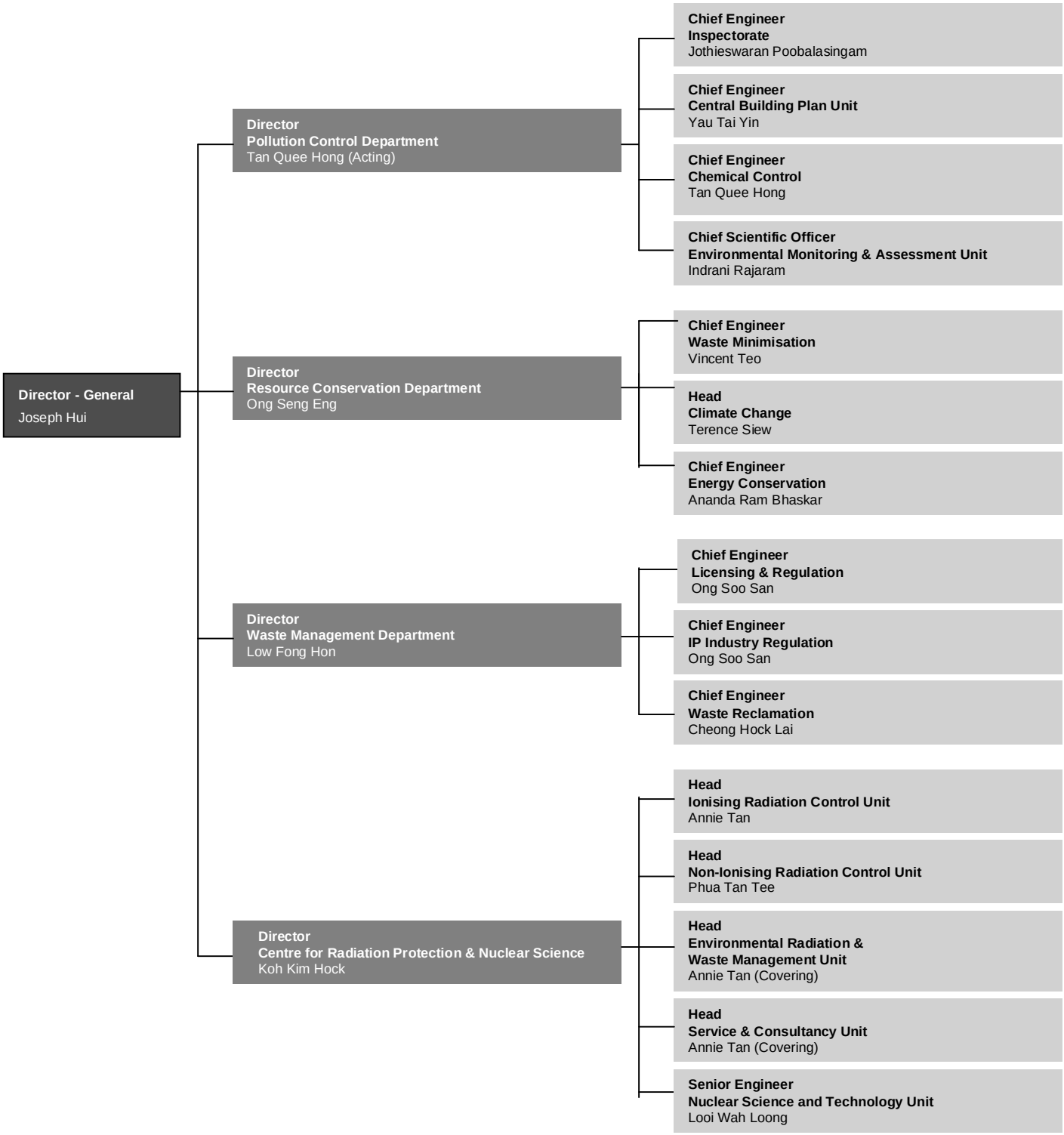
8

Appendices

APPENDIX 1

ORGANISATION CHART
ENVIRONMENTAL PROTECTION DIVISION



ORGANISATION CHART OF POLLUTION CONTROL DEPATMENT

DIRECTOR

Central Building Plan

Planning Industrial Section

- Assess environmental impact of new developments at land use and development control stages
- Impose environmental control requirements on new developments
- Process sewerage and drainage interpretation plan applications

Building Plan Non-Industrial Section

- Provide walk-in pre-consultation sessions to architects and professional engineers on building plan submission
- Register building plans/detailed plans on sewerage, drainage and environmental health
- Check building plans for compliance with pollution control requirements
- Process applications for Temporary Occupation Permit/Certificate of Statutory Completion

Inspectorate

Enforcement

- Enforce pollution control legislation.
- Implement air and water pollution control programmes e.g. inspections, water samplings & emission testing, surveillances of rural areas, backyard industries and industries.
- Investigate complaints of air and water pollution.
- Investigate complaints of noise pollution from construction sites.

Vehicle Emission/ Noise/ Projects

- Formulate and implement programmes/projects on environmental management for the ASEAN Working Group on Environmental Management.
- Formulate and implement programmes/projects on environmental co-operation for the Malaysia-Singapore Joint Committee on the Environment and the Indonesia-Singapore Joint Committee on the Environment.
- Control vehicular emissions and fuel quality.

Chemical Control

Hazardous Substances

- Plan and implement programmes such as hazard analysis, safety review, wastes audit, emergency & spill response, to control hazardous substances
- Approve and check on the transportation of hazardous substances.
- Control the import, export, sale, handling & storage of hazardous chemicals through licences and permits

Terrain Decontamination

- Oversee terrain decontamination matters

Toxic Wastes/ Multi-lateral Environmental

- Plan and implement programmes such as hazard analysis, safety review, wastes audit, emergency & spill response, to control toxic wastes.
- Approve and check on the transportation and disposal of toxic wastes.
- Implement programmes to phase-out ozone depleting substances
- Implement programmes to fulfil the obligations of the Basel Convention

Environmental Monitoring & Assessment Unit

- Undertake monitoring programmes to assess air quality and the quality of the inland and coastal waters
- Monitor toxic trace contaminants in the environment
- Track air and water quality trends to identify emerging environmental problems
- Provide laboratory services for investigations and enforcement action
- Undertake studies and projects related to environmental quality
- Develop and upgrade monitoring methods for air and water quality assessment

ORGANISATION CHART OF RESOURCE CONSERVATION DEPARTMENT

DIRECTOR

Waste Minimization

Recycling Programme

- § Formulate and implement waste recycling initiatives and programmes
- § Promote waste recycling in households, commercial, industrial and Public sectors
- § Plan, promote and coordinate the deployment of recycling bins in public places

Recycling Industry

- § Facilitate development of recycling facilities
- § Manage and develop Sarimbun Recycling Park
- § Collect and analyse waste statistics & recycling rates

Product Stewardship and Waste Reduction

- § Facilitate development of Innovative green technologies
- § Develop waste minimization programmes eg. the Singapore Packaging Agreement, a Product Stewardship initiative

Energy Conservation

- § Formulate and implement initiatives and programmes to promote energy efficiency in the Buildings, Consumer, Industrial, Transportation, and Public sectors
- § Raise awareness in the public and businesses on energy efficiency
- § Support development and test-bedding of promising energy technologies
- § Develop the local knowledge base and expertise in energy management
- § Promote the adoption of energy efficiency technologies
- § Secretariat support for the NCCC
- § Secretariat support for the E2PO

