances that the Authority will not allow in effluents to inland waters. They are listed below.

Prohibited substances-INLAND WATERS

polychlorinated biphenyls (PCB)
 polyaromatic hydrocarbon (PAH)
 fumigant, pesticide or toxicant
 radioactive substances
 chlorinated hydrocarbons
 flammable or toxic solvents
 petroleum oil or tar
 calcium carbide
 wastes liable to form scum, deposits or discoloration
 sludge or solid refuse of any kind
 detergents in Group A inland waters only

- 8.5 The Authority will not allow dilution as a means of meeting effluent standards. This would cause excessive loading on the receiving waters and their biota. For this purpose the licence may specify an instantaneous peak flow. This does not necessarily prohibit mixing different effluent streams within the premises.
- 8.6 The effluent standards in the tables do not apply to household septic tanks that discharge to the ground. The Authority will control them by design and maintenance standards. The general prohibitions still apply.
9. Discharges to coastal waters
- 9.1 Tables 7, 8, 9a and 9b, and 10a and 10b list the standards for effluents in the various groups of coastal waters. Regardless of these standards, the Authority will not allow new effluents in certain areas. They are listed below.

Prohibited Effluents-COASTAL WATERS

No new effluent will be allowed:

- within 100m of the boundaries of a gazetted beach in any direction, including rivers, streams and storm water drains;
- within 200m of the seaward boundaries of a marine fish culture zone or a site of special scientific interest, and within 100m of the landward boundaries;
- in any typhoon shelter;
- in any marina;
- within 100m of a seawater intake point.

9.2 There are some substances that the Authority will not allow in effluents to coastal waters. They are listed below.

Prohibited substances-COASTAL WATERS

- polychlorinated biphenyls (PCB)
- polyaromatic hydrocarbon (PAH)
- fumigant, pesticide or toxicant
- radioactive substances
- chlorinated hydrocarbons
- flammable or toxic solvents
- petroleum oil or tar
- calcium carbide
- wastes liable to form scum, deposits or discoloration
- sludge, floatable substances or solids larger than 10 mm

9.3 The Authority will not allow dilution as a means of meeting effluent standards. This would cause excessive loading on the receiving waters and their biological systems. For this purpose the licence may specify and instantaneous peak flow. This does not necessarily prohibit mixing different effluent streams within the premises.

(Enacted 1990)

Annex:	1	REFERENCE TO ANALYTICAL METHODS	32 of 2000	09/06/2000
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Annex 1

This table lists the methods used by the Government Chemist.

Parameter	Reference
pH	APHA 17ed 4500-H+B
Temperature	Note (a)
Colour	Lovibond Tintometer, 25mm cell
Conductivity	BS 2690: Part 9: 1970: Method 6
Total Suspended Solids	APHA 17ed 2540 D
Settleable Solid	APHA 17ed 2540 F
Dissolved Oxygen	APHA 17ed 4500-O G
Biochemical Oxygen Demand (BOD)	BS 6068: Section 2.14: 1984
Chemical Oxygen Demand (COD)	ASTM D 1252-88 Test Method B or APHA 17ed 5220 C & D
Oil & Grease	APHA 17ed 5520 C
Metals	
Pretreatment for total metals	Sample Digestion

Antimony	}	APHA 17ed 3030 A and 3030 F.3b
Beryllium	}	
Barium	}	
Cadmium	}	
Chromium	}	
Copper	}	
Iron	}	APHA 17ed 3111, 3113 and 3120 as appropriate
Lead	}	
Manganese	}	
Nickel	}	
Silver	}	
Thallium	}	
Vanadium	}	
Zinc	}	
Arsenic	}	APHA 17ed 3113 and 3114 as appropriate
Selenium		APHA 17ed 3112
Mercury		APHA 17ed 3120
Boron		
Cyanide		ASTM D 2036-89 or APHA 17ed 4500-CN
Sulphide total	}	
free	}	APHA 17ed 4500-S ²⁻
H ₂ S		
Phenols		APHA 17ed 5530
Surfactants (total) (total means anionic and non-ionic)		
Anionic		BS 6068: Section 2.23: 1986 or APHA 17ed 5540 C
Non-ionic		BS 6068: Section 2.24: 1986
Total residual chlorine		APHA 17ed 4500-Cl G
Total Phosphorus (TP)		ASTM D 515-88
Total Reactive Phosphorus		APHA 17ed 4500-P
Sulphate		APHA 17ed 4500-SO ₄ ²⁻
Chloride		APHA 17ed 4500-Cl ⁻
Fluoride		APHA 17ed 4500-(F) ⁻ -C
Nitrogen-Ammonia		APHA 17ed 4500-NH ₃
Nitrogen-Nitrate		APHA 17ed 4500-NO ₃ ⁻
Nitrogen-Nitrite		APHA 17ed 4500-NO ₂ ⁻
Total Kjeldahl Nitrogen (TKN)		ASTM D 3590-89
E. coli		Notes (b), (c)

