ENVIRONMENTAL NORMS

BOI
SRI LANKA

Board of Investment of Sri Lanka

CONTENTS

STANDARDS PERTAINING TO:

Page No'

ENFORCEMENT OF PROVISIONS UNDER THE NATIONAL ENVIRONMENTAL ACT

The operations of all enterprises should be carried out ensuring conformity to the provisions of the National Environmental Act and its Regulations. The enforcement of provisions under the National Environmental Act is carried out by the BOI in respect of all projects established within its Export Processing Zones (EPZZ). A list of activities which could be accommodated in respect of each EPZ has been prepared and could be made available on request. In respect of Enterprises outside the Export Processing Zones, the BOI grants Environmental Clearance and issues Environmental Protection Licences after obtaining concurrence from the Central Environmental Authority (CEA) where necessary.

The Environmental Impact Assessment Regulations of Sri Lanka include a list of Prescribed Projects in respect of which a specified procedure has been laid down in the Regulations for granting of environmental clearance. The Environment Management Department of BOI assists the Project Proponents in obtaining Environmental Clearance by providing the necessary guidance in case of Prescribed Projects.

This document is a Guide in respect of the Environmental Protection requirements and the Standards to be adhered to by the Enterprises both within and outside the Export Processing Zones.

Further information on Environmental Protection requirements and advice could be obtained from the Environment Management Department of BOI.

Board of Investment of Sri Lanka
August 2008

ENVIRONMENTAL LICENSING PROCEDURE

In terms of National Environmental (Protection & Quality) Regulations of 2008, made under the National Environmental Act, Enterprises are required to obtain an Environmental Protection License (EPL) prior to commencement of commercial operations. This EPL is issued by the Environment Management Department of the Board of Investment of Sri Lanka with the concurrence of the Central Environmental Authority (CEA). The application form for the EPL can be obtained from the Environment Management Department of the Board. The completed application should be submitted to the Environment Management Department, at least one month prior to the expected date of commencement of commercial operations. A fee would be levied for the inspection and for the issue of the Environmental Protection License.

Upon submission of the completed application and the payment of the appropriate fee, the Environment Management Department will make arrangements to inspect the factory to check for compliance with the relevant Environmental Norms prior to issue of the Environmental Protection License. This license is valid for one year/three years, depending on the project. At least one month prior to the date of expiry of the License, an application for renewal should be submitted to the Environment Management Department in the prescribed form obtainable from this Department.

In addition to the EPL, the Enterprises are also required to obtain a License for the management of their waste. At present this License is issued by the CEA. The application for this License can be obtained from the Environment Management Department. The completed application should be submitted to the CEA with a copy to the Environment Management Department. This application will be processed by the CEA for issuing of this License.

CHEMICALS

Chemicals to be used as raw materials or otherwise should be disclosed by their chemical name along with their Chemicals Safety Data Sheets to the Director (Environment Management) of the BOI. In case of chemicals to be imported, approximate quantities should be indicated prior to their import. Any changes, substitutions or additions to the declared list of chemicals should be intimated to the Environment Management Department prior to importation.

If it is envisaged to import/use/export any chemicals scheduled under the Chemical Weapons Convention Act No.58 of 2007, such chemicals require registration with the “National Authority for Implementation of the Chemical Weapons Convention (CWC) in Sri Lanka”. These scheduled chemicals are shown from page No: 16 – 19 in this booklet. For further details please contact this Authority on Telephone No : 011 2327807

