Annex-2-1

NOTIFICATION: No. SO. In exercise of the powers conferred under clause (c) of sub-section 1 of section 4 of the Punjab Environmental Protection Act, 1997(XXXIV of 1997), the Environmental Protection Council has approved the followingas the Punjab Environmental Quality Standards for Paper and Pulp Industry:

A-Punjab Environmental Quality Standards for Paper and Pulp Industry
Liquid Effluents

Sr.#	Parameter	Unit	Effective Immediately		Effective from 2026	
			Into Inland water	Into Sewerage Treatment	Into Inland water	Into Sewerage Treatment
1.	**Temperature**	˚C	Ambient Temp.±3˚C	Ambient Temp.±3˚C	Ambient Temp.±3˚C	Ambient Temp.±3˚C
2.	**pH**	-	6-9	6-9	6-9	6-9
3.	**Biochemical Oxygen Demand (BOD)**	mg/l	150	300	80	150
4.	**Chemical Oxygen Demand (COD)**	mg/l	250	500	`150	250
5.	**Total Suspended Solids**	mg/l	200	400	200	200
6.	**TDS**	mg/l	3000	3000	3000	3000
7.	**Grease and oil**	mg/l	10	10	10	10
8.	**Phenolic compounds (as phenols)**	mg/l	0.1	0.3	0.1	0.3
9.	**Chloride**	mg/l	1000	1000	1000	1000
10.	**Fluoride**	mg/l	10	10	10	10
11.	**Cyanide**	mg/l	0.2	1	0.2	1
12.	**An-Ionic Detergents**	mg/l	20	20	20	20
13.	**Sulfate**	mg/l	400	800	400	800
14.	**Sulfide**	mg/l	1	2	1	2
15.	**Ammonia**	mg/l	10	40	10	40
16.	**Pesticide**	mg/l	0.15	0.15	0.15	0.15
17.	**Cadmium**	mg/l	0.1	0.1	0.1	0.1
18.	**Chromium (III & VI)**	mg/l	1	1	1	1
19.	**Copper**	mg/l	1	1	1	1
20.	**Lead**	mg/l	0.5	0.5	0.5	0.5
21.	**Mercury**	mg/l	0.01	0.01	0.01	0.01
22.	**Selenium**	mg/l	0.5	0.5	0.5	0.5
23.	**Nickel**	mg/l	1	1	1	1
24.	**Silver**	mg/l	1	1	1	1
25.	**Total Toxic Metal**	mg/l	2	2	2	2
26.	**Zinc**	mg/l	5	5	5	5
27.	**Arsenic**	mg/l	1	1	1	1
28.	**Barium**	mg/l	1.5	1.5	1.5	1.5
29.	**Iron**	mg/l	8	8	8	8
30.	**Manganese**	mg/l	1.5	1.5	1.5	1.5
31.	**Boron**	mg/l	5	5	5	5
32.	**Chlorine**	mg/l	0.5	1	0.5	1
33.	**Trichloroethane**	mg/l	NA	NA	1	1
34.	**Chloroform**	mg/l	NA	NA	1	1
35.	**Tetrachlorocarbon**	mg/l	NA	NA	1	1
36.	**Dichloroethane**	mg/l	NA	NA	1	1

Explanation:

1. Total Dissolved Solids (TDS) levels are implemented following a calculation of the discharge from the water source (Source TDS-Process TDS= Discharge TDS)
2. Assuming Minimum dilution 1:10 on discharge, lower ratio would attract progressively stringent standards to be determined by the Provincial Environment Protection Agency. By 1:10 dilution means, for example that for each one cubic meter treated effluent, the recipient water body should have 10 cubic meters of water for dilution of this effluent.
3. Methylene Blue Active Substances; assuming as biodegradable.
4. Pesticides includes herbicides, fungicides and insecticides.
5. Subject to Total Toxic Metals, discharge should not exceed level given at S.N. 25.

6. Applicable only when and where sewage treatment is operational and BOD_5 =80mg/l is achieved by the sewage treatment system.
   *The effluent should not result in temperature increase of more than 3 C^o at the edge of the zone where initial mixing and dilution take place in the receiving body. In case, zone is not defined, use 100 meters from the point of discharge.

Note:

1. Dilution of the effluents to meet the PEQS limiting value is not permissible through fresh water mixing with the effluent before discharging into the environment.
2. The concentration of pollutants in water being used will be subtracted from the effluent for calculating the PEQS limits.

B-Punjab Environmental Quality Standards for Industrial Gaseous Emission for Paper and Pulp Industry

Parameter	Standards		
	Lime Kiln (3% O2)	Alkali Recovery (WHRB) (3% O2)	Pulping Process
Particulate matter (PM)	50	50	250
Oxides of nitrogen (NOX)	600	300	-
Hydrogen Sulphide (HS)	-	15	10
Oxides of Sulphur (SOX)	-	650	-
Hydrogen Chloride (HCL)	-	15	-

***All units are in Mg/Nm^3 unless otherwise defined**

Note:

- The proposed emission standards provide a cohesive regulatory framework, ensuring consistency across Lime Kiln, Alkali Recovery (WHRB), and Pulping Process operations.
- The tiered emission limits for particulate matter, oxides of nitrogen, hydrogen sulphide, oxides of sulphur, and hydrogen chloride recognize the diverse challenges associated with each industrial process.
- Tailored standards acknowledge the distinct nature of emissions from Lime Kiln, Alkali Recovery (WHRB), and Pulping Process, promoting effective pollution control measures.
- The absence of specific standards for Lime Kiln and Pulping Process for SOX and HCL suggests a need for further evaluation or potential reliance on general industry emission guidelines

The “Rule of Thumb” for designing stack is given as:

1) The stack height should be 2-2.5 times as high as building or countryside to avoid surrounding turbulence.
2) Gases emitting velocity should be greater than 60 ft/sec so that it can overcome the turbulence or any kind of disturbance.
3) The emissions from diameter of stack less than 5 feet and height less than 200 feet can possibly hit the ground in large concentrations.
4) The ground concentration of pollutants can be reduced by designing higher stacks and it is usually changing as Inverse Square of stack height.
5) The emissions exit from stack chimney to atmospheric diffusion (while building or any other object is not a hurdle) then the ground level concentration of pollutant in order of 0.001 to 1 % of stack concentration is possible to occur.
6) The maximum ground concentration of stack gases subjected to atmospheric diffusion usually occurs at about five to 10 stack heights from the stacks

Annex-2-2

NOTIFICATION: No. SO. In exercise of the powers conferred under clause (c) of sub-section 1 of section 4 of the Punjab Environmental Protection Act, 1997(XXXIV of 1997), the Environmental Protection Council has approved the followingas the Punjab Environmental Quality Standards for All integrated textile units of cotton/woolen/ polyester/ printing/dyeing/bleaching process or manufacturing and garment units:

A-Punjab Environmental Quality Standards for All Integrated Textile Units of Cotton/Woolen/ Polyester/ Printing/Dyeing/Bleaching Process or Manufacturing and Garment Units Liquid Effluents

Sr.#	Parameter	Unit	Effective immediately		Effective from 2026	
			Inland water	Sewerage Treatment	Inland water	Sewerage Treatment
1.	Temperature	˚C	Ambient Temp.±3˚C	Ambient Temp.±3˚C	Ambient Temp.±3˚C	Ambient Temp.±3˚C
2.	pH	-	6-9	6-9	6-9	6-9
3.	BOD	mg/l	80	250	80	150
4.	COD	mg/l	150	400	150	300
5.	TSS	mg/l	200	400	200	400
6.	TDS	mg/l	3000	3000	3000	3000
7.	Grease and oil	mg/l	10	10	10	10
8.	Phenolic compounds (as phenols)	mg/l	0.1	0.3	0.1	0.1
9.	Fluoride	mg/l	10	10	10	10
10.	Cyanide	mg/l	1	1	1	0.2
11.	An-Ionic Detergents	mg/l	20	20	20	20
12.	Sulfate	mg/l	600	1000	200	200
13.	Sulfide	mg/l	1	1	1	1
14.	Ammonia	mg/l	40	40	10	10
15.	Pesticide	mg/l	0.15	0.15	0.15	0.15
16.	Cadmium	mg/l	0.1	0.1	0.1	0.1
17.	Chromium (III & VI)	mg/l	1	1	1	1
18.	Copper	mg/l	1	1	1	1
19.	Lead	mg/l	0.5	0.5	0.5	0.5
20.	Silver	mg/l	1	1	1	1
21.	Mercury	mg/l	0.01	0.01	0.01	0.01
22.	Selenium	mg/l	0.5	0.5	0.5	0.5
23.	Nickel	mg/l	1	1	1	1
24.	Total Toxic Metal	mg/l	2	2	2	2
25.	Zinc	mg/l	5	5	5	5
26.	Arsenic	mg/l	1	1	1	1
27.	Barium	mg/l	1.5	1.5	1.5	1.5
28.	Iron	mg/l	8	8	8	8
29.	Manganese	mg/l	1.5	1.5	1.5	1.5
30.	Boron	mg/l	6	6	5	5
31.	Chlorine	mg/l	1	1	1	0.5
32.	Organo phosphorus compo	mg/l	1	1	1	1
33.	Trichlor oethane	mg/l	1	1	1	1
34.	Tetrachlorocarbon	mg/l	1	1	1	1
35.	Dichloroethane	mg/l	0.2	0.2	0.2	0.2

36.	**Dichloromethane**	mg/l	0.05	0.05	0.05	0.05
37.	**Benzene**	mg/l	0.4	0.4	0.4	0.4

Explanation:

1. Total Dissolved Solids (TDS) levels are implemented following a calculation of the discharge from the water source (Source TDS-Process TDS= Discharge TDS)
2. Assuming Minimum dilution 1:10 on discharge, lower ratio would attract progressively stringent standards to be determined by the Provincial Environment Protection Agency. By 1:10 dilution means, for example that for each one cubic meter treated effluent, the recipient water body should have 10 cubic meters of water for dilution of this effluent.
3. Methylene Blue Active Substances; assuming as biodegradable.
4. Subject to Total Toxic Metals, discharge should not exceed level given at S.N. 23.
5. Applicable only when and where sewage treatment is operational and BOD_5 =80mg/l is achieved by the sewage treatment system.

   *The effluent should not result in temperature increase of more than 3 C^o at the edge of the zone where initial mixing and dilution take place in the receiving body. In case, zone is not defined, use 100 meters from the point of discharge.

Note:

1. Dilution of the effluents to meet the PEQS limiting value is not permissible through fresh water mixing with the effluent before discharging into the environment.
2. The concentration of pollutants in water being used will be subtracted from the effluent for calculatingthe PEQS limits.

B- Punjab Environmental Quality Standards of Textile Industry for Gaseous Emissions

For gaseous emission standards, Textile industry will follow (are refer) to Punjab Environmental Quality Standards for Boiler emissions Standards. These standards aredesigned to address and regulate the atmospheric pollutants originating from boiler operations within the Textile industry.

Annex-2-3

NOTIFICATION: No. SO. In exercise of the powers conferred under clause (c) of sub-section 1 of section 4 of the Punjab Environmental Protection Act, 1997(XXXIV of 1997), the Environmental Protection Council has approved the followingas the Punjab Environmental Quality Standards for Leather and Tanneries:

A- Punjab Environmental Quality Standards for Leather and tanneries Liquid Effluents

Sr.	Parameter	Unit	Effective Immediately		Effective from 2026	
			Into Inland water	Into Sewerage Treatment	Into Inland water	Into Sewerage Treatment
1.	Temperature	˚C	Ambient Temp.±3˚C	Ambient Temp.±3˚C	Ambient Temp.±3˚C	Ambient Temp.±3˚C
2.	pH	-	6-9	6-9	6-9	6-9
3.	BOD	mg/l	150	250	80	150
4.	COD	mg/l	300	400	150	300
5.	TSS	mg/l	400	400	200	400
6.	TDS	mg/l	3000	3000	3000	3000
7.	Grease and oil	mg/l	10	10	10	10
8.	Phenolic compounds (as phenols)	mg/l	0.1	0.3	0.1	0.3
9.	Chloride	mg/l	1000	1000	1000	1000
10.	Fluoride	mg/l	10	10	5	10
11.	Cyanide	mg/l	1	1	1	1
12.	An-Ionic Detergents	mg/l	20	20	20	20
13.	Sulfate	mg/l	600	1000	600	1000
14.	Sulfide	mg/l	1	1	1	1
15.	Ammonia	mg/l	50	50	50	50
16.	Pesticide	mg/l	0.15	0.15	0.15	0.15
17.	Cadmium	mg/l	0.1	0.1	0.1	0.1
18.	Chromium (III & VI)	mg/l	1	1	1	1
19.	Copper	mg/l	1	1	1	1
20.	Lead	mg/l	0.5	0.5	0.5	0.5
21.	Mercury	mg/l	0.01	0.01	0.01	0.01
22.	Selenium	mg/l	0.5	0.5	0.5	0.5
23.	Nickel	mg/l	1	1	1	1
24.	Silver	mg/l	1	1	1	1
25.	Total Toxic Metal	mg/l	2	2	2	2
26.	Zinc	mg/l	5	5	5	5
27.	Arsenic	mg/l	1	1	1	1
28.	Barium	mg/l	1.5	1.5	1.5	1.5
29.	Iron	mg/l	8	8	8	8
30.	Manganese	mg/l	1.5	1.5	1.5	1.5
31.	Boron	mg/l	6	6	6	6
32.	Chlorine	mg/l	1	0.5	1	0.5
33.	Total Kjeldahl Nitrogen (TKN)	mg/l	NA	NA	100	100
34.	Total Chrome	mg/l	NA	NA	4	4

Explanation:

1. Total Dissolved Solids (TDS) levels are implemented following a calculation of the discharge from the water source (Source TDS-Process TDS= Discharge TDS)
2. Assuming Minimum dilution 1:10 on discharge, lower ratio would attract progressively stringent standards to be determined by the Provincial Environment Protection Agency. By 1:10 dilution means, for example that for each one cubic meter treated effluent, the recipient water body should have 10 cubic meters of water for dilution of this effluent.
3. Methylene Blue Active Substances; assuming as biodegradable.
4. Subject to Total Toxic Metals, discharge should not exceed level given at S.N. 25.
5. Applicable only when and where sewage treatment is operational and BOD_5 =80mg/l is achieved by the sewage treatment system.
   *The effluent should not result in temperature increase of more than 3 C^o at the edge of the zone where initial mixing and dilution take place in the receiving body. In case, zone is not defined, use 100 meters from the point of discharge.

Note:

1. Dilution of the effluents to meet the PEQS limiting value is not permissible through fresh water mixing with the effluent before discharging into the environment.
2. The concentration of pollutants in water being used will be subtracted from the effluent for calculating the PEQS limits.

B- Punjab Environmental Quality Standards for Leather and Tanning Industry for Gaseous Emissions

For gaseous emission standards, Leather and Tanning Industry will follow (are refer) to Punjab Environmental Quality Standards for Boiler Emissions Standards. These standards are designed to address and regulate the atmospheric pollutants originating from boiler operations within the Leather and Tanning Industry.

Annex-2-4

NOTIFICATION: No. SO. In exercise of the powers conferred under clause (c) of sub-section 1 of section 4 of the Punjab Environmental Protection Act, 1997(XXXIV of 1997), the Environmental Protection Council has approved the followingas the Punjab Environmental Quality Standards for Sugar Industry:

A- Punjab Environmental Quality Standards for Sugar Industry for Wastewater Effluents

Sr.#	Parameter	Unit	Effective immediately		Effective from 2026	
			On land water	Surface water body	On land water	Surface water body
1.	**Temperature**	˚C	Ambient Temp.±3˚C	Ambient Temp.±3˚C	Ambient Temp.±3˚C	Ambient Temp.±3˚C
2.	**pH**	-	6-9	6-9	6-9	6-9
3.	**BOD**	mg/l	150	250	100	200
4.	**COD**	mg/l	300	400	200	250
5.	**TSS**	mg/l	400	200	200	200
6.	**TDS**	mg/l	3000	3000	3000	3000
7.	**Grease and oil**	mg/l	10	10	10	10
8.	**Phenolic compounds (as phenols)**	mg/l	1	0.1	1	0.1
9.	**Chloride**	mg/l	1000	1000	1000	1000
10.	**Fluoride**	mg/l	10	10	10	10
11.	**Cyanide**	mg/l	1	0.2	0.2	1
12.	**An-Ionic Detergents**	mg/l	20	20	20	20
13.	**Sulfate**	mg/l	800	400	400	800
14.	**Sulfide**	mg/l	2	1	2	1
15.	**Ammonia**	mg/l	40	10	10	40
16.	**Pesticide**	mg/l	0.15	0.15	0.15	0.15
17.	**Cadmium**	mg/l	0.1	0.1	0.1	0.1
18.	**Chromium (III & VI)**	mg/l	1	1	1	1
19.	**Copper**	mg/l	1	1	1	1
20.	**Lead**	mg/l	0.5	0.5	0.5	0.5
21.	**Mercury**	mg/l	0.01	0.01	0.01	0.01
22.	**Selenium**	mg/l	0.5	0.5	0.5	0.5
23.	**Nickel**	mg/l	1	1	1	1
24.	**Silver**	mg/l	1	1	1	1
25.	**Total Toxic Metal**	mg/l	2	2	2	2
26.	**Zinc**	mg/l	5	5	5	5
27.	**Arsenic**	mg/l	1	1	1	1
28.	**Barium**	mg/l	1.5	1.5	1.5	1.5
29.	**Iron**	mg/l	8	8	8	8
30.	**Manganese**	mg/l	1.5	1.5	1.5	1.5
31.	**Boron**	mg/l	6	5	6	5
32.	**Chlorine**	mg/l	1	0.5	1	0.5
33.	**Sodium**	mg/l	NA	NA	5	5
34.	**Calcium**	mg/l	NA	NA	15	15

35.	**Magnesium**	mg/l	NA	NA	4	4
36.	**Nitrate**	mg/l	NA	NA	1	1
37.	**Phosphate**	mg/l	NA	NA	5	5

Explanation:

1. Total Dissolved Solids (TDS) levels are implemented following a calculation of the discharge from thewater source (Source TDS-Process TDS= Discharge TDS)
2. Assuming Minimum dilution 1:10 on discharge, lower ratio would attract progressively stringent standards to be determined by the Provincial Environment Protection Agency. By 1:10 dilution means, for example that for each one cubic meter treated effluent, the recipient water body should have 10 cubic meters of water for dilution of this effluent.
3. Methylene Blue Active Substances; assuming as biodegradable.
4. Pesticides includes herbicides, fungicides and insecticides.
5. Subject to Total Toxic Metals, discharge should not exceed level given at S.N. 23.
6. Applicable only when and where sewage treatment is operational and BOD_5 =80mg/l is achieved by the sewage treatment system.

   *The effluent should not result in temperature increase of more than 3 C^o at the edge of the zone where initial mixing and dilution take place in the receiving body. In case, zone is not defined, use 100 meters from the point of discharge.

Note:

1. Dilution of the effluents to meet the PEQS limiting value is not permissible through fresh water mixing with the effluent before discharging into the environment.
2. The concentration of pollutants in water being used will be subtracted from the effluent for calculating the PEQS limits.

B- Punjab Environmental Quality Standards for Sugar Industry for Gaseous Emissions

For gaseous emission standards, Sugar industry will follow (are refer) to Punjab Environmental Quality Standards for Boiler Emissions Standards. These standards are designed to address and regulate the atmospheric pollutants originating from boiler operations within the sugar industry

Recommendations for wastewater Effluent and Gaseous Emissions:

1. Establishment of cooling arrangement and polishing tank for recycling the excess condensate water to process or utilities or allied units.
2. Effluent Treatment Plant to be stabilized one month prior to the start of the crushing season and continue to operate one month after the crushing season.
3. During no demand period for irrigation, the treated effluent to be stored in a seepage proof lined pond having 15 days holding capacity only.
4. Flow meter to be installed in all water abstraction points and usage of fresh water tobe minimized.
5. Suitable Air pollution control devices to be installed to meet the particulate matter emission standard.

Annex-2-5

NOTIFICATION: No. SO. In exercise of the powers conferred under clause (c) of sub-section 1 of section 4 of the Punjab Environmental Protection Act, 1997(XXXIV of 1997), the Environmental Protection Council has approved the followingas the Punjab Environmental Quality Standards for Ethanol/ Distillery Industry:

A- Punjab Environmental Quality Standards for Ethanol/ Distillery Industry Liquid Effluents

Sr. No	Parameter	Unit	Effective immediately		Effective from 2026	
			Inland water	Sewerage Treatment	Inland water	Sewerage Treatment
1.	**Ambient Temperature**	˚C	Ambient Temp .±3	Ambient Temp.±3	Ambient Temp.±3	Ambient Temp.±3
2.	**pH**	-	6-9	6-9	6-9	6-9
3.	**BOD**	mg/l	250	500	250	500
4.	**COD**	mg/l	500	1000	500	1000
5.	**TSS**	mg/l	200	400	200	400
6.	**TDS**	mg/l	3000	3000	3000	3000
7.	**Grease and oil**	mg/l	10	10	10	10
8.	**Phenolic compounds (as phenols)**	mg/l	0.1	1	0.1	1
9.	**Chloride**	mg/l	1000	1000	1000	1000
10.	**Fluoride**	mg/l	10	10	10	10
11.	**Cyanide**	mg/l	0.2	1	0.2	1
12.	**An-Ionic Detergents**	mg/l	20	20	20	20
13.	**Sulfate**	mg/l	400	800	400	800
14.	**Sulfide**	mg/l	1	2	1	2
15.	**Ammonia**	mg/l	10	40	10	40
16.	**Pesticide**	mg/l	0.15	0.15	0.15	0.15
17.	**Cadmium**	mg/l	0.1	0.1	0.1	0.1
18.	**Chromium (III & VI)**	mg/l	1	1	1	1
19.	**Copper**	mg/l	1	1	1	1
20.	**Lead**	mg/l	0.5	0.5	0.5	0.5
21.	**Mercury**	mg/l	0.01	0.01	0.01	0.01
22.	**Selenium**	mg/l	0.5	0.5	0.5	0.5
23.	**Nickel**	mg/l	1	1	1	1
24.	**Silver**	mg/l	1	1	1	1
25.	**Total Toxic Metal**	mg/l	2	2	2	2
26.	**Zinc**	mg/l	5	5	5	5
27.	**Arsenic**	mg/l	1	1	1	1
28.	**Barium**	mg/l	1.5	1.5	1.5	1.5
29.	**Iron**	mg/l	8	8	8	8
30.	**Manganese**	mg/l	1.5	1.5	1.5	1.5
31.	**Boron**	mg/l	5	6	5	6
32.	**Chlorine**	mg/l	0.5	1	0.5	1
33.	**Sodium**	mg/l	NA	NA	5	5
34.	**Calcium**	mg/l	NA	NA	15	15
35.	**Magnesium**	mg/l	NA	NA	4	4

Explanation:

1. Total Dissolved Solids (TDS) levels are implemented following a calculation of the discharge from the water source (Source TDS-Process TDS= Discharge TDS)
2. Assuming Minimum dilution 1:10 on discharge, lower ratio would attract progressively stringent standards to be determined by the Provincial Environment Protection Agency. By 1:10 dilution means, for example that for each one cubic meter treated effluent, the recipient water body should have 10 cubic meters of water for dilution of this effluent.
3. Methylene Blue Active Substances; assuming as biodegradable.
4. Pesticides includes herbicides, fungicides and insecticides.
5. Subject to Total Toxic Metals, discharge should not exceed level given at S.N. 23.
6. Applicable only when and where sewage treatment is operational and BOD_5 =80mg/l is achieved by the sewage treatment system.
   *The effluent should not result in temperature increase of more than 3 C^o at the edge of the zone where initial mixing and dilution take place in the receiving body. In case, zone is not defined, use 100 meters from the point of discharge.