Reference Notes:

ASTM -Annual Book of American Society for Testing and Materials Standards, Vol 11.01 & 11.02.

BS -British Standards Institution.

APHA 17ed -American Public Health Association. Standard Methods 17th Edition (1989).

- (a) Temperature sensor should be calibrated against a mercury thermometer of 0.1°C scale.
- (b) DoE(1983): The Bacteriological Examination of Drinking Water Supplies 1982, Sec. 7.8 & 7.9.
- (c) Membrane lauryl sulphate method with in situ urease test for E. coli:
Reports on Public Health and Medical Subjects No. 71. Methods for the Examination of Waters and Associated Materials. London: Her Majesty's Stationery Office 1983.

(Enacted 1990)

Table 1 Standards for effluents discharged into foul sewers leading into Government sewage treatment plants

(All units in mg/L unless otherwise stated; all figures are upper limits unless otherwise indicated)

Determinand	Flow rate (m ³ /day)	≤ 10	>10 and ≤ 100	>100 and ≤ 200	>200 and ≤ 400	>400 and ≤ 600	>600 and ≤ 800	>800 and ≤ 1000	>1000 and ≤ 1500	>1500 and ≤ 2000	>2000 and ≤ 3000	>3000 and ≤ 4000	>4000 and ≤ 5000	>5000 and ≤ 6000
pH (pH units)		6-10	6-10	6-10	6-10	6-10	6-10	6-10	6-10	6-10	6-10	6-10	6-10	6-10
Temperature (°C)		43	43	43	43	43	43	43	43	43	43	43	43	43
Suspended solids	1200	1000	900	800	800	800	800	800	800	800	800	800	800	800
Settleable solids	100	100	100	100	100	100	100	100	100	100	100	100	100	100
BOD	1200	1000	900	800	800	800	800	800	800	800	800	800	800	800
COD	3000	2500	2200	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Oil & Grease	100	100	50	50	50	40	30	20	20	20	20	20	20	20
Iron	30	25	25	25	15	12.5	10	7.5	5	3.5	2.5	2	1.5	
Boron	8	7	6	5	4	3	2.4	1.6	1.2	0.8	0.6	0.5	0.4	
Barium	8	7	6	5	4	3	2.4	1.6	1.2	0.8	0.6	0.5	0.4	
Mercury	0.2	0.15	0.1	0.1	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	
Cadmium	0.2	0.15	0.1	0.1	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	
Copper	4	4	4	3	1.5	1.5	1	1	1	1	1	1	1	
Nickel	4	3	3	2	1.5	1.5	1	0.8	0.7	0.7	0.6	0.6	0.6	
Chromium	2	2	2	2	1	0.7	0.6	0.4	0.3	0.2	0.1	0.1	0.1	
Zinc	5	5	4	3	1.5	1.5	1	0.8	0.7	0.7	0.6	0.6	0.6	
Silver	4	3	3	2	1.5	1.5	1	0.8	0.7	0.7	0.6	0.6	0.6	
Other toxic metals individually	2.5	2.2	2	1.5	1	0.7	0.6	0.4	0.3	0.2	0.15	0.12	0.1	
Total toxic metals	10	10	8	7	3	2	2	1.6	1.4	1.2	1.2	1.2	1	
Cyanide	2	2	2	1	0.7	0.5	0.4	0.27	0.2	0.13	0.1	0.08	0.06	
Phenols	1	1	1	1	0.7	0.5	0.4	0.27	0.2	0.13	0.1	0.1	0.1	
Sulphide	10	10	10	10	5	5	4	2	2	2	1	1	1	
Sulphate	1000	1000	1000	1000	1000	1000	1000	900	800	600	600	600	600	
Total nitrogen	200	200	200	200	200	200	200	100	100	100	100	100	100	
Total phosphorus	50	50	50	50	50	50	50	25	25	25	25	25	25	
Surfactants (total)	200	150	50	40	30	25	25	25	25	25	25	25	25	