Climate Change

- § Formulate and implement initiatives and programmes to ensure Singapore meet its obligations under the United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol
- § Coordinate the preparation of Singapore's National Communication to the UNFCCC
- § Compile Singapore's inventory of greenhouse gas emissions
- § Commission studies to ascertain the local impacts of global climate change
- § Implement programs to raise public awareness on climate change issues
- § Promote the development of Clean Development Mechanism (CDM) projects in Singapore

ORGANISATION CHART OF WASTE MANAGEMENT DEPARTMENT

DIRECTOR

Licensing & Regulation

- Licence waste collectors
- Regulate refuse collection for the domestic and trade premises in the nine sectors
- Enforce illegal dumping

Waste Reclamation

- Provide refuse disposal services.
- Operate and maintain waste-to-energy plants at Ulu Pandan, Tuas, Senoko and Tuas South
- Operate and maintain Tuas Marine Transfer Station and Semakau Landfill

IP Industry Regulation

- Manage Design-Build-Own-Operate (DBOO) and divested waste-to-energy plants (IPs)
- Policy and Planning on Solid Waste Disposal

ORGANISATION CHART OF THE CENTRE FOR RADIATION PROTECTION AND NUCLEAR SCIENCE

DIRECTOR

Ionising Radiation Control Unit

§ Control the import, export, sale, manufacture, dealing in, transport, possession & use of radioactive materials and ionising radiation irradiating apparatus

Non-Ionising Radiation Control Unit

§ Control the import, export, sale, manufacture, dealing in, possession & use of non-ionising radiation irradiating apparatus

Environmental Radiation & Waste Management Unit

- Monitoring of Environmental Radiation
- Radioactive Waste Management

Service & Consultancy Unit

- Operating the Secondary Standards Dosimetry Laboratory
- Providing radiation services such as calibration of survey meters, personal radiation dose monitoring, radiation source leakage testing, food sample analysis, training and education

Nuclear Science and Technology Unit

- National Focal Point for various IAEA Conventions / Agreement
- National Focal Point to IAEA on technical cooperation matters

STANDARDS OF CONCENTRATION OF AIR IMPURITIES

SUBSTANCE	TRADE, INDUSTRY, PROCESS, FUEL BURNING EQUIPMENT OR INDUSTRIAL PLANT	EMISSION LIMITS
(a) Ammonia and ammonium compounds	Any trade, industry or process	76 mg/Nm^3 expressed as ammonia
(b) Antimony and its compounds	Any trade, industry or process	5 mg/Nm^3 expressed as antimony
(c) Arsenic and its compounds	Any trade, industry or process	1 mg/Nm^3 expressed as arsenic
(d) Benzene	Any trade, industry or process	5 mg/Nm^3
(e) Cadmium and its compounds	Any trade, industry or process	3 mg/Nm^3 expressed as cadmium
(f) Carbon monoxide	Any trade, industry, process or fuel burning equipment	625 mg/Nm^3
g) Chlorine	Any trade, industry or process	32 mg/Nm^3
(h) Copper and its compounds	Any trade, industry or process	5 mg/Nm^3 expressed as copper
(i) Dioxins and furans	Any waste incinerator	(i) 1.0 ng TEQ/Nm^3 for waste incinerators commissioned before 1st Jan 2001 (ii) 0.1 ng TEQ/Nm^3 for waste incinerators commissioned on or after 1st Jan 2001
(j) Ethylene oxide	Any trade, industry or process	5 mg/Nm^3
(k) Fluorine, hydrofluoric acid or inorganic fluorine compounds	Any trade, industry or process	50 mg/Nm^3 expressed as hydrofluoric acid
(l) Formaldehyde	Any trade, industry or process	20 mg/Nm^3
(m) Hydrogen chloride	Any trade, industry or process	200 mg/Nm^3
(n) Hydrogen sulphide	Any trade, industry or process	7.6 mg/Nm^3
(o) Lead and its compounds	Any trade, industry or process	5 mg/Nm^3 expressed as lead
(p) Mercury and its compounds	Any trade, industry or process	3 mg/Nm^3 expressed as mercury
(q) Oxides of nitrogen	Any trade, industry, process or fuel burning equipment	700 mg/Nm^3 expressed as nitrogen dioxide
(r) Particulate substances including smoke, soot, dust, ash, fly-ash, cinders, cement, lime, alumina, grit and other solid particles of any kind	Any trade, industry, process, fuel burning equipment or industrial plant (except for any cold blast foundry cupolas)	(i) 100 mg/Nm^3 ;or (ii) where there is more than one flue, duct or chimney in any scheduled premises, the total mass of the particulate emissions from all of such flue, duct or chimney divided by the total volume of such emissions shall not exceed 100mg/Nm^3 and the particulate emissions from each of such flue, duct or chimney shall not exceed 200 mg/Nm^3 at any point in time.

SUBSTANCE	TRADE, INDUSTRY, PROCESS, FUEL BURNING EQUIPMENT OR INDUSTRIAL PLANT	EMISSION LIMITS
(s) Smoke	All stationary fuel-burning sources	r equivalent opacity (Not to exceed more than 5 mins in any period of one hour, 3 times a day)
(t) Styrene monomer	Any trade, industry or process	100 mg/Nm^3
(u) Sulphur dioxide (non-combustion sources)	Any trade, industry or process	500 mg/Nm^3
(v) Sulphur trioxide and other acid gases	The manufacture of sulphuric acid	500 mg/Nm^3 expressed as sulphur trioxide. Effluent gases shall be free from persistent mist.
(w) Sulphur trioxide or sulphuric acid mist	Any trade, industry or process, other than any combustion process and any plant involving the manufacture of sulphuric acid	100 mg/Nm^3 expressed as sulphur trioxide
(x) Vinyl chloride monomer	Any trade, industry or process	20 mg/Nm^3

Note: The concentration of any specified substance (1st column) emitted from any specified operation in any trade, industry, process, fuel burning equipment or industrial plant (2nd column) shall not at any point before mixture with air, smoke or other gases, exceed the specified limits (3rd column).

''dioxins and furans''	means polychlorinated dibenzo-p-dioxins (PCDD) and polychlorinated dibenzofurans (PCDF), being tricyclic and aromatic compounds formed by 2 benzene rings which are connected by 2 oxygen atoms in PCDD and by one oxygen atom in PCDF and the hydrogen atoms of which may be replaced by up to 8 chlorine atoms;
''mg''	means milligram;
''ng''	means nanogram;
''Nm^3''	means normal cubic metre, being that amount of gas which when dry, occupies a cubic metre at a temperature of 0 degree Centigrade and at an absolute pressure of 760 millimetres of mercury;
''TEF''	means Toxic Equivalency Factor;

APPENDIX 7

LIST OF PREMISES CLASSIFIED AS SCHEDULED PREMISES UNDER THE ENVIRONMENTAL POLLUTION CONTROL ACT

Scheduled Premises are any premises :-

(a) being used for :

(i) cement works, being works for the manufacture or packing of portland cement, similar cement or pozzolanic materials;

(ii) concrete works, being works for the manufacture of concrete and of each batch capacity greater than 0.5 cubic metre;

(iii) asphalt works, being works for the manufacture of asphalt or tarmacadam;

(iv) ceramic works, being works in which any products such as bricks, tiles, pipes, pottery goods, refractories or glass are manufactured in furnaces or kilns fired by any fuel;

(v) chemical works, being works in which acids, alkali, chemical fertilizer, soap, detergent, sodium silicates, lime or other calcium compounds, chlorine, chemicals or chemical products are manufactured;

(vi) coke or charcoal works, being works in which coke and charcoal is produced and quenched, cut, crushed or graded;