Note:

1. Dilution of the effluents to meet the PEQS limiting value is not permissible through fresh water mixing with the effluent before discharging into the environment.
2. The concentration of pollutants in water being used will be subtracted from the effluent for calculating the PEQS limits.

B- Punjab Environmental Quality Standards for Ethanol/Distillery industry for Gaseous Emissions

For gaseous emission standards, Ethanol/Distillery industry will follow (are refer) to Punjab Environmental Quality Standards for Boiler emissions Standards. These standards are designed to address and regulate the atmospheric pollutants originating from boiler operations within the Ethanol/Distillery industry,

Annex-2-6

NOTIFICATION: No. SO. In exercise of the powers conferred under clause (c) of sub-section 1 of section 4 of the Punjab Environmental Protection Act, 1997(XXXIV of 1997), the Environmental Protection Council has approved the followingas the Punjab Environmental Quality Standards for Chemical industry (Acid Manufacturing)

A- Punjab Environmental Quality Standards for Chemical industry (Acid Manufacturing) Liquid Effluents

Sr. No	Parameter	Unit	Effective immediately		Effective from 2026	
			Into Inland Waters	Into Sewerage Treatment	Into Inland Waters	Into Sewerage Treatment
1.	**Temperature**	˚C	Ambient Temp.±3	Ambient Temp.±3	Ambient Temp.±3	Ambient Temp.±3
2.	**pH**	--	6.0-9.0	6.0-9.0	6.0-9.0	6.0-9.0
3.	**BOD**	mg/l	150	250	80	150
4.	**COD**	mg/l	200	400	150	300
5.	**TSS**	mg/l	200	400	200	200
6.	**TDS**	mg/l	3000	3000	3000	3000
7.	**Grease and oil**	mg/l	10	10	10	10
8.	**Phenolic compounds (as phenols)**	mg/l	0.1	0.3	0.1	0.3
9.	**Chloride**	mg/l	1000	1000	1000	1000
10.	**Fluoride**	mg/l	10	10	5	10
11.	**Cyanide**	mg/l	1	1	1	1
12.	**An-ionic detergents**	mg/l	20	20	20	20
13.	**Pesticides**	mg/l	0.15	0.15	0.15	0.15
14.	**Sulfate**	mg/l	600	1000	600	800
15.	**Sulfide**	mg/l	1	1	1	1
16.	**Cadmium**	mg/l	0.1	0.1	0.1	0.1
17.	**Chromium (III & VI)**	mg/l	1	1	1	1
18.	**Copper**	mg/l	1	1	1	1
19.	**Lead**	mg/l	0.5	0.5	0.5	0.5
20.	**Mercury**	mg/l	0.01	0.01	0.01	0.01
21.	**Selenium**	mg/l	0.5	0.5	0.01	0.01
22.	**Nickel**	mg/l	1	1	0.01	0.01
23.	**Silver**	mg/l	1	1	0.01	0.01
24.	**Total Toxic Metals**	mg/l	2	2	2	2
25.	**Zinc**	mg/l	5	5	5	5
26.	**Arsenic**	mg/l	1	1	1	1
27.	**Barium**	mg/l	1.5	1.5	1.5	1.5
28.	**Iron**	mg/l	8	8	8	8
29.	**Manganese**	mg/l	1.5	1.5	1.5	1.5
30.	**Boron**	mg/l	6	6	6	6
31.	**Chlorine**	mg/l	1	1	1	1
32.	**Total mercury**	mg/l	NA	NA	0.005	0.005
33.	**Formaldehyde**	mg/l	NA	NA	3	3
34.	**Dioxin**	mg/l	NA	NA	10	10
35.	**Dichloromethane**	mg/l	NA	NA	0.2	0.2

36.	**Chloroform**	mg/l	NA	NA	0.6	0.6
37.	**Benzene**	mg/l	NA	NA	0.05	0.05
38.	**Ethylbenzene**	mg/l	NA	NA	0.4	0.4
39.	**1,2-Dichloroethane or Chloroethene**	mg/l	NA	NA	0.1	0.1
40.	**Dimethyl phthalate (DMP)**	mg/l	NA	NA	0.2	0.2
41.	**Diethyl phthalate (DEP)**	mg/l	NA	NA	0.4	0.4
42.	**Dibutyl phthalate (DBP)**	mg/l	NA	NA	0.4	0.4
43.	**Benzyl butyl phthalate (BBP)**	mg/l	NA	NA	0.4	0.4
44.	**Di-n-octyl phthalate (DNOP)**	mg/l	NA	NA	0.6	0.6
45.	**Di(2-ethylhexyl) phthalate (DEHP)**	mg/l	NA	NA	0.2	0.2
46.	**Nitrobenzene**	mg/l	NA	NA	0.4	0.4
47.	**Trichloroethene**	mg/l	NA	NA	0.3	0.3

Explanation:

1. Total Dissolved Solids (TDS) levels are implemented following a calculation of the discharge from the water source (Source TDS-Process TDS= Discharge TDS)
2. Assuming Minimum dilution 1:10 on discharge, lower ratio would attract progressively stringent standards to be determined by the Provincial Environment Protection Agency. By 1:10 dilution means, for example that for each one cubic meter treated effluent, the recipient water body should have 10 cubic meters of water for dilution of this effluent.
3. Methylene Blue Active Substances; assuming as biodegradable.
4. Subject to Total Toxic Metals, discharge should not exceed level given at S.N. 21.
5. Applicable only when and where sewage treatment is operational and BOD5 =80mg/l is achieved by the sewage treatment system.

   *The effluent should not result in temperature increase of more than 3 C° at the edge of the zone where initial mixing and dilution take place in the receiving body. In case, zone is not defined, use 100 meters from the point of discharge.

Note:

1. Dilution of the effluents to meet the PEQS limiting value is not permissible through fresh water mixing with the effluent before discharging into the environment.
2. The concentration of pollutants in water being used will be subtracted from the effluent for calculating the PEQS limits.

B-Punjab Environmental Quality Standards for Chemical (Acid Manufacturing) Industry

Parameter	Standards
Particulate Matter (PM)	80
Hydrogen Fluoride	5
Hydrogen chloride	35
Chlorine	10
Sulphur dioxide	800
Sulphuric acid mist and sulphur trioxide (S03)	25
Oxides of Nitrogen (NOx)	350
1,2-Dichloroethane	5
Vinyl Chloride	5

*** All units are in Mg/Nm^3 unless otherwise defined**

Note:

- The roof legs, slotted pipes and/or dipping well on floating roof tanks (except domed floating roof tanks or internal floating roof tanks) shall have sleeves fitted to minimize emissions.
- Relief valves on pressurized storage should undergo periodic checks for internal leaks. This can be carried out using portable acoustic monitors or if venting to atmosphere with an accessible open end, tested with a hydrocarbon analyzer as
- Loading/unloading (except rail loading and unloading): All liquid products with a vapour pressure above 14 k.Pa shall be loaded/unloaded using bottom loading, with the vent pipe connected to a gas balancing line. Vapours expelled during loading.
- The actual temperature in the tank must be used for vapour pressure calculations.
- Alternative control measures that can achieve the same or better results may be used.

The "Rule of Thumb" for designing stack is given as:

1. The stack should be 2-2.5 times the height of adjacent structures or the surrounding landscape to minimize turbulence and ensure effective dispersion.
2. Maintain a gas exit velocity greater than 60 ft/sec to overcome turbulence and disturbances.
3. Stacks with a diameter less than 5 feet and a height less than 200 feet may result in emissions hitting the ground in concentrated form.
4. Higher stacks help reduce ground-level pollutant concentrations, following an Inverse Square relationship with stack height.
5. In the absence of obstructions (buildings or obstacles), ground-level pollutant concentrations can be as low as 0.001 to 1% of stack concentrations due to atmospheric diffusion.
6. The highest ground-level concentrations occur around five to ten stack heights away from the stack

Annex-2-7

NOTIFICATION: No. SO. In exercise of the powers conferred under clause (c) of sub-section 1 of section 4 of the Punjab Environmental Protection Act, 1997(XXXIV of 1997), the Environmental Protection Council has approved the followingas the Punjab Environmental Quality Standards for Paint Industry:

A-Punjab Environmental Quality Standards for Paint Industry
Liquid Effluents

Sr. #	Parameter	Unit	Effective Immediately		Effective from 2026	
			Into Inland water	Into Sewerage Treatment	Into Inland water	Into Sewerage Treatment
1.	**Temperature**	˚C	Ambient Temp. ±3˚C	Ambient Temp. ±3˚C	Ambient Temp. ±3˚C	Ambient Temp. ±3˚C
2.	**pH**	-	6.0-9.0	6.0-9.0	6.0-9.0	6.0-9.0
3.	**BOD**	mg/l	80	250	80	150
4.	**COD**	mg/l	150	400	150	200
5.	**TSS**	mg/l	200	400	200	200
6.	**TDS**	mg/l	3000	3000	3000	3000
7.	**Grease and oil**	mg/l	10	10	10	10
8.	**Phenolic compounds (as phenols)**	mg/l	0.1	0.3	0.1	0.5
9.	**Fluoride**	mg/l	10	10	5	10
10.	**Chloride**	mg/l	1000	1000	1000	1000
11.	**Cyanide**	mg/l	1	1	1	1
12.	**An-Ionic Detergents**	mg/l	20	20	20	20
13.	**Sulfate**	mg/l	600	1000	400	600
14.	**Sulfide**	mg/l	1	1	1	1
15.	**Ammonia**	mg/l	40	40	10	40
16.	**Pesticides**	mg/l	0.15	0.15	0.15	0.15
17.	**Cadmium**	mg/l	0.1	0.1	0.1	0.1
18.	**Chromium (III & VI)**	mg/l	1	1	2	2
19.	**Copper**	mg/l	1	1	1	1
20.	**Lead**	mg/l	0.5	0.5	0.1	0.1
21.	**Mercury**	mg/l	0.01	0.01	0.01	0.01
22.	**Selenium**	mg/l	0.5	0.5	0.5	0.5
23.	**Nickel**	mg/l	1	1	1	1
24.	**Silver**	mg/l	1	1	1	1
25.	**Total Toxic Metal**	mg/l	2	2	2	2
26.	**Zinc**	mg/l	5	5	5	5
27.	**Arsenic**	mg/l	1	1	0.5	0.5
28.	**Barium**	mg/l	1.5	1.5	1.5	1.5
29.	**Iron**	mg/l	8	8	8	8
30.	**Manganese**	mg/l	1.5	1.5	1.5	1.5
31.	**Boron**	mg/l	6	6	6	6
32.	**Chlorine**	mg/l	1	1	1	1
33.	**Cobalt**	mg/l	N/A	N/A	0.2	0.2

Explanation:

1. Total Dissolved Solids (TDS) levels are implemented following a calculation of the discharge from the water source (Source TDS-Process TDS= Discharge TDS)
2. Assuming Minimum dilution 1:10 on discharge, lower ratio would attract progressively stringent standards to be determined by the Provincial Environment Protection Agency. By1:10 dilution means, for example that for each one cubic meter treated effluent, the recipient water body should have 10 cubic meters of water for dilution of this effluent.
3. Methylene Blue Active Substances; assuming as biodegradable.
4. Pesticides includes herbicides, fungicides and insecticides.
5. Subject to Total Toxic Metals, discharge should not exceed level given at S.N. 25.
6. Applicable only when and where sewage treatment is operational and BOD_5 =80mg/l isachieved by the sewage treatment system.
   *The effluent should not result in temperature increase of more than 3 C^o at the edge of the zone where initial mixing and dilution take place in the receiving body. In case, zone is notdefined, use 100 meters from the point of discharge.

Note:

1. Dilution of the effluents to meet the PEQS limiting value is not permissible through freshwater mixing with the effluent before discharging into the environment.
2. The concentration of pollutants in water being used will be subtracted from the effluent for calculating the PEQS limits.

B- Punjab Environmental Quality Standards for Paint Industry for Gaseous Emissions

For gaseous emission standards, Paint industry will follow (are refer) to Punjab Environmental Quality Standards for Boiler Emissions Standards if boiler is used otherwise Industry will follow (are refer) to Generalized Punjab Environmental QualityStandards for gaseous emissions. These standards are designed to address and regulate the atmospheric pollutants originating from within the Paint industry

Annex-2-8

NOTIFICATION: No. SO. In exercise of the powers conferred under clause (c) of sub-section 1 of section 4 of the Punjab Environmental Protection Act, 1997(XXXIV of 1997), the Environmental Protection Council has approved the followingas the Punjab Environmental Quality Standards for Pesticide Industry

A- Punjab Environmental Quality Standards for Pesticide Industry

Liquid Effluents

Sr. #	Parameter	Unit	Effective Immediately		Effective from 2026	
			Into Inland water	Into Sewerage Treatment	Into Inland water	Into Sewerage Treatment
1.	**Temperature**	˚C	Ambient Temp.±3 ˚C	Ambient Temp.±3 ˚C	Ambient Temp.±3 ˚C	Ambient Temp.±3 ˚C
2.	**pH**	--	6.0-9.0	6.0-9.0	6.0-9.0	6.0-9.0
3.	**BOD**	mg/l	80	150	80	150
4.	**COD**	mg/l	150	400	150	400
5.	**TSS**	mg/l	200	400	200	400
6.	**TDS**	mg/l	3000	3000	3000	3000
7.	**Grease and oil**	mg/l	10	10	10	10
8.	**Phenolic compounds (as phenols)**	mg/l	0.1	0.3	0.1	0.3
9.	**Fluoride**	mg/l	10	10	5	10
10.	**Chloride**	mg/l	1000	1000	1000	1000
11.	**Fluoride**	mg/l	10	10	10	10
12.	**Sulfate**	mg/l	600	1000	600	1000
13.	**Sulfide**	mg/l	1	1	1	1
14.	**Ammonia**	mg/l	40	40	40	40
15.	**Pesticides**	mg/l	0.15	0.15	0.15	0.15
16.	**Cyanide**	mg/l	1	1	1	1
17.	**An-ionic detergents**	mg/l	20	20	20	20
18.	**Cadmium**	mg/l	0.1	0.1	0.1	0.1
19.	**Chromium (III & VI)**	mg/l	1	1	1	1
20.	**Copper**	mg/l	1	1	1	1
21.	**Lead**	mg/l	0.5	0.5	0.5	0.5
22.	**Total Mercury**	mg/l	0.01	0.01	0.01	0.01
23.	**Selenium**	mg/l	0.5	0.5	0.5	0.5
24.	**Nickel**	mg/l	1	1	1	1
25.	**Silver**	mg/l	1	1	1	1
26.	**Total Toxic Metals**	mg/l	2	2	2	2
27.	**Zinc**	mg/l	5	5	5	5
28.	**Arsenic**	mg/l	1	1	1	1
29.	**Barium**	mg/l	1.5	1.5	1.5	1.5
30.	**Iron**	mg/l	8	8	8	8
31.	**Manganese**	mg/l	1.5	1.5	1.5	1.5
32.	**Boron**	mg/l	6	6	6	6
33.	**Chlorine**	mg/l	1	1	1	1
34.	**benzene hexachloride**	mg/l	N/A	N/A	0.01	0.01
35.	**Carbonyl**	mg/l	N/A	N/A	0.01	0.01

36.	**copper sulphate**	mg/l	N/A	N/A	0.05	0.05
37.	**copper oxychloride**	mg/l	N/A	N/A	9.6	9.6
38.	**DDT**	mg/l	N/A	N/A	0.01	0.01
39.	**Dimethoate**	mg/l	N/A	N/A	0.45	0.45
40.	**2,4 D**	mg/l	N/A	N/A	0.4	0.4
41.	**Endosulfan**	mg/l	N/A	N/A	0.01	0.01
42.	**Fenitothion**	mg/l	N/A	N/A	0.01	0.01
43.	**Malathion**	mg/l	N/A	N/A	0.01	0.01
44.	**methyl parathion**	mg/l	N/A	N/A	0.01	0.01
45.	**Paraquat**	mg/l	N/A	N/A	2.3	2.3
46.	**Phenathoate**	mg/l	N/A	N/A	0.01	0.01
47.	**Phorate**	mg/l	N/A	N/A	0.01	0.01
48.	**Proponil**	mg/l	N/A	N/A	7.3	7.3
49.	**Pyrethrums**	mg/l	N/A	N/A	0.01	0.01
50.	**Ziram**	mg/l	N/A	N/A	1	1
51.	**Other pesticide (Individually)**	mg/l	N/A	N/A	0.1	0.1

Explanation:

1. Total Dissolved Solids (TDS) levels are implemented following a calculation of the discharge from the water source (Source TDS-Process TDS= Discharge TDS)
2. Assuming Minimum dilution 1:10 on discharge, lower ratio would attract progressively stringent standards to be determined by the Provincial Environment Protection Agency. By 1:10 dilution means, for example that for each one cubic meter treated effluent, the recipient water body should have 10 cubic meters of water for dilution of this effluent.
3. Methylene Blue Active Substances; assuming as biodegradable.
4. Subject to Total Toxic Metals, discharge should not exceed level given at S.N. 27.
5. Applicable only when and where sewage treatment is operational and BOD_5 =80mg/l is achievedby the sewage treatment system.

   *The effluent should not result in temperature increase of more than 3 C^o at the edge of the zone where initial mixing and dilution take place in the receiving body. In case, zone is not defined, use 100 meters from the point of discharge.

Note:

1. Dilution of the effluents to meet the PEQS limiting value is not permissible through fresh watermixing with the effluent before discharging into the environment.
2. The concentration of pollutants in water being used will be subtracted from the effluent for calculating the PEQS limits.

B- Punjab Environmental Quality Standards for Pesticide Industry for Gaseous Emissions

For gaseous emission standards, Pesticide industry will follow (are refer) to Punjab Environmental Quality Standards for Boiler Emissions Standards if boiler is used otherwise Industry will follow (are refer) to Generalized Punjab Environmental QualityStandards for gaseous emissions. These standards are designed to address and regulate the atmospheric pollutants originating from within the Pesticide industry,

Annex-2-9

NOTIFICATION: No. SO. In exercise of the powers conferred under clause (c) of sub-section 1 of section 4 of the Punjab Environmental Protection Act, 1997(XXXIV of 1997), the Environmental Protection Council has approved the followingas the Punjab Environmental Quality Standards for Cement Industry:

A- Punjab Environmental Quality Standards for Cement Industry
Liquid Effluents

Sr. #	Parameter	Unit	Into Inland water	Into Sewerage Treatment
1.	**Temperature**	˚C	Ambient Temp .±3	Ambient Temp .±3
2.	**pH**	--	6.0-9.0	6.0-9.0
3.	**BOD**	mg/l	80	150
4.	**COD**	mg/l	150	300
5.	**TSS**	mg/l	150	200
6.	**TDS**	mg/l	3000	3000
7.	**Grease and oil**	mg/l	10	10
8.	**Phenolic compounds (as phenols)**	mg/l	0.1	0.1
9.	**Chloride**	mg/l	1000	1000
10.	**Fluoride**	mg/l	5	10
11.	**An-Ionic Detergents**	mg/l	20	20
12.	**Sulfate**	mg/l	400	600
13.	**Sulfide**	mg/l	1	1
14.	**Ammonia**	mg/l	10	30
15.	**Pesticides**	mg/l	0.15	0.15
16.	**Cadmium**	mg/l	0.1	0.1
17.	**Chromium (III & VI)**	mg/l	1	1
18.	**Copper**	mg/l	1	1
19.	**Lead**	mg/l	0.5	0.5
20.	**Total Mercury**	mg/l	0.01	0.01
21.	**Selenium**	mg/l	0.5	0.5
22.	**Nickel**	mg/l	1	1
23.	**Silver**	mg/l	1	1
24.	**Total Toxic Metals**	mg/l	2	2
25.	**Zinc**	mg/l	5	5
26.	**Arsenic**	mg/l	1	1
27.	**Barium**	mg/l	1.5	1.5
28.	**Iron**	mg/l	8	8
29.	**Manganese**	mg/l	1.5	1.5
30.	**Boron**	mg/l	6	6
31.	**Chlorine**	mg/l	0.5	0.5

Explanation:

1. Total Dissolved Solids (TDS) levels are implemented following a calculation of the discharge from thewater source (Source TDS-Process TDS= Discharge TDS)
2. Assuming Minimum dilution 1:10 on discharge, lower ratio would attract progressively stringent standards to be determined by the Provincial Environment Protection Agency. By 1:10 dilution means, for example that for each one cubic meter treated effluent, the recipient water body should have 10 cubic meters of water for dilution of this effluent.
3. Methylene Blue Active Substances; assuming as biodegradable.

4. Pesticides includes herbicides, fungicides and insecticides.
5. Subject to Total Toxic Metals, discharge should not exceed level given at S.N. 25.
6. Applicable only when and where sewage treatment is operational and BOD_5 =80mg/l is achieved by the sewage treatment system.

*The effluent should not result in temperature increase of more than 3 C^o at the edge of the zone where initial mixing and dilution take place in the receiving body. In case, zone is not defined, use 100 meters from the point of discharge.

Note:

1. Dilution of the effluents to meet the PEQS limiting value is not permissible through fresh water mixing with the effluent before discharging into the environment.
2. The concentration of pollutants in water being used will be subtracted from the effluent for calculating the PEQS limits.

B- Punjab Environmental Quality Standards for Cement Industry for Gaseous Emissions

Gaseous Emission Standards of Cement Industry based on Process

Parameter	Process	Standards Existing Plant	Standards New Plant
Particulate Matter (PM)	Grey Cement Kiln	300	150
	White Cement Kiln		
	Clinker Cooler	300	150
	Clinker Grinding Mill	300	150
	Coal Grinding Mill	300	150
Oxides of Sulphur (SOX)	Grey Cement Kiln	1700	800
	White Cement Kiln		
Oxides of Nitrogen (NOx)	Grey Cement Kiln	500	500
	White Cement Kiln	500	500
Excess Oxygen		50%/ 7.00% O2	50%/ 7.00% O2
Smoke Opacity		40% or 2 Ringlemann scale or equivalent smoke Number	

Gaseous Emission Standards Cement Plant Using Wastes as Fuel or Raw Material

Pollutants	Standards Existing Plant	Standards New Plant
Particulate Matter (PM)	300	100
Sulphur Dioxide (SO2)	50	50
Oxides of Nitrogen (NOx)	600	500
Hydrogen Chloride (HCL)	10	10
Hydrogen Floride (HF)	1	1
Dioxins/Furans (TEQ)	0.1	0.1
Cadmium (Cd)	0.05	0.05
Lead (Pb)	0.05	0.05
TOC (Total Organic	10	10

Carbon)		
Excess Oxygen	50%/ 7.00% O2	50%/ 7.00% O2
Smoke Opacity	40% or 2 Ringlemann scale or equivalent smoke number	

*****All units are in Mg/Nm3 unless otherwise defined

Note:

a) It is recommended to incorporate CO2 removal within the calcination process, in accordance with the guidelines specified in the Pollution Charge Calculation Rules.

b) The height of each stack including Clinker Grinding Plant, Coal Mill, Raw Mill, I Grinding, Packaging Section, etc. shall be of a minimum of 30 meters or, as per the formula H=14 (Q)0.3, whichever is more, where "H" is the height of stack in meters and "Q" is the maximum quantity of SO2 expected to be emitted in kg/hr through the stack at 100 per cent rated capacity of the plant and calculated as per the norms of gaseous emission.

c) Excess Air: 50%/ 7.00% O2

d) Above norms shall be applicable even if pet-coke is mixed with coal or, used alone for clinker making in kiln provided,

e) All monitored values for S02 and N02 shall be corrected ~o 7% Oxygen, on dry basis. The norms for SO2 and NO2 shall be applicable to stacks attached to kiln.

f) Scrubber meant for scrubbing emissions shall not be used as quencher. Plants having separate stack for gaseous emission for the scrubbing unit, the height of this stack shall be at least equal to the main stack.