(Enacted 1990)

Table 2 Standards for effluents discharged into foul sewers leading into Government sewage treatment plants with microbial treatment

(All units in mg/L unless otherwise stated; all figures are upper limits unless otherwise indicated)

Determinand	Flow rate (m ³ /day)	≤ 10	>10 and ≤ 100	>100 and ≤ 200	>200 and ≤ 400	>400 and ≤ 600	>600 and ≤ 800	>800 and ≤ 1000	>1000 and ≤ 1500	>1500 and ≤ 2000	>2000 and ≤ 3000	>3000 and ≤ 4000	>4000 and ≤ 5000	>5000 and ≤ 6000
Copper		1.5	1	1	1	0.8	0.6	0.5	0.4	0.3	0.2	0.15	0.1	0.05

NOTE : Standards in this table apply in place of those in Table 1 for the corresponding determinand.

(Enacted 1990)

Table 3 Standards for effluents discharged into Group A inland waters

(All units in mg/L unless otherwise stated; all figures are upper limits unless otherwise indicated)

Flow rate (m ³ /day)	≤ 10	>10 and ≤ 100	>100 and ≤ 500	>500 and ≤ 1000	>1000 and ≤ 2000
Determinand					
pH (pH units)	6.5-8.5	6.5-8.5	6.5-8.5	6.5-8.5	6.5-8.5
Temperature (°C)	35	35	30	30	30
Colour (lovibond units) (25mm)	1	1	1	1	1

cell length)					
Conductivity (µs/cm at 20 °C)	1000	1000	1000	1000	1000
Suspended solids	10	10	5	5	5
Dissolved oxygen	≧4	≧4	≧4	≧4	≧4
BOD	10	10	5	5	5
COD	50	50	20	20	10
Oil & Grease	1	1	1	1	1
Boron	2	2	1	0.5	0.5
Barium	2	2	1	0.5	0.5
Iron	2	2	1	0.5	0.5
Arsenic	0.05	0.05	0.05	0.05	0.05
Total chromium	0.05	0.05	0.05	0.05	0.05
Mercury	0.001	0.001	0.001	0.001	0.001
Cadmium	0.001	0.001	0.001	0.001	0.001
Selenium	0.01	0.01	0.01	0.01	0.01
Copper	0.2	0.2	0.2	0.2	0.1
Lead	0.1	0.1	0.1	0.1	0.1
Manganese	0.5	0.5	0.5	0.5	0.5
Zinc	1	1	1	1	1
Other toxic metals individually	0.1	0.1	0.1	0.1	0.1
Total toxic metals	0.3	0.3	0.2	0.2	0.15
Cyanide	0.05	0.05	0.05	0.05	0.02
Phenols	0.1	0.1	0.1	0.1	0.1
Hydrogen sulphide	0.05	0.05	0.05	0.05	0.05
Sulphide	0.2	0.2	0.1	0.1	0.1
Fluoride	1	1	1	1	0.5
Sulphate	800	600	500	400	200
Chloride	800	500	500	200	200
Total reactive phosphorus	1	0.7	0.7	0.5	0.5
Ammonia nitrogen	1	1	1	1	0.5
Nitrate + nitrite nitrogen	15	15	15	10	10
E. coli (count/100 ml)	<1	<1	<1	<1	<1

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(Enacted 1990)

Table 4 Standards for effluents discharged into Group B inland waters
(All units in mg/L unless otherwise stated; all figures are upper limits unless otherwise indicated)