TOLERANCE LIMITS FOR INDUSTRIAL WASTE WATER (EFFLUENTS) DISCHARGED INTO THE COMMON WASTE WATER TREATMENT PLANT

PARAMETERS	MAXIMUM TOLERANCE LIMIT
BOD (5 days at 20^{o}C) (mg/1)	200
COD (mg/1)	600
pH	6.0-8.5
Total Suspended solids (mg/l)	500
Total dissolved solids (inorganic) (mg/1)	2100
Temperature (^{0}C)	40
Phenolic compounds (as phenolic OH) (mg/1)	5
Oil and grease (mg/1)	30
Total Chromium (mg/1)	2 (Chromium VI 0.5)
Copper (as Cu) (mg/1)	3
Lead (as Pb) (mg/1)	1
Mercury (as Hg) (mg/1)	0.001
Nickel (as Ni) (mg/1)	3
Zinc (as Zn) (mg/1)	10
Arsenic (as As) (mg/1)	0.2
Boron (as B) (mg/1)	2
Ammonical Nitrogen (as N) (mg/1)	50
Sulphides (as S^{2-}) (mg/1)	2
Sulphates (as SO_4^{2-}) (mg/1)	1000
Chlorides (as Cl^{-}) (mg/1)	900
Cyanides (as CN^{-}) (mg/1)	0.2
Free Residual Chlorine (as Chlorine) (mg/1)	Nil

Colour – Wave Length Range	Maximum Spectral Absorption Coefficient
400 – 499 nm (Yellow range)	7 m^{-1}
500 – 599 nm (Red range)	5 m^{-1}
600 – 750 nm (Blue range)	3 m^{-1}

Radioactive Materials	
Alpha emitters (μc/ml)	10^{-7}
Beta emitters (μc/ml)	10^{-6}

mg/1 = milligrams/litre
μc/ml = microcuries/millilitre
BOD = Biochemical Oxygen Demand
COD = Chemical Oxygen Demand
nm = nanometer

Note:-

The quality of waste waters discharged into common sewer or collection system should be such to ensure that the waste water.

1. does not damage the sewer by physical or chemical action;

2. does not endanger the health of the workers cleaning the sewer;

3. does not upset the processes that are normally used in sewage treatment;

4. does not overload the common treatment plant;

5. does not damage the crops or affect the soil in case the effluent after treatment is used for irrigation and,

6. does not create fire and explosion hazards due to certain constituents present in the effluent.

The industrial effluents not conforming to the specified tolerance limits or containing solids such as ash, sands, feathers, large floatable, straw, plastics, wood, lime slurry, residue, beer or distillery slops, chemical or paint residue, gross solids from cannery wastes, cinder, sand, tar, hair, rags, metal shavings, garbage and broken glass shall not be permitted to be discharged directly into the common sewer line leading to the waste water treatment plant. Such effluents have to be subjected to an inhouse treatment to bring them to be within the suggested tolerance limits and or to free them from the undesirable material mentioned above prior to discharge into the sewer line.

DRINKING WATER STANDARDS

(Sri Lanka Standards for potable water – SLS 614, 1983)

PARAMETER	Highest Desirable level	Maximum permissible level
A. Physico-Chemical		
Electrical conductivity at 25^0C µs/cm	750	3500
Total solids (mg/l)	500	2000
Colour (Hazen Units)	5	30
Taste	Unobjectionable	-
Odour	Unobjectionable	-
Turbidity (NTU)	2	8
Chloride (Cl^-) (mg/l)	200	1200
Fluoride (F^-) (mg/l)	-	1.5
Iron (Fe) (mg/l)	0.3	1
Manganese (Mn) (mg/l)	0.05	0.5
Copper (Cu) (mg. I)	0.05	1.5
Zinc (Zn) (mg/l)	5	15
Calcium (Ca) (mg/l)	100	240
Magnesium (Mg) (mg/l)	30	150
Total Phosphates (PO_4^{3-}) (mg/l)	-	2.0
Sulphate (SO_4^{2-}) (mg/l)	200	400
Total Alkalinity (as $CaC0_3$) (mg/l)	200	400
Total Hardness (as $CaC0_3$) (mg/l)	250	600
Free Ammonia (as NH_3) (mg/l)	-	0.06
Nitrate (NO_3^-) (mg/l)	-	45
Nitrite (NO_2^-) (mg/l)	-	0.01
pH	7.0 – 8.5	6.5 – 9.0
Arsenic (As) (mg/l)	-	0.05
Cadmium (Cd) (mg/l)	-	0.005
Chromium (Cr) (mg/l)	-	0.05
Cyanide (CN^-) (mg/l)	-	0.05
Lead (Pb) (mg/l)	-	0.05
Mercury (Hg) (mg/l)	-	0.001
Selenium (Se) (mg/l)	-	0.01
Free Residual Chlorine (as Chlorine) (mg/l)	-	0.2
Polynuclear aromatic hydrocarbons (mg/l)	-	0.0002
Phenolic compounds (as phenolic OH) (mg/l)	0.001	0.002
Grease & Oil (mg/l)	-	1.0
COD (Chemical Oxygen Demand) (mg/l)	-	10
Radioactive materials		
Gross alpha radioactivity (pC/I)	-	3
Gross beta radioactivity (pC/I)	-	30
B. Bacteriological		
Total Coliforms / 100 ml	Absent in (i) 95% of the samples in a year and (ii) in any two consecutive samples	10
E.Coli/100ml	Absent	Absent