(vii) ferrous and non-ferrous metal works, being works in which metal melting process for casting and/or metal coating are carried out;

(viii) gas works, being works in which coal, coke, oil or other mixtures or derivatives are handled or prepared for carbonisation or gasification and in which such materials are subsequently carbonised or gasified;

(ix) crushing, grinding and milling works, being works in which rock, ores, minerals, chemicals or natural grain products are processed by crushing, grinding, milling or separating into different sizes by sieving, air elutriation or in any other manner;

(x) petroleum works, being works in which crude or shale oil or crude petroleum or other mineral oil is refined or reconditioned;

(xi) scrap metal recovery works, being works in which scrap metals are treated in any type of furnace for recovery of metal irrespective of whether this is the primary object of any specific premises or not;

(xii) primary metallurgical works, being works in which ores are smelted or converted to metal of any kind;

(xiii) pulping works, being works in which wood or cellulose material is made into pulp;

(xiv) abrasive blasting works, being works in which equipment or structures are cleaned by abrasive blasting;

(b) on which there is erected any boiler of steam generating capacity of 2300 kilogrammes or more per hour, incinerator or furnace burning 500 kilogrammes or more of solid combustible material per hour or 220 kilogrammes or more of liquid material per hour;

(c) being used or intended to be used for storing:-

(i) more than 100 tonnes of one or more of the following substances:-
chemicals, chemical products, hydrocarbons or hydrocarbon products which are toxic or which produce toxic gases on burning or on contact with water or air; or

(ii) more than 1000 tonnes of one or more of the following substances:-

chemicals, chemical products, hydrocarbons or hydrocarbon products with a flash point lower than 55º C.

ALLOWABLE LIMITS FOR TRADE EFFLUENT DISCHARGED INTO A PUBLIC SEWER/WATERCOURSE/CONTROLLED WATERCOURSE

	Items Of Analysis	Public Sewer	Watercourse	Controlled Watercourse
		Units in milligram per litre or otherwise stated		
1	Temperature of discharge	45ºC	45ºC	45ºC
2	Colour	-	7 Lovibond Units	7 Lovibond Units
3	pH Value	6 - 9	6 - 9	6 - 9
4	BOD (5 days at 20ºC)	400	50	20
5	COD	600	100	60
6	Total Suspended Solids	400	50	30
7	Total Dissolved Solids	3000	-	1000
8	Chloride (as chloride ion)	1000	-	250
9	Sulphate (as SO_4)	1000	-	200
10	Sulphide (as sulphur)	1	0.2	0.2
11	Cyanide (as CN)	2	0.1	0.1
12	Detergents (linear alkylate sulphonate as methylene blue active substances)	30	15	5
13	Grease and Oil (Total) Grease and Oil (Hydrocarbon) Grease and Oil (Non-hydrocarbon)	-	10	1
14	Arsenic	100	-	-
15	Barium	-	-	-
16	Tin	5	0.1	0.01
17	Iron (as Fe)	10	2	1
18	Beryllium	10	-	5
19	Boron	50	10	1
20	Manganese	5	-	0.5
21	Phenolic Compounds (expressed as phenol)	5	5	0.5
22	*Cadmium	10	5	0.5
23	*Chromium (trivalent and hexavalent)	0.5	0.2	-
24	*Copper	-	-	-
25	*Lead	1	0.1	0.003
26	*Mercury	5	1	-

	Items Of Analysis	Public Sewer	Watercourse	Controlled Watercourse
		Units in milligram per litre or otherwise stated		
27	*Nickel	-	-	0.05
28	*Selenium	5	0.1	0.1
29	*Silver	5	0.1	0.1
30	*Zinc	0.5	0.05	0.001
31	*Metals in Total	10	1	0.1
32	Chlorine (Free)	10	0.5	0.01
33	Phosphate (as PO_4)	5	0.1	0.1
34	Calcium (as Ca)	10	1	0.5
35	Magnesium (as Mg)	10	1	0.5
36	Nitrate (NO_3)	- - - - -	1 5 - - -	1 2 150 150 20

NOTE: * The concentration of Toxic Metal shall not exceed the limits as shown, individually or in total.

'Controlled Watercourse' means a watercourse from which potable water supplied by PUB under the Public Utilities Act is obtained but does not include a watercourse from which wa er is pumped into a main of the PUB.

The trade effluent discharged must not include:-

(1) Calcium carbide.

(2) Petroleum spirit or other inflammable solvents.

(3) Materials that may give rise to fire or explosion hazards.

(4) Materials that may be a hazard to human life, a public nuisance, injurious to health or otherwise objectionable.

(5) Refuse, garbage, sawdust, timber, or any solid matter.

(6) Pesticides, fungicides, insecticides, herbicide, rodenticide or fumigants.

(7) Radioactive material.

The trade effluent discharged into a public sewer must not include rainwater, storm water, ground water or other form of street drainage, subsurface drainage, roof drainage or yard drainage.

The trade effluent shall be analysed in accordance with the latest edition of 'Standard Methods for the Examination of Water and Wastewater' published jointly by the American Water Works Association and the Water Pollution Control Federation of the United States.

TRADE EFFLUENT TARIFF SCHEME

The fees to be levied for discharge of biodegradable trade effluent into the public sewers are as follows:-

Concentration (mg/l)	Fee at $ per cubic metre or part thereof	
	BOD	TSS
401 – 600	0.21	0.15
601 - 800	0.42	0.30
801 – 1000	0.63	0.45
1001 - 1200	0.84	0.60
1201 - 1400	1.05	0.75
1401 - 1600	1.26	0.90
1601 - 1800	1.47	1.05
1801 - 2000	1.68	1.20
2001 - 2200	1.89	1.35
2201 - 2400	2.10	1.50
2401 - 2600	2.31	1.65
2601 - 2800	2.52	1.80
2801 - 3000	2.73	1.95
3001 - 3200	2.94	2.10
3201 - 3400	3.15	2.25
3401 - 3600	3.36	2.40
3601 - 3800	3.57	2.55
3801 - 4000	3.78	2.70

NB: BOD = Biochemical Oxygen Demand (5 days at 20°C)
TSS = Total Suspended Solids

Trade effluent with BOD and TSS each in excess of 4000 mg/l shall be treated to below this standard at the factory prior to discharge into the public sewers.

Prior approval is required to dispose of organic sludge at designated Water Reclamation Plants/Sludge Treatment Works on the payment of a fee at a rate of $7.00 per cubic meter or part thereof.

Organic sludge means the organic matter in trade effluent which has a minimum solid content of 3 per cent by weight or a maximum moisture content of 97 per cent by weight.