Determinand	Flow rate (m ³ /day)	Flow rate							
		≧200	>200 and ≧400	>400 and ≧600	>600 and ≧800	>800 and ≧1000	>1000 and ≧1500	>1500 and ≧2000	>2000 and ≧3000
pH (pH units)	6.5-8.5	6.5-8.5	6.5-8.5	6.5-8.5	6.5-8.5	6.5-8.5	6.5-8.5	6.5-8.5	6.5-8.5
Temperature (°C)	35	30	30	30	30	30	30	30	30
Colour (lovibond units) (25mm cell length)	1	1	1	1	1	1	1	1	1
Suspended solids	30	30	30	30	30	30	30	30	30
BOD	20	20	20	20	20	20	20	20	20
COD	80	80	80	80	80	80	80	80	80
Oil & Grease	10	10	10	10	10	10	10	10	10
Iron	10	8	7	5	4	3	2	1	1
Boron	5	4	3	2.5	2	1.5	1	0.5	0.5
Barium	5	4	3	2.5	2	1.5	1	0.5	0.5
Mercury	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Cadmium	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Selenium	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1
Other toxic metals individually	0.5	0.5	0.2	0.2	0.2	0.1	0.1	0.1	0.1
Total Toxic metals	2	1.5	1	0.5	0.5	0.2	0.2	0.2	0.2
Cyanide	0.1	0.1	0.1	0.08	0.08	0.05	0.05	0.03	0.03
Phenols	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Sulphide	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Fluoride	10	10	8	8	8	5	5	3	3
Sulphate	800	800	600	600	600	400	400	400	400
Chloride	1000	1000	800	800	800	600	600	400	400
Total phosphorus	10	10	10	8	8	8	5	5	5
Ammonia nitrogen	5	5	5	5	5	5	5	5	5
Nitrate + nitrite nitrogen	30	30	30	20	20	20	10	10	10
Surfactants (total)	5	5	5	5	5	5	5	5	5
E. coli (count/100ml)	100	100	100	100	100	100	100	100	100

(Enacted 1990)

Table 5 Standards for effluents discharged into Group C inland waters
(All units in mg/L unless otherwise stated; all figures are upper limits unless otherwise indicated)

Determinand	Flow rate (m ³ /day)	Flow rate (m ³ /day)			
		≅ 100	> 100 and ≅ 500	> 500 and ≅ 1000	> 1000 and ≅ 2000
pH (pH units)		6-9	6-9	6-9	6-9
Temperature (°C)	30	30	30	30	30
Colour (lovibond units) (25mm cell length)	1	1	1	1	1
Suspended solids	20	10	10	5	5
BOD	20	15	10	5	5
COD	80	60	40	20	20
Oil & Grease	1	1	1	1	1
Boron	10	5	4	2	2
Barium	1	1	1	0.5	0.5
Iron	0.5	0.4	0.3	0.2	0.2
Mercury	0.001	0.001	0.001	0.001	0.001
Cadmium	0.001	0.001	0.001	0.001	0.001
Silver	0.1	0.1	0.1	0.1	0.1
Copper	0.1	0.1	0.05	0.05	0.05
Selenium	0.1	0.1	0.05	0.05	0.05
Lead	0.2	0.2	0.2	0.1	0.1
Nickel	0.2	0.2	0.2	0.1	0.1
Other toxic metals individually	0.5	0.4	0.3	0.2	0.2
Total Toxic metals	0.5	0.4	0.3	0.2	0.2
Cyanide	0.05	0.05	0.05	0.01	0.01
Phenols	0.1	0.1	0.1	0.1	0.1
Sulphide	0.2	0.2	0.2	0.1	0.1
Fluoride	10	7	5	4	4
Sulphate	800	600	400	200	200
Chloride	1000	1000	1000	1000	1000
Total phosphorus	10	10	8	8	8
Ammonia nitrogen	2	2	2	1	1
Nitrate + nitrite nitrogen	30	30	20	20	20
Surfactants (total)	2	2	2	1	1
E. coli (count/100ml)	1000	1000	1000	1000	1000

(Enacted 1990)

Table 6 Standards for effluents discharged into Group D inland waters
(All units in mg/L unless otherwise stated; all figures are upper limits unless otherwise indicated)

Determinand	Flow rate (m ³ /day)	Flow rate (m ³ /day)							
		≅ 200	> 200 and ≅ 400	> 400 and ≅ 600	> 600 and ≅ 800	> 800 and ≅ 1000	> 1000 and ≅ 1500	> 1500 and ≅ 2000	> 2000 and ≅ 3000
pH (pH units)		6-10	6-10	6-10	6-10	6-10	6-10	6-10	6-10
Temperature (°C)	30	30	30	30	30	30	30	30	30
Colour (lovibond units) (25mm cell length)	1	1	1	1	1	1	1	1	1
Suspended solids	30	30	30	30	30	30	30	30	30
BOD	20	20	20	20	20	20	20	20	20
COD	80	80	80	80	80	80	80	80	80
Oil & Grease	10	10	10	10	10	10	10	10	10
Iron	10	8	7	5	4	2.7	2	1.3	1.3
Boron	5	4	3.5	2.5	2	1.5	1	0.7	0.7
Barium	5	4	3.5	2.5	2	1.5	1	0.7	0.7
Mercury	0.1	0.05	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Cadmium	0.1	0.05	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Other toxic metals individually	1	1	0.8	0.8	0.5	0.5	0.2	0.2	0.2
Total Toxic metals	2	2	1.6	1.6	1	1	0.5	0.4	0.4
Cyanide	0.4	0.4	0.3	0.3	0.2	0.1	0.1	0.05	0.05
Phenols	0.4	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1
Sulphide	1	1	1	1	1	1	1	1	1
Sulphate	800	600	600	600	600	400	400	400	400
Chloride	1000	800	800	800	600	600	400	400	400
Fluoride	10	8	8	8	5	5	3	3	3
Total phosphorus	10	10	10	8	8	8	5	5	5
Ammonia nitrogen	20	20	20	20	20	20	20	10	10