The “Rule of Thumb” for designing stack is given as:

1. The stack should be 2-2.5 times the height of adjacent structures or the surrounding landscape to minimize turbulence and ensure effective dispersion.
2. Maintain a gas exit velocity greater than 60 ft/sec to overcome turbulence and disturbances.
3. Stacks with a diameter less than 5 feet and a height less than 200 feet may result in emissions hitting the ground in concentrated form.
4. Higher stacks help reduce ground-level pollutant concentrations, following an Inverse Square relationship with stack height.
5. In the absence of obstructions (buildings or obstacles), ground-level pollutant concentrations can be as low as 0.001 to 1% of stack concentrations due to atmospheric diffusion.
6. The highest ground-level concentrations occur around five to ten stack heights away from the stack.

Annex-2-10

NOTIFICATION: No. SO. In exercise of the powers conferred under clause (c) of sub-section 1 of section 4 of the Punjab Environmental Protection Act, 1997(XXXIV of 1997), the Environmental Protection Council has approved the followingas the Punjab Environmental Quality Standards for Foundry and Smelting Industry:

A-Punjab Environmental Quality Standards for Foundry and Smelting Industry Liquid Effluents

Sr. No.	Pollutants	Units	Standards
1.	**pH**	-	6-9
2.	**Total suspended solids**	mg/l	35
3.	**Oil and grease**	mg/l	10
4.	**Temperature increase**	°C	3a
5.	**COD**	mg/l	125
6.	**Phenol**	mg/l	1
7.	**Cadmium**	mg/l	0.01
8.	**Chromium (total)**	mg/l	0.5
9.	**Copper**	mg/l	0.5
10.	**Lead**	mg/l	0.2
11.	**Nickel**	mg/l	0.5
12.	**Zinc**	mg/l	0.5
13.	**Tin**	mg/l	2
14.	**Ammonia**	mg/l (as N)	5
15.	**Fluoride**	mg/l (as F)	5
16.	**Iron**	mg/l	5
17.	**Aluminum**	kg/t	0.02b

NOTES:

a At the edge of a scientifically established mixing zone which takes into account ambient water quality, receiving water use, potential receptors and assimilative capacity

b Aluminum smelting and casting

Explanation:

1. Assuming Minimum dilution 1:10 on discharge, lower ratio would attract progressively stringent standards to be determined by the Provincial Environment Protection Agency. By 1:10 dilution means, for example that for each one cubic meter treated effluent, the recipient water body should have 10 cubic meters of water for dilution of this effluent.
2. Methylene Blue Active Substances; assuming as biodegradable.
3. Pesticides includes herbicides, fungicides and insecticides.
4. Subject to Total Toxic Metals, discharge should not exceed level given at S.N. 22.
5. Applicable only when and where sewage treatment is operational and BOD5 =80mg/l is achieved by the sewage treatment system.

   *The effluent should not result in temperature increase of more than 3 C^o at the edge of the zone where initial mixing and dilution take place in the receiving body. In case, zone is not defined, use 100 meters from the point of discharge.

Note:

1. Dilution of the effluents to meet the PEQS limiting value is not permissible through fresh water mixing with the effluent before discharging into the environment.
2. The concentration of pollutants in water being used will be subtracted from the effluent for calculating the PEQS limits.

B-Punjab Environmental Quality Standards of Foundry and Smelting Industry for Gaseous Emissions

Pollutant	Units	Standards
Particulate Matter	mg/Nm3	20(2) 50(3)
Oil Aerosol / Mist	mg/Nm3	5
NOX	mg/Nm3	400(4) 120(5) 150(6)
Sulphur Dioxide (SO2)	mg/Nm3	400(8) 50(9) 120(7)
Volatile Organic Compounds (VOCs)	mg/Nm3	20(10) 30 150(11)
PCDD/F	ng TEQ/ Nm3	0.1
Carbon Monoxide (CO)	mg/Nm3	200(12) 150(13)
Amines	mg/Nm3	5(14)
Chlorine	mg/Nm3	5(15)
Pb, Cd and their compounds	mg/Nm3	1-2(16)
Ni, Co, Cr, Sn and their compounds	mg/Nm3	5
Cu and their compounds	mg/Nm3	5-20(17)
Chloride	mg/Nm3	5(18)
Fluoride	mg/Nm3	5(19)
H2S	ppm v/v	5

NOTES:

1. References conditions for limits. For combustion gases: dry, temperature 273K (0°C), pressure 101.3 kPa (1 atmosphere), oxygen content 3% dry for liquid and gaseous fuels, 6% dry for solid fuels. For non-combustion gases: no correction for water vapor or oxygen content, temperature 273K (0°C), pressure 101.3 kPa (1 atmosphere).
2. Particulate matter emissions where toxic metals are present
3. Particulate matter emissions where toxic metals are not present
4. Ferrous metal melting. Maximum emissions level considered on BAT base and based on cokeless cupola furnaces
5. Non-ferrous metal melting (shaft furnaces)
6. From thermal sand reclamation systems/regeneration units
7. Maximum emissions level considered on BAT base and based on cold blast cupola furnaces
8. Non-ferrous metal melting (shaft furnaces)
9. Ferrous metal melting (cupola furnaces)
10. Non-ferrous metal melting (shaft furnaces)
11. Ferrous metal melting (EAFs). Cupola furnaces may have higher emission levels (up to 1,000 mg/N3)
12. Non-ferrous metal melting (shaft furnaces)
13. Cold box molding and core making shop
14. Non-ferrous metal melting (aluminum)
15. Thermal sand reclamation systems and solvent based investment foundry coating, shelling, and setting operation
16. Higher value applicable to non-ferrous metal foundries from scrap
17. Higher value applicable to copper and its alloy producing processes
18. Furnace emissions where chloride flux is used
19. Furnace emissions where fluoride flux is used

Note:

The "Rule of Thumb" for designing stack is given as:

1. The stack should be 2-2.5 times the height of adjacent structures or the surrounding landscape to minimize turbulence and ensure effective dispersion.
2. Maintain a gas exit velocity greater than 60 ft/sec to overcome turbulence and disturbances.
3. Stacks with a diameter less than 5 feet and a height less than 200 feet may result in emissions hitting the ground in concentrated form.
4. Higher stacks help reduce ground-level pollutant concentrations, following an Inverse Square relationship with stack height.
5. In the absence of obstructions (buildings or obstacles), ground-level pollutant concentrations can be as low as 0.001 to 1% of stack concentrations due to atmospheric diffusion.

The highest ground-level concentrations occur around five to ten stack heights away from the stack.

Annex-2-11

NOTIFICATION: No. SO. In exercise of the powers conferred under clause (c) of sub-section 1 of section 4 of the Punjab Environmental Protection Act, 1997(XXXIV of 1997), the Environmental Protection Council has approved the followingas the Punjab Environmental Quality Standards for Pharmaceutical Industry:

A-Punjab Environmental Quality Standards for Pharmaceutical Industry
Liquid Effluents

Sr. #	Parameter	Unit	Into Inland water	Into SewerageTreatment
1.	**Temperature**	˚C	Ambient Temp.±3˚C	Ambient Temp.±3˚C
2.	**pH**	--	6.0-9.0	6.0-9.0
3.	**BOD**	mg/l	80	150
4.	**COD**	mg/l	150	400
5.	**TSS**	mg/l	200	400
6.	**TDS**	mg/l	3000	3000
7.	**Grease and oil**	mg/l	10	10
8.	**Phenolic compounds (asphenols)**	mg/l	0.1	0.3
9.	**Fluoride**	mg/l	10	10
10.	**Chloride**	mg/l	1000	1000
11.	**An-ionic detergents**	mg/l	20	20
12.	**Sulfate**	mg/l	600	1000
13.	**Sulfide**	mg/l	1	1
14.	**Ammonia**	mg/l	40	40
15.	**Pesticides**	mg/l	0.15	0.15
16.	**Cadmium**	mg/l	0.1	0.1
17.	**Chromium (III & VI)**	mg/l	1	1
18.	**Copper**	mg/l	1	1
19.	**Lead**	mg/l	0.5	0.5
20.	**Total Mercury**	mg/l	0.01	0.01
21.	**Selenium**	mg/l	0.5	0.5
22.	**Nickle**	mg/l	1	1
23.	**Silver**	mg/l	1	1
24.	**Total Toxic Metals**	mg/l	2	2
25.	**Zinc**	mg/l	5	5
26.	**Arsenic**	mg/l	1	1
27.	**Barium**	mg/l	1.5	1.5
28.	**Iron**	mg/l	8	8
29.	**Manganese**	mg/l	1.5	1.5
30.	**Boron**	mg/l	6	6
31.	**Chlorine**	mg/l	1	1
32.	**Zinc**	mg/l	5	5

Explanation:

1. Total Dissolved Solids (TDS) levels are implemented following a calculation of the discharge from thewater source (Source TDS-Process TDS= Discharge TDS)
2. Assuming Minimum dilution 1:10 on discharge, lower ratio would attract progressively stringent standards to be determined by the Provincial Environment Protection Agency. By 1:10 dilution means, for example that for each one cubic meter treated effluent, the recipient water body should have 10 cubic meters of water for dilution of this effluent.
3. Methylene Blue Active Substances; assuming as biodegradable.
4. Subject to Total Toxic Metals, discharge should not exceed level given at S.N. 25.
5. Applicable only when and where sewage treatment is operational and BOD_5 =80mg/l is achieved by the sewage treatment system.

   *The effluent should not result in temperature increase of more than 3 C^o at the edge of the zone where initial mixing and dilution take place in the receiving body. In case, zone is not defined, use 100 meters from the point of discharge.

Note:

1. Dilution of the effluents to meet the PEQS limiting value is not permissible through fresh water mixing with the effluent before discharging into the environment.
2. The concentration of pollutants in water being used will be subtracted from the effluent for calculating the PEQS limits.

B- Punjab Environmental Quality Standards for Pharmaceutical Industry for Gaseous Emissions

For gaseous emission standards, Pharmaceutical industry will follow (are refer) to Punjab Environmental Quality Standards for Boiler Emissions Standards if boiler is used otherwise Industry will follow (are refer) to Generalized Punjab Environmental Quality Standards for gaseous emissions. These standards are designed to address and regulate the atmospheric pollutants originating from boiler operations within the pharmaceutical industry,

Annex-2-12

NOTIFICATION: No. SO. In exercise of the powers conferred under clause (c) of sub-section 1 of section 4 of the Punjab Environmental Protection Act, 1997(XXXIV of 1997), the Environmental Protection Council has approved the followingas the Punjab Environmental Quality Standards for Ceramic Industry

A- Punjab Environmental Quality Standards for Ceramic Industry

Liquid Effluents

Sr. #	Parameter	Unit	Into Inland water	Into Sewerage Treatment
1.	**Temperature**	˚C	Ambient Temp .±3	Ambient Temp .±3
2.	**pH**	--	6.0-9.0	6.0-9.0
3.	**BOD**	mg/l	80	150
4.	**COD**	mg/l	150	250
5.	**TSS**	mg/l	150	200
6.	**TDS**	mg/l	3000	3000
7.	**Grease and oil**	mg/l	10	10
8.	**Phenolic compounds (as phenols)**	mg/l	0.1	0.1
9.	**Chloride**	mg/l	1000	1000
10.	**Fluoride**	mg/l	5	10
11.	**An-Ionic Detergents**	mg/l	20	20
12.	**Sulfate**	mg/l	400	600
13.	**Sulfide**	mg/l	1	1
14.	**Ammonia**	mg/l	10	30
15.	**Pesticides**	mg/l	0.15	0.15
16.	**Cadmium**	mg/l	0.1	0.1
17.	**Chromium (III & VI)**	mg/l	1	1
18.	**Copper**	mg/l	1	1
19.	**Lead**	mg/l	0.5	0.5
20.	**Total Mercury**	mg/l	0.01	0.01
21.	**Selenium**	mg/l	0.5	0.5
22.	**Nickel**	mg/l	1	1
23.	**Silver**	mg/l	1	1
24.	**Total Toxic Metals**	mg/l	2	2
25.	**Zinc**	mg/l	5	5
26.	**Arsenic**	mg/l	1	1
27.	**Barium**	mg/l	1.5	1.5
28.	**Iron**	mg/l	8	8
29.	**Manganese**	mg/l	1.5	1.5
30.	**Boron**	mg/l	6	6
31.	**Chlorine**	mg/l	0.5	0.5
32.	**Beryllium**	mg/l	0.5	0.5
33.	**Cobalt**	mg/l	3	3

Explanation:

1. Total Dissolved Solids (TDS) levels are implemented following a calculation of the discharge from the water source (Source TDS-Process TDS= Discharge TDS)
2. Assuming Minimum dilution 1:10 on discharge, lower ratio would attract progressively stringent standards to be determined by the Provincial Environment Protection Agency. By 1:10 dilution means, for example that for each one cubic meter treated effluent, the recipient water body should have 10 cubic meters of water for dilution of this effluent.
3. Methylene Blue Active Substances; assuming as biodegradable.

4. Pesticides includes herbicides, fungicides and insecticides.
5. Subject to Total Toxic Metals, discharge should not exceed level given at S.N. 25.
6. Applicable only when and where sewage treatment is operational and BOD_5 =80mg/l is achieved by the sewage treatment system.

*The effluent should not result in temperature increase of more than 3 C^o at the edge of the zone where initial mixing and dilution take place in the receiving body. In case, zone is not defined, use 100 meters from the point of discharge.

Note:

1. Dilution of the effluents to meet the PEQS limiting value is not permissible through fresh water mixing with the effluent before discharging into the environment.
2. The concentration of pollutants in water being used will be subtracted from the effluent for calculating the PEQS limits.

B- Punjab Environmental Quality Standards for Gaseous emissions of Ceramic Industry (Grinding Mill)

Parameter	Proposed standards
Particulate Matter	100
Sulphur Dioxide (SO_2)	500
Hydrogen Fluoride HF	50
Lead	0.3
Zinc	2
Cadmium	0.1

Ceramic Industry (Kiln)

Parameter	Proposed standards
PM	300
Sox	1700
NOx	500

Annex-2-13

NOTIFICATION: No. SO. In exercise of the powers conferred under clause (c) of sub-section 1 of section 4 of the Punjab Environmental Protection Act, 1997(XXXIV of 1997), the Environmental Protection Council has approved the followingas the Punjab Environmental Quality Standards for Polymer and Plastic Industry

A- Punjab Environmental Quality Standards for Polymer and Plastic Industry

Liquid Effluents

Sr. #	Parameter	Unit	Into Inland water	Into Sewerage Treatment
1.	**Temperature**	˚C	Temp.±3	Temp.±3
2.	**pH**	--	6.0-9.0	6.0-9.0
3.	**BOD**	mg/l	80	150
4.	**COD**	mg/l	150	250
5.	**TSS**	mg/l	200	200
6.	**TDS**	mg/l	3000	3000
7.	**Grease and oil**	mg/l	10	10
8.	**Phenolic compounds (as phenols)**	mg/l	0.1	0.1
9.	**Chloride**	mg/l	1000	1000
10.	**Fluoride**	mg/l	5	10
11.	**An-Ionic Detergents**	mg/l	20	20
12.	**Sulfate**	mg/l	400	600
13.	**Sulfide**	mg/l	1	1
14.	**Ammonia**	mg/l	10	30
15.	**Pesticides**	mg/l	0.15	0.15
16.	**Cadmium**	mg/l	0.1	0.1
17.	**Chromium (III & VI)**	mg/l	1	1
18.	**Copper**	mg/l	1	1
19.	**Lead**	mg/l	0.5	0.5
20.	**Total Mercury**	mg/l	0.01	0.01
21.	**Selenium**	mg/l	0.5	0.5
22.	**Nickel**	mg/l	1	1
23.	**Silver**	mg/l	1	1
24.	**Total Toxic Metals**	mg/l	2	2
25.	**Zinc**	mg/l	5	5
26.	**Arsenic**	mg/l	1	1
27.	**Barium**	mg/l	1.5	1.5
28.	**Iron**	mg/l	8	8
29.	**Manganese**	mg/l	1.5	1.5
30.	**Boron**	mg/l	6	6
31.	**Chlorine**	mg/l	0.5	0.5
32.	**Tin**	mg/l	0.5	0.5
33.	**Volatile Organic Halogens (vox)**	mg/l	0.1	0.1

Explanation:

1. Total Dissolved Solids (TDS) levels are implemented following a calculation of the discharge from the water source (Source TDS-Process TDS= Discharge TDS)
2. Assuming Minimum dilution 1:10 on discharge, lower ratio would attract progressively stringent standards to be determined by the Provincial Environment Protection Agency. By 1:10 dilution means, for example that for each one cubic meter treated effluent, the recipient water body should have 10 cubic meters of water for dilution of this effluent.

3. Methylene Blue Active Substances; assuming as biodegradable.
4. Pesticides includes herbicides, fungicides and insecticides.
5. Subject to Total Toxic Metals, discharge should not exceed level given at S.N. 25.
6. Applicable only when and where sewage treatment is operational and BOD_5 =80mg/l is achieved by the sewage treatment system.

*The effluent should not result in temperature increase of more than 3 C^o at the edge of the zone where initial mixing and dilution take place in the receiving body. In case, zone is not defined, use 100 meters from the point of discharge.

Note:

1. Dilution of the effluents to meet the PEQS limiting value is not permissible through fresh water mixing with the effluent before discharging into the environment.
2. The concentration of pollutants in water being used will be subtracted from the effluent for calculating the PEQS limits.

B- Punjab Environmental Quality Standards for Polymer and Plastic Industry for Gaseous Emissions

For gaseous emission standards, Polymer and Plastic Industry will follow (are refer) to Generalized Punjab Environmental Quality Standards for gaseous emissions

Annex-2-14

NOTIFICATION: No. SO. In exercise of the powers conferred under clause (c) of sub-section 1 of section 4 of the Punjab Environmental Protection Act, 1997(XXXIV of 1997), the Environmental Protection Council has approved the followingas the Punjab Environmental Quality Standards for Stone Crushing:

A- Punjab Environmental Quality Standards for Stone Crushing Liquid Effluents			
Sr. No.	**Parameter**	**Into Inland Water**	**Into Municipal Treatment**
1.	**Temperature or Temperature increase***	=<3 o C or 40 o C effluent water temperature	=< 3 o C or 40 o C effluent water Temperature
2.	**pH value**	6-9	6-9
3.	**Biochemical Oxygen Demand (BOD)**	80 (5days at 20 o C)	250 (5days at 20 o C)
4.	**Chemical Oxygen Demand (COD) mg/l**	150	400
5.	**Total Suspended Solids (mg/l)**	200	400
6.	**Total Dissolved Solids (mg/l)**	3500	3500
7.	**Oil and Grease (mg/l)**	10	20
8.	**Phenolic Compounds (as Phenol) mg/l**	0.1	0.3
9.	**Chloride (as Cl) mg/l**	1000	1000
10.	**Fluoride (as F-) mg/l**	5.0	10
11.	**Total Cyanide (as CN-) mg/l**	1.0	1.0
12.	**An-ionic detergents (as MBAS) mg/l**	20	20
13.	**Sulphate (SO4) mg/l**	600	1000
14.	**Sulfide (S-2) mg/l**	2.0	2.0
15.	**Ammonia (NH3) mg/l**	10	40
16.	**Pesticides, Herbicides, Fungicides and Insecticides mg/l)**	0.15	0.15
17.	**Copper (mg/l)**	3.0	3.0
18.	**Lead (mg/l)**	0.5	0.5
19.	**Cadmium (mg/l)**	0.1	0.1
20.	**Chromium (Cr+3 & Cr+6) mg/l**	1.0	1.0
21.	**Mercury (mg/l)**	0.01	0.01
22.	**Selenium (mg/l)**	0.5	0.5
23.	**Nickel (mg/l)**	1.0	1.0
24.	**Silver (mg/l)**	1.0	1.0
25.	**Total Toxic Metals (mg/l)**	2.0	2.0
26.	**Zinc (mg/l)**	5.0	5.0
27.	**Arsenic (mg/l)**	1.0	1.0
28.	**Barium (mg/l)**	1.5	1.5
29.	**Iron (mg/l)**	8.0	8.0
30.	**Manganese (mg/l)**	1.5	1.5
31.	**Boron (mg/l)**	6.0	6.0
32.	**Chlorine (mg/l)**	1.0	1.0
33.	**Total Phosphorus (TP) mg/l**	-	<5
34.	**Total Nitrogen (TN) mg/l**	-	<5
35.	**Bio-assay test**	90% survival	80% survival

		of fish after 96 hours in 100% effluent	of fish after 96 hours in 100% effluent

Explanation:

1. Assuming Minimum dilution 1:10 on discharge, lower ratio would attract progressively stringent standards to be determined by the Provincial Environment Protection Agency. By 1:10 dilution means, for example that for each one cubic meter treated effluent, the recipient water body should have 10 cubic meters of water for dilution of this effluent.
2. Methylene Blue Active Substances; assuming as biodegradable.
3. Pesticides includes herbicides, fungicides and insecticides.
4. Subject to Total Toxic Metals, discharge should not exceed level given at S.N. 25.
5. Applicable only when and where sewage treatment is operational and BOD5 =80mg/l is achieved by the sewage treatment system.

*The effluent should not result in temperature increase of more than 3 C^o at the edge of the zone where initial mixing and dilution take place in the receiving body. In case, zone is not defined, use 100 meters from the point of discharge.

Note:

1. Dilution of the effluents to meet the PEQS limiting value is not permissible through fresh water mixing with the effluent before discharging into the environment.
2. The concentration of pollutants in water being used will be subtracted from the effluent for calculating the PEQS limits.

B- Punjab Environmental Quality Standards for Industrial Gaseous Emissions of Stone Crushers

Parameter	Prescribed Standards
Suspended Particulate Matter(SPM)	300 mg/nm^3

*Measured between 3 meter and 10 meters from any process equipment of the stone crusher i.e., center of the jaw crusher, secondary crusher, screen, conveyors.