AMBIENT AIR QUALITY STANDARD

Pollutant	* Average Time	Maximum Permissible Level		+ Method of measurement
		$\mu g/m^3$	ppm	
1.Particulate Matter- Aerodynamic diameter is less than 10µm in size (PM_{10})	Annual	50	-	Hi-volume sampling and Gravimetric or Beta Attenuation
	24hrs.	100	-	
2. Particulate Matter- Aerodynamic diameter is less than 2.5µm in size (PM2.5)	Annual	25	-	Hi-volume sampling and Gravimetric or Beta Attenuation
	24hrs.	50	-	
3. Nitrogen Dioxide (NO_2)	24hrs.	100	0.05	Colorimetric using saltzman method or equivalent gas phase chemiluminescence
	8hrs.	150	0.08	
	1hr.	250	0.13	
4. Suplphur Dioxide (SO_2)	24hrs.	80	0.03	Pararosanilene method or equivalent pulse fluorescent
	8hrs.	120	0.05	
	1hr.	200	0.08	
5. Ozone (O_3)	1hr.	200	0.10	Chemiluminescence method or equivalent ultraviolet photometric
6. Carbon Monoxide (CO)	8hrs.	10,000	9.00	Non-Dispersive Infrared Spectroscopy
	1hr.	30,000	26.00	
	Any time	58,000	50.00	

* Minimum number of observations required to determine the average over the specified period-

03 hour average – 03 consecutive hourly average.
08 hour average – 08 hourly average.
24 hour average – 18 hourly average.
yearly average – 09 monthly averages with at least 02 monthly average each quarter.

+ By wet chemistry methods or by automated analysers.

PERMISSIBLE NOISE LEVELS IN ACCORDANCE WITH NOISE CONTROL REGULATIONS

Maximum Permissible Noise Levels (as L_{Acq} T) at Boundaries of the land in which the noise source is located shall not exceed the limits set out below.

Area	**L_{Acq} T, dB(A)**	
	Day Time	**Night Time**
Low Noise (Pradeshiya Sabha area)	55	45
Medium Noise (Municipal Council/Urban Council area)	63*	50
High Noise (EPZZ of BOI & Industrial Estates approved under part IVC of the NEA)	70	60
Silent Zone (100 m from the boundary of a courthouse, hospital, public library, school, zoo, sacred areas and areas set apart for recreation or environmental purposes)	50	45

* Provided that the noise level should not exceed 60 dB (A) inside existing houses, during day time.

Maximum permissible Noise levels at Boundaries of the land in which the source of noise is located in L_{Aeq} T for construction activities.

Construction Activities

L_{Acq} T, dB (A)

Day Time	Night time
75	50

The following noise levels will be allowed where the background noise level exceed or is marginal to the given levels in the above table.

(a) For low noise areas in which the background noise level exceeds or is marginal to the given level	Measured Background Noise level + 3dB (A)

(b) For medium noise areas in which the background noise level exceeds or is marginal to the given level	Measured Background Noise level + 3dB (A)
(c) For silent zone in which the background noise level exceeds or is marginal to the given level	Measured Background Noise Level + 3dB (A)

(d) For high noise areas in which the background noise level exceeds or is marginal to the given level

(i) For day time	Measured Background Noise level + 5dB (A)
(ii) For night time	Measured Background Noise level + 3dB (A)

Note 1:

"**L_{Aeq} T**" means the equivalent continuous, A-weighted sound pressure determined over a time interval T (in dB).

"day time" from 06.00 hours to 18.00 hours, except for the purposes of construction activities where it means 06.00 hours to 21.00 hours.