Nitrate + nitrite nitrogen	50	50	50	30	30	30	30	20
Surfactants (total)	15	15	15	15	15	15	15	15
<i>E. coli</i> (count/100ml)	1000	1000	1000	1000	1000	1000	1000	1000

(Enacted 1990)

Table 7 Standards for effluents discharged into the coastal waters of Tolo and Port Shelter Water Control Zones

(All units in mg/L unless otherwise stated; all figures are upper limits unless otherwise indicated)

Determinand	Flow rate (m ³ /day)	≅ 10	> 10 and ≅ 200	> 200 and ≅ 400	> 400 and ≅ 600	> 600 and ≅ 800	> 800 and ≅ 1000	> 1000 and ≅ 1500	> 1500 and ≅ 2000	> 2000 and ≅ 3000	> 3000 and ≅ 4000	> 4000 and ≅ 5000	> 5000 and ≅ 6000
		6-9	6-9	6-9	6-9	6-9	6-9	6-9	6-9	6-9	6-9	6-9	6-9
pH (pH units)		6-9	6-9	6-9	6-9	6-9	6-9	6-9	6-9	6-9	6-9	6-9	6-9
Temperature (°C)	45	45	45	45	45	45	45	45	45	45	45	45	45
Colour (lovibond units) (25mm cell length)	1	1	1	1	1	1	1	1	1	1	1	1	1
Suspended solids	30	30	30	30	30	30	15	15	15	15	15	15	15
BOD	20	20	20	20	20	20	10	10	10	10	10	10	10
COD	80	80	80	80	80	80	50	50	50	50	50	50	50
Oil & Grease	20	20	20	20	20	20	10	10	10	10	10	10	10
Iron	10	10	10	7	5	4	2.7	2	1.3	1	0.8	0.6	0.6
Boron	5	4	3	2.5	2	1.6	1.1	0.8	0.5	0.4	0.3	0.2	0.2
Barium	5	4	3	2.5	2	1.6	1.1	0.8	0.5	0.4	0.3	0.2	0.2
Mercury	0.1	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Cadmium	0.1	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Other toxic metals individually	1	1	0.8	0.5	0.5	0.4	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Total toxic metals	2	2	1.6	1	1	0.8	0.2	0.2	0.2	0.2	0.2	0.14	0.1
Cyanide	0.1	0.1	0.1	0.1	0.1	0.1	0.05	0.05	0.03	0.02	0.02	0.02	0.01
Phenols	0.5	0.5	0.5	0.25	0.25	0.25	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Sulphide	5	5	5	5	5	5	2.5	2.5	1.5	1	1	1	0.5
Total residual chlorine	1	1	1	1	1	1	1	1	1	1	1	1	1
Total nitrogen	20	20	20	15	15	15	15	15	10	10	10	10	10
Total phosphorus	8	8	5	5	5	5	5	5	5	5	5	5	5
Surfactants (total)	15	15	15	15	15	15	10	10	10	10	10	10	10
<i>E. coli</i> (count/100ml)	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000

(Enacted 1990)

Table 8 Standards for effluents discharged into the coastal waters of Deep Bay Water Control Zone

(All units in mg/L unless otherwise stated; all figures are upper limits unless otherwise indicated)