HAZARDOUS SUBSTANCES LISTED IN THE 2ND SCHEDULE OF THE ENVIRONMENTAL POLLUTION CONTROL ACT

HAZARDOUS SUBSTANCES	
Substance	**Exclusion**
1,2-dibromoethane (EDB)	
Acetic acid	Substances containing not more than 80%, weight in weight, of acetic acid; Preparations and solutions for photographic use.
Acetyl bromide	
Allyl isothiocyanate	
Alkali metal bifluorides; Ammonium bifluoride; Potassium fluoride; Sodium fluoride; Potassium silicofluoride; Sodium silicofluoride; Silicofluoric acid	Preparations containing not more than 0.3%, weight in weight, of potassium fluoride in radiator protectors; Preparations containing not more than 0.96%, weight in weight, of potassium fluoride in photographic chemicals; Substances containing not more than 3%, weight in weight, of sodium fluoride or sodium silicofluoride as a preservative; Substances containing sodium fluoride intended for the treatment of human ailments.
Ammonia	Preparations and solutions of ammonia containing not more than 10%, weight in weight, of ammonia; Refrigeration equipment; Photographic and plan developers; Hair colour dyes; Perm lotions; Smelling bottles.
Ammonium chlorate	
Anionic surface active agents	Preparations containing less than 5% by weight of anionic surface active agents; Preparations containing anionic surface active agents which are not less than 90% biodegradable under a test carried out in accordance with that part of the OECD method which is referred to as ?Confirmatory Test Procedure? in European Communities Council Directive No. 73/405/EEC (C) or other equivalent test methods acceptable to the Director.
Antimony pentachloride	Polishes
Antimony trihydride	

HAZARDOUS SUBSTANCES	
Substance	**Exclusion**
Arsenical substances, the following: Arsenic acid Arsenic sulphide Arsenic trichloride Arsine Calcium arsenite Copper arsenate Copper arsenite Lead arsenate Organic compounds of arsenic Oxides of arsenic Potassium arsenite Sodium arsenate Sodium arsenite Sodium thioarsenate	Pyrites ores or sulphuric acid containing arsenical poisons as natural impurities;Animal feeding stuffs containing not more than 0.005%, weight in weight, of 4-hydroxy-3-nitrophenyl-arsonic acid and not containing any other arsenical poison; Animal feeding stuffs containing not more than 0.01%, weight in weight, of arsanilic acid and not containing any other arsenical poison; Animal feeding stuffs containing not more than 0.0375%, weight in weight, of carbarsone and not containing any other arsenical poison.
Asbestos in the form of crocidolite, actinolite, amosite, tremolite, chrysotile and amphiboles and products containing these forms of asbestos	Asbestos in the form of chrysotile in any vehicle or clutch lining installed in any vehicle registered before 1st April 1995.
Boric acid; Sodium borate	Boric acid or sodium borate in medicinal preparations, cosmetics, toilet preparations and substances being preparations intended for human consumption; Preparations containing boric acid or sodium borate or a combination of both where water or solvent is not the only other part of the composition.
Boron tribromide	
Boron trichloride	
Boron trifluoride	
Bromine; Bromine solutions	
Cadmium-containing silver brazing alloy	
Captafol	

HAZARDOUS SUBSTANCES	
Substance	**Exclusion**
Carbamates	Benomyl; Carbendazim; Chlorpropham; Propham; Thiophanate-methyl; Preparations containing not more than 1%, weight in weight, of propoxur and not containing any other carbamate; Preparations containing not more than 1%, weight in weight, of methomyl and not containing any other carbamate.
Carbon monoxide	Gas mixtures containing carbon monoxide weighing less than 1 metric tonne; Gas mixtures containing carbon monoxide as by-products from combustion activities.
Carbon tetrafluoride	
Chlorinated hydrocarbons, the following: Aldrin Benzene hexachloride (BHC) Bromocyclen Camphechlor Chlorbenside Chlorbicyclen Chlordane Chlordecone Chlordimeform Chlorfenethol Chlorfenson Chlorfensulphide Chlorobenzilate Chloropropylate Dicophane (DDT) pp'-DDT Dicofol Dieldrin Endosulfan Endrin Fenazaflor Fenson Fluorbenzide Gamma benzene hexachloride (Gamma - BHC), also known as lindane HCH (mixed isomers) HEOD [1,2,3,4,10,10-hexachloro-6,7-epoxy-1,4,4a,5,6,7,8,8a- octahydro-1, 4 (exo): 5,8 (endo)-dimethano naphthalene] HHDN [1,2,3,4,10,10-hexachloro-1,4,4a,5,8,8a-hexahydro-1,4 (exo):5,8 (endo)-dimethano naphthalene]	Paper impregnated with not more than 0.3%, weight in weight, of benzene hexachloride or gamma - BHC provided it is labelled with directions that no food, wrapped or unwrapped, or food utensils are to be placed on the treated paper, and that it is not to be used where food is prepared or served.

HAZARDOUS SUBSTANCES	
Substance	**Exclusion**
Heptachlor Hexachloroethane Isobenzan Isodrin Kelevan Methoxychlor [1,1,1-trichloro-2,2-di-(p-methoxyphenyl) ethane] Mirex Tetrachlordiphenylethane [TDE; 1,1-dichloro-2,2-bis (p-chlorophenyl) ethane] Tetradifon Tetrasul Toxaphene Allied chlorinated hydrocarbon compounds used as pesticides (insecticides, acaricides, etc.)	
Chlorine	Chlorine used for chlorination of water in swimming pools.
Chlorine trifluoride	
Chlorobenzenes, the following: Monochlorobenzene Meta-dichlorobenzene Ortho-dichlorobenzene Trichlorobenzene Tetrachlorobenzene Pentachlorobenzene Hexachlorobenzene	
Chlorophenols, the following: Monochlorophenol Dichlorophenol Trichlorophenol Tetrachlorophenol Pentachlorophenol and its salts and esters	Substances containing not more than 1%, weight in weight, of chlorophenols.
Chlorophenoxyacids; their salts, esters, amines, which include but are not limited to - 2,4,5-T and its salts and esters	
Chloropicrin	
Chlorosilanes, the following: Hexachlorodisilane Phenyltrichlorosilane Tetrachlorosilane	
Chlorosulphonic acid	

HAZARDOUS SUBSTANCES	
Substance	**Exclusion**
Chromic acid	Substances containing not more than 9%, weight in weight, of chromic acid; Photographic solutions containing chromic acid in individual containers containing not more than 15 kilograms each of such solutions and of aggregate weight of not more than 500 kilograms of such solutions.
Cyanides	Ferrocyanides; Ferricyanides; Acetonitrile; Acrylonitrile; Butyronitrile; 2-Dimethylaminoacetonitrile; Isobutyronitrile; Methacrylonitrile; Propionitrile.
Diborane	
Dibromochloropropane	
Diethyl sulphate	
Dinitrocresols (DNOC)and its salts (such as ammonium salt, potassium salt and sodium salt)	
Dinosam; its compounds with a metal or a base Dinoseb and its salts and esters, which includes but is not limited to - Binapacryl	
Diquat; its salts	
Drazoxolon; its salts	Dressings on seeds.
Dustable powder formulations containing a combination of - Benomyl at or above 7 percent, carbofuran at above 10 percent, thiram at or above 15 percent.	
Endothal; its salts	
Epichlorohydrin	
Ethyl mercaptan	Substances containing less than 1%, weight in weight, of ethyl mercaptan
Ethylene dichloride	
Ethylene imine	
Ethylene oxide	Mixtures of inert gases and ethylene oxide comprising not more than 12%, weight in weight, of ethylene oxide contained in cylinders of water capacity less than 47 litres and for aggregate of not more than 3 numbers of such cylinders.
Ferric chloride	
Fipronil	Formulated products containing Fipronil approved for household use and belonging to the WHO class IV hazards.