"night time" means from 18.00 hours to 06.00 hours except for the purposes of construction activities where it means 21.00 hours to 06.00 hours.

Note 2:

Noise generated from machinery and processes should be controlled as far as possible at the source by one or more of the following methods;

(a) Vibration isolation

(b) Noise Insulation

(c) Noise absorption

(d) Damping

Attempts should be made to maintain noise levels as low as practicable within the working environment. However, in the event noise level exceeds 85 dB (A), suitable ear protection devices should be provided to all workers exposed to such noise levels. Wearing of these devices should be ensured during working times.

TOLERANCE LIMITS FOR THE DISCHARGE OF INDUSTRIAL WASTE WATER INTO INLAND SURFACE WATERS

No.	Parameter	Unit type of limit	Tolerance Limit Value
01.	Total suspended solids	mg/l, max.	50
02.	Particle size of the total suspended solids	μm, less than	850
03.	pH at ambient temperature	-	6.0-8.5
04.	Biochemical Oxygen Demand (BOD_5 in five days at 20^0C or BOD_3 in three days at 27^0C)	mg/l, max.	30
05.	Temperature of discharge	^0C, max.	Shall not exceed 40^0C in any section of the stream within 15m down stream from the effluent outlet.
06.	Oils and greases	mg/l, max	10
07.	Phenolic compounds (as phenolic OH)	mg/l, max	1
08.	Chemical Oxygen Demand (COD)	mg/l, max	250
09.	Colour	Wave length range 436nm (Yellow range) 525 (Red range) 620 (Blue range)	Maximum spectral absorption coefficient $7m^{-1}$ $5m^{-1}$ $3m^{-1}$
10.	Dissolved phosphates (as P)	mg/l, max	5
11.	Total Kjedahl nitrogen (as N)	mg/l, max	150
12.	Ammonical nitrogen (as N)	mg/l, max	50
13.	Cyanide (as CN^-)	mg/l, max	0.2
14.	Total residual chlorine	mg/l, max	1.0
15.	Flourides (as F^-)	mg/l, max	2.0
16.	Sulphides (as S^{2-})	mg/l, max	2.0
17.	Arsenic (as As)	mg/l, max	0.2
18.	Cadmium (as Cd)	mg/l, max	0.1
19.	Chromium, total (as Cr)	mg/l, max	0.5
20.	Chromium, Hexavalent (as Cr^{6+})	mg/l, max	0.1
21.	Copper (as Cu)	mg/l, max	3.0
22.	Iron (as Fe)	mg/l, max	3.0
23.	Lead (as Pb)	mg/l, max	0.1
24.	Mercury (as Hg)	mg/l, max	0.0005

25.	Nickel (as Ni)	mg/l, max	3.0
26.	Selenium (as Se)	mg/l, max	0.05
27.	Zinc (as Zn)	mg/l, max	2.0
28.	Pesticides	mg/l, max	0.005
29.	Detergents/surfactants	mg/l, max	5
30.	Faecal Coliform	MPN/100 ml, max	40
31.	Radio Active Material: (a) Alpha emitters (b) Beta emitters	 micro curie/ml, max micro curie/ml, max	 10^{-8} 10^{-7}

Note 1 : All efforts should be made to remove unpleasant odour as far as possible.

Note 2 : These values are based on dilution of effluents by at least 8 volumes of clean receiving water. If the dilution is below 8 times, the tolerance limits are multiplied by the 1/8 of the actual dilution.

Note 3 : The above mentioned general standards shall cease to apply with regard to a particular industry when industry specific standards are notified for that industry.

Note 4 : Pesticides as per World Health Organization (WHO) and Food and Agriculture Organization (FAO) requirements.