Annex-2-15

NOTIFICATION: No. SO. In exercise of the powers conferred under clause (c) of sub-section 1 of section 4 of the Punjab Environmental Protection Act, 1997(XXXIV of 1997), the Environmental Protection Council has approved the followingas the Punjab Environmental Quality Standards for Brick kilns

A- Punjab Environmental Quality Standards for Brick Kiln Liquid Effluents

Sr. No.	Parameter	Into Inland Water	Into Municipal Treatment
1.	**Temperature or Temperature increase***	=<3 ° C or 40 ° C effluent water temperature	=< 3 ° C or 40 ° C effluent water temperature
2.	**pH value**	6-9	6-9
3.	**Biochemical Oxygen Demand (BOD) mg/l**	80 (5days at 20 ° C)	250 (5days at 20 ° C)
4.	**Chemical Oxygen Demand (COD) mg/l**	150	400
5.	**Total Suspended Solids (mg/l)**	200	400
6.	**Total Dissolved Solids (mg/l)**	3500	3500
7.	**Oil and Grease (mg/l)**	10	20
8.	**Phenolic Compounds (as Phenol) mg/l**	0.1	0.3
9.	**Chloride (as Cl) mg/l**	1000	1000
10.	**Fluoride (as F^-) mg/l**	5.0	10
11.	**Total Cyanide (as CN^-) mg/l**	1.0	1.0
12.	**An-ionic detergents (as MBAS) mg/l**	20	20
13.	**Sulphate (SO_4) mg/l**	600	1000
14.	**Sulfide (S^{-2}) mg/l**	2.0	2.0
15.	**Ammonia (NH_3) mg/l**	10	40
16.	**Pesticides, Herbicides, fungicides and Insecticides mg/l)**	0.15	0.15
17.	**Copper (mg/l)**	3.0	3.0
18.	**Lead (mg/l)**	0.5	0.5
19.	**Cadmium (mg/l)**	0.1	0.1
20.	**Chromium (Cr+3 & Cr+6) mg/l**	1.0	1.0
21.	**Mercury (mg/l)**	0.01	0.01
22.	**Selenium (mg/l)**	0.5	0.5
23.	**Nickel (mg/l)**	1.0	1.0
24.	**Silver (mg/l)**	1.0	1.0
25.	**Total Toxic Metals (mg/l)**	2.0	2.0
26.	**Zinc (mg/l)**	5.0	5.0
27.	**Arsenic (mg/l)**	1.0	1.0
28.	**Barium (mg/l)**	1.5	1.5
29.	**Iron (mg/l)**	8.0	8.0
30.	**Manganese (mg/l)**	1.5	1.5
31.	**Boron (mg/l)**	6.0	6.0
32.	**Chlorine (mg/l)**	1.0	1.0
33.	**Total Phosphorus (TP) mg/l**	-	≤5
34.	**Total Nitrogen (TN) mg/l**	-	≤5
35.	**Bio-assay test**	90% survival	80% survival

		of fish after 96 hours in 100% effluent	*of fish after 96 hours in 100% effluent*

Explanation:

1. Assuming Minimum dilution 1:10 on discharge, lower ratio would attract progressively stringent standards to be determined by the Provincial Environment Protection Agency. By 1:10 dilution means, for example that for each one cubic meter treated effluent, the recipient water body should have 10 cubic meters of water for dilution of this effluent.
2. Methylene Blue Active Substances; assuming as biodegradable.
3. Pesticides includes herbicides, fungicides and insecticides.
4. Subject to Total Toxic Metals, discharge should not exceed level given at S.N. 25.
5. Applicable only when and where sewage treatment is operational and BOD_5 =80mg/l is achieved by the sewage treatment system.
   *The effluent should not result in temperature increase of more than 3 C^o at the edge of the zone where initial mixing and dilution take place in the receiving body. In case, zone is not defined, use 100 meters from the point of discharge.

Note:

1. Dilution of the effluents to meet the PEQS limiting value is not permissible through fresh water mixing with the effluent before discharging into the environment.
2. The concentration of pollutants in water being used will be subtracted from the effluent for calculating the PEQS limits.

B- Punjab Environmental Quality Standards for Industrial Gaseous Emissions for Brick Kiln Industry

Parameter	Standards
Carbone Monoxide (CO)	800
Nitrogen Dioxide (NO2)	400
Sulphur Dioxide (SO2)	1700
Particulate Matter (PM)	250
Smoke Opacity	40% or 2 Ringlemann scale or equivalent smoke number
HF	150

*** All units are in Mg/Nm^3 unless otherwise defined**

Note:

- It is imperative that stringent standards be implemented across all technologies such as FCBTK, IDZK, Hoffmann, VSBK and ZigZag
- The existing brick kilns which are not following zig-zag technology or vertical shaft or or Hoffman or whichever affordable shall be converted as per guidelines of Government of Punjab, Pakistan
- All brick kilns shall use only clean fuel such as Piped Natural Gas, coal, fire wood and/or agricultural residues.
- Use of pet coke, tyres, plastic, and hazardous waste shall not be allowed in brick kilns.
- Brick kilns shall construct permanent facility (port hole and platform) as per the USEPA Methods. Particulate Matter (PM) results shall be normalized at 4% CO2 as below:
- "PM (normalized) = (PM (measured) x 4%)/ (% of CO2 measured in stack), no normalization in case CO2 measured ≥ 4%. Stack height (in metre) shall also be calculated by formula H=14Q0.3 (where Q is SO2 emission rate in kg/hr), and the maximum of two shall apply. "
- Brick kilns should be established at a minimum distance of one kilometre from an existing brick kiln to avoid clustering of kilns in an area.
- The ash generated in the brick kilns shall be fully utilized in-house in brick making.

The “Rule of Thumb” for designing stack is given as:

1. The stack should be 2-2.5 times the height of adjacent structures or the surrounding landscape to minimize turbulence and ensure effective dispersion.
2. Maintain a gas exit velocity greater than 60 ft/sec to overcome turbulence and disturbances.
3. Stacks with a diameter less than 5 feet and a height less than 200 feet may result in emissions hitting the ground in concentrated form.
4. Higher stacks help reduce ground-level pollutant concentrations, following an Inverse Square relationship with stack height.
5. In the absence of obstructions (buildings or obstacles), ground-level pollutant concentrations can be as low as 0.001 to 1% of stack concentrations due to atmospheric diffusion.
6. The highest ground-level concentrations occur around five to ten stack heights away from the stack.

Annex-2-16

NOTIFICATION: No. SO. In exercise of the powers conferred under clause (c) of sub-section 1 of section 4 of the Punjab Environmental Protection Act, 1997(XXXIV of 1997), the Environmental Protection Council has approved the followingas the Punjab Environmental Quality Standards for Thermal Power Plants:

A- Punjab Environmental Quality Standards for Thermal Power Plants

Sr. #	Parameter	Unit	Into Inland water	Into Sewerage Treatment
1.	**Temperature**	˚C	Ambient Temp.±3 ˚C	Ambient Temp.±3 ˚C
2.	**pH**	--	6.0-9.0	6.0-9.0
3.	**BOD**	mg/l	80	150
4.	**COD**	mg/l	150	300
5.	**TSS**	mg/l	200	200
6.	**TDS**	mg/l	3000	3000
7.	**Grease and oil**	mg/l	10	10
8.	**Phenolic compounds (as phenols)**	mg/l	0.1	0.1
9.	**Chloride**	mg/l	1000	1000
10.	**Fluoride**	mg/l	5	10
11.	**An-Ionic Detergents**	mg/l	20	20
12.	**Sulfate**	mg/l	400	600
13.	**Sulfide**	mg/l	1	1
14.	**Ammonia**	mg/l	10	30
15.	**Pesticides**	mg/l	0.15	0.15
16.	**Cadmium**	mg/l	0.1	0.1
17.	**Chromium (III & VI)**	mg/l	1	1
18.	**Copper**	mg/l	1	1
19.	**Lead**	mg/l	0.5	0.5
20.	**Total Mercury**	mg/l	0.01	0.01
21.	**Selenium**	mg/l	0.5	0.5
22.	**Nickel**	mg/l	1	1
23.	**Silver**	mg/l	1	1
24.	**Total Toxic Metals**	mg/l	2	2
25.	**Zinc**	mg/l	5	5
26.	**Arsenic**	mg/l	1	1
27.	**Barium**	mg/l	1.5	1.5
28.	**Iron**	mg/l	8	8
29.	**Manganese**	mg/l	1.5	1.5
30.	**Boron**	mg/l	6	6
31.	**Chlorine**	mg/l	0.5	0.5

Explanation:

1. Total Dissolved Solids (TDS) levels are implemented following a calculation of the discharge from thewater source (Source TDS-Process TDS= Discharge TDS)
2. Assuming Minimum dilution 1:10 on discharge, lower ratio would attract progressively stringent standards to be determined by the Provincial Environment Protection Agency. By 1:10 dilution means, for example that for each one cubic meter treated effluent, the recipient water body should have 10 cubic meters of water for dilution of this effluent.
3. Methylene Blue Active Substances; assuming as biodegradable.
4. Pesticides includes herbicides, fungicides and insecticides.

5. Subject to Total Toxic Metals, discharge should not exceed level given at S.N. 25.
6. Applicable only when and where sewage treatment is operational and BOD_5 =80mg/l is achieved by the sewage treatment system.
   *The effluent should not result in temperature increase of more than 3 C^o at the edge of the zone where initial mixing and dilution take place in the receiving body. In case, zone is not defined, use 100 meters from the point of discharge.

Note:

1. Dilution of the effluents to meet the PEQS limiting value is not permissible through fresh water mixing with the effluent before discharging into the environment.
2. The concentration of pollutants in water being used will be subtracted from the effluent for calculating the PEQS limits.

B- Punjab Environmental Quality Standards for Industrial Gaseous Emission for Thermal Power Plant

Fuel	Parameters	Capacity (MW)	New Power Plant	Existing Power Plants	Existing Power Plant	New Power Plants	Biomass Fuel
			Local Coal as Pre-Fuel		Imported Coal Fuel		
Solid fuel Combustion Power Plant	PM	0-300	300	300	150	150	150
		300-500	300	300	150	150	
		> 500	300	300	150	150	
	SOx	0-300	1200	1200	400	200	100
		300-500	1200	1200	300	300	
		> 500	1200	1200	300	300	
	NOx	0-300	600	800	600	600	<500
		300-500	500	600	500	500	
		> 500	500	500	500	500	
	Mercury		1	1	0.5	0.5	-
	Total Metals		1	1			-
	Excess Air		50% / 7% O2				
	Smoke Opacity		40% or 2 Ringlemann scale or equivalent smoke number				

* All units are in Mg/Nm^3 unless otherwise defined

Fuel	Parameters	MW	Existing Power Plants	New Power Plants
Liquid Fuel Engines	**PM**	0-300	150	100
		300-500	150	100
		> 500	150	100
	SOx	0-300	400	200
		300-500	300	200
		> 500	200	200
	NOx	0-300	400	400
		300-500	400	400
		> 500	400	400
	Excess Air		25% 3% O2	

	Smoke Opacity		40% or 2 Ringlemann scale or equivalent smoke number

*All units are in Mg/Nm3 unless otherwise defined

Fuel	Parameters	MW	Existing Power Plant	New Power Plants
Gas Turbines	**PM**	0-300 300-500 > 500	50	10
	SOx		40	20
	NOx		250	150
	Excess Air / Oxygen		25% 3% O2	
	Smoke Opacity		% or 2 Ringlemann scale or equivalent smoke number	

*All units are in Mg/Nm3 unless otherwise defined Note:

1. "Power plants are categorized as 'existing' if they were established before 2025, while those established after 2025 are classified as 'new'.
2. If more than two types of fuel are used in a factory, the emission shall not exceed the emission standard of the fuel utilized at the highest proportion according to Industry Law
3. Close system means the combustion system which is designed to control air volume and operating
4. condition for combustion, for example, cement kiln, boiler, etc.
5. Open system means the combustion system is not designed for controlling air volume and operating condition for combustion, for example, white cement kiln, cupola, etc.

Emission Standards for Power Plants with Mixed Fuel

In case of power plants utilizing mixed fuel (mixture of various types of fuels) in each generating unit, emission standard values must be calculated based upon the proportion of each type of fuel as follows :

Emission Standard = AW + BX + CY + DZ

When A = Emission Standard when only coal is used as fuel.
B = Emission Standard when only oil is used as fuel.
C = Emission Standard when only natural gas is used as fuel.
D = Emission Standard when only biomass is used as fuel.
W = Proportion of Heat Input from coal being used as fuel.
X = Proportion of Heat Input from oil being used as fuel.
Y = Proportion of Heat Input from natural gas being used as fuel.
Z = Proportion of Heat Input from biomass being used as fuel.

Average Emission Concentration from Power Plants with more than 1 stack

In case of power plants with more than 1 stack, the average emission concentration must be calculated as follows :

$$\text{Average Emission Concentration} = \frac{\sum_{i=1}^{n} Q_i C_i}{\sum_{i=1}^{n} Q_i}$$

When Q = Gas flow rate of stack$_i$ (m^3/hr)
C = Concentration of gaseous emission (ppm) or particulate matter (mg/Nm^3) at stack$_i$
n = Number of stacks
i = 1, 2, 3, ……., n

The “Rule of Thumb” for designing stack is given as:

1. The stack should be 2-2.5 times the height of adjacent structures or the surrounding landscape to minimize turbulence and ensure effective dispersion.
2. Maintain a gas exit velocity greater than 60 ft/sec to overcome turbulence and disturbances.
3. Stacks with a diameter less than 5 feet and a height less than 200 feet may result in emissions hitting theground in concentrated form.

4. Higher stacks help reduce ground-level pollutant concentrations, following an Inverse Square relationship with stack height.
5. In the absence of obstructions (buildings or obstacles), ground-level pollutant concentrations can be aslow as 0.001 to 1% of stack concentrations due to atmospheric diffusion.
6. The highest ground-level concentrations occur around five to ten stack heights away from the stack

Annex-2-17

NOTIFICATION: No. SO. In exercise of the powers conferred under clause (c) of sub-section 1 of section 4 of the Punjab Environmental Protection Act, 1997(XXXIV of 1997), the Environmental Protection Council has approved the followingas the Punjab Environmental Quality Standards for Industrial Boiler Emissions:

Punjab Environmental Quality Standards for Industrial Boiler Emissions Solid Fuel Combustion Installations (Coal)

Parameters	Standards
PM	300
Sox	1700
NOx	500
CO	600
Hg	1
Excess Air	25%/ 7.00%
Smoke Opacity	40% or 2 Ringlemann scale or equivalentsmoke number

***** All units are in Mg/Nm^3 unless otherwise defined

Liquid Fuel Combustion installations

Parameters	Standards
PM	200
Sox	800
NOx	400
Excess Air	25% / 3% O2
Smoke Opacity	40% or 2 Ringlemann scale or equivalent smoke number

*All units are in Mg/Nm^3 unless otherwise defined

Gas Combustion Installation

Parameters	Standards
PM	50
Sox	50
NOx	250
Excess Air	25% / 3% O2
Smoke Opacity	40% or 2 Ringlemann scale or equivalent smoke number

***** All units are in Mg/Nm^3 unless otherwise defined

Solid Biomass Combustion Installations

Parameters	Standards
PM	300
Sox	100
NOx	<500
Excess Air	50% / 7% O2
Smoke Opacity	40% or 2 Ringlemann scale or equivalent smoke number

***** All units are in Mg/Nm^3 unless otherwise defined

Note:

The following special arrangements shall apply-

1. All industries, including textile, sugar, distillery/ethanol, paint, pharmaceutical, and pesticides must adhere to meet the prescribed boiler standards. If other industries within the sixteen sectors utilize boiler. They too are required to conform to these boiler standard
2. Continuous emission monitoring of PM, S0x and NOx is required.

The "Rule of Thumb" for designing stack is given as:

1. The stack should be 2-2.5 times the height of adjacent structures or the surrounding landscape to minimize turbulence and ensure effective dispersion.
2. Maintain a gas exit velocity greater than 60 ft/sec to overcome turbulence and disturbances.
3. Stacks with a diameter less than 5 feet and a height less than 200 feet may result in emissions hitting the ground in concentrated form.
4. Higher stacks help reduce ground-level pollutant concentrations, following an Inverse Square relationship with stack height.
5. In the absence of obstructions (buildings or obstacles), ground-level pollutant concentrations can be as low as 0.001 to 1% of stack concentrations due to atmospheric diffusion.
6. The highest ground-level concentrations occur around five to ten stack heights away from the stack.

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GOVERNMENT OF THE PUNJAB

LAW AND PARLIAMENTARY AFFAIRS DEPARTMENT

NOTIFICATION

(...)

The following Notification No. SO…., dated ……. Regarding the Punjab Environmental Quality Standards for Ambient Air is published for general information:

Secretary
Government of the Punjab
Law and Parliamentary Affairs Department
Government of the Punjab
Environmental Protection Department

NOTIFICATION: No. SO. In exercise of the powers conferred under clause (c) of sub-section 1 of section 4 of the Punjab Environmental protection Act, 1997 (XXXIV of 1997), the Environmental protection Council has approved the following as the Punjab Environmental Quality Standards for Ambient Air:

Punjab Environmental Quality Standards for Ambient Air

Sr #	Parameter (Unit)	Time weigh (Avg)	Existing Values	Proposed Value	Methodology
1.	Carbon Monoxide (CO) mg/m^3	8 Hours Average**	5	5	Non-Dispersive InfraRed or Equivalent Standard Test Method
		01 Hour**	10	10	
2.	Sulfur Dioxide (SO_2) µg/m^3	Annual Average*	80	80	UV Fluorescence or Equivalent Standard Test Method
		1 hours**	-	200	
		24 Hour Average**	120	120	
3.	Nitrogen Dioxide (NO_2) µg/m^3	Annual Average*	40	40	Chemiluminescence or Equivalent Standard Test Method
		1 hour**	-	150	
		24 Hour Average**	80	80	
4.	Nitrogen Oxide (NO) µg/m^3	Annual Average	40	Excluded	
		24 Hour Average	40	Excluded	
5.	Ozone (O_3) µg/m^3	1 Hour**	130	130	UV Absorption or Equivalent Standard Test Method
		8 Hours Average**	-	100	
6.	Respirable Particulate Matter PM_{10} µg/m^3	Annual Average*	120	120	Beta-Attenuation Method or Gravimetric Method (Equivalent Standard Test Method)
		24 Hour Average**	150	150	
7.	Respirable Particulate Matter $PM_{2.5}$ µg/m^3	Annual Average*	15	30	Beta-Attenuation Method or Gravimetric Method (Equivalent Standard Test Method)
		24 Hour Average**	35	55	
8.	Suspended Particulate Matter (SPM) µg/m^3	Annual Average*	360	200	Gravimetric Method (using HVS or LVS)

Sr #	Parameter (Unit)	Time weigh (Avg)		Existing Values	Proposed Value	Methodology
		24 Hour Average**		500	350	
9.	Lead µg/m³	Annual Average*		1.0	0.5	Gravimetric Method (using HVS or LVS) with AAS or ICP
		24 Hour Average**		1.5	1	
10.	VOC's as BTEX	Annual Average*	Benzene (ppb)	-	5 ppb	Using Standard or Equivalent Test Method (Standard Tubes, Cannister or Passive Tubes) along GC-MS
		Annual Average*	Toluene (ppb)	-	60 ppb	
		Annual Average*	Ethyl Benzene (ppb)	-	100 ppb	
		Annual Average*	Xylene (ppb)	-	200 ppb	
11.	Benzopyrene (ng/m³)	Annual Average*		-	1	Using Standard or Equivalent Test Method (Standard Tubes, Cannister or Passive Tubes) along GC-MS
12.	Cadmium (ng/m³)	Annual Average*		-	20	Gravimetric Method (using HVS or LVS) with AAS or ICP
13.	Arsenic (ng/m³)	Annual Average*		-	6	Gravimetric Method (using HVS or LVS) with AAS or ICP
14.	Hydrogen Sulfide H_2S (ppb)	1-Hour**		-	40	UV Fluorescence or Equivalent Standard Test Method
15.	Ammonia NH_3 (ppb)	24-Hour Average**		-	500	Chemiluminescence or Equivalent Standard Test Method
		Annual Average*		-	200	

Note:
The 1-hour values are to be used in acute conditioned environments where high levels of pollutants are expected.
***Annual Arithmetic mean of minimum 104 measurements in a year taken twice a week 24 hourly at uniform interval.**
****24 hourly/8 hourly/1 hourly values should be met 98% of the in a year. 2% of the time, it may exceed but not on two consecutive days.**

Secretary, Government of the Punjab
Environment Protection Department

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GOVERNMENT OF THE PUNJAB

LAW AND PARLIAMENTARY AFFAIRS DEPARTMENT

NOTIFICATION

(...)