Determinand	Flow rate (m ³ /day)	≅ 10	> 10 and ≅ 200	> 200 and ≅ 400	> 400 and ≅ 600	> 600 and ≅ 800	> 800 and ≅ 1000	> 1000 and ≅ 1500	> 1500 and ≅ 2000	> 2000 and ≅ 3000	> 3000 and ≅ 4000	> 4000 and ≅ 5000	> 5000 and ≅ 6000
		6-9	6-9	6-9	6-9	6-9	6-9	6-9	6-9	6-9	6-9	6-9	6-9
pH (pH units)		6-9	6-9	6-9	6-9	6-9	6-9	6-9	6-9	6-9	6-9	6-9	6-9
Temperature (°C)	45	45	45	45	45	45	45	45	45	45	45	45	45
Colour (lovibond units) (25mm cell length)	1	1	1	1	1	1	1	1	1	1	1	1	1
Suspended solids	50	50	50	50	50	50	25	25	25	25	25	25	25
BOD	20	20	20	20	20	20	10	10	10	10	10	10	10
COD	80	80	80	80	80	80	50	50	50	50	50	50	50
Oil & Grease	20	20	20	20	20	20	10	10	10	10	10	10	10
Iron	10	10	10	7	5	4	3	2	1	1	1	1	1
Boron	5	4	3	2.5	2	1.6	1.1	0.8	0.5	0.4	0.3	0.2	0.2
Barium	5	4	3	2.5	2	1.6	1.1	0.8	0.5	0.4	0.3	0.2	0.2
Mercury	0.1	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Cadmium	0.1	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Other toxic metals individually	1	0.5	0.5	0.5	0.4	0.4	0.25	0.2	0.15	0.1	0.1	0.1	0.1
Total toxic metals	2	1	1	1	0.8	0.8	0.5	0.4	0.3	0.2	0.14	0.1	0.1
Cyanide	0.1	0.1	0.1	0.1	0.1	0.08	0.06	0.04	0.03	0.02	0.01	0.01	0.01
Phenols	0.5	0.5	0.4	0.3	0.25	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Sulphide	5	5	5	5	5	5	2.5	2.5	1.5	1	1	1	0.5
Total residual chlorine	1	1	1	1	1	1	1	1	1	1	1	1	1
Total nitrogen	100	100	100	100	100	100	80	80	50	50	50	50	50
Total phosphorus	10	10	10	10	10	10	8	8	5	5	5	5	5
Surfactants (total)	15	15	15	15	15	15	10	10	10	10	10	10	7
<i>E. coli</i> (count/100ml)	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000

(Enacted 1990)

Table 9a Standards for effluents discharged into the inshore waters of Victoria Harbour Water Control Zone

(All units in mg/L unless otherwise stated; all figures are upper limits unless otherwise indicated)

Determinand	Flow rate (m ³ /day)	Standards											
		≤ 10	> 10 and ≤ 200	> 200 and ≤ 400	> 400 and ≤ 600	> 600 and ≤ 800	> 800 and ≤ 1000	> 1000 and ≤ 1500	> 1500 and ≤ 2000	> 2000 and ≤ 3000	> 3000 and ≤ 4000	> 4000 and ≤ 5000	> 5000 and ≤ 6000
pH (pH units)	6-9	6-9	6-9	6-9	6-9	6-9	6-9	6-9	6-9	6-9	6-9	6-9	6-9
Temperature (°C)	40	40	40	40	40	40	40	40	40	40	40	40	40
Colour (lovibond units) (25mm cell length)	1	1	1	1	1	1	1	1	1	1	1	1	1
Suspended solids	50	30	30	30	30	30	30	30	30	30	30	30	30
BOD	50	20	20	20	20	20	20	20	20	20	20	20	20
COD	100	80	80	80	80	80	80	80	80	80	80	80	80
Oil & Grease	30	20	20	20	20	20	20	20	20	20	20	20	20
Iron	15	10	10	7	5	4	2.7	2	1.3	1	0.8	0.6	0.6
Boron	5	4	3	2.7	2	1.6	1.1	0.8	0.5	0.4	0.3	0.2	0.2
Barium	5	4	3	2.7	2	1.6	1.1	0.8	0.5	0.4	0.3	0.2	0.2
Mercury	0.1	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Cadmium	0.1	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Other toxic metals individually	1	1	0.8	0.7	0.5	0.4	0.25	0.2	0.15	0.1	0.1	0.1	0.1
Total toxic metals	2	2	1.6	1.4	1	0.8	0.5	0.4	0.3	0.2	0.14	0.1	0.1
Cyanide	0.2	0.1	0.1	0.1	0.1	0.1	0.05	0.05	0.03	0.02	0.02	0.01	0.01
Phenols	0.5	0.5	0.5	0.3	0.25	0.2	0.13	0.1	0.1	0.1	0.1	0.1	0.1
Sulphide	5	5	5	5	5	5	2.5	2.5	1.5	1	1	0.5	0.5
Total residual chlorine	1	1	1	1	1	1	1	1	1	1	1	1	1
Total nitrogen	100	100	100	100	100	100	80	80	50	50	50	50	50
Total phosphorus	10	10	10	10	10	10	8	8	5	5	5	5	5
Surfactants (total)	20	15	15	15	15	15	10	10	10	10	10	10	10
E. coli (count/100ml)	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000