HAZARDOUS SUBSTANCES	
Substance	**Exclusion**
Fluorine	
Fluoroacetamide	
Formaldehyde	Substances containing not more than 5%, weight in weight, of formaldehyde; Photographic glazing or hardening solutions.
Formic acid	Substances containing not more than 5%, weight in weight, of formic acid.
Germane	
Hydrazine anhydrous; Hydrazine aqueous solutions	
Hydrochloric acid	Substances containing not more than 9% , weight in weight, of hydrochloric acid.
Hydrofluoric acid	Preparations or solutions containing not more than 2%, weight in weight, of hydrofluoric acid.
Hydrogen chloride	
Hydrogen cyanide; Hydrocyanic acid	Preparations of wild cherry; In reagent kits supplied for medical or veterinary purposes, substances containing less than the equivalent of 0.1%, weight in weight, of hydrocyanic acid.
Hydrogen fluoride	
Hydrogen selenide	
Isocyanates	Polyisocyanates containing less than 0.7%, weight in weight, of free monomeric diisocyanates; Pre-polymerised isocyanates in polyurethane paints and lacquers; Hardeners and bonding agents for immediate use in adhesives.
Lead compounds in paint	Lead compounds in paint in which the lead content is not more than 0.06% by weight of the paint; Lead compounds in paint in which the container is affixed with an appropriate label. The labels to be used for paints containing lead compounds are in accordance with Part IV of the Second Schedule of the EPMA
Lead tetra-ethyl and similar lead containing compounds in petrol intended for use in Singapore as fuel for motor vehicles	
Mercury compounds including inorganic mercury compounds, alkyl mercury compounds, alkyloxyalkyl and aryl mercury compounds, and other compounds of mercury	
Mercury and its compounds in batteries	Batteries other than mercury oxide batteries, zinc carbon batteries containing more than 0.001% by weight of mercury per cell and alkaline batteries, except those in button form, containing more than 0.025% by weight of mercury per cell.
Metanil yellow (sodium salt of metanilylazo-diphenylamine)	Dye-indicators used in laboratories
Methyl chloride	
Methyl mercaptan	Substances containing less than 1%, weight in weight, of methyl mercaptan

HAZARDOUS SUBSTANCES	
Substance	**Exclusion**
Monomethyltetrachloro diphenyl methane	
Monomethyl-dichloro-diphenyl methane	
Monomethyl-dibromodiphenyl methane	
Neonicotinoid compounds used as pesticides, the following : Imidacloprid	Formulated products containing Imidacloprid approved for household use and belonging to the WHO class IV hazards.
Niclofolan	
Nicotine sulphate	
Nitric acid	Substances containing not more than 9%, weight in weight, of nitric acid.
Nitric oxide	
Nitrobenzene	Substances containing less than 0.1%, weight in weight, of nitrobenzene; Soaps containing less than 1%, weight in weight, of nitrobenzene; Polishes and cleansing agents.
Nitrogen trifluoride	
Ozone depleting substances, namely: (*a*) Chlorofluorocarbons, the following: Chloroheptafluoropropane Chloropentafluoroethane Chlorotrifluoromethane Dichlorodifluoromethane Dichlorohexafluoropropane Dichlorotetrafluoroethane Heptachlorofluoropropane Hexachlorodifluoropropane Pentachlorofluoroethane Pentachlorotrifluoropropane Tetrachlorodifluoroethane Tetrachlorotetrafluoropropane Trichlorofluoromethane Trichloropentafluoropropane Trichlorotrifluoroethane (*b*) Halons, the following: Bromochlorodifluoromethane Bromochloromethane Bromotrifluoromethane Dibromotetrafluoroethane (*c*) Hydrochlorofluorocarbons, the following: 1,1-dichloro-1-fluoro-ethane 1,1-dichloro-2,2,3,3,3-pentafluoropropane 1,3-dichloro-1,2,2,3,3-pentafluoropropane 1-chloro-1,1-difluoro-ethane Chlorodifluoroethane Chlorodifluoromethane Chlorodifluoropropane Chlorofluoroethane Chlorofluoromethane Chlorofluoropropane Chlorohexafluoropropane	Products containing any ozone depleting substance other than the following products: (*a*) in the case of chlorofluorocarbons ? (i) air-conditioners in vehicles registered on or after 1st January 1995 or intended for such vehicles; (ii) equipment for domestic or commercial refrigeration or air-conditioning installed on or after 1st January 1993, or heat pump equipment, which contains any chlorofluorocarbon substance as a refrigerant or in any insulating material of such equipment; (iii) refrigerators that have a compressor rating which exceeds one horsepower; (iv) non-pharmaceutical aerosol products; (v) insulation boards, panels or pipe covers; (vi) polystyrene sheets or finished products; (*b*) in the case of Halons, portable fire extinguishers; and (*c*) in the case of bromotrifluoromethane, fire protection systems with building plans approved after 17th June 1991 and installed after 31st December 1991.

HAZARDOUS SUBSTANCES	
Substance	**Exclusion**
Chloropentafluoropropane	
Chlorotetrafluoroethane	
Chlorotetrafluoropropane	
Chlorotrifluoroethane	
Chlorotrifluoropropane	
Dichlorodifluoroethane	
Dichlorodifluoropropane	
Dichlorofluoroethane	
Dichlorofluoromethane	
Dichlorofluoropropane	
Dichloropentafluoropropane	
Dichlorotetrafluoropropane	
Dichlorotrifluoroethane	
Dichlorotrifluoropropane	
Hexachlorofluoropropane	
Pentachlorodifluoropropane	
Pentachlorofluoropropane	
Tetrachlorodifluoropropane	
Tetrachlorofluoroethane	
Tetrachlorofluoropropane	
Tetrachlorotrifluoropropane	
Trichlorodifluoroethane	
Trichlorodifluoropropane	
Trichlorofluoroethane	
Trichlorofluoropropane	
Trichlorotetrafluoropropane	
Trichlorotrifluoropropane	
(*d*) Hydrobromofluorocarbons, the following:	
Bromodifluoroethane	
Bromodifluoromethane	
Bromodifluoropropane	
Bromofluoroethane	
Bromofluoromethane	
Bromofluoropropane	
Bromohexafluoropropane	
Bromopentafluoropropane	
Bromotetrafluoroethane	
Bromotetrafluoropropane	
Bromotrifluoroethane	
Bromotrifluoropropane	
Dibromodifluoroethane	
Dibromodifluoropropane	
Dibromofluoroethane	
Dibromofluoromethane	
Dibromofluoropropane	
Dibromopentafluoropropane	
Dibromotetrafluoropropane	
Dibromotrifluoroethane	
Dibromotrifluoropropane	
Hexabromofluoropropane	
Pentabromodifluoropropane	
Pentabromofluoropropane	
Tetrabromodifluoropropane	
Tetrabromofluoroethane	
Tetrabromofluoropropane	
Tetrabromotrifluoropropane	
Tribromodifluoroethane	
Tribromodifluoropropane	
Tribromofluoroethane	
Tribromofluoropropane	
Tribromotetrafluoropropane	
Tribromotrifluoropropane	
(*e*) Carbon tetrachloride	
(*f*) 1,1,1-trichloroethane (methyl chloroform)	
(*g*) Methyl bromide	

HAZARDOUS SUBSTANCES	
Substance	**Exclusion**
Oleum	
Orange II [sodium salt of p-(2-hydroxy-1-naphthylazo) benzenesulphonic acid]	Dye-indicators used in laboratories
Organic peroxides	Car puttys; Substances and preparations containing not more than 3%, weight in weight, of organic peroxides; Solutions of not more than 60%, weight in weight, of methyl ethyl ketone peroxides and total aggregate weight of less than 50 kilograms of such solutions.
Organo-tin compounds, the following: Compounds of fentin Cyhexatin Tributyl tin compounds	
Paraquat; its salts	Preparation in pellet form containing not more than 5%, weight in weight, of salts of paraquat ion.
Perchloromethyl mercaptan	Substances containing less than 1%, weight in weight, of perchloromethyl mercaptan
Perfluorooctane sulfonate (PFOS)	
Phenols, the following: Catechol Cresol Hydroquinone Octyl phenol Phenol Resorcinol	Preparations containing less than 1%, weight in weight, of phenols; Phenols which are intended for the treatment of human ailments and other medical purposes; Soaps for washing; Tar (coal or wood), crude or refined; Photographic solutions containing hydroquinone in individual containers containing not more than 15 kilograms each of such solutions and of aggregate weight of not more than 500 kilograms of such solutions.
Phosgene	
Phosphides	
Phosphine	
Phosphoric acid	Substances containing not more than 50%, weight in weight, of phosphoric acid.