The following Notification No. SO...., dated ……. Regarding the Punjab Environmental Quality Standards for Drinking Water is published for general information:

Secretary
Government of the Punjab
Law and Parliamentary Affairs Department
Government of the Punjab
Environmental Protection Department

NOTIFICATION: No. SO. In exercise of the powers conferred under clause (c) of sub-section 1 of section 4 of the Punjab Environmental protection Act, 1997 (XXXIV of 1997), the Environmental protection Council has approved the following as the Punjab Environmental Quality Standards for Drinking Water:

Punjab Environmental Quality Standards for Drinking Water

Sr. No.	Parameter/Properties	WHO Value	Existing Value	Proposed Value
1.	All Drinking Water intended for Drinking (E. Coli, Thermal Tolerant Coliform Bacteria)	*Must not be Detected in any 100 ml Sample*	*Must not be Detected in any 100 ml Sample*	*Must not be Detected in any 100 ml Representative Sample*
2.	Treated Water Entering the Distribution System (E. Coli, Thermal Tolerant Coliform Bacteria and Total Coliform)	*Must not be Detected in any 100 ml Sample*	*Must not be Detected in any 100 ml Sample*	*Must not be Detected in any 100 ml Representative Sample*
3.	Treated Water in the Distribution System (E. Coli, Thermal Tolerant Coliform Bacteria and Total Coliform)	*Must not be Detected in any 100 ml Sample. In case of Large, supplies, where sufficient samples are examined, must not be present in 95% of sample taken throughout 12-month of year.*	*Must not be Detected in any 100 ml Sample. In case of Large, supplies, where sufficient samples are examined, must not be present in 95% of sample taken throughout 12-month of year.*	*Must not be Detected in any 100 ml Representative Sample. In case of Large, supplies, where sufficient samples are examined, must not be present in 95% of sample taken throughout 12-month of year.*
4.	Color	*≤15 TCU*	*≤15 TCU*	*≤15 TCU*
5.	Taste	*Non-Objectionable /Acceptable*	*Non-Objectionable*	*Non-Objectionable*
6.	Odor	*Non-Objectionable /Acceptable*	*Non-Objectionable*	*Non-Objectionable*
7.	Turbidity	*≤5 NTU*	*≤5 NTU*	*≤5 NTU*
8.	Total Hardness (*mg/l*)	-	*≤500*	*≤500*
9.	Total Dissolved Solids (*mg/l*)	*≤1000*	*≤1000*	*≤1000*
10.	pH	*6.5-8.5*	*6.5-8.5*	*6.5-8.5*
11.	Chloride (Cl^{-1}) *mg/l*	*250*	*≤250*	*≤250*
12.	Sodium (Na^{+}) *mg/l*	*200*	-	*200*
13.	Potassium (K^{+}) mg/l	*12*	-	*12*
14.	Arsenic (*As*) *mg/l*	*0.01*	*≤0.05*	*≤0.04*
15.	Selenium (*Se*) *mg/l*	*0.01*	*0.01*	*≤0.01*
16.	Nitrite (NO_2^{-1}) *mg/l*	*3.0*	*≤3*	*≤3*
17.	Nitrate (NO_3^{-2}) *mg/l*	*50*	*≤50*	*≤30*
18.	Zinc (Zn) *mg/l*	*3.0*	*5.0*	*≤3.0*
19.	Boron (B) *mg/l*	*0.3*	*0.3*	*≤0.3*
20.	Aluminum (Al) *mg/l*	*0.2*	*≤0.2*	*≤0.2*
21.	Barium (Ba) *mg/l*	*0.7*	*0.7*	*≤0.7*
22.	Fluoride (F^{-1}) *mg/l*	*1.5*	*≤1.5*	*≤1.0*
23.	Cyanide (CN^{-1}) *mg/l*	*0.07*	*≤0.05*	*≤0.05*
24.	Chromium (Cr) *mg/l*	*0.05*	*≤0.05*	*≤0.05*
25.	Manganese (Mn) *mg/l*	-	*≤0.5*	*≤0.5*
26.	Mercury (Hg) *mg/l*	*0.006*	*≤0.001*	*≤0.001*
27.	Antimony (Sb) *mg/l*	*0.02*	*≤0.005*	*≤0.05*
28.	Cadmium (Cd) *mg/l*	*0.003*	*0.01*	*≤0.005*
29.	Nickel (Ni) *mg/l*	*0.02*	*0.02*	*≤0.02*

Sr. No.	Parameter/Properties	WHO Value	Existing Value	Proposed Value
30.	Lead (Pb) *mg/l*	*0.07*	*0.05*	*≤0.02*
31.	Copper (Cu) *mg/l*	*2.0*	*2.0*	*≤1.0*
32.	Residual Chlorine *mg/l*	--	*0.2-0.5 at consumer end 0.5-1.5 at source*	*0.2-0.5 at consumer end 0.5-1.5 at source*
33.	Polyaromatic Hydrocarbons (PAH) g/l	*0.01 (by GC/MS)*	*0.01 (by GC/MS)*	*0.01 (by GC/MS)*
34.	Phenolic Compounds (*mg/l)*	*0.002*	*0.002*	*0.002*
35.	Pesticides (*mg/l)*	--	-	--
36.	Beta Emitters bq/L or pCi	*1*	*1*	*1*
37.	Alpha Emitter bq/L or pCi	*0.1*	*0.1*	*0.1*

Secretary, Government of the Punjab
Environment Protection Department

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GOVERNMENT OF THE PUNJAB

LAW AND PARLIAMENTARY AFFAIRS DEPARTMENT

NOTIFICATION

(...)

The following Notification No. SO...., dated ……. Regarding the Punjab Environmental Quality Standards for Industrial Gaseous Emissions is published for general information:

Secretary
Government of the Punjab
Law and Parliamentary Affairs Department
Government of the Punjab
Environmental Protection Department

NOTIFICATION: No. SO. In exercise of the powers conferred under clause (c) of sub-section 1 of section 4 of the Punjab Environmental protection Act, 1997 (XXXIV of 1997), the Environmental protection Council has approved the following as the Punjab Environmental Quality Standards for Industrial Gaseous Emissions:

Punjab Environmental Quality Standards for Industrial Gaseous Emissions

Sr #	Parameter (Unit)	Source of Emission	Existing PEQS	Standard*	
1.	Carbon Monoxide (CO) mg/Nm3	Any	800	500	
2.	Oxides of Sulfur as Sulfur Dioxide (SO_2) mg/Nm3	Any	1700	1200	
3.	Oxides of Nitrogen as (NO) & (NO_2) mg/Nm3	Coal Fired	1200	900	
		Oil Fired	600	450	
		Gas Fired	400	300	
4.	Particulate Matter (PM) mg/Nm3	Oil Fired	300	150	
		Coal Fired	500	250	
		Biomass or Similar Fuels (like Bagasse, Corn Waste, Rice Husk etc.)	-	350	
		Gas Fired	-	75	
		Grinding, Crushing, Hammering, Metallurgy, Blast Furnaces, Copulas, Converters and Related Processes generating Particulate Matter.	500	250	
5.	Lead mg/Nm3	Any	50	5	
6.	Mercury mg/Nm3	Any	10	1.5	
7.	Arsenic (As) mg/Nm3	Any	20	2	
8.	Cadmium (Cd) mg/Nm3	Any	20	5	
9.	Antimony (Sb) mg/Nm3	Any	20	2	
10.	Copper (Cu) mg/Nm3	Any	50	2	
11.	Hydrogen Chloride (HCL) mg/Nm3	Any	400	For Alternative fuel containing chlorine content	100

				Co-Combustion Processes (Fuel shouldn't fall in Sub-Standard Category)	200
				General Sources Emitting HCL	100
12.	Chlorine (Cl_2) mg/Nm3	Any	150	150	
13.	Hydrogen Fluoride (HF) mg/Nm3	Any	150	50	
14.	Hydrogen Sulfide (H_2S) mg/Nm3	Any	10	10	

* All the values of gases should be standardized at 6-7% O2 Level for Solid Fuel and 3-4% O2 Level for Liquid and Gaseous Fuels except Gas Turbines and Engines (Gas or Liquid) which should be standardized at 15% O2 Level.

Note:

The "Rule of Thumb" for designing stack is given as:

1) The stack height should be 2-2.5 times as high as building or countryside to avoid surrounding turbulence.
2) Gases emitting velocity should be greater than 60 ft/sec so that it can overcome the turbulence or any kind of disturbance.
3) The emissions from diameter of stack less than 5 feet and height less than 200 feet can possibly hit the ground in large concentrations.
4) The ground concentration of pollutants can be reduced by designing higher stacks and it is usually changing as inverse square of stack height.
5) The maximum ground concentration of stack gases subjected to atmospheric diffusion usually occurs at about five to 10 stack heights from the stack.

Secretary, Government of the Punjab
Environment Protection Department

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GOVERNMENT OF THE PUNJAB

LAW AND PARLIAMENTARY AFFAIRS DEPARTMENT

NOTIFICATION

(...)

The following Notification No. SO...., dated ……. Regarding the Punjab Environmental Quality Standards for Municipal and Liquid Industrial Effluents is published for general information:

Secretary
Government of the Punjab
Law and Parliamentary Affairs Department
Government of the Punjab
Environmental Protection Department

NOTIFICATION: No. SO. In exercise of the powers conferred under clause (c) of sub-section 1 of section 4 of the Punjab Environmental protection Act, 1997 (XXXIV of 1997), the Environmental protection Council has approved the following as the Punjab Environmental Quality Standards for Municipal and Liquid Industrial Effluents:

Punjab Environmental Quality Standards for Municipal and Liquid Industrial Effluents

		Existing Values	Existing Values	Proposed Value	Proposed Value
Sr. No.	**Parameter**	**Into Inland Water***	**Into Municipal Treatment**	**Into Inland Water***	**Into Municipal Treatment**
1.	Temperature or Temperature increase*	≤3	≤3	≤3° C or 40° C effluent water temperature	≤3° C or 40° C effluent water temperature
2.	pH value	6-9	6-9	6-9	6-9
3.	Biochemical Oxygen Demand (BOD) *mg/l*	*80*	*250*	*80 (5days at 20 ° C)*	*250 (5days at 20 ° C)*
4.	Chemical Oxygen Demand (COD) *mg/l*	*150*	*400*	*150*	*400*
5.	Total Suspended Solids (*mg/l*)	*200*	*400*	*200*	*400*
6.	Total Dissolved Solids (*mg/l*)	*3500*	*3500*	*3500*	*3500*
7.	Oil and Grease (*mg/l*)	*10*	*10*	*10*	*20*
8.	Phenolic Compounds (as Phenol) *mg/l*	*0.1*	*0.3*	*0.1*	*0.3*
9.	Chloride (as Cl) *mg/l*	1000	1000	1000	1000
10.	Fluoride (as F^-) *mg/l*	10	10	5.0	10
11.	Total Cyanide (as CN^-) *mg/l*	1.0	1.0	1.0	1.0
12.	An-ionic detergents (as MBAS) *mg/l*	20	20	20	20
13.	Sulphate (SO_4) *mg/l*	600	1000	600	1000
14.	Sulfide (S^{-2}) *mg/l*	1.0	1.0	2.0	2.0
15.	Ammonia (NH_3) *mg/l*	40	40	10	40
16.	Pesticides, Herbicides, Fungicidesand Insecticides *mg/l)*	0.15	0.15	0.15	0.15
17.	Copper (*mg/l)*	1.0	1.0	3.0	3.0
18.	Lead (*mg/l)*	*0.5*	*0.5*	*0.5*	*0.5*
19.	Cadmium (*mg/l)*	*0.1*	*0.1*	*0.1*	*0.1*

		Existing Values	Existing Values	Proposed Value	Proposed Value
20.	Chromium (Cr+3 & Cr+6) *mg/l*	*1.0*	*1.0*	*1.0*	*1.0*
21.	Mercury (*mg/l*)	*0.01*	*0.01*	*0.01*	*0.01*
22.	Selenium (*mg/l*)	*0.5*	*0.5*	*0.5*	*0.5*
23.	Nickel (*mg/l*)	*1.0*	*1.0*	*1.0*	*1.0*
24.	Silver (*mg/l*)	*1.0*	*1.0*	*1.0*	*1.0*
25.	Total Toxic Metals (*mg/l*)	*2.0*	*2.0*	*2.0*	*2.0*
26.	Zinc (*mg/l*)	*5.0*	*5.0*	*5.0*	*5.0*
27.	Arsenic (*mg/l*)	*1.0*	*1.0*	*1.0*	*1.0*
28.	Barium (*mg/l*)	*1.5*	*1.5*	*1.5*	*1.5*
29.	Iron (*mg/l*)	*8.0*	*8.0*	*8.0*	*8.0*
30.	Manganese (*mg/l*)	*1.5*	*1.5*	*1.5*	*1.5*
31.	Boron (*mg/l*)	*6.0*	*6.0*	*6.0*	*6.0*
32.	Chlorine (*mg/l*)	1.0	1.0	1.0	1.0
33.	Total Phosphorus (TP) *mg/l*	-	-	-	≤5
34.	Total Nitrogen (TN) *mg/l*	-	-	-	≤5
35.	Bio-assay test	-	-	*90% survival of fish after 96 hours in 100% effluent*	*80% survival of fish after 96 hours in 100% effluent*

Explanation:

*The inland water standards also implemented to the on-land methods adopted in disposing off the effluent water other than using standard or designed treatment system within or outside the premises of polluter resulting in Ground Water contamination.

1. Assuming Minimum dilution 1:10 on discharge, lower ratio would attract progressively stringent standards to be determined by the Provincial Environment Protection Agency. By 1:10 dilution means, for example that for each one cubic meter treated effluent, the recipient water body should have 10 cubic meters of water for dilution of this effluent.
2. Methylene Blue Active Substances; assuming as biodegradable.
3. Pesticides includes herbicides, fungicides and insecticides.
4. Subject to Total Toxic Metals, discharge should not exceed level given at S.N. 25.
5. Applicable only when and where sewage treatment is operational and BOD_5 =80mg/l is achieved by the sewage treatment system.
   *The effluent should not result in temperature increase of more than 3 C° at the edge of the zone where initial mixing and dilution take place in the receiving body. In case, zone is not defined, use 100 meters from the point of discharge.

Note:

1. **Dilution of the effluents to meet the PEQS limiting value is not permissible through fresh water mixing with the effluent before discharging into the environment.**
2. **The concentration of pollutants in water being used will be subtracted from the effluent for calculating the PEQS limits.**

Secretary, Government of the Punjab
Environment Protection Department

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GOVERNMENT OF THE PUNJAB

LAW AND PARLIAMENTARY AFFAIRS DEPARTMENT

NOTIFICATION

(...)

The following Notification No. SO…., dated ……. Regarding the Punjab Environmental Quality Standards for Noise Level is published for general information:

Secretary
Government of the Punjab
Law and Parliamentary Affairs Department
Government of the Punjab
Environmental Protection Department

NOTIFICATION: No. SO. In exercise of the powers conferred under clause (c) of sub-section 1 of section 4 of the Punjab Environmental protection Act, 1997 (XXXIV of 1997), the Environmental protection Council has approved the following as the Punjab Environmental Quality Standards for Noise Level:

Punjab Environmental Quality Standards for Noise Level

Sr #	Category	Unit of Measurement	Existing Values		Proposed Values		Methodology
			Day Time	Night Time	Day Time	Night Time	SPL Method (Sound Pressure Level Device with Capacity of Measuring L_{eq}, L_p, L_N, L_D)
1.	Industrial Area	L eq	75	65	70	60	
2.	Commercial Area	L eq	65	55	60	50	
3.	Mixed Area	L eq	-	-	60	55	
4.	Residential Area	L eq	55	45	55	45	
5.	Silence Zone	L eq	50	45	45	40	
6.	Roadside Traffic Zone (Both Sides of Road)	L eq	-	-	70	55	

Note:

1. **Day Time hours; 07:00 AM to 11:00 PM**
2. **Night Time Hours; 11:00 PM to 07:00 AM**
3. **Silence Zone: Which are declared by such as competent authority. An area comprising not less than 100 meters around hospital, educational institutions and courts.**
4. **Mixed Categories may be declared by the competent authority usually not fall in the Industrial, Commercial or Residential Zones or where co-construction of two type of zones exist will be decided by the competent authority that which standard should be promulgated.**
5. **dB(A) L_{eq}: Time Weighed Average of the level of sound in the decibel on scale A which is relatable to human hearing.**

Secretary, Government of the Punjab
Environment Protection Department

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GOVERNMENT OF THE PUNJAB

LAW AND PARLIAMENTARY AFFAIRS DEPARTMENT

NOTIFICATION

(...)

The following Notification No. SO...., dated ……. Regarding the Punjab Environmental Quality Standards for Reuse of Treated Effluent and Sludge for Horticultural and Irrigation Purposes is published for general information:

Secretary
Government of the Punjab
Law and Parliamentary Affairs Department
Government of the Punjab
Environmental Protection Department

NOTIFICATION: No. SO. In exercise of the powers conferred under clause (c) of sub-section 1 of section 4 of the Punjab Environmental protection Act, 1997 (XXXIV of 1997), the Environmental protection Council has approved the following as the Punjab Environmental Quality Standards for Reuse of Treated Effluent and Sludge for Horticultural and Irrigation Purposes:

Punjab Environmental Quality Standards for Reuse of Treated Effluent and Sludge for Horticultural and Irrigation Purposes

Treated Effluent for Horticultural and Irrigation Purposes:

Sr. No.	Parameter/Properties	Proposed Value
1.	pH	6.0~8.4
2.	Conductivity (25 C**o**) µS/cm	3000
3.	BOD (5 Days at 20 Co)	80
4.	COD	150
5.	Oil & Grease (*mg/l)*	10
6.	TDS (*mg/l*)	2000
7.	Chlorides (Cl-) *mg/l*	500
8.	Sulfates (SO2-4) *mg/l*	350
9.	Nitrates (NO3-2) *mg/l*	30
10.	Copper (Cu) *mg/l*	2.0
11.	Iron (Fe) *mg/l*	5.0
12.	Manganese (Mn) *mg/l*	2.0
13.	Zinc (Zn) *mg/l*	5.0
14.	Selenium (*Se) mg/l*	0.1
15.	Boron (B) *mg/l*	0.7
16.	Arsenic (As) *mg/l*	0.1
17.	Mercury (Hg) *mg/l*	0.01
18.	Lead (Pb) *mg/l*	0.1
19.	Cadmium (Cd) *mg/l*	0.01
20.	Chromium (Cr VI) *mg/l*	0.5
21.	Sodium Absorption Ration (SAR) eq /*l*	25

Treated Sludge for Horticultural and Irrigation Purposes

Biological Standards for Sludge

- All Class A sludges must meet: fecal coliform density i.e., 1,000 MPN a /gram total solids. B, or
- Salmonella sp. density i.e., 3 MPN/4 grams total solids.

Plus one of 6 alternatives:

1. Time and temperature requirements specified, depending on solids content of sludge.
2. Alkaline and temperature treatment requirements: pH i.e., 12 for at least 72 hours. Temperature i.e., 52 C^{o}, For at least 12 hours, then air dry sludge to 50% total solids.
3. Level of enteric virus and helminth ova prior to pathogen treatment i.e., 1 PFU c /4 grams total solids, For virus 1 viable ova/4 grams total solids for helminth ova.

   or

   If levels of enteric virus and/or helminth ova prior to pathogen treatment are 1 PFU or if viable ova are present, then test after treatment. Document process operating parameters to achieve it i.e., 1 PFU/4 grams total solids for virus i.e., viable ova/4 grams total solids for helminth ova.
4. Levels of enteric virus and helminth ova after treatment and when ready to distribute 1 PFU/4 Grams total solids for virus i.e., 1 viable ova/4 grams total solids for helminth ova.
5. Use of Process to Further Reduce Pathogens (PFRP). See requirements for composting, heat drying, heat treatment, thermophilic aerobic digestion, beta ray irradiation, gamma ray irradiation, and pasteurization.
6. Treat equivalent to PFRP requirements. Determined by the permitting authority.

Note:

MPN: Most Probable Number, all weights are dry weights, PFU: Plaque Forming Unit

Standards Class B

- Food crops that touch sludge or soil Harvest after 14 mos. of sludge application.
- Root crops Harvest after 20 mos. if 4 mos. elapse prior to planting.
- Other food, feed or fodder Harvest after 30 days of sludge application.
- Grazing No grazing prior to 30 days after sludge application.
- Lawn turf Harvest after one year of sludge application.
- Public access to land - high access potential one year waiting period prior to access.
- Public access to land - low access potential 30 day waiting period prior to access.

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GOVERNMENT OF THE PUNJAB

LAW AND PARLIAMENTARY AFFAIRS DEPARTMENT

NOTIFICATION

(...)

The following Notification No. SO…., dated ……. Regarding the Punjab Environmental Quality Standards for Soil is published for general information:

Secretary
Government of the Punjab
Law and Parliamentary Affairs Department
Government of the Punjab
Environmental Protection Department

NOTIFICATION: No. SO. In exercise of the powers conferred under clause (c) of sub-section 1 of section 4 of the Punjab Environmental protection Act, 1997 (XXXIV of 1997), the Environmental protection Council has approved the following as the Punjab Environmental Quality Standards for Soil:

Punjab Environmental Quality Standards for Soil

Sr. No.	Parameter/Properties	Proposed Value
1.	EC	0.150-0.500 dS/m
2.	pH	6.5-8.0
3.	Arsenic (As)	40 mg/kg
4.	Cadmium (Cd)	5 mg/kg
5.	Chromium (Cr)	100 mg/kg
6.	Argentum (Ag)	2 mg/kg
7.	Cobalt (Co)	10 mg/kg
8.	Copper (Cu)	200 mg/kg
9.	Lead (Pb)	400 mg/kg
10.	Nickel (Ni)	75 mg/kg
11.	Zinc (Zn)	500 mg/kg
12.	Mercury (Hg)	2 mg/kg
13.	Manganese (Mn)	2000 mg/kg

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GOVERNMENT OF THE PUNJAB

LAW AND PARLIAMENTARY AFFAIRS DEPARTMENT

NOTIFICATION

(...)

The following Notification No. SO...., dated ……. Regarding the Punjab Environmental Quality Standards for Surface Water is published for general information:

Secretary
Government of the Punjab
Law and Parliamentary Affairs Department
Government of the Punjab
Environmental Protection Department

NOTIFICATION: No. SO. In exercise of the powers conferred under clause (c) of sub-section 1 of section 4 of the Punjab Environmental protection Act, 1997 (XXXIV of 1997), the Environmental protection Council has approved the following as the Punjab Environmental Quality Standards for Surface Water:

Punjab Environmental Quality Standards for Surface Water

Sr. No.	Parameter and Unit	Proposed Value				
		A (Drinking Water with only Disinfection)	**B** (Outdoor Swimming & Bathing)	**C** (Drinking Water with Treatment and Disinfection)	**D** (For Aquatic Life & Fisheries)	**E** (For Reuse like Irrigation Purposes)
1.	Taste	Unobjectionable	--	--	--	--
2.	Odor	Unobjectionable	Unobjectionable	--	--	--
3.	Color (True) (Hazen unit)	15	200	200	--	--
4.	pH	6.5-8.5	6.5-8.5	6.5-8.5	6.5-8.5	6.0~8.4
5.	Conductivity (25oC) µS/cm	--	--	--	1000	3000
6.	DO (mg/L) (minimum)	≥6	≥5	≥4	≥4	--
7.	BOD (5d, 20oC) (mg/L)	--	≥2	≥3	--	80
8.	Total Coliforms (MPN/100 mL)	Must not be detected in 100 ml sample	--	--	--	--
9.	TDS (mg/L)	1000	--	2000	--	2500
10.	Total Hardness (mg/L as CaCO3)	≤500	--	--	--	--
11.	Chlorides (mg/L as Cl)	250	--	600	--	600
12.	Sulfates (mg/L as SO4)	--	--	400	--	450
13.	Nitrates (mg/L as NO3)	30	--	50	--	30
14.	Free NH3 (mg/L as N)	--	--	--	1	--
15.	Fluorides (mg/L as F)	1.0	1.0	1.0	--	--
16.	Copper (mg/L)	1.0	--	2.0	--	2.0
17.	Iron (mg/L)	0.3	--	4.0	--	5.0
18.	Manganese (mg/L)	0.5	--	--	--	2.0
19.	Zinc (mg/L)	3	--	15	--	5.0
20.	Boron (mg/L as B)	--	--	--	--	1.0
21.	Barium (mg/L)	0.7	--	--	--	--
22.	Arsenic Total (mg/L)	0.04	--	--	--	0.1
23.	Mercury (mg/L)	0.001	--	--	--	0.01
24.	Lead (mg/L)	0.02	--	0.1	--	0.1

25.	Cadmium (mg/L)	0.005	--	0.01	--	0.01
26.	Chromium (VI) (mg/L)	0.05	0.05	0.05	--	0.5
27.	Selenium (mg/L)	0.01	--	0.05	--	0.1
28.	Cyanide (mg/L as CN)	0.05	0.05	0.05	--	--
29.	Alpha emitters (10^{-6}uC/mL)	0.1	--	--	--	--
30.	Beta emitters (10^{-6}uC/mL)	1	--	--	--	--
31.	Sodium Absorption Ratio	--	--	--	--	25

Note:

CLASS - A: Drinking Water without Conventional Treatment but after Disinfection.

CLASS - B: Water for Outdoor Bathing (Like Swimming)

CLASS – C: Drinking Water with Conventional Treatment but after Disinfection.

CLASS – D: Water used for Aquatic Life

CLASS – E: Water for Reuse like Irrigation, Industrial Cooling.