(Enacted 1990)

Table 9b Standards for effluents discharged into the marine waters of Victoria Harbour
Water Control Zone

(All units in mg/L unless otherwise stated; all figures are upper limits unless otherwise indicated)

Determinand	Flow rate (m ³ /day)	Standards											
		≤ 10	> 10 and ≤ 200	> 200 and ≤ 400	> 400 and ≤ 600	> 600 and ≤ 800	> 800 and ≤ 1000	> 1000 and ≤ 1500	> 1500 and ≤ 2000	> 2000 and ≤ 3000	> 3000 and ≤ 4000	> 4000 and ≤ 5000	> 5000 and ≤ 6000
pH (pH units)	6-10	6-10	6-10	6-10	6-10	6-10	6-10	6-10	6-10	6-10	6-10	6-10	6-10
Temperature (°C)	45	45	45	45	45	45	45	45	45	45	45	45	45
Colour (lovibond units) (25mm cell length)	4	1	1	1	1	1	1	1	1	1	1	1	1
Suspended solids	700	600	600	500	375	300	200	150	100	75	60	40	40
BOD	700	600	600	500	375	300	200	150	100	75	60	40	40
COD	1500	1200	1200	1000	700	600	400	300	200	100	100	85	85
Oil & Grease	50	50	50	30	25	20	20	20	20	20	20	20	20
Iron	20	15	13	10	7.5	6	4	3	2	1.5	1.2	1	1
Boron	6	5	4	3.5	2.5	2	1.5	1	0.7	0.5	0.4	0.3	0.3
Barium	6	5	4	3.5	2.5	2	1.5	1	0.7	0.5	0.4	0.3	0.3
Mercury	0.1	0.1	0.05	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Cadmium	0.1	0.1	0.05	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Other toxic metals individually	2	1.5	1	0.8	0.6	0.5	0.32	0.24	0.16	0.12	0.1	0.1	0.1
Total toxic metals	4	3	2	1.6	1.2	1	0.64	0.48	0.32	0.24	0.2	0.14	0.14
Cyanide	1	0.5	0.5	0.5	0.4	0.3	0.2	0.1	0.1	0.08	0.06	0.04	0.04
Phenols	0.5	0.5	0.5	0.3	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Sulphide	5	5	5	5	5	5	2.5	2.5	1.5	1	1	0.5	0.5
Total residual chlorine	1	1	1	1	1	1	1	1	1	1	1	1	1
Total nitrogen	100	100	100	100	100	100	100	100	100	100	100	100	50
Total phosphorus	10	10	10	10	10	10	10	10	10	10	10	10	5
Surfactants (total)	30	20	20	20	15	15	15	15	15	15	15	15	15
E. coli (count/100ml)	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000

(Enacted 1990)

Table 10a Standards for effluents discharged into the inshore waters of Southern, Mirs
Bay, Junk Bay, North Western, Eastern Buffer and Western Buffer Water
Control Zones

(All units in mg/L unless otherwise stated; all figures are upper limits unless otherwise indicated)

Determinand	Flow rate (m ³ /day)	Standards											
		≤ 10	> 10 and ≤ 200	> 200 and ≤ 400	> 400 and ≤ 600	> 600 and ≤ 800	> 800 and ≤ 1000	> 1000 and ≤ 1500	> 1500 and ≤ 2000	> 2000 and ≤ 3000	> 3000 and ≤ 4000	> 4000 and ≤ 5000	> 5000 and ≤ 6000
pH (pH units)	6-9	6-9	6-9	6-9	6-9	6-9	6-9	6-9	6-9	6-9	6-9	6-9	6-9
Temperature (°C)	40	40	40	40	40	40	40	40	40	40	40	40	40
Colour (lovibond units) (25mm cell length)	1	1	1	1	1	1	1	1	1	1	1	1	1
Suspended solids	50	30	30	30	30	30	30	30	30	30	30	30	30