HAZARDOUS SUBSTANCES	
Substance	**Exclusion**
Phosphorus compounds used as pesticides (insecticides, acaricides, etc.), which includes but is not limited to : Methamidophos Methyl-parathion Monocrotophos Parathion Phosphamidon	Acephate; Bromophos; Iodofenphos; Malathion; Pirimiphos-methyl; Temephos; Tetrachlorvinphos; Trichlorfon; Preparations containing not more than 0.5%, weight in weight, of chlorpyrifos and not containing any other phosphorus compound; Preparations containing not more than 0.5%, weight in weight, of dichlorvos and not containing any other phosphorus compound; Materials impregnated with dichlorvos and not containing any other phosphorus compound for slow release; Preparations containing not more than 1%, weight in weight, of azamethiphos and not containing any other phosphorus compound.
Phosphorus oxybromide	
Phosphorus oxychloride	
Phosphorus pentabromide	
Phosphorus pentachloride	
Phosphorus pentafluoride	
Phosphorus trichloride	
Polybrominated biphenyls	
Polybrominated diphenyl ethers (PBDEs), the following : Penta-brominated diphenyl ether Octa-brominated diphenyl ether Deca-brominated diphenyl ether	
Polychlorinated biphenyls	
Polychlorinated terphenyls	
Potassium hydroxide	Substances containing not more than 17%, weight in weight, of potassium hydroxide; Accumulators; Batteries.
Prochloraz	

HAZARDOUS SUBSTANCES	
Substance	**Exclusion**
Pyrethroid compounds used as pesticides, the following : Fenvalerate	Formulated products containing Fenvalerate approved for household use and belonging to the WHO Class IV hazards.
Sodium azide	Air bag devices in motor vehicles
Sodium hydroxide	Substances containing not more than 17%, weight in weight, of sodium hydroxide; Made-up formulated preparations either liquid or solid for biochemical tests.
Sulphur in diesel intended for use in Singapore as fuel for motor vehicles or industrial plants	Sulphur in diesel in which the sulphur content is 0.005% or less by weight.
Sulphur tetrafluoride	
Sulphur trioxide	
Sulphuric acid	Substances containing not more than 9%, weight in weight, of sulphuric acid; Accumulators; Batteries; Fire extinguishers; Photographic developers containing not more than 20%, weight in weight, of sulphuric acid.
Sulphuryl chloride	
Sulphuryl fluoride	
Tetraethyl lead, tetramethyl lead and similar lead containing compounds	

(List is updated as at 1 Feb 08)

HAZARDOUS SUBSTANCES QUANTITIES EXCEEDING WHICH TRANSPORT APPROVAL IS REQUIRED

Substance	Qty (kgs)	Substance	Qty (kgs)
Acetic acid	1000	Hydrogen peroxide	1000
Ammonia	500	Hydrogen selenide	0
Antimony pentachloride	50	Isocyanates	500
Arsine	0	Lead tetra-ethyl and similar lead containing compounds	0
Arsenical Substances	50	Metanil yellow (sodium salt of metanilylazo-diphenylamine)	5000
Boric Acid; Sodium borate	5000	Methyl bromide	50
Boron trichloride	50	Methyl chloride	50
Boron trifluoride	50	Methyl mercaptan	50
Bromine, bromine solutions	50	Monomethyltetrachloro diphenyl methane	0
Captafol	0	Monomethyl-dichloro-diphenyl methane	0
Carbamates except bendiocard, BPMC (fenobucarb), mercaptodimethur (methiocarb)	0	Monomethyl-dibromo-diphenyl methane	0
Carbon tetrafluoride	500	Nitric acid (95% or greater)	50
Chlorine	500	Nitric acid (less than 95%)	1000
Chlorine trifluoride	50	Nitric oxide	0
Chlorinated hydrocarbon compounds used as pesticides	0	Nitrogen trifluoride	50
Chlorobenzenes	0	Oleum	50
Chlorophenols	0	Orange II (sodium salt of p-(2-hydroxy-1 naphthylazo) benzenesulphonic acid)	5000
Chlorophenoxyacids	0	Organic compounds of Mercury; Mercuric chloride; Mercuric iodide	0
Chlorosilanes	50	Organic peroxides	500
Chlorosulphonic acid	50	Organo-tin compounds	0
Chromic acid	50	Perchloro methyl mercaptan	50
Cyanides	50	Phenols	500
Diborane	50	Phosgene	0

Substance	Qty (kgs)	Substance	Qty (kgs)
Dibromochloropropane	50	Phosphides	0
Diethyl sulphate	500	Phosphorous compounds except Dimethoate, diazinon, Fenchlorophos, fenitrothion, Phenthoate, profenophos, Prothiophos, quinalphos	0
Epichlorohydrin	50	Phosphorus oxychloride	50
Ethyl mercaptan	50	Phosphorus pentachloride	50
Ethylene dibromide	0	Phosphorus pentafluoride	50
Ethylene dichloride	0	Phosphorus trichloride	50
Ethylene imine	0	Polybrominated biphenyls	0
Ethylene oxide	50	Polychlorinated biphenyls	0
Ferric chloride	1000	Polychlorinated terphenyls	0
Fluorine	0	Potassium hydroxide	1000
Fluoroacetamide	0	Prochloraz	0
Formic acid	1000	Sodium hydroxide	1000
Germane	0	#Sulphur in Diesel	0
Hydrazine anhydrous, hydrazine aqueous solutions	50	Sulphur tetrafluoride	0
Hydrochloric acid	1000	Sulphur trioxide	50
Hydrocyanic acid; Hydrogen cyanide	0	Sulphuric acid	1000
Hydrofluoric acid	500	Titanium tetrachloride	1000
Hydrogen chloride, all forms	500	Tris(2,3-dibromopropyl) phosphate	0

NB: Definition and exemptions of Poisons in Part II List will also be extended to the above list.

APPENDIX 12

TOXIC INDUSTRIAL WASTES CONTROLLED UNDER THE ENVIRONMENTAL PUBLIC HEALTH (TOXIC INDUSTRIAL WASTE) REGULATIONS 1988

List of Toxic Industrial Wastes
Acids Spent inorganic acids e.g. hydrochloric acid, sulphuric acid, nitric acid, phosphoric acid, hydrofluoric acid, boric acid and pickling acid Spent organic acids e.g. acetic acid, formic acid, benzoic acid and sulphonic acid
Alkalis Spent alkaline solutions Spent ammoniacal solutions Metal hydroxide sludges and oxide sludges
Antimony and its Compounds Spent antimony potassium tartrate
Arsenic and its Compounds Timber preservative residues containing arsenic Wastes containing gallium arsenide
Asbestos Asbestos wastes from asbestos/cement manufacturing processes Empty sacks/bags which have contained loose asbestos fibres
Cadmium and its Compounds Plating effluents and residues containing cadmium Wastes containing cadmium from Ni/Cd battery manufacturing
Chromium Compounds Plating effluents and residues containing chromium Timber preservative residues containing chromium Spent and aqueous solutions containing chromium compounds Tannery effluents and residues containing chromium
Copper Compounds Plating effluents and residues containing copper Spent etching solutions containing copper from printed circuit board manufacturing Timber preservative residues containing copper
Cyanides Plating effluents and residues containing cyanides Heat treatment residues containing cyanides Spent quenching oils containing cyanides Spent processing solutions containing cyanides from photographic processing
Fluoride Compounds Timber preservative residues containing fluorides Spent ammonium bi-fluoride
Isocyanates Spent di-isocyanates e.g. toluene di-isocyanate (TDI) and methylene di-isocyanate (MDI) from polyurethane foam-making process
Laboratory Wastes Obsolete laboratory chemicals Toxic chemical wastes from chemical analysis
Lead Compounds Sludges containing lead oxide/sulphate Spent organo-lead compounds e.g. tetraethyllead (TEL) and tetramethyllead (TML) Waste lead-acid batteries, whole or crushed
Mercury and its Compounds Effluents, residues or sludges containing mercury from chlor-alkali industry Wastes containing mercury from equipment manufacturing involving the use of metal mercury Spent catalysts from chemical processes containing mercury Spent organo-mercury compounds