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GOVERNMENT OF THE PUNJAB

LAW AND PARLIAMENTARY AFFAIRS DEPARTMENT

NOTIFICATION

(...)

The following Notification No. SO...., dated ……. Regarding the Punjab Environmental Quality Standards for Treatment of Effluent and Disposal of Biomedical Waste is published for general information:

Secretary
Government of the Punjab
Law and Parliamentary Affairs Department
Government of the Punjab
Environmental Protection Department

NOTIFICATION: No. SO. In exercise of the powers conferred under clause (c) of sub-section 1 of section 4 of the Punjab Environmental protection Act, 1997 (XXXIV of 1997), the Environmental protection Council has approved the following as the Punjab Environmental Quality Standards for Treatment of Effluent and Disposal of Biomedical Waste:

Punjab Environmental Quality Standards for Treatment of Effluent and Disposal of Biomedical Waste

Operating Standards

1. *The Combustion Efficiency of Incinerator, computed as below should be at least **97.5**%.*

   Combustion Efficiency= $\%CO_2/\%CO_2+\%CO$
2. *The minimum value of temperature of primary chamber shall be 800C^O.*
3. *The gas residence time in secondary chamber shall be at least 1 (one) second at the temperature of 1200$\pm$50 C^O with at least 3% oxygen in the stack emissions.*
4. *It is mandatory by the incinerators to install the dry scrubbers (to control Particulate Matter) in combination with Wet Scrubbers (To control gaseous Emissions) prior to operationalize the incineration.*

Sr #	Parameter	Unit of Measurement	Existing Values		Proposed Values	
			Limiting Concentration unless stated	Sampling Duration in Minutes unless stated	Limiting Concentration unless stated	Sampling Duration in Minutes unless stated
1.	*Particulate Matter*	mg/Nm^3	50	30 Minutes or 1 Nm^3 of sample volume, whichever is more.	50	30 Minutes or 1 Nm^3 of sample volume, whichever is more.
2.	*Nitrogen Oxide expressed as NO_2*	mg/Nm^3	400	30 Minutes for online or grab sampling	400	30 Minutes for online or grab sampling
3.	*HCL*	mg/Nm^3	50	30 Minutes or 1 Nm^3 of sample volume,	50	30 Minutes or 1 Nm^3 of sample volume,

				whichever is more.		whichever is more.
4.	*Total Dioxins & Furans*	ng TEQ/N^3(at 11 % O_2)	0.1 ng TEQ/N^3(at 11 % O_2)	8 hours or 5 Nm^3 of sample volume, whichever is more.	0.1 ng TEQ/N^3(at 11 % O_2)	8 hours or 5 Nm^3 of sample volume, whichever is more.
5.	*Hg and its compounds*	mg/Nm^3	0.05	2 hours or 1 Nm^3 of sample volume, whichever is more.	0.05	2 hours or 1 Nm^3 of sample volume, whichever is more.

Note:

a) Air pollution control devices shall be installed or retrofitted with the incinerator to achieve the above given emission standards. All the existing incinerators shall comply with these standards within a period of 2 years from the date of this notification.

b) Secondary combustion chambers and pollution control devices of existing incinerators shall be suitably retrofitted, if necessary, to achieve these standards.

c) Chlorinated plastics shall not be incinerated and the wastes incinerated shall also not chemically treated with any chlorinated disinfectant.

d) Ash from incineration of biomedical waste shall be disposed of at a Hazardous Waste Treatment and Disposal Facility. However, it may be disposed of in municipal landfill, if the toxic metals in incineration ash are within the regulatory quantities as defined under the Hazardous Waste or revised from time to time.

e) Only low Sulphur fuel such as Light Diesel Oil, CNG, or LPG shall be used as fuel in the incinerator.

f) Stack gaseous emissions shall be mentioned under maximum capacity of the incinerator once in three months through a laboratory approved under the Punjab Environmental Protection Act, 1997 and record of such analysis results shall be mentioned and submitted to EPA Punjab. For dioxins and furans, monitoring shall be done once a year.

g) Continuous emission monitoring system for the CO, CO_2 and O_2 parameters shall be installed in stack and its data shall be transmitted in real time to the servers at EPA Punjab.

h) The monitored values shall be corrected to 11% Oxygen on dry basis.

i) In addition to complying with temperature and residence time standards, incinerators (combustion chambers) shall be operated with such temperatures, retention time and turbulence, as to achieve Total Organic Carbon (TOC) content in the slag and bottom ashes less than 3% or their loss on ignition shall be less than 5% of the dry weight.

j) Combustion gas analyzers shall be used to measure CO_2, CO and O_2.

DEEP BURIAL

1. A pit or trench shall be dug about meters deep. It shall be half filled with waste, them covered with lime within 50cm of the surface, before filling the rest of the pit with soil.
2. It shall be ensured that animals do not have any access to burial sites. Covers of galvanized iron/wire meshes may be used.
3. Burial shall be performed under close and dedicated supervision.
4. The deep burial site shall be relatively impermeable and no shallow well should be close to the site.
5. The pits shall be away from habitation, and sited so as to ensure that no combination of any surface water or ground water occurs. The area should not be prone to flooding or erosion.
6. The location of the deep burial site shall be authorized by EPA Punjab.
7. A record of all pits for deep burial shall be maintained.

AUTOCLAVING

Dedicated autoclave shall be used for disinfecting and treating bio-medical waste.

1. In gravity flow autoclave, medical waste shall be subjected to:
    i. a temperature of not less than 125°C at 15 pounds per square inch (psi) with a residence time of not less than 60 minutes; or
    ii. a temperature of not less than 135°C and a pressure of 30 psi with an autoclave residence time of not less than 45 minutes; or
    iii. a temperature of not less 150°C and a pressure of 50 psi with an autoclave residence time of not less than 30 minutes.
2. In a vacuum autoclave, medical waste shall be subjected to a minimum of one pre-vacuum pulse to purge the autoclave of all air. Waste shall be treated at:
    i. a temperature of not less than 125°C and pressure of 15 psi with autoclave residence time of not less than 45 minutes. or
    ii. a temperature of not less than 135°C and a pressure of 35 psi with an autoclave residence time of not less than 30 minutes.
3. Medical waste shall be deemed treated if all parameters (residence time, temperature and pressure) indicators indicate that their required values were reached during the autoclave process. If for any reasons, either of the parameter (residence time, temperature or pressure) was not reached, the entire batch of waste shall be autoclaved again until all the required parameters (temperature, pressure and residence time) are achieved.

4. For recording of operational parameters, each autoclave shall have graphic or computer recording devices which will automatically and continuously monitor and record dates, time of day, load identification number and operating parameters throughout the entire length of the autoclave cycle.
5. The autoclave should completely and consistently kill the approved biological indicator at its maximum design capacity. Biological indicator for autoclave shall be *Bacillus stearothermophilus* spores using vials or spore strips with at least 1×10^4 spores per milliliter.
6. Under no circumstances will an autoclave have minimum operating parameters less than a residence time of 30 minutes, regardless of temperature and pressure, a temperature less than 125°C or a pressure less than 15 psi.
7. A chemical indicator strip/tape that changes color when a certain temperature is reached can be used to verify that a specific temperature has been achieved. It may be necessary to use more than one strip over the waste packages has been adequately autoclaved.

STANDARDS OF MICROWAVING

1. Microwave treatment shall not use for cytotoxic or radioactive wastes, contaminated animal carcasses, body parts, and large metal items.
2. The microwave system shall comply with the efficacy test/routine tests and a performance guarantee provided by the manufacturer/ supplier.

The microwave should completely and consistently kill the bacteria and other pathogenic organisms that is ensured by approved biological indicator at its maximum design capacity. Biological indicators for microwave shall be *Bacillus Subtilis* spores using vials or spore strips with at least 1×10^1 spores per milliliter.

Liquid Waste

Sr #	Parameter	Unit of Measurement	Existing Values	Proposed Value
1.	pH	-	6.3-9.0	6.3-9.0
2.	Suspended Solids	mg/l	100	100
3.	Oil and Grease	mg/l	10	10
4.	BOD5	mg/l	30	30
5.	COD	mg/l	250	250
6.	Bio-assay Test	%	90% survival of fish after 96 hours in 100% effluent.	90% survival of fish after 96 hours in 100% effluent.

These limits are applicable to the hospitals which are either connected to sewers without terminal sewage treatment plant or not connected to public sewers.

For discharge into public sewers with terminal ‘treatment facilities, the general standard as noticed under the Punjab Environment Protection Act, 1997 shall be applicable.

Secretary, Government of the Punjab
Environment Protection Department

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GOVERNMENT OF THE PUNJAB

LAW AND PARLIAMENTARY AFFAIRS DEPARTMENT

NOTIFICATION

(...)

The following Notification No. SO...., dated ……. Regarding the Punjab Environmental Quality Standards for Motor Vehicle Exhaust and Noise is published for general information:

Secretary
Government of the Punjab
Law and Parliamentary Affairs Department
Government of the Punjab
Environmental Protection Department

NOTIFICATION: No. SO. In exercise of the powers conferred under clause (c) of sub-section 1 of section 4 of the Punjab Environmental protection Act, 1997 (XXXIV of 1997), the Environmental protection Council has approved the following as the Punjab Environmental Quality Standards for Motor Vehicle Exhaust and Noise:

Punjab Environmental Quality Standards for Motor Vehicle Exhaust and Noise

On Road:

Sr. No.	Parameter	Measuring Method	Revised PEQS
1.	Smoke	To Be Compared with Ringleman Chart at a Distance of 6 Meters or More	40% or 2 on the Ringleman Scale during engine Acceleration Mode at a Distance of 6 Meters or More
2.	Carbon Monoxide (CO)	Under Idling conditions: Non-Dispersive Infra-Red Detection through Gas Analyzer	Less Than 2.5 %
3.	Noise	Sound Meter at 7.5 Meter Distance from Source	75 dB (A)

Punjab 2 Standards

Applicability:

These standards are effective on the same condition as previously mentioned in the existing Motor Vehicle Standards i.e. registered after 2009 to 2023 period.

For the Passenger Cars and Light Commercial Vehicles (g/km):

Type of Vehicle	Category/Class	Tiers	CO	HO+ NO_x	PM	Measuring Method	Applicability
1	2	3	4	5	6	7	8
Passenger Cars	M1: with reference mass (RW) up to 2500 kg	Punjab —II, I IDI	1.0	0.7	0.8		
	Cars with RW over' 2500 kg to meet N1 category standards	Punjab —II, DI	1.0	0.9	0.10	NEDC (ECE I5+EUDCL)	
Light Commercial Vehicles	N 1-1(RW <1250kg)	Punjab— II, IDI	1.0	0.70	0.08		All imported end locally manufactured diesel vehicles with effect from 01 -07-2012
		Punjab - II, DI	0.1	0.9	0.10		
	N 1—11(1250kg< RW<l 700kg)	Punjab —II, IDI	1.25	1.0	0.12		
		Punjab - Il, DI	1.25	1.3	0.14		
	NI-III (RW≥ l 700kg)	Punja b -II ,IDI	1.50	1.2	0.17		

		Pak-II. D I	1.5	1.6	0.20		
Parameter Standards (Max Permissible Limit)						**Measuring Method**	
Noise	85 dB (A)					Sound-meter at 7.5 meters from the source	

b) For Heavy Duty Diesel Engine and Large Goods Vehicles (g/kwh):

Type of Vehicle	**Category/Class**	**Tiers**	**CO**	**HC**	**NO_x**	**PM**	**Measuring Method**	**Applicability**
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Heavy Duty Diesel Engine	Truck and Buses	Punjab-II	4.0	1.1	7.0	0.15	ECR-R-49	All imported end locally manufactured diesel vehicles with effect from 01 -07-2012
Large Goods Vehicles	**N2(2000 and up)**	Punjab-II	4.0	7.0	1.1	0.15	ECD	
Parameter Standards (Max Permissible Limit)						**Measuring Method**		
Noise	85 dB (A)					Sound-meter at 7.5 meters from the source		

EMISSION STANDARDS FOR PETROL VEHICLES (g/km):

Type of Vehicle	**Category/Class**	**Tiers**	**CO**	**HO+ NO_x**	**Measuring Method**	**Applicability**
1	**2**	**3**	**4**	**5**	**6**	**7**
Passenger Cars	M1: with reference mass (RW) up to 2500kg. Cars with RW over 2500kg tó meet. N1 category standards	Punjab-II	2.20	0.5	NEDC (MC E15+EUDCL)	All imported and new models * locally manufactured petrol vehicles with effect from 0 1 -07-2009**
Light Commercial Vehicles	N1-I (RW <1250kg)	Punjab—II	2.20	0.5		
	N1—II (1250kg< RW<l 700kg)	Punjab—II	4.0	0.65		
	NI-III (RW≥ l 700kg)	Punjab -II	5.0	0.08		
Motor Rickshaws and Motor Cycles	2,4 Rickshaws Strokes <150cc	Punjab -II	5.5	1.5	ECER 40	
	2,4 Rickshaws Strokes <150cc	Punjab -II	5.5	1.3		
Parameter Standards (Max Permissible Limit)					**Measuring Method**	
Noise	85 dB (A)				Sound-meter at 7.5 meters from the source	

***New Model Means; Both Model and Design Change.**

****The Existing Model of Petrol Driven Vehicles locally manufactured with immediately switched over to PAK-II emission standards but not later than 30th 2012**

Punjab 5 Standards

Applicability:

These standards are applicable on all Petrol, Deisel and Hybrid Vehicle registered in 2024 and onward.

For the Passenger Cars and Light Commercial Vehicles (g/km):

Stage	Vehicle Type	CO	HC	HC + NO_x	NO_x	PM
	g/km					
PUNJAB 5	Diesel Passenger Car	0.50	–	0.23	0.18	0.005
PUNJAB 5	Petrol Passenger Car	1.0	0.10	–	0.06	0.005
PUNJAB 5	N_1[i] Class I ≤1305 Kg (Diesel)	0.50	–	0.23	0.18	0.005
PUNJAB 5	N_1 Class II 1305-1760 Kg (Diesel)	0.63	–	0.295	0.235	0.005
PUNJAB 5	N_1 Class III >1760 Kg (Diesel)	0.74	–	0.350	0.280	0.005
PUNJAB 5	N_2 [ii](Diesel)	0.74	–	0.350	0.280	0.005
PUNJAB 5	N_1 Class I ≤1305 Kg (Petrol)	1.0	0.10	–	0.06	0.005
PUNJAB 5	N_1 Class II 1305-1760 Kg (Petrol)	1.81	0.13	–	0.075	0.005
PUNJAB 5	N_1 Class III >1760 Kg (Petrol)	2.27	0.16	–	0.082	0.005
PUNJAB 5	N_2 (Petrol)	2.27	0.16	–	0.082	0.005
PUNJAB 5	HDV Diesel Engines	2.30	0.20	–	0.15	–

Standards for Heavy Duty Vehicles (HDV)

Stage	Type	CO (g/kWh)	HC (g/kWh)	NOx (g/kWh)	PM (mg/kWh)	Smoke (m^{-1})
PUNJAB 5	HDV Diesel Engine	1.5	0.46	2.0	20	0.5

Two-Wheeler and Three-Wheelers

Stage	Type	Capacity In cc	CO (g/kWh)	HC (g/kWh)	NOx (g/kWh)
PUNJAB 5	Two -Wheeler	<150	2.00	0.80	0.15
		≥150	2.00	0.30	0.15
PUNJAB 5	Three -Wheeler	All Diesel	7.00	1.50	0.40
		All Petrol	2.00	1.00	0.65

Standards for Hybrid Vehicles

Stage	Type	Vehicle Category Name	Capacity	CO (g/km)	THC (g/km)	NOx (g/km)	PM (g/km)
PUNJAB 5	L1Be-L7e[1]	All Other L-Type Vehicles	Pl/Pl Hybrid Cl/Cl Hybrid	1.00	THC 10 NMHC 0.068	0.060	0.0045
				0.50	THC 10 NMHC 0.068	0.060	0.0045

	L1Ae[1]	Powered Cycle	Pl/Cl Hybrid	0.50	THC 10 NMHC 0.068	0.060	0.0045

[1] Vehicles used for the carriage of goods and having a maximum mass not exceeding 3.5 Tonnes.
Vehicles used for the carriage of goods and having a maximum mass exceeding 3.5 tonnes but not exceeding 12 tonnes.

Secretary, Government of the Punjab
Environment Protection Department

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GOVERNMENT OF THE PUNJAB

LAW AND PARLIAMENTARY AFFAIRS DEPARTMENT

NOTIFICATION

(...)

The following Notification No. SO...., dated ……. Regarding the Punjab Environmental Quality Standards for Vibration is published for general information:

Secretary
Government of the Punjab
Law and Parliamentary Affairs Department
Government of the Punjab
Environmental Protection Department

NOTIFICATION: No. SO. In exercise of the powers conferred under clause (c) of sub-section 1 of section 4 of the Punjab Environmental protection Act, 1997 (XXXIV of 1997), the Environmental protection Council has approved the following as the Punjab Environmental Quality Standards for Vibration:

Punjab Environmental Quality Standards for Vibration

Sr #	Category	Unit	Exposure Time	Proposed PEQS
1.	Environment Vibration	m/s^2	For 8-Hours Exposure Limit	1
2.	Environment Vibration	m/s^2	For 24-Hours Exposure Limit	0.5

Secretary, Government of the Punjab
Environment Protection Department

EXTRA ORDINARY ISSUE **REGISTERED No.**

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Lahore ------- 2023

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LAW AND PARLIAMENTARY AFFAIRS DEPARTMENT

NOTIFICATION
(...)

The following Notification No. SO...., dated ……. Regarding the Environment Sampling Rules is published for general information:

Secretary
Government of the Punjab
Law and Parliamentary Affairs
Department

Government of the Punjab
Environmental Protection Department

Environment Sampling Rules, 2001, Revised, 2023.

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Environment Sampling Rules, 2001, Revised, 2023

S.R.O.527(1)/2001. - In exercise of the powers conferred by section 31 of the Punjab Environmental Protection Act, 1997 (XXXIV of 1997) Amended 20212, the Provincial Government is pleased to make the following rules, namely: -

1. **Short title and Commencement:** (1) These rules may be called the Environmental SamplesRules, 2001(Revised 2023).

   (2) They shall come into force at once.

2. **Definitions:** (1) In these Rules, unless there is anything repugnant in the subject orcontext. –

   (a) "**Act**" means the Punjab Environmental Protection Act, 1997(XXXIV of1997), Amended 2012;

   (b) "**Authorized Person**" means a person authorized by the Director-General under rule 3;

   (c) "**Chief Analyst**" means the Chief Analyst of an environmental laboratory,and includes an Analyst who is performing the functions of the Chief Analyst in the environmental laboratory;

   (d) "**Director-General**" means the Director-General of the Provincial Agency;

   "**Environmental Laboratory**" A laboratory which has been established by the Punjab Govt. under section (6) sub section (2) clause (e) of the PEPA Act, 1997; and

   (e) "**Form**" means the form annexed to these rules.

All other words and expressions used in these rules but not defined shall have thesame meanings as are assigned to them in the Act.

3. **Authorization:** (1) Functions and powers specified in these rules including powers under clauses (g), (h), (i) and (j) of

section 7 of the Act of the Provincial Agency if delegated to it, may be performed and exercised by any person duly authorized by the Director-General in this behalf, under sub-section (5) of section 5 of the Act.

(2) In performing such functions and exercising such powers under sub-rule (1), an authorized person may employ such assistance as he may consider necessary: Provided that police assistance, if required, shall be obtained only under orders of the Environmental Tribunal or Environmental Magistrate having jurisdiction.

4. **Entry and Inspection** (1) An authorized person shall make an entry in a movement register before leaving for inspection. Authorized person shall enter the premises by showing authorization order.

(2) For the purpose of determining whether, and if so in what manner, an offenceunder the Act has been, or is being committed, in any place an authorized person may. –

(a) Enter and inspect such place, and examine any machinery or equipment while in operating condition, or any relevant document or otherarticle found therein; and

(b) Take into possession, against a signed receipt, any article which he hasreason to believe has been or is involved in, or which may furnish evidence of, the commission of an offence:

Provided that where it is not practicable to take physical possession of any such article, the authorized person may, by order in writing in the form as set out in Form A, entrust the article to the custody of the owner or the person previously holding the article in his possession or charge, and direct him not to remove or otherwise deal with the article except with the prior written permission of the authorized person:

Provided further that where the owner or person previously holding the articlein his possession or charge is not known or cannot be found within reasonabletime, the authorized person may in one English and one Urdu daily newspaper calling upon such person after publication notice to show cause as why the article should not be confiscated.

(3) Any power under clause (b) of sub-rule (2) shall not be exercised if production or operations in such place will be adversely affected unless prior permission in writing is obtained from the Environmental Tribunal or Environmental Magistrate having jurisdiction.

(4) The owner or person in charge of the place in which entry is sought by an authorized person shall, on being informed of his purpose and shown his authorization, allowhim unimpeded access to such place and provide all reasonable facilities for his inspection:

Provided that the authorized person shall abide by all safety rules andprecautions applicable to such place.

5. **Search:**

(1) Where an authorized person considers that violation of the act has been or is being committed but the person in charge of the facility has denied the entry and inspection of the authorized officer, he may apply to the Environmental Tribunal or Environmental Magistrate having jurisdiction for a search-warrant,specifying in his application

(2) The Environmental Tribunal or Environmental Magistrate may, on an application of an authorized person under sub-rule (1), for reasons to be recorded in writing,issue a search-warrant specifying the place to be searched and, to the extent possible, thearticle for which search is to be made, and may also lay down such other conditions as it maydeem fit in the circumstances of the case.

(3) If despite stating his purpose and showing his search-warrant, an authorized person cannot obtain entry into such place, he may break or open any lock, door, gate orwindow of such place:

Provided that if the place into which entry is sought is in the actual occupancy of a woman who, according to custom, does not appear in public, the authorized person shall give notice to such woman to withdraw and shall afford her every reasonable opportunity of withdrawing, before breaking or opening and entering such place.

(4) The provisions of sections 102 and 103 of the Code of Criminal Procedure, 1898 (Act V of 1898), shall *mutatis mutandis*, apply to searches made under this rule.

6. **Issue of Environmental Protection Order**: Where on entry, inspection or search of anyplace, an authorized person is satisfied that the circumstances in such place require issue of an Environmental Protection Order in respect thereof, he shall immediately inform the Director- General in writing, for initiation of necessary action in accordance with the provisions of section 16 of the Act.

7. **Procedure for Taking Samples**: (1) An authorized person taking samples under clause (h) of section 7 of the Act shall forthwith divide the same into three portions, in the presence of the person from whom the sample is taken:

Provided that the where real time monitoring is preferred the authorized person shall record reading as per testing method and shall make part the same of Form-B.

Provided that where the sample is such that it cannot or need not be divided, additional samples should be taken, if possible.

(2) An authorized person shall take representative samples in clean, dry bottles or jars or other suitable containers which shall be closed sufficiently tight to prevent leakage or evaporation orentry

of moisture:

Provided that where necessary the authorized person shall add preservative to the samplebefore sealing the container.

