

## REQUIREMENTS FOR DISCHARGE OF TRADE EFFLUENT INTO THE PUBLIC SEWERS

### 1 Definition

"Trade effluent" means any liquid, including particles of matter and other substances in suspension in the liquid, which is the outflow from any trade, business or manufacture or of any works of engineering or building construction.

### 2 Regulations

All trade effluent to be discharged into the public sewerage system must be done so with the written consent of the Public Utilities Board. The requirements for trade effluent discharge are spelt out in the Sewerage and Drainage Act, Chapter 294 and the Sewerage and Drainage (Trade Effluent) Regulations.

### 3 Water Quality Standards For Trade Effluent Discharge Into Public Sewer

The physical and chemical characteristics of the trade effluent to be discharged into the **public sewer** shall not exceed the following limits:

- a) The temperature of the trade effluent shall not exceed 45° Celsius at the point of its entry into any public sewer.
- b) The pH value of the trade effluent shall not be less than 6 nor more than 9 at the point of its entry into any public sewer.
- c) The caustic alkalinity of the trade effluent shall not be more than 2,000 milligrams of calcium carbonate per litre at the point of its entry into any public sewer.
- d) Maximum concentrations of certain substances in trade effluent:

S/No	List of Substances	Limit in milligrams per litre of trade effluent (or otherwise stated)
1	5 Day Biochemical Oxygen Demand (BOD) at 20°C	400
2	Chemical Oxygen Demand	600
3	Total Suspended Solids	400
4	Total Dissolved Solids	3,000
5	Chloride (as chloride ion)	1,000
6	Sulphate (as SO <sub>4</sub> )	1,000

<b>S/No</b>	<b>List of Substances</b>	<b>Limit in milligrams per litre of trade effluent (or otherwise stated)</b>
7	Sulphide (as sulphur)	1
8	Cyanide (as CN)	2
9	Detergents (linear alkylate sulphonate as methylene blue active substances)	30
10	Grease and Oil (Hydrocarbon)	60
11	Grease and Oil (Non-hydrocarbon)	100
12	Arsenic	5
13	Barium	10
14	Tin	10
15	Iron (as Fe)	50
16	Beryllium	5
17	Boron	5
18	Manganese	10
19	Phenolic Compounds (expressed as phenol)	0.5
20	Fluoride (expressed as fluoride ion)	15

e) Maximum concentrations of metals in trade effluent:

<b>S/No</b>	<b>List of Metals</b>	<b>Limit in milligrams per litre of trade effluent (or otherwise stated)</b>
1	Cadmium	1
2	Chromium (trivalent and hexavalent)	5
3	Copper	5
4	Lead	5
5	Mercury	0.5
6	Nickel	10

<b>S/No</b>	<b>List of Substances</b>	<b>Limit in milligrams per litre of trade effluent (or otherwise stated)</b>
7	Selenium	10
8	Silver	5
9	Zinc	10
<p>Note: Where 2 or more of the metals listed in the table are present in the trade effluent, the total concentration of the metals shall not exceed 10 milligrams per litre.</p>		

4 The trade effluent discharged into a public sewer shall not contain any of the following substances:

- (a) any toxic industrial waste specified in the first column of the Schedule to the Environmental Public Health (Toxic Industrial Waste) Regulations (Cap. 95, Rg 11);
- (b) calcium carbide;
- (c) petroleum spirit or other inflammable substance;
- (d) any organic compound specified in First Schedule as follows:

<b>LIST OF PROHIBITED ORGANIC COMPOUNDS (VOCs / SVOCs)</b>			
1	Methylene Chloride	16	Octane
2	Trichloroethylene	17	1,2,4 – Trimethylbenzene
3	111-trichloroethane	18	Furan
4	Tetra-chloromethane	19	THF (Tetrahydrofuran)
5	112-Trichloroethane	20	DMF (N,N-Dimethylformamide)
6	Toluene	21	Benzene
7	Styrene	22	Turpentine
8	Methyl tert-butyl-ether	23	Polybrominated Diphenyl Ether
9	Nonane	24	Isobutanol
10	Decane	25	Methyl Ethyl Ketone
11	Tetrachloroethylene	26	Methyl Isobutyl Ketone

12	Ethylbenzene	27	Isopropyl ether
13	Xylene (o,m,p)	28	Diethyl ether
14	Hexane	29	Dimethyl Sulphide
15	Heptane	30	Dimethyl Sulphoxide

(e) any substance that either by itself or in combination or by reaction with other waste or refuse may give rise to any gas, fume, odour or substance which is or is likely to be a hazard to human life, a public nuisance, injurious or otherwise objectionable, or which prevents or is likely to prevent entry into the public sewer by workmen maintaining or repairing it;