BOD	50	20	20	20	20	20	20	20	20	20	20	20	20
COD	100	80	80	80	80	80	80	80	80	80	80	80	80
Oil & Grease	30	20	20	20	20	20	20	20	20	20	20	20	10
Iron	15	10	10	7	5	4	3	2	1	1	0.8	0.6	0.6
Boron	5	4	3	2	2	1.5	1.1	0.8	0.5	0.4	0.3	0.2	0.2
Barium	5	4	3	2	2	1.5	1.1	0.8	0.5	0.4	0.3	0.2	0.2
Mercury	0.1		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Cadmium	0.1		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Other toxic metals individually	1	1	0.8	0.7	0.5	0.4	0.3	0.2	0.15	0.1	0.1	0.1	0.1
Total toxic metals	2	2	1.6	1.4	1	0.8	0.6	0.4	0.3	0.2	0.1	0.1	0.1
Cyanide	0.2	0.1	0.1	0.1	0.1	0.1	0.05	0.05	0.03	0.02	0.02	0.01	0.01
Phenols	0.5	0.5	0.5	0.3	0.25	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Sulphide	5	5	5	5	5	5	2.5	2.5	1.5	1	1	0.5	0.5
Total residual chlorine	1	1	1	1	1	1	1	1	1	1	1	1	1
Total nitrogen	100	100	80	80	80	80	50	50	50	50	50	50	30
Total phosphorus	10	10	8	8	8	8	5	5	5	5	5	5	5
Surfactants (total)	20	15	15	15	15	15	10	10	10	10	10	10	10
E. coli (count/100ml)	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000

(Enacted 1990)

Table 10b Standards for effluents discharged into the marine waters of Southern, Mirs Bay, Junk Bay, North Western, Eastern Buffer and Western Buffer Water Control Zones

(All units in mg/L unless otherwise stated; all figures are upper limits unless otherwise indicated)

Determinand	Flow rate (m ³ /day)	Flow rate (m ³ /day)											
		≤ 10	> 10 and ≤ 200	> 200 and ≤ 400	> 400 and ≤ 600	> 600 and ≤ 800	> 800 and ≤ 1000	> 1000 and ≤ 1500	> 1500 and ≤ 2000	> 2000 and ≤ 3000	> 3000 and ≤ 4000	> 4000 and ≤ 5000	> 5000 and ≤ 6000
pH (pH units)		6-10	6-10	6-10	6-10	6-10	6-10	6-10	6-10	6-10	6-10	6-10	6-10
Temperature (°C)	45	45	45	45	45	45	45	45	45	45	45	45	45
Colour (lovibond units) (25mm cell length)	4	1	1	1	1	1	1	1	1	1	1	1	1
Suspended solids	500	500	500	300	200	200	100	100	50	50	40	30	30
BOD	500	500	500	300	200	200	100	100	50	50	40	30	30
COD	1000	1000	1000	700	500	400	300	200	150	100	80	80	80
Oil & Grease	50	50	50	30	25	20	20	20	20	20	20	20	20
Iron	20	15	13	10	7	6	4	3	2	1.5	1.2	1	1
Boron	6	5	4	3.5	2.5	2	1.5	1	0.7	0.5	0.4	0.3	0.3
Barium	6	5	4	3.5	2.5	2	1.5	1	0.7	0.5	0.4	0.3	0.3
Mercury	0.1	0.1	0.1		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Cadmium	0.1	0.1	0.1		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Other toxic metals individually	2	1.5	1.2	0.8	0.6	0.5	0.32	0.24	0.16	0.12	0.1	0.1	0.1
Total toxic metals	4	3	2.4	1.6	1.2	1	0.64	0.48	0.32	0.24	0.2	0.14	0.14
Cyanide	1	0.5	0.5	0.5	0.4	0.3	0.2	0.15	0.1	0.08	0.06	0.04	0.04
Phenols	0.5	0.5	0.5	0.3	0.25	0.2	0.13	0.1	0.1	0.1	0.1	0.1	0.1
Sulphide	5	5	5	5	5	5	2.5	2.5	1.5	1	1	0.5	0.5
Total residual chlorine	1	1	1	1	1	1	1	1	1	1	1	1	1
Total nitrogen	100	100	80	80	80	80	50	50	50	50	50	50	50
Total phosphorus	10	10	8	8	8	8	5	5	5	5	5	5	5
Surfactants (total)	30	20	20	20	15	15	15	15	15	15	15	15	15
E. coli (count/100ml)	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000

(Enacted 1990)