(3) All such bottles or jars or containers shall be labeled, placed in a cloth or otherbag which shall be sewn or glued at the ends and then effectively sealed on the stitches or

ends and suitably marked and signed by the authorized person and the person from whom thesample is taken.

(4) Where the person from whom the sample is taken is not available, or willfully absent himself or is unknown at the relevant time, or declines to add his seal or mark or signatures, the authorized person shall obtain on the sealed parcel the seal or mark and, ifpossible, signatures of one or more independent witnesses in whose presence the sample hasbeen taken.

(5) Both the label and the sealed parcel shall contain a distinguishing number, a brief description of the sample and the preservative, if any, and the place, date and time of taking thesample.

8. **Dispatch of Samples**: (1) One portion of the sample duly packed, sealed and marked as provided in rule 7 shall be handed over to the person from whom the sample is taken, along with a notice in the form as set out in Form B:

Provided that, in cases covered under sub-rule (4) of rule 7, the first portion and notice in Form-B shall be dispatched to the person from whom the sample is taken, if since traced, by registered post.

(2) The second portion of the sample, or the second sample, or the sample itself taking of only one sample is possible, shall, after being duly packed, sealed, labeled andmarked as provided in rule 7, be delivered within forty-eight hours to an environmental laboratory for test and analysis, along with forwarding letter in the form as set out in Form C.

(3) The third portion of the sample or the third sample, after

being duly packed, sealed, labeled and marked as provided in rule 7, shall be retained by the authorized person for future test and analysis, and comparison, as may be required.

(4) Specimen impression of the seal affixed on the parcel shall be sent by the authorized person to an environmental laboratory separately by registered post or courier.

9. **Detailed Sampling Procedures:** (1) Subject to the provisions of rules 7 and 8, where the nature of the samples or the tests or analyses proposed to be carried out so require, the Director-General may specify further details as to the procedures for taking, packing, storage and dispatch of samples, and where such details have been specified, the authorized person shall comply therewith.

10. **Test and Analysis of Samples**: (1) On receipt of sealed parcel containing a sample for test and analysis, the Chief Analyst shall compare the seals on the parcel with the specimen impression received, and shall note the condition of the seal thereon.

(2) Amongst other tests or analyses, the Chief Analyst shall particularly test or analyze the sample to determine whether it conforms to the Punjab Environmental Quality Standards.

(3) After the test or analysis, the Chief Analyst, on receipt of fees payable in respect thereof, shall forthwith send to the authorized person a certificate in the form as set out in Form D, in triplicate, declaring the results of such test or analysis.

(4) The Chief Analyst shall, as far as possible, carry out the test or analysis and send the certificate in the form as set out in Form D to the authorized person within thirty days of receipt of the sample:

Provided that if for any reason the Chief Analyst is unable to carry out the test or analysis within the prescribed period, he shall inform the authorized person accordingly who may collect the sample and

send the same to another environmental laboratory for the purpose.

(5) On receipt of the certificate in the form as set out in Form D, in triplicate, the authorized person shall –

(a) send one original to the person from whom the sample is taken;

(b) submit the second original with the complaint, if any, filed with the Environmental Tribunal or Environmental Magistrate; and

(c) retain the third original in his record or in the record of the Provincial Agency for future use.

11. **Admissibility and Evidentiary Value of Certificate of Environmental Laboratory**:

(1) Upon production in any inquiry, trial or other proceedings under the Act, of the certificate

in Form D issued by the Chief Analyst of an environmental laboratory in respect of a sample, the person from whom the sample is taken may, within fifteen days of receipt of the certificate, give notice to the authorized person in writing of his intention to contest the results contained in the certificate.

(2) Where on the request of the accused the Environmental Tribunal considers it necessary in the interests of justice, it may summon the Chief Analyst to give evidence in respect of the certificate issued by him:

Provided that the costs of summoning the Chief Analyst shall be deposited by the accused, and if the accused is subsequently acquitted, the same shall be refunded to him.

12. **Filing of Complaint:** (1) On receipt of a certificate in Form D, an authorized person may, if the said certificate indicates contravention or failure to comply with the provisions of sub-section (1) of section 11 of the Act, file a complaint against the

person or persons responsible for such contravention or failure, with the Environmental Tribunal having jurisdiction.

(2) A complaint referred to in sub-rule (1) shall be accompanied by an original certificate in Form D, and attested copies of a notice in Form B, forwarding letter of sample in Form C and notice if any, received under sub-rule (1) of rule 11.

(3) The authorized person may also submit to the Environmental Tribunal any article taken into possession under clause (b) of sub-rule (2) of rule 4, if it is considered necessary and practicable to do so.

13. **Expenses of Prosecution**: Along with the complaint, the authorized person may also file a statement indicating the expenses incurred in the prosecution, including the costs of samples and of test and analysis thereof, and may request the Environmental Tribunal that in case of conviction the aforesaid expenses may be reimbursed to the complainant, in accordance with the provisions of section 545 of the Code of Criminal Procedure, 1898 (Act V of 1898).

14. **Second Test and Analysis:** (1) Where the Environmental Tribunal is of the opinion, on the basis of evidence produced before it by the accused against whom the complaint has been filed, that further investigation is justified and is possible notwithstanding the time elapsed, it may, after recording the grounds for its opinion, direct that the third portion of the sample in the custody of the authorized person be sent for second test and analysis to another environmental laboratory:

Provided that the costs of the second test and analysis shall be deposited by the accused, and if the accused is subsequently acquitted, the same shall be refunded to him.

(2) The provisions of rules 10 and 11 shall apply to the second test and analysis under sub-rule (1), and the certificate in the form as

set out in Form D in respect thereof shall beissued.

15. **Procedure for Trial**: The Environmental Tribunal shall try an offence under sub-section
(1) of section 11 of the Act in accordance with the provisions of the Code of Criminal Procedure, 1898 (Act V of 1898).

16. Right of Private Persons to have Samples Analyzed:

(1) Any person may apply in writing to the Director-General for arranging test and analysis of such sample and from such person as may be specified in the application.

(2) If the Director-General approves the application, he shall instruct an authorized person to take the sample and arrange for its test and analysis, and the provisions of rules 7 to 11 shall, *mutatis mutandis*, apply thereto.

(3) The costs of taking the sample and of the test and analysis shall be paid by the applicant:

Provided that in case the sample is found by an environmental laboratory not to conform to the Punjab Environmental Quality Standards, the amount paid by the applicant shall be returned to him.

ANNEX-I

Sampling Guidelines for Ambient Air:

Sampling Site Survey

The sampling site survey should be conducted by the analyst. The analyst should coordinate with the proponent regarding sampling locations and sites. The analyst should evaluate the target site keeping in view the receptors near site and select the suitable sampling location based on the guidelines given below:

Sampling Networking Planning

The sampling networking planning depends on the objective of Ambient Air quality assessment. The ambient air quality objective varies from population exposure to hotspot assessment to evaluation of general ambient air quality of the region. The monitoring network planning strategy is a guidance in placement of fixed Air Quality Monitoring Station based on the objective. Based on the objectivity of the ambient air quality monitoring the five major categories are described to evaluate the placement of AQMS:

- **Real-Time Assessment**; Use to assess the state level air quality to develop the data mapping and forecasting.
- **Compliance Monitoring**; Compliance monitoring is the evaluation of progress made in attaining the desired air quality; for this purpose, sampling stations should be strategically situated to facilitate evaluation of the implemented control strategies.
- **Emergency Episode (EE) Evaluation**; For episode avoidance purposes, data are needed quickly--in no less than a few hours after the pollutant contacts the sensor. The severity of the problem, the size of the receptor area, and the availability of resources all influence both the scope and sophistication of the monitoring system.
- **Trends Analysis and Evaluation**; Trends monitoring is characterized by locating a minimal number of monitoring sites across as large an area as possible while still meeting the monitoring objectives. The

program objective is to determine the extent and nature of the air pollution and to determine the variations in the measured levels of the atmospheric contaminants in respect to the geographical, socio-economic, climatological and other factors.

- **Monitoring for Research**; Air monitoring networks related to health effects are composed of integrating samplers both for determining pollutant concentrations for ≤24 hours. The research requires that monitoring points be located so that the resulting data will represent the population group under evaluation. Therefore, the monitoring stations are established in the centers of small well-defined residential areas within a community.

The goal in siting stations is to correctly match the spatial scale represented by the sample of monitored air with the spatial scale most appropriate for the monitoring objective. In this regard, following scale should be kept in consideration while Siting the AQMS.

Micro; Concentrations in air volumes associated with area dimensions ranging from several meters up to about 100 meters.

Middle; Concentration typical of area up to several city blocks in size with dimensions ranging from 100 meters to 500 meters.

Neighborhood; Concentrations within some extended area of the city that has relatively uniform land use with dimensions in the 0.5 to 4.0 kilometers range.

Urban; Overall, citywide conditions with dimensions on the order of 4 to 50 kilometers. This scale would usually require more than one site for definition.

Regional; Usually a rural area of reasonably homogeneous geography and extends from tens to hundreds of kilometers.

National/Global; Concentrations characterizing the nation and the globe as a whole.

The linkage between the scale and objective of ambient air quality monitoring is described in the table-1 given below:

Table 1 Linkage Between Siting Scale and Objective of AQMS

Monitoring Objective	Appropriate Siting Scale
Highest Concentration	**Micro, Middle, Neighborhood, Sometimes Urban**
Population	**Neighborhood, Urban**
Source Impact	**Micro, Middle, Neighborhood**
General/Background & Regional Transport	**Urban/Regional**
Welfare-Related	**Urban/Regional**

Table 2 Spatial Scale and AQMS Siting Nature

Spatial Scale	SLAMS Sites[1]							$PM_{10-2.5}$	NCore[2]	STN[3]	NATTs[4]	PAMS[5]	OP[6]
	SO_2	CO	O_3	NO_2	Pb	PM_{10}	$PM_{2.5}$						
Micro	*	*			*	*	*	*					
Middle	*	*		*	*	*	*	*					*
Neighborhood	*		*	*	*	*	*	*	*	*	*	*	*
Urban			*	*	*		*		*	*	*	*	*
Regional			*		*		*		*		*		*

[1]State and Local Air Monitoring Stations [2]Multipollutant Network [3]Speciation Trends Network [4]National Air Toxics Trends Stations [5]Photochemical Assessment Monitoring Station [6]Open Sites

The impact of topography and meteorological data in designing the Air Quality Monitoring Network is also an important consideration. The parameters in the placing the AQMS in different type of topographies and meteorological conditions changes and the quick guide in evaluating the sites for placing the AQMS is given in **Table-3**.

Table 3 Monitoring Site Selection based on Topography and Air Flow of Site

Topographical Feature	Influence on air flow	Influence on monitoring site selection
Slope/Valley	Downward air currents at night and on cold days; up slope winds on clear days when valley heating occurs. Slope winds and valley channeled winds; tendency toward down-slope and down-valley winds; tendency toward inversions.	**Slopes and valleys as special sites for air monitors because pollutants generally are well dispersed; concentration levels not representative of other geographic areas; possible placement of monitor to determine concentration levels in a population or industrial center in valley.**
Water	Sea or lake breezes inland or parallel to shoreline during the day or in cold weather; land breezes at night.	**Monitors on shorelines generally for background readingsor for obtaining pollution data on water traffic.**
Hill	Sharp ridges causing turbulence; air flow around obstructions during stable conditions, but over obstructions during unstable conditions	**Depends on source orientation; upwind source emissions generally mixed down the slope, and siting at foot of hill not generally advantageous; downwind source emissions generally down washed near the source; monitoring closeto a source generally desirable if population centers adjacent or if monitoring protects workers**
Natural or manmade obstruction	Eddy effects	**Placement near obstructions not generally representative in readings**

Based on the current issues in Region regarding Smog the criteria for targeted pollutant playing key role in formation of Photochemical Smog is

being illustrated in the **Table-4** given below to regulate and monitor the precursor (Ozone, O_3) of Smog.

Table 4 Photochemical (Precursor, Ozone) Assessment Site Selection Criteria

Type #	Meas. Scale	Description
1	Urban	**Upwind and background characterization to identify those areas which are subjected to overwhelming incoming transport of ozone. The #1 Sites are located in the predominant morning upwind direction from the local area of maximum precursor emissions and at a distance sufficient to obtain urban scale measurements. Typically, these sites will be located near the upwind edge of thephotochemical grid model domain.**
2	Neighborhood	**Maximum ozone precursor emissions impacts located immediately downwind (using the same morning wind direction as for locating Site #1) of the area of maximum precursor emissions and are typically placed near the downwind boundary of the central business district (CBD) or primary area of precursor emissions mix to obtain neighborhood scale measurements.**
2a	Neighborhood	**Maximum ozone precursor emissions impacts -second-most predominant morning wind direction**
3	Urban	**Maximum ozone concentrations occurring downwind from the area of maximum precursor emissions. Locations for #3 Sites should be chosen so that urban scale measurements are obtained. Typically, these sites are located 10 to 30 miles from the fringe of the urban area**
4	**Urban**	**Extreme downwind monitoring of transported ozone and its precursor concentrations exiting the area and will identify those areas which are potentially contributing to overwhelming ozone transport into other areas. The #4 Sites are located in the predominant afternoon downwind direction from thelocal area of maximum precursor emissions at a distance sufficient to obtain urban scale measurements. Typically, these sites will be located near the downwind edge of the photochemicalgrid model domain.**

Sampling Methodology for Mobile Air Quality Stations

Sampling site depends on the objective of the sampling and analysis. The sampling site varies area to area. For instance, sampling site can be within radius of 0.5 meter to hundreds of kilometers from source depending on the pollution loads in the area. The general methodology should be followed for sampling of Air Quality and Noise Level Monitoring which are given below:

I. Site shouldn't have any obstruction i.e., Buildings, Mountains, Long Tree etc. if there is any it should not be more than 30^o incline. The Obstruction in the air stream will disturb the sampling and results will be inaccurate.

II. The station should be installed away from any sort of obstacle at least twice the height of the object (like Building, Tower etc.)

III. The Sampler should be installed on plain ground as much possible and sampler inlet should be at height of at least 2 Meter from the analyzer.

IV. The sampling site shouldn't be in downwind direction of any stationary pollutant source. This will cause disturbance in natural pollutant level.

V. The sampling shouldn't be conducted during rain or storm or abnormal weather conditions.

VI. The site shouldn't be near industrial activity. The samples near the industrial premises are usually concentrated. however, if the site is present within premises of industrial estate/area the baseline sample will be representative of that industrial estate/area.

VII. For the linear projects, the baseline sampling should be conducted at distance of every 5-10 Km while the sampling for the existing project, the sampling point will be identified by the analyst depending upon the pollution sources.

ANNEX-II

Sampling Guidelines for Stack Emission and Incineration

Monitoring Methodology

- The gaseous emissions monitoring should be conducted using USEPA Method 10, 7E and 8 or any other equivalent method for Carbon Monoxide (CO), Oxides of Nitrogen (NOx) and Oxides of Sulfur (SOx) respectively.
- The monitoring of Particulate Matter should be conducted through iso-kinetic method (Gravimetric Method) which collects the sample from the stationary source and then being analyzed in the laboratory for final readings. The sampling of PM should be conducted as per **USEPA Method 5 or 17 or equivalent method**.
- The heavy metals sample should be collected iso-kinetically using PM analyzer and should be analyzed according to USEPA Method 29 or any equivalent method.
- The sampling of acidic gases (H_2S, HCL, HF and Cl_2) should be conducted using iso-kinetic method in compliance with method 15 for H_2S and method 26 respectively or any equivalent method.

Sampling Point Evaluation and Protocol

- The sampling point should not have cyclonic or swirl flow.
- In terms of cross-sectional area, it should be higher than the 0.071 m^2.
- The simplified procedure should not be used when the measurement site is less than two stack or duct diameters downstream or less than a half diameter upstream from a flow disturbance.
- Sampling measurements should be performed at a site located at least eight stack or duct diameters downstream and two diameters upstream from any flow disturbance such as a bend, expansion, or contraction in the stack, or from a visible flame.

- An alternative location may be selected, at a position at least two stack or duct diameters downstream and a half diameter upstream from any flow disturbance.
-
- This method is applicable to gas streams flowing in ducts, stacks, and flues.

ANNEX-III

Sampling Guidelines for Noise Level

Sampling Methodology

The sample should be collected using Sound Pressure Level Meter which measures the noise level in dB (A) L eq. The following sampling collection methodology was adopted to collected sample from each site:

- The sampling site or location must consist of open site and should be over the hard reflecting plane.
- The Reflecting Plane surface should be a sealed concrete or sealed asphalt and extendable to 1 meter distance from noise meter microphone position.
- The sample should be taken at the distance of 7.5 meters from the premises of source.
- The site should be at least 3.2-10 meters away from any reflecting surface like; hillside, building signboard etc.
- The windscreen should be implied to the microphone of noise level meter if the wind speed is above 11km/hr.
- The calibration of equipment should be conducted prior to each measurement or annual calibration of instrumentation should be conducted with precision of +0.5 dB.
- The height of sound pressure level meter should be 1.2 m above ground or if the monitoring vehicle is available, it can be placed over the vehicles with 1.2 m height from roof of vehicle.
- The noise monitoring should not be conducted in Rainfall or any precipitation.
- The noise monitoring should not be conducted during lightening.
- There shouldn't be any observer at the distance of 1meter in all direction of microphone of noise meter.

- In higher windspeed (greater than 19 km/hr) noise testing shouldn't be performed.

ANNEX-IV

Sampling Guidelines for Soil Sampling

1. Collect the soil sample during fallow period.
2. In the standing crop, collect samples between rows.
3. Sampling at several locations in a zig-zag pattern ensures homogeneity.
4. Fields, which are similar in appearance, production and past-management practices, can be grouped into a single sampling unit.
5. Collect separate samples from fields that differ in colour, slope, drainage, past management practices like liming, gypsum application, fertilization, cropping system etc.
6. Avoid sampling in dead furrows, wet spots, areas near main bund, trees, manure heaps and irrigation channels.
7. The Site containing shallow roots, collect samples up to 15 cm depth. For site having deep roots at site, collect samples up to 30 cm depth.
8. Always collect the soil sample in presence of the site owner who knows the site better.

Field Procedure:

1. Divide the field into different homogenous units based on the visual observation.
2. Remove the surface litter at the sampling spot.
3. Drive the auger to a plough depth of 15 cm and draw the soil sample.
4. Collect at least 5-6 samples from each sampling unit and place in a bucket or tray.
5. If auger is not available, make a 'V' shaped cut to a depth of 15 cm in the sampling spot using spade.
6. Remove thick slices of soil from top to bottom of exposed face of the 'V' shaped cut and place in a clean container.

Laboratory Procedure:

1. Mix the samples thoroughly and remove foreign materials like roots, stones, pebbles and gravels.
2. Reduce the bulk to about half to one kilogram by quartering or compartmentalization.

3. Quartering is done by dividing the thoroughly mixed sample into four equal parts. The two opposite quarters are discarded and the remaining two quarters are remixed and the process repeated until the desired sample size is obtained.
4. Compartmentalization is done by uniformly spreading the soil over a clean hard surface and dividing into smaller compartments by drawing lines along and across the length and breadth. From each compartment a pinch of soil is collected. This process is repeated till the desired quantity of sample is obtained.
5. Collect the sample in a clean cloth or polythene bag.
6. Label the bag with information like name of the farmer, location of the farm, survey number, previous crop grown, present crop, crop to be grown in the next season, date of collection, name of the sampler etc.

ANNEX-V

Drinking Water and Wastewater Sampling Methodology

Pre-Sampling Protocol:

- When sample is collected leave, ample air space in the bottle (at least 2.5cm) to facilitate mixing by shaking before examination. No air space for Microbial samples.
- Collect samples that are representative of the water being tested
- Flush or disinfect sample port and use aseptic techniques to avoid sample contamination.
- Keep sampling bottles closed until it is to be filled
- Avoid loss of volatile materials by collecting sample in completely filled container. Achieve this by overfilling bottle before capping or sealing

For Sampling of Potable Water:

- If the water sample is to be taken from the distribution system tap without attachments, select a tap that is supplying water from a service pipe, directly connected with the main& is not served for example from a cistern or storage tank.
- Open tap fully & let water run to waste for 2 or 3 minutes or for a time sufficient to permit clearing the service line
- Reduce water flow to permit filling of bottle without splashing
- If tap cleaning is questionable, apply a solution of sodium hypochlorite (100mg/NaOCl/l) to faucet before sampling, let water run for additional 2 to 3 minutes after treatment.
- Don't sample leaking taps that allow water to flow over the outside of the tap.
- If sample is to be taken from a well fitted with hand pump, pump the water to waste for about 5 minutes before collecting sample.
- If the wells equipped with a mechanical pump, collect sample from a tap on the discharge.

For Sampling of Drinking Water Evaluation:

- In drinking water evaluation, collect samples of finish water and from distribution sites, selected to assure systematic coverage during each month.
- Carefully choose distribution system sample locations to include dead end sections to demonstrate bacteriological quality throughout the network & to ensure that the localized contamination does not occur through cross connections, breaks in the distribution lines ,or reduction in positive pressure

For Sampling of Microbiological Evaluation:

- For bacteriological samples, use sterilized bottles of glass or plastic of any suitable size and shape.
- Glass bottles of suitable size that can be sterilized repeatedly are satisfactory as sample containers
- Collect samples for microbiological examination in bottles that have been cleansed & rinsed carefully
- Given a final rinse with distilled water & sterilized it
- Before sterilization, cover tops & necks of sample bottles having glass closure with aluminum foil or heavy craft paper
- Add reducing agent to container in aseptic conditions that intended for the collection of water having residual chlorine or other halogens unless they contain both for direct planting of sample. Sodium Thiosulphate is a satisfactory dechlorinating agent that neutralizes any residual halogen & prevent continuation of bactericidal action during sample transit the examination then will indicate more accurately the true microbial content of water at the time of sampling.

For Sampling of Raw Water Supply:

- In collecting water directly from a river stream, lake reservoir, spring, or shallow well, obtain sample representative of the water that is the source of supply to the consumer
- It is undesirable to take the samples too near the bank or too far from the point of draw off or at the depth above or below the point of draw off.

Sample Preservation:

Nature of Sample Changes:

- **Temperature**

  Temperature can change quickly

- **pH Changes**

  pH may change significantly in a matter of minutes. With the changes in pH alkalinity-carbon dioxide balance, Calcium carbonate may precipitate and cause a decrease in the values for calcium & for total hardness

- **Dissolved gases**

  Dissolved gases (oxygen, CO_2) may be lost

  So, determine pH & dissolved gases in the field

- **Microbiological Activities**

May be responsible for the changes in the

a. nitrate-nitrite-ammonia content,
b. for decrease in phenol concentration and
c. in BOD or
d. for reducing sulfate to sulfide
e. Residual chlorine is reduced to chloride
f. Sulfide, sulfite, ferrous, iron, iodide & cyanide may be lost through oxidation
g. Biological changes taking place in the sample may change the oxidation state of some of some constituents

- **Color, Odor, Turbidity**

May increase, decrease or change in quality

Time interval between sample collection and analysis

In general, the shorter the time that elapses between the collection of a sample & its analysis, the more reliable will be the analytical results. For certain constituents and physical values, the immediate analysis in the field is required. For composite samples it is common practice to use the time at the end of composite collection as the sample collection time.