(f) yeast, spent or unspent molasses, crude tar, tar oil, crude oil, carbon disulphide, hydro-sulphide and poly-sulphide;

(g) any radioactive material;

(h) any waste or refuse liable to form a viscous or solid coating or deposit on any part of the public sewer or sewerage system;

(i) any excessively discolouring substance;

(j) any substance of a nature or quantity which is likely, either alone, in combination with or by interaction with another substance —

(i) to cause a fire or an explosion in the public sewer or a sewerage system to which the public sewer is connected;

(ii) to cause damage to the public sewer or a sewerage system to which the public sewer is connected; or

(iii) to interfere with —

(A) the proper working of a sewerage system to which the public sewer is connected, or any facility, machinery or equipment related or connected to the sewerage system;

(B) the proper working of any facility, machinery or equipment which treats sewage from the public sewer for reuse;

(C) any process of treating trade effluent or other waste or refuse from the public sewer; or

(D) any process of treating sewage from the public sewer for reuse;

(k) any pesticide, fungicide, herbicide, insecticide, rodenticide or fumigant ;

(l) blood waste;

(m) infectious waste.

5. Permission required to discharge trade effluent containing trace amounts of certain substances

(I) Applicant may, notwithstanding item 4, with the prior permission of PUB, discharge into any public sewer trade effluent containing trace amounts of any substance specified in item 4.

(II) PUB may refuse or revoke any permission under (I) if it considers that the discharge is likely to be a hazard to the safety or health of any person at work in the public sewer or the sewerage system to which the public sewer is connected, or interfere with –

- (a) the proper working of a sewerage system to which the public sewer is connected, or any facility, machinery or equipment related or connected to the sewerage system;
- (b) the proper working of any facility, machinery or equipment which treats sewage from the public sewer for reuse;
- (c) any process of treating trade effluent or other waste or refuse from the public sewer; or
- (d) any process of treating sewage from the public sewer for reuse.

6. Trade Effluent Tariff Scheme

Applicant may with the prior permission of the Board discharge into any public sewer trade effluent containing BOD or TSS greater than 400 milligrams per litre but not exceeding 6000 milligrams per litre of the trade effluent with payment of Trade Effluent Fee. However, the corresponding COD shall not be greater than 10,000 milligrams per litre of the trade effluent or 3 times the concentration of BOD in the trade effluent, whichever is the lower. The fees to be levied are computed in accordance with the scale set out in the following Schedule:

<b>Concentration of BOD<sub>5</sub> or TSS in milligrams per litre of trade effluent</b>	<b>Fee For Biochemical Oxygen Demand (BOD<sub>5</sub>) (cents per cubic metre)</b>	<b>Fee For Total Suspended Solids (TSS) (cents per cubic metre)</b>
<b>401 – 600</b>	21	15
<b>601 – 800</b>	42	30
<b>801 – 1,000</b>	63	45
<b>1,001 – 1,200</b>	84	60
<b>1,201 – 1,400</b>	105	75
<b>1,401 – 1,600</b>	126	90
<b>1,601 – 1,800</b>	147	105
<b>1,801 – 2,000</b>	168	120
<b>2,001 – 2,200</b>	189	135

<b>2,201 – 2,400</b>	210	150
<b>2,401 – 2,600</b>	231	165
<b>2,601 – 2,800</b>	252	180
<b>2,801 – 3,000</b>	273	195
<b>3,001 – 3,200</b>	294	210
<b>3,201 – 3,400</b>	315	225
<b>3,401 – 3,600</b>	336	240
<b>3,601 – 3,800</b>	357	255
<b>3,801 – 4,000</b>	378	270
<b>4,001 – 4,200</b>	399	285
<b>4,201 – 4,400</b>	420	300
<b>4,401 – 4,600</b>	441	315
<b>4,601 – 4,800</b>	462	330
<b>4,801 – 5,000</b>	483	345
<b>5,001 – 5,200</b>	504	360
<b>5,201 – 5,400</b>	525	375
<b>5,401 – 5,600</b>	546	390
<b>5,601 – 5,800</b>	567	405
<b>5,801 – 6,000</b>	588	420

*Note : BOD = Biochemical Oxygen Demand (5 day at 20°C)  
TSS = Total Suspended Solids*

## 7 Other Requirements

- (a) The discharger shall maintain any trade effluent treatment facilities in good order to ensure that the trade effluent complies with the Regulations.
- (b) The discharger shall submit in writing to the Water Reclamation Department, PUB within 14 days of any change or addition to the following:
  - Name of company and address; and
  - Process or operation used in the trade, manufacture, business or building construction.