List of Toxic Industrial Wastes
Metal Catalysts Spent metal catalysts from chemical processes and petroleum refining e.g. catalysts containing chromium and cobalt
Nickel Compounds Plating effluents and residues containing nickel
Organic Compounds containing Halogen Spent halogenated organic solvents e.g. trichloroethylene, 111-trichloroethane, perchloro-ethylene, methylene chloride, tetra-chloromethane and 112-trichloro-122-trifluoroethane Residues from recovery of halogenated organic solvents Packaging materials or residues containing chloro- benzenes and/or chlorophenols and their salts
Organic Compounds not containing Halogen Spent non-halogenated organic solvents e.g. benzene, toluene, xylene, turpentine, petroleum, thinner, kerosene, methanol, ethanol, isobutanol, iso-propanol, methyl ethyl ketone, methyl isobutyl ketone, isopropyl ether, diethyl ether, hexane, dimethyl sulphide and dimethyl sulphoxide Residues from recovery of non-halogenated organic solvents
Other Wastes Obsolete/abandoned chemicals and pesticides from storage, manufacturing and trading activities Used containers, bags and process equipment contaminated by chemicals and pesticides from storage, manufacturing and trading activities Wastes/residues containing unreacted monomers, eg. vinyl chloride and styrene monomers, from polymer manufacturing processes Tar residues from distilling and tarry materials from refining Wastes from toxic waste treatment processes e.g. wastes and residues from solidification, fixation and incineration processes Wastes from toxic chemical drums and tank cleaning activities Chemical and oil slops from ship tankers Wastes from the production, formulation and use of resins, latex, plasticisers, glues/adhesives containing solvents and other contaminants. Wastes from the production, formulation and use of inks, dyes, pigments, paints, lacquers, varnish containing organic solvents, heavy metals or biocides.
Pathogenic Wastes Pathogenic wastes from hospitals
Phenolic Compounds Sludges/residues from paint stripping using chemicals containing phenols Residues containing unreacted phenol and formaldehyde from adhesive industry
Polychlorinated Bi-phenyl (PCB) including ***Poly-chlorinated Ter-phenyl (PCT)*** Spent transformer oil containing PCB and/or PCT Retrofilled transformer contaminated with PCB and/or PCT Electrical equipment and parts containing or contaminated with PCB and/or PCT e.g. Capacitors and transformers 4. Containers and all waste materials contaminated with PCB and/or PCT
Polyvinyl Chloride (PVC) All waste materials containing PVC e.g. PVC insulated wires, PVC pipes and trunking, PVC parts, PVC upholstery and PVC resins
Silver Compounds 1. Spent processing solutions containing silver from photographic processing
Used, Contaminated Oil Used mineral, lubricating and hydraulic oil from machine cylinders, turbines, switch gears and transformers Spent motor oils from petrol and diesel engines Spent quenching oil from metal hardening Oil recovered from solvent degreasers Spent oil water emulsions e.g. Spent coolants from metal working industries Oil water mixtures (mainly oil) e.g. Oily ballast water from ship tankers Oil and sludge from oil interceptors Tankers sludges and oil sludges/residues from storage tanks Oil sludges containing acid from recovery and recycling of used oil
Zinc Compounds Plating effluents and residues containing zinc

BOUNDARY NOISE LIMITS FOR FACTORY PREMISES

The maximum permissible boundary noise levels are as follows:

Type of affected premises	Maximum permissible noise level (reckoned as the equivalent continuous noise level over the specified period) in decibels (dBA)		
	Day 7 am - 7 pm	Evening 7 pm - 11 pm	Night 11 pm -7 am
Noise Sensitive Premises	60	55	50
Residential Premises	65	60	55
Commercial Premises	70	65	60

Type of affected premises	Maximum permissible noise level (reckoned as the equivalent continuous noise level over 5 minutes) in decibels (dBA)		
	Day 7 am - 7 pm	Evening 7 pm - 11 pm	Night 11 pm -7 am
Noise Sensitive Premises	65	60	55
Residential Premises	70	65	60
Commercial Premises	75	70	65
Factory Premises	75	70	65

APPENDIX 14

MAXIMUM PERMISSIBLE NOISE LEVELS FROM CONSTRUCTION SITES

Since 1 Oct 2001, the permissible noise limits for evening (7 pm to 10 pm) and night time (10 pm to 7 am) for construction sites located within 150 m from any residential areas have been tightened. The permissible noise limits are as shown:

Maximum Permissible Noise Limits (Construction sites that commenced work before 1 Oct 2001)		Maximum Permissible Noise Limits (Construction sites that commenced work on or after 1 Oct 2001)	
Time	**Noise Limits**	**Time**	**Noise Limits**
7 am to 7 pm	Leq 12 hr – 75 dBA Leq 5 min – 90 dBA	7 am to 7 pm	Leq 12 hr – 75 dBA Leq 5 min – 90 dBA
7 pm to 7 am	Leq 12 hr – 65 dBA Leq 5 min – 70 dBA	7 pm to 10 pm	Leq 1 hr – 65 dBA Leq 5 min – 70 dBA
		10 pm to 7 am	Leq 1 hr – 55 dBA Leq 5 min – 60 dBA

USEPA AMBIENT AIR QUALITY STANDARDS

Pollutants	Averaging Time	USEPA Primary Air Quality Standards	
		Concentration	Method
GASEOUS POLLUTANTS			
Sulphur Dioxide	Annual Mean 24 Hours	80 $\mu g/m^3$ (0.03 ppm) 365 $\mu g/m^3$ (0.14 ppm)	Pulsed Fluorescence
Carbon Monoxide	8 Hours 1 Hour	10 mg/m^3 (9 ppm) 40 mg/m^3 (35 ppm)	Non-dispersive Infrared Spectrometry
Nitrogen Dioxide	Annual Mean	100 $\mu g/m^3$ (0.053 ppm)	Chemiluminescence
Ozone	1 Hour 8 Hours	235 $\mu g/m^3$ (0.12 ppm) 157 $\mu g/m^3$ (0.08 ppm)	Ultraviolet Photometry
PARTICULATE POLLUTANTS			
PM10 (Particles that are 10 micrometers or smaller)	24 Hours	150 $\mu g/m^3$	1) Continuous Filter-Based Mass Measurement 2) Beta Attenuation
PM2.5 (Particles that are 2.5 micrometers or smaller)	Annual Mean 24 Hours	15 $\mu g/m^3$ 35 $\mu g/m^3$	
Lead	3 Months	1.5 $\mu g/m^3$	Atomic Absorption Spectroscopy