TOLERANCE LIMITS FOR INDUSTRIAL WASTE WATER DISCHARGED ON LAND FOR IRRIGATION PURPOSE

No:	Parameter	Unit Type of limit	Tolerance Limit Value
1.	Total dissolved solids	mg/l, max.	2100
2.	pH at ambient temperature	-	5.5-9.0
3.	Biochemical Oxygen Demand (BOD_5 in five days at 20^0C or BOD_3 in three days at 27^0C)	mg/l, max.	250
4.	Oils and greases	mg/l, max.	10
5.	Chemical Oxygen Demand (COD)	mg/l, max.	400
6.	Chlorides (as Cl^-)	mg/l, max.	600
7.	Sulphates (as SO_4^{2-})	mg/l, max.	1000
8.	Boron (as B)	mg/l, max.	2.0
9,	Arsenic (as As)	mg/l, max.	0.2
10.	Cadmium (as Cd)	mg/l, max.	2.0
11.	Chromium, total (as Cr)	mg/l, max.	1.0
12.	Lead (as Pb)	mg/l, max.	1.0
13.	Mercury (as Hg)	mg/l, max.	0.01
14.	Sodium Adsorption Ration (SAR)	-	10-15
15.	Residual Sodium Carbonate (RSC)	mol/l, max.	2.5
16.	Electrical conductivity	µs/cm, max.	2250
17.	Faecal Coliform	MPN/100ml, max.	40
18.	Copper (as Cu)	mg/l, max.	1.0
19	Cyanide (as CN^-)	mg/l, max.	0.2
20.	Radio Active Material: (c) Alpha emitters (d) Beta emitters	 micro curie/ml, max micro curie/ml, max	 10^{-9} 10^{-8}

HYDRAULIC LOADING APPICABLE FOR DIFFERENT SOILS

Soil Texture Class	Recommended Dosage of settled Industrial Effluents (cubic Meters / hectare, day)
1. Sandy	225 to 280
2. Sandy Loam	170 to 225
3. Loam	110 to 170
4. Clay loam	55 to 110
5. Clay	35 to 55

TOLERANCE LIMITS FOR INDUSTRIAL AND DOMESTIC WASTE WATER DISCHARGED INTO MARINE COASTAL AREAS

No:	Parameter	Unit Type of limit	Tolerance Limit Value
1.	Total suspended solids	mg/l, max.	150
2.	Particle size of- (a) Floatable solids (b) Settlable solids	 mm, max. µm, max.	 3 850
3.	pH at ambient temperature	-	5.5-9.0
4.	Biochemical Oxygen Demand (BOD_5 in five days at 20^0C or BOD_3 in three days at 27^0C)	mg/l, max.	100
5.	Temperature	^0C, max.	45^0C at the point of discharge
6.	Oils and greases	mg/l, max	20
7.	Phenolic compounds (as C_6H_5OH)	mg/l, max	5
8.	Chemical Oxygen Demand (COD)	mg/l, max	250
9.	Total residual chlorine	mg/l, max	1.0
10.	Ammonical Nitrogen	mg/l, max	50
11.	Cyanide (as CN^-)	mg/l, max	0.2
12.	Sulphides (as S^{2-})	mg/l, max	5.0
13.	Fluorides (as $F^{-)}$	mg/l, max	15
14.	Arsenic (as As)	mg/l, max	0.2
15.	Cadmium (as Cd)	Mg/l, max	2.0
16.	Chromium, total (as Cr)	Mg/l, max	2.0
17.	Chromium, Hexavalent (as Cr^{6+})	Mg/l, max	1.0
18.	Copper (as Cu)	Mg/l, max	3.0
19.	Lead (as Pb)	Mg/l, max	1
20.	Mercury (as Hg)	Mg/l, max	0.01
21.	Nickel (as Ni)	Mg/l, max	5.0
22.	Selenium (as Se)	Mg/l, max	0.1
23.	Zinc (as Zn)	Mg/l, max	5.0
24.	Pesticides	Mg/l, max	0.005
25.	Organo-Phosphorus compounds	Mg/l, max	1.0
26	Chlorinated hydrocarbons (as Cl)	Mg/l, max	0.02
27.	Faecal Coliform	MPN/100ml, max.	60
28.	Radio Active Material: (e) Alpha emitters (f) Beta emitters	 micro curie/ml, max micro curie/ml, max	 10^{-8} 10^{-7}

Note 1 : All efforts should be made to remove unpleasant odour and colour as far as practicable.

Note 2 : These values are based on dilution of effluents by at least 8 volumes of clean receiving water. If the dilution is below 8 times, the permissible limits are multiplied by the 1/8 of the actual dilution.

TOLERANCE LIMITS FOR WASTE WATER FROM RUBBER FACTORIES BEING DISCHARGED INTO INLAND SURFACE WATERS

No:	Parameters	Units Type of limit	Tolerance Limit Value	
			Type I* Factories	Type II** Factories
1.	pH value at ambient temperature	-	6.5 to 8.5	6.5 to 8.5
2.	Total suspended solids	mg/l, max.	100	100
3.	Total solids	mg/l, max.	1500	1000
4.	Biochemical Oxygen Demand (BOD_5 in five days at 20^0C or BOD_3 in three days at 27^0C)	mg/l, max.	60	50
5.	Chemical Oxygen Demand (COD)	mg/l, max.	400	400
6.	Total Nitrogen	mg/l, max.	300	60
7.	Ammonical Nitrogen (as N)	mg/l, max.	300	40
8.	Sulphides (as S^{2-})	mg/l, max.	2.0	2.0

* Type I Factories – Latex Concentrate

** Type II Factories – Standard Lanka Rubber; Crepe Rubber and Ribbed Smoked Sheet

Note 1 : All efforts should be made to remove odour and colour as far as possible.

Note 2 : These values are based on dilution of effluents by at least 8 volumes of clean receiving water. If the dilution is below 8 times, the permissible limits are multiplied by the 1/8 of the actual dilution.

TOLERANCE LIMITS FOR WASTE WATER FROM TEXTILE INDUSTRY BEING DISCHARGED INTO INLAND SURFACE WATERS

No.	Parameters	Unit type of limit	Tolerance Limit Values
01.	pH at ambient temperature		6.5 to 8
02.	Temperature	^{0}C, max	40 measured at site of sampling
03.	Total suspended solids	mg/l, max.	50
04.	Biochemical Oxygen Demand (BOD_5 in five days at 20^0C or BOD_3 in three days at 27^0C)	mg/l, max.	60
05.	Colour	Wave length range 436nm (Yellow range) 525 (Red range) 620 (Blue range)	Maximum spectral absorption coefficient $7m^{-1}$ $5m^{-1}$ $3m^{-1}$
06.	Oils and grease	mg/l, max	10
07.	Phenolic compounds (as Phenolic OH)	mg/l, max	1.0
08.	Chemical Oxygen Demand (COD)	mg/l, max	250
09.	Sulphides (as S^{2-})	mg/l, max	2.0
10.	Chromium (as Cr)	mg/l, max	2.0
11.	Hexavalent Chromium (as Cr^{+6})	mg/l, max	0.5
12.	Copper, total (as Cu)	mg/l, max	3.0
13.	Zinc, total (as Zn)	mg/l, max	5.0
14.	Ammonical nitrogen (as N)	mg/l, max	60
15.	Chloride (as Cl^-)	mg/l, max	70

Note 1 : All effort should be made to remove unpleasant odour as far as practicable.

Note 2 : These values are based on dilution of effluents by at least 8 volumes of clean receiving water. If the dilution is below 8 times, the permissible limits are multiplied by the 1/8 of the actual dilution.

TOLERANCE LIMITS FOR WASTE WATER FROM BEING DISCHARGED FROM TANNING INDUSTRIES

No:	**Parameter**	**Unit** **Type of Limit**	**Tolerance Limit Values for Effluents Discharged into Inland Surface Waters**	**Tolerance Limit Values for Effluents Discharged into Marine Coastal Areas**
01.	pH value at ambient temperature	-	5.5-9.0	5.5-9.0
02.	Total suspended solids	mg/l, max.	100	150
03.	Biochemical Oxygen Demand (BOD_5 in five days at 20^0C or BOD_3 in three days at 27^0C)	mg/l, max.	60	100
04.	Chemical Oxygen Demand (COD)	mg/l, max.	250	300
05.	Colour	Wave length range 436nm (Yellow range) 525 (Red range) 620 (Blue range)	**Maximum spectral absorption coefficient** $7m^{-1}$ $5m^{-1}$ $3m^{-1}$	 - - -
06.	Alkalinity (as $CaCO_3$)	mg/l, max.	750	-
07.	Chloride (as Cl^-)	mg/l, max.	1000	-
08.	Hexavalent Chromium (as Cr^{+6})	mg/l, max.	0.5	0.5
09.	Chromium, total (as Cr)	mg/l, max.	2.0	2.0
10.	Oils and greases	mg/l, max.	10	20
11.	Phenolic compounds (as phenolic OH)	mg/l, max.	1.0	5.0
12.	Sulphides (as S^{2-})	mg/l, max.	2.0	5.0

Note 1 : All efforts should be made to remove unpleasant odour as far as practicable.