THE SCHEDULE OF THE ENVIRONMENTAL POLLUTION CONTROL (OZONE DEPLETING SUBSTANCES) REGULATIONS 2000

ANNEX A

Group I		
$CFCl_3$	CFC-11	Trichlorofluoromethane
CF_2Cl_2	CFC-12	Dichlorodifluoromethane
$C_2F_3Cl_3$	CFC-113	Trichlorotrifluoroethane
$C_2F_4Cl_2$	CFC-114	Dichlorotetrafluoroethane
C_2F_5Cl	CFC-115	Chloropentafluoroethane
Group II		
CF_2BrCl	Halon-1211	Bromochlorodifluoromethane
CF_3Br	Halon-1301	Bromotrifluoromethane
$C_2F_4Br_2$	Halon-2402	Dibromotetrafluoroethane

ANNEX B

Group I		
CF_3Cl	CFC-13	Chlorotrifluoromethane
C_2FCl_5	CFC-111	Pentachlorofluoroethane
$C_2F_2Cl_4$	CFC-112	Tetrachlorodifluoroethane
C_3FCl_7	CFC-211	Heptachlorofluoropropane
$C_3F_2Cl_6$	CFC-212	Hexachlorodifluoropropane
$C_3F_3Cl_5$	CFC-213	Pentachlorotrifluoropropane
$C_3F_4Cl_4$	CFC-214	Tetrachlorotetrafluoropropane
$C_3F_5Cl_3$	CFC-215	Trichloropentafluoropropane
$C_3F_6Cl_2$	CFC-216	Dichlorohexafluoropropane
C_3F_7Cl	CFC-217	Chloroheptafluoropropane
Group II		
CCl_4		Carbon tetrachloride
Group III		
$C_2H_3Cl_3$		1,1,1-trichloroethane (methyl chloroform)

ANNEX C

Group I		
$CHFCl_2$	HCFC-21	Dichlorofluoromethane
CHF_2Cl	HCFC-22	Chlorodifluoromethane
CH_2FCl	HCFC-31	Chlorofluoromethane
C_2HFCl_4	HCFC-121	Tetrachlorofluoroethane
$C_2HF_2Cl_3$	HCFC-122	Trichlorodifluoroethane
$C_2HF_3Cl_2$	HCFC-123	Dichlorotrifluoroethane
C_2HF_4Cl	HCFC-124	Chlorotetrafluoroethane
$C_2H_2FCl_3$	HCFC-131	Trichlorofluoroethane
$C_2H_2F_2Cl_2$	HCFC-132	Dichlorodifluoroethane
$C_2H_2F_3Cl$	HCFC-133	Chlorotrifluoroethane
$C_2H_3FCl_2$	HCFC-141	Dichlorofluoroethane
CH_3CFCl_2	HCFC-141b	1,1-dichloro-1-fluoro-ethane
$C_2H_3\ F_2Cl$	HCFC-142	Chlorodifluoroethane
CH_3CF_2Cl	HCFC-142b	1-chloro-1,1-difluoro-ethane
C_2H_4FCl	HCFC-151	Chlorofluoroethane
C_3HFCl_6	HCFC-221	Hexachlorofluoropropane
$C_3HF_2Cl_5$	HCFC-222	Pentachlorodifluoropropane
$C_3HF_3Cl_4$	HCFC-223	Tetrachlorotrifluoropropane
$C_3HF_4Cl_3$	HCFC-224	Trichlorotetrafluoropropane
$C_3HF_5Cl_2$	HCFC-225	Dichloropentafluoropropane
$CF_3CF_2CHCl_2$	HCFC-225ca	1,1-dichloro-2,2,3,3,3-pentafluoropropane
CF_2ClCF_2CHClF	HCFC-225cb	1,3-dichloro-1,2,2,3,3-pentafluoropropane
C_3HF_6Cl	HCFC-226	Chlorohexafluoropropane
$C_3H_2FCl_5$	HCFC-231	Pentachlorofluoropropane
$C_3H_2F_2Cl_4$	HCFC-232	Tetrachlorodifluoropropane
$C_3H_2F_3Cl_3$	HCFC-233	Trichlorotrifluoropropane
$C_3H_2F_4Cl_2$	HCFC-234	Dichlorotetrafluoropropane
$C_3H_2F_5Cl$	HCFC-235	Chloropentafluoropropane
$C_3H_3FCl_4$	HCFC-241	Tetrachlorofluoropropane
$C_3H_3F_2Cl_3$	HCFC-242	Trichlorodifluoropropane

$C_3H_3F_3Cl_2$	HCFC-243	Dichlorotrifluoropropane
$C_3H_3F_4Cl$	HCFC-244	Chlorotetrafluoropropane
$C_3H_4FCl_3$	HCFC-251	Trichlorofluoropropane
$C_3H_4F_2Cl_2$	HCFC-252	Dichlorodifluoropropane
$C_3H_4F_3Cl$	HCFC-253	Chlorotrifluoropropane
$C_3H_5FCl_2$	HCFC-261	Dichlorofluoropropane
$C_3H_5F_2Cl$	HCFC-262	Chlorodifluoropropane
C_3H_6FCl	HCFC-271	Chlorofluoropropane
Group II		
$CHFBr_2$		Dibromofluoromethane
CHF_2Br	HBFC-22B1	Bromodifluoromethane
CH_2FBr		Bromofluoromethane
C_2HFBr_4		Tetrabromofluoroethane
$C_2HF_2Br_3$		Tribromodifluoroethane
$C_2HF_3Br_2$		Dibromotrifluoroethane
C_2HF_4Br		Bromotetrafluoroethane
$C_2H_2FBr_3$		Tribromofluoroethane
$C_2H_2F_2Br_2$		Dibromodifluoroethane
$C_2H_2F_3Br$		Bromotrifluoroethane
$C_2H_3FBr_2$		Dibromofluoroethane
$C_2H_3F_2Br$		Bromodifluoroethane
C_2H_4FBr		Bromofluoroethane
C_3HFBr_6		Hexabromofluoropropane
$C_3HF_2Br_5$		Pentabromodifluoropropane
$C_3HF_3Br_4$		Tetrabromotrifluoropropane
$C_3HF_4Br_3$		Tribromotetrafluoropropane
$C_3HF_5Br_2$		Dibromopentafluoropropane
C_3HF_6Br		Bromohexafluoropropane
$C_3H_2FBr_5$		Pentabromofluoropropane
$C_3H_2F_2Br_4$		Tetrabromodifluoropropane
$C_3H_2F_2Br_4$		Tetrabromodifluoropropane
$C_3H_2F_2Br_4$		Tetrabromodifluoropropane

$C_3H_2F_3Br_3$	Tribromotrifluoropropane
$C_3H_2F_4Br_2$	Dibromotetrafluoropropane
$C_3H_2F_5Br$	Bromopentafluoropropane
$C_3H_3FBr_4$	Tetrabromofluoropropane
$C_3H_3F_2Br_3$	Tribromodifluoropropane
$C_3H_3F_3Br_2$	Dibromotrifluoropropane
$C_3H_3F_4Br$	Bromotetrafluoropropane
$C_3H_4FBr_3$	Tribromofluoropropane
$C_3H_4F_2Br_2$	Dibromodifluoropropane
$C_3H_4F_3Br$	Bromotrifluoropropane
$C_3H_5FBr_2$	Dibromofluoropropane
$C_3H_5F_2Br$	Bromodifluoropropane
C_3H_6FBr	Bromofluoropropane
Group III	
CHClBr	Bromochloromethane

ANNEX D

Group I	
CH_3Br	Methyl bromide