Note 2 : These values are based on dilution of effluents by at least 8 volumes of clean receiving water. If the dilution is below 8 times, the permissible limits are multiplied by the 1/8 of the actual dilution.

CLASSIFICATION OF INDUSTRIES AND RECOMMENDED BUFFER ZONES

Type	Categories and examples	Area each works (hectares)	Buffer Zone width Feet
1. Heavy Industry with much air pollution	Oil Refineries, Iron and steel industry, Nuclear reactor	50 -200	500 -2000
	Machine manufacture power station, ship building/breaking		
	Strawboard, artificial fibres, ceramic & glass products, cement etc.		
2. Medium heavy industry with moderate air pollution	Electrical appliances textile weaving etc	50 -75	150 -500
3. Light Industry with some air pollution	Confectionery and food industry, glass manufacture etc.	1 -50	30 -150
4. Light Industry with little air pollution	Electronics garments etc.	1 -10	20 -50
5. Workshops handicrafts etc.	shoes, handbags etc.	< 1	> 10

LIST OF CHEMICALS REQUIRING REGISTRATION WITH THE "NATIONAL AUTHORITY FOR IMPLEMENTATION OF THE CHEMICAL WEAPONS CONVENTION (CWC) IN SRI LANKA " FOR IMPORT/USE/EXPORT

SCHEDULE 1

A. Toxic chemicals :	**(CAS registry number)**
(1) O-Alkyl (≤C10, incl. cycloalkyl) Alkyl (Me,Et, n-Pr or i-Pr)-phosphonofluoridates	
e.g. Sarin: O-Isopropyl methylphosphonofluoridate	(107-44-8)
Somon: O-Pinacolyl methylphosphonofluoridate	(96-64-0)
(2) O-Alkyl (≤C10,incl, cycloalkyl) N, N-dialkyl (Me, Et, n-Pr or 1-Pr) phosphoramidocyanidates	
e.g. Tabun: O-Ethyl N,N-dimethyl phosphoramidocyanidate	(77-81-6)
(3) O-Alkyl (H or ≤C10, incl. cycloalkyl) S-2-dialkyl (Me, Et, n-Pr or i-Pr)-aminoethyl alkyl (Me, Et, n-Pr or i-Pr)-phosphonothiolates and corresponding alkylated or protonated salts	
e.g. VX: O-Ethyl S-2-diisopropylaminoethyl methyl phosphonothiolate	(50782-69-9)
(4) Sulfur mustards:	
2-Chloroethylchloromethylsulfide	(2625-76-5)
Mustard gas: Bis(2-chloroethyl) sulfide	(505-60-2)
Bis(2-chloroethylthio) methane	(63869-13-6)
Sesquimustard: 1, 2-Bis(2-chloroethylthio) ethane	(3563-36-8)
1, 3-Bis (2-chloroethylthio)-n-propane	(63905-10-2)
1, 4-Bis (2-chloroethylthio)-n-butane	(142868-93-7)
1, 5-Bis (2-chloroethylthio)-n-pentane	(142868-94-8)
Bis (2-chloroethylthiomethyl) ether	(63918-90-1)
O-Mustard: Bis (2-chloroethylthioethyl) ether	(63918-89-8)
(5) Lewisties:	
Lewisties 1: 2-Chlorovinyldichloroarsine	(541-25-3)
Lewisties 2: Bis (2-chlorovinyl)chloroarsine	(40334-69-8)
Lewisties 3: Tris (2-chloroethyl) arsine	(40334-70-1)

(6) Nitrogen mustards:

HN1: Bis (2-chloroethyl) ethylamine	(538-07-8)
HN2: Bis (2-chloroethyl) methylamine	(51-75-2)
HN3: Tris (2-chloroethyl) amine	(555-77-1)

(7) Saxitoxin (35523-89-8)

(8) Ricin (9009-86-3)

B. Precursors :

(1) Alkyl (Me,Et, n-Pr or i-Pr) phosphonyldifluorides

e.g. DF: Methylphosphonyldifluoride (676-99-3)

(2) O-Alkyl (H or ≤C10, incl. cycloalkyl) O-2-dialkyl (Me, Et, n-Pr or i-Pr)-aminoethyl alkyl (Me, Et, n-Pr or i-Pr)-phosphonites and Corresponding alkylated or protonated salts

e.g. QL: O-Ethyl O-2-diisopropylaminoethyl methylphosphonite (57856-11-8)

(3) Chlorosarin:
O-Isoprophyl methylphosphonochloridate (1445-76-7)

(4) Chlorosoman:
O-Pinacolyl methylphosphonochloridate (7040-57-5)

SCHEDULE II

A. Toxic chemicals :

(1) Amtion:
O, O-Diethyl S-[2-diethylamino) ethyl]
Phosphorothiolate (78-53-5)
and corresponding alkylated or protonated salts

(2) PFIB: 1,1,3,3,3-Pentafluoro-2-(trifluoromethyl)- 1-propene (382-21-8)

(3) BZ: 3-Quinuclidinyl benzilate (*) (6581-06-2)

B. Precursors :

(1) Chemicals, except for those listed in schedule 1,
containing a phosphorus atom to which is bonded
one methyl, ethyl or propyl (normal or iso) group
but not further carbon atoms,

e.g. Methylphosphonyl dichloride (676-97-1)
Dimethyl methylphosphonate (756-79-6)

Exemption: Fonofos: O-Ethyl S-phenyl
ethylphosphonothiolothionate (944-22-9)

(2) N, N-Dialkyl (Me, Et, n-Pr or i-Pr)-phosphoramidic dihalides

(3) Dialkyl (Me, Et, n-Pr or i-Pr) N, N-dialkyl
(Me, Et, n-Pr or i-Pr)-phosphoramides

(4) Arsenic trichloride (7784-34-1)

(5) 2,2-Diphenyl-2-hydroxyacetic acid (76-93-7)

(6) Quinuclidin-3-ol (1619-34-7)

(7) N, N-Dialkyl (Me, Et, n-Pr or i-Pr)-aminoethyl-
2-chlorides and corresponding protonated salts

(8) N, N-Dialkyl (Me, Et, n-Pr or i-Pr) aminoethane-2-ols and
corresponding protonated salts
Exemption: N, N-Dialkylaminoethanol (108-01-0)
and corresponding protonated salts
N,N-Diethylaminoethanol (100-37-8)

(9) N, N-Dialkyl (Me, Et, n-Pr or i-Pr)-aminoethane-thiols and corresponding protonated salts

(10) Thiodiglycol: Bis (2-hydroxyethyl) sulfide (111-48-8)

(11) Pionacolyl alcohol: 3,3-Dimethylbutane-2-ol (464-07-3)

SCHEDULE III

A. Toxic chemicals :

(1) Phosgene: Carbonyl dichloride (75-44-5)
(2) Cyanogen chloride (506-77-4)
(3) Hydrogen cyanide (74-90-8)
(4) Chloropicrin: Trichloronitromethane (76-06-2)

B. Precursors :

(1) Phosphorus oxychloride (10025-87-3)
(2) Phosphorus trichloride (7719-12-2)
(3) Phosphorus penta chloride (10026-13-8)
(4) Trimethyl phosphite (121-45-9)
(5) Triethyl phosphite (122-52-1)
(6) Dimethyl phosphite (868-85-9)
(7) Diethyl phosphite (762-04-9)
(8) Sulfur monochloride (10025-67-9)
(9) Sulfur dichloride (10545-99-0)
(10) Thionyl chloride (7719-09-7)
(11) Ethyldiethanolamine (139-87-7)
(12) Methyldiethanolamine (105-59-9)
(13) Triethanolamine (102-71-6)