Changes caused by the growth of microorganisms are greatly retarded by keeping the sample in the dark and at low temperature. When the interval between the sample collection and analysis is long enough to produce changes in either the concentration or the physical state of the constituent to be measured. Sample preservation, sample collection criteria and holding time practice should be adopted as given in the Table below:

Determination	Container	Minimum Sample Size (ml)	Sample Type	Preservation	Recommended Storage	Regulatory
Alkalinity	P, G, FP	200	g	Cool, ≤6°C	24h	14 Days
BOD	P, G, FP	1000	g,c	Cool, ≤6°C	6h	48h
COD	P, G, FP	200	g,c	Analyze as soon as possible, or add H_2SO_4 to pH<2; Cool, ≤6°C	7days	28 Days
Chloride	P, G, FP	200	g,c	None Required	24h	28 Days
Chlorine, Total, Residual	P, G	50	g	Analyze Immediately	0.25h	0.25h
Color	P, G, FP	50	g,c	Cool, ≤6°C	24h	48h
EC	P, G, FP	50	g,c	Cool, ≤6°C	28days	28 Days
Cyanide	P, G, FP	100	g,c	Cool, ≤6°C	24h	24h if Sulfide present
Fluoride	P	100	g,c	None required	28days	28 Days
Total Hardness	P, G, FP	200	g,c	Add HNO_3 or H_2SO_4 to pH<2	6 months	6 Months
Metals	P(A), G(A), FP (A)	500	g,c	For dissolved metals filter immediately, add HNO3 to pH<2	6 months	6 Months
Ammonia	P, G, FP	1000	g,c	Analyze as soon as possible or add H_2SO_4 to pH<2, Cool, ≤6°C	7 days	28 Days
Nitrate	P, G, FP	100	g,c	Analyze as soon as possible; Cool, ≤6°C	1 -2 days	28 Days (14d for Chlorinated Samples)
Nitrite	P, G, FP	100	g,c	Analyze as soon as possible; Cool, ≤6°C	1 -2 days	28 Days
Odor	G	500	g	Analyze as soon as possible; ≤6°C	6 h	24h
Oil & Grease	G, wide-mouth calibrated	2000	g	Add HCl or H_2SO_4 to pH<2, Cool≤6°C	28 days	28 Days
MBAS	P, G, FP	500	g,c	Cool≤6° C	48h	7 Days Before Extraction, 40 d After Extraction

Phenol	P, G, PTFE-lined cap	500	g,c	Cool≤6° C, add H_2SO_4 to pH<2	28 days until extraction, 2 days after extraction	28 Days until Extraction, 2 Days After Extraction
TDS, TSS, TS	G,P	500	g,c	Refrigerate at 4 ^{0}C	<24h	7 Days
pH	P, G	50		Analyze immediately	0.25h	0.25h
Sulfate	P, G, FP	1000	g,c	Cool≤6° C	28 days	28 Days
Sulfide	P, G, FP	1000	g,c	Cool≤6° C; add 4 drops 2N zinc acetate/100 mL; add NaOH to pH <9	28 days	7 Days
Turbidity	P, G, FP	100	g,c	Analyze same day; store in dark up to 24 h, Cool≤6° C;	24h	48h
Micro	G	500	g	Analyze immediately, refrigerate at 4 ^{0}C, add sodium thiosulfate 3%,	24 h	48h

Sampling Procedure:

- **Hand Pump/Dug well**

  Purging-one stroke per foot of depth

- **Tube well**

  Flow for at least 10 minutes to get representative sample

  Depth of groundwater level and location of the tube well properly marked on the survey sheet

- **Pond, Nullah, Dam, River and Lake**

  Difficult to obtain a truly representative sample of surface water

  Sampling point selected carefully to avoid debris (chances are more near to bank in case of river)

  For lakes documentation of considerable variations (Runoff, rainfall and wind)

- **Water Supply**

  Sample collection from the source to minimize the effects of pollution in the distribution system

  Sample collection from consumers end to evaluate the actual quality of water

  Slow filling of sample containers to avoid turbulence and air bubbles

  For bacteriological samples flow of taps must be slow under flaming, transportation to lab. in controlled temp. within 24 hrs.

- **Stream Water**

Sample collection from the middle of the stream keeping bottle above of the bed of the stream to avoid unwanted bed material

- **Spring Water**

  Sample collection directly from the spring

Sampling Procedure for Microbiological Examination:

Sample Bottles

- Pre-sterilized sampling bottles of 200-500 ml capacity made of pre-sterilized disposable/autoclavable, good quality soda / borosilicate glass.
- Prior to sampling all bottles should be checked for physically defects i.e., leakage etc.

Dichlorination

- 3% of 0.5 ml sodium Thio-Sulfate (500ml capacity bottle) under aseptic condition is added in sampling bottles before sampling for de-chlorination purpose. This chemical neutralizes any residual chlorine and prevents continuation of bactericidal action during sample transit.

Sampling Procedure Steps

- Spray 70% ethanol on your hands up to arms for disinfection purpose.
- Remove any attachments from the tap such as pipes, filters etc. Open the tap for 5 minutes to flush out the standing water, close the tap and clean with tissue paper. Spray a small quantity of 70% ethanol on surface of tap and flame it with spirit lamp flame and let it cool down.
- After flaming, open the tap again to turn the water down to a thin stream (about the width of a pencil) and let it run for one minute.
- To avoid contamination while taking the sample, hold the bottle near the bottom with one hand, hold the top of the cap with the other, and then unscrew the cap. **Do not** place the cap on the ground. Sampling will be more reliable if performed near flame.
- Hold the bottle under the stream of water, being careful not to let the bottle touch the sample tap. Fill the bottle to the neck (leave 1” from top) but do not allow it to overflow. Remove the bottle from the water flow and replace the cap.

- Label the bottle with permanent marker and kept in insulated ice box having sterilized coolants (under controlled condition of 4^{o}C). Sample should be delivered to laboratory as soon as possible.
- Seal three bottles as per sampling rules

Prevention of Sampling Contamination:

- Never touch the neck of the bottle, or inside the lid. When filling the bottle, the lid should not be placed on a surface, but remain in the hand.
- The sample bottle should not be rinsed out prior to filling.
- The flow rate of the tap should not be changed during sampling as this may dislodge bacterial films inside the tap.
- A small air gap should be left in the bottle.
- Once the bottle is filled and the lid replaced the sample should be placed in an ice box for transfer to the laboratory/testing point in field.
- If accidental contamination is suspected then the sample should be discarded and taken again using a fresh container.

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GOVERNMENT OF THE PUNJAB

LAW AND PARLIAMENTARY AFFAIRS DEPARTMENT

NOTIFICATION

(...)

The following Notification No. SO…., dated ……. Regarding the Guidelines for Hazardous Waste Generating from Industries is published for general information:

Secretary
Government of the Punjab
Law and Parliamentary Affairs
Department

Government of the Punjab
Environmental Protection Department

NOTIFICATION: No. SO. In exercise of the powers conferred under clause (c) of sub-section 1 of section 4 of the Punjab Environmental protection Act, 1997 (XXXIV of 1997), the Environmental protection Council has approved the following as the Guideline for Hazardous Waste Generating from Industries:

Guidelines for Hazardous Waste Generating from Industries, 2024

Table of Contents

Definition:

a) "**Competent Authority**"**;** Environment Protection Authority (EPA, Punjab)

b) **"Prevention";** means to stop or intercept the approach, access, or performance of a thing.

c) **"Minimization";** means the reduction of something, especially something undesirable, to the smallest possible amount or degree.

d) **"Reuse";** means the action of using something again.

e) **"Recycling";** means convert (waste) into reusable material.

f) **"Recovery";** means a return to a normal state

g) **"Utilization";** means the action of making practical and effective use of something

h) **"Co-Processing";** means the use of waste materials together with new materials in an industrial process, especially to produce energy: Integrated management of waste can be applied through reduction at the source, separation, re-use, recycling and co-processing of wastes.

i) **"Safe Disposal";** means the process whereby spoilt foodstuff and condemned products may be disposed of on the Disposal site under supervision of a registered authority member

j) **"Occupier";** means a person or company residing in or using a property as its owner or tenant for hazardous waste, or (illegally) as a squatter

k) **"Hazardous Waste";** means a waste that has substantial or potential threats to public health or the environment. Hazardous waste is a type of dangerous goods. They usually have one or more of the following hazardous traits: ignitability, reactivity, corrosivity, toxicity.

l) **"Importer";** means a person or organization that brings goods or services into a country/State from Outside boundary of State or Country

m) **"Exporter";** means a person, country, or company that sends goods or services to another country

n) **"Operator";** means a person or company that runs a disposal facility.

PROCEDURE FOR MANAGEMENT OF HAZARDOUS AND OTHER WASTES

1. Responsibilities of the Occupier for Management of Hazardous and other Wastes-

(1) For the management of hazardous and other wastes, an occupier shall follow the following steps, namely-

(a) Prevention;

(b) Minimization;

(c) Reuse,

(d) Recycling;

(e) Recovery, utilization including co-processing;

(f) Safe Disposal.

(2) The occupier shall be responsible for safe and environmentally sound management of hazardous and other wastes.

(3) The hazardous and other wastes generated in the establishment of an occupier shall be sentor sold to an authorized actual user or shall be disposed of in an authorized disposal facility.

(4) The hazardous and other wastes shall be transported from an occupier's establishment to an authorized actual user or to an authorized disposal facility in accordance with the provisions of these rules.

(5) The occupier who intends to get its hazardous and other wastes treated and disposed of by the operator of a treatment, storage and disposal facility shall give to the operator of that facility, such specific information as may be needed for safe storage and disposal.

(6) The occupier shall take all the steps while managing hazardous and other wastes to-

(a) Contain contaminants and prevent accidents and limit their consequences on human beings and the environment; and

(b) Provide persons working in the site with appropriate training, equipment and the information necessary to ensure their safety.

2. Responsibilities of Provincial Government for environmentally sound management of hazardous and other wastes. —

(1) Department of Industry in the Province or any other government agency authorized in this regard by the provincial Government, to ensure earmarking or allocation of industrial space or shed for recycling, pre-processing and other utilization of hazardous or other waste in the existing and upcoming industrial park, estate and industrial clusters;

(2) Department of Labor in the Province or any other government agency authorized in this regardby the Provincial Government shall-

(a) Ensure recognition and registration of workers involved in recycling, pre-processing and other utilization activities;

(b) Assist formation of groups of such workers to facilitate setting up such facilities;

(c) undertake industrial skill development activities for the workers involved inrecycling, pre-processing and other utilization;

(d) Undertake annual monitoring and to ensure safety and health of workers involvedin recycling, pre-processing and other utilization.

3. Grant of authorization for managing hazardous and other wastes-

(1) Every occupierof the facility who is engaged in handling, generation, collection, storage, packaging,transportation, use, treatment, processing, recycling, recovery, pre-processing, co-processing, utilization, offering for sale, transfer or disposal

of the hazardous and other wastes shall be required to make an application to the EPA and obtain an authorization from the EPA.

1. Power to suspend or cancel an authorization-

(1) The EPA, may, if in its opinion the holder of the authorization has failed to comply with any of the conditions of the authorization or with any provisions of the Act or these rules and after giving him a reasonable opportunity of being heard and after recording reasons thereof in writing cancel or suspend the authorization issued under PEPA Act, 1997 for such period as it considers necessary in the public interest.

(2) Upon suspension or cancellation of the authorization, the EPA may give directions to the person whose authorization has been suspended or cancelled for the safe storage and management of the hazardous and other wastes, and such occupier shall complywith such directions.

4. Storage of hazardous and other wastes-

(1) The occupiers of facilities may store the hazardous and other wastes for a period not exceeding ninety days and shall maintain a record ofsale, transfer, storage, recycling, recovery, pre-processing, co-processing and utilization of such wastes and make these records available for inspection:

Provided that the EPA may extend the said period of ninety days in following cases, namely-

(i) small generators (up to ten tons per annum) up to one hundred and eighty days of their annual capacity;

(ii) actual users and disposal facility operators up to one hundred and eighty days of their annual capacity,

(iii) occupiers who do not have access to any treatment, storage, disposal facility in the concerned Province; or

(iv) the waste which needs to be specifically stored for development of a process for its recycling, recovery, pre-processing, co-processing or utilization;

(v) in any other case, on justifiable grounds up to one hundred and eighty days.

5. Utilization of hazardous and other wastes-

(1) The utilization of hazardous and other wastes as a resource or after pre-processing either for co-processing or for any other use, including within the premises of the generator (if it is not part of process), shall be carried out only after obtaining authorization from the EPA.

(2) Where standard operating procedures or guidelines are not available for specific utilization,the approval has to be sought from EPA which shall be granting approval on the basis of trial runs and thereafter, standard operating procedures or guidelines shall be prepared by EPA:

Provided, if trial run has been conducted for particular waste with respect to particular utilization and compliance to the environmental standards has been demonstrated, authorization may be granted by the EPA with respect to the same waste and utilization, without need of separate trial run by EPA and such cases of successful trial run, EPA shall intimate all the EPA regarding the same.

(3) No trial runs shall be required for co-processing of waste in cement plants for which guidelinesby the EPA are already available.

6. Standard Operating Procedure or guidelines for actual users-

EPA may issue guidelines or standard operating procedures for environmentally sound management of hazardous and other wastes from time to time.

IMPORT AND EXPORT OF HAZARDOUS AND OTHER WASTES

Import and export (transboundary movement) of hazardous and other wastes-

The Ministry of Climate Change shall be the nodal Ministry to deal with the transboundary movement of the hazardous and other wastes in accordance with the provisions of these rules.

7. Strategy for Import and export of hazardous and other wastes-

(1) No import of the hazardous and other wastes from any country to for disposal shall be permitted.

(2) The import of hazardous and other wastes from any country shall be permitted only for recycling, recovery, reuse and utilization including co-processing.

(3) The import of hazardous waste in Part A of Annexure III of Basel Convention may be allowed to actual users with the prior informed consent of the exporting country and shall require the permission of the Ministry of Climate Change.

(4) The import of other wastes in Part B of Annexure III of Basel Convention may be allowed to actual users with the permission of the Ministry of Climate Change.

(5) The import of other wastes in Part D of Annexure III of Basel Convention will be allowed as per procedure given in Section 14 and as per the note below the said Annexure.

(6) No import of the hazardous and other wastes specified in Annexure VI of Basel Convention shall be permitted.

(7) The export of hazardous and other wastes from listed in Part A and Part B of AnnexureIII and Annexure VI of Basel Convention shall be with the permission of Ministry of Climate Change. In case of applications for export of hazardous and other waste listed in Part A of Annexure III and Annexure VI of Basel Convention, they shall be considered on the basis of prior informed consent of the importing country.

(8) The import and export of hazardous and other wastes not specified in Annexure III of Basel Convention, but exhibiting the hazardous characteristics outlined in Part C of Annexure III of Basel Convention shall require prior written permission of the Ministry of Climate Change before it is imported to or exported from, as the case may be.

8. Procedure for import of hazardous and other wastes-

(1) Actual users intending to import or transit for transboundary movement of hazardous and other wastes shall apply to the Ministry of Climate Change for the proposed import together with the prior informed consent of the exporting country and shall send a copy of the application, simultaneously, to the concerned EPA for information and the acknowledgement in this respect from the concerned EPA shall be submitted to the Ministry of Climate Change along with the application.

9. Procedure for Export of hazardous and other wastes-

(1) Any occupier intending to export waste shall make an application to the Ministry of Climate Change for the proposed transboundary movement of thehazardous and other wastes together with the prior informed consent in writing from the importing country in respect of wastes.

10. Illegal traffic-

(1) The export and import of hazardous or other wastes from and into Punjab respectively shall be deemed illegal, if-

(i) It is without permission of the Central Government in accordance with these rules; or

(ii) The permission has been obtained through falsification, mis-representation or fraud;or

(iii) It does not conform to the shipping details provided in the movement documents; or

(iv) It results in deliberate disposal (i.e., dumping) of hazardous or other waste in contravention of the Basel Convention and of general principles of international or domestic law.

(2) In case of illegal import of the hazardous or other waste, the importer shall re-export the wastein question at his cost within a period of ninety days from the date of its arrival into Pakistan and its implementation will be ensured by the concerned Port and the Custom authority. In case of disposal of such waste by the Port and Custom authorities, they

shall do so in accordance with these rules with the permission of the Environment Protection Agency of the Province where the Port exists.

(3) In case of illegal import of hazardous or other waste, where the importer is not traceable then the waste either can be sold by the Customs authority to any user having authorization under these rules from the concerned EPA or can be sent to authorized treatment, storage and disposal facility.

TREATMENT, STORAGE AND DISPOSAL FACILITY FOR HAZARDOUS AND OTHER WASTES

11. Treatment, storage and disposal facility for hazardous and other wastes-

(1) The Provincial Government, occupier, operator of a facility or any association of occupiers shall individually or jointly or severally be responsible for identification of sites for establishing the facility for treatment, storage and disposal of the hazardous and other waste in the province.

(2) The operator of common facility or occupier of a captive facility, shall design and set up the treatment, storage and disposal facility as per technical guidelines issued by the EPA in this regard from time to time and shall obtain approval from the EPA for design and layout in this regard.

(3) The EPA shall monitor the setting up and operation of the common or captive treatment, storage and disposal facility, regularly.

(4) The operator of common facility or occupier of a captive facility shall be responsible for safe and environmentally sound operation of the facility and its closure and post closure phase, as per guidelines or standard operating procedures issued by the EPA from time to time.

(5) The operator of common facility or occupier of a captive facility shall maintain records of hazardous and other wastes handled by him.

(6) The operator of common facility or occupier of a captive facility shall file an annual return.

PACKAGING, LABELLING, AND TRANSPORT OF HAZARDOUS AND OTHER WASTES.

12. Packaging and Labelling-

(1) Any occupier handling hazardous or other wastes and operator of the treatment, storage and disposal facility shall ensure that the hazardous and other wastes are packaged in a manner suitable for safe handling, storage and transport as per the guidelines issued by the EPA from time to time.

(2) The label shall be of non-washable material, weather proof and easily visible.

13. Transportation of hazardous and other wastes-

(1) The occupier shall provide the transporter with the relevant information regarding the hazardous nature of the wastes and measures to be taken in case of an emergency and shall label the hazardous and other wastes containers.

(2) In case of transportation of hazardous and other waste for final disposal to a facility existing in a province other than the province where the waste is generated, the sender shall obtain 'No Objection Certificate' from the EPA of both the province.

(3) In case of transportation of hazardous and other waste for recycling or utilization including co- processing, the sender shall intimate both the provincial EPAs before handing over the waste to the transporter.

(4) In case of transit of hazardous and other waste for recycling, utilization including co- processing or disposal through a province other than the province of origin and destination, the sender shall give prior intimation to the concerned EPA of the provinces of transit before handing over the wastes to the transporter.

(5) In case of transportation of hazardous and other waste, the responsibility of safe transport shall be either of the sender or the receiver whosoever arranges the transport and has the necessary authorization for transport from the concerned EPA. This responsibility should be clearly indicated in the manifest.

(6) The authorization for transport shall be obtained either by the sender or the receiver on whose behalf the transport is being arranged.

14. Manifest system (Movement Document) for Hazardous and Other Waste to be Used within the Country Only-

(1) The sender of the waste shall prepare seven copies of the manifest comprising of color code indicated below and all seven copies shall be signed by thesender:

Copy number with color code	**Purpose**
(1)	**(2)**
Copy 1 (White)	To be forwarded by the sender to the EPA after signing all the seven copies.
Copy 2 (Yellow)	To be retained by the sender after taking signature on it from the transporter and the rest of the five signed copies to be carried bythe transporter.
Copy 3 (Pink)	To be retained by the receiver (actual user or treatment storage and disposal facility operator) after receiving the waste and the remaining four copies are to be duly signed by the receiver.
Copy 4 (Orange)	To be handed over to the transporter by the receiver afteraccepting waste.
Copy 5 (Green)	To be sent by the receiver to the EPA.
Copy 6 (Blue)	To be sent by the receiver to the sender.
Copy 7 (Grey)	To be sent by the receiver to the EPAof the sender in case the sender is in another province.

(2) The sender shall forward copy 1 (white) to the EPA, and in case the hazardous or other wastes is likely to be transported through any transit province, the sender shall intimate EPAs of transit province about the movement of the waste.

(3) No transporter shall accept waste from the sender for transport unless it is accompanied by signed copies 3 to 7 of the manifest.

(4) The transporter shall submit copies 3 to 7 of the manifest duly signed with date to the receiver along with the waste consignment.

(5) The receiver after acceptance of the waste shall hand over copy 4 (orange) to the transporter and send copy 5 (green) to his relevant provincial EPA and send copy 6 (blue) to thesender and the copy 3 (pink) shall be retained by the receiver.

(6) The copy 7 (grey) shall only be sent to the EPA of the sender, if the sender is in another province.

MISCELLANIOUS

15. Records and returns-

(1) The occupier handling hazardous or other wastes and operator of disposal facility shall maintain records of such operations.

(2) The occupier handling hazardous and other wastes and operator of disposal facility shall send annual returns to the EPA.

16. Responsibility of Authorities. –

The authority specified in column (2) of Annexure VII of Basel Convention shall perform the duties as specified in column (3) of the said Annexure subject to the provisions of these rules.

17. Accident Reporting. –

Where an accident occurs at the facility of the occupier handling hazardous or other wastes and operator of the disposal facility or during transportation, the occupier or the operator or the transporter shall immediately intimate the EPA through telephone, e-mail about the accident and subsequently send a report.

18. Liability of Occupier, Importer or Exporter and Operator of a Disposal Facility-

(1) The occupier, importer or exporter and operator of the disposal facility shall be liable for all damages caused to the environment or third party due to improper handling and management of the hazardous and other waste.

(2) The occupier and the operator of the disposal facility shall be liable to pay financial penalties as levied for any violation of the provisions under these rules by the EPA with the prior approval of the EPA.

19. Appeal-

(1) Any person aggrieved by an order of suspension or cancellation or refusal of authorization or its renewal passed by the EPA may, within a period of thirty days.

Note:

For Identification and Categorization of waste as Hazardous or Non-Hazardous, the guidelines are annexed as **Annexure I-VIII** as per Basel Convention.

Secretary, Government of the Punjab
Environment Protection Department

ANNEXURE I

List of Processes Generating Hazardous Wastes

S. No.	Processes	Hazardous Waste*
(1)	(2)	(3)
1.	Petrochemical processes and pyrolytic operations	1.1 Furnace or reactor residue and debris 1.2 Tarry residues and still bottoms fromdistillation 1.3 Oily sludge emulsion 1.4 Organic residues 1.5 Residues from alkali wash of fuels
2.	Crude oil and natural gas production	2.1 Drill cuttings excluding those from water-based mud 2.2 Sludge containing oil Drilling mud containing oil
3.	Cleaning, emptying and maintenance of petroleum oil storage tanks including ships	3.1 cargo residue, washing water and sludge containing oil 3.2 cargo residue and sludge containingchemicals 3.3 Sludge and filters contaminated with oil Ballast water containing oil from ships
4.	Petroleum refining or re-processing of used oil or recycling of waste oil	4.1 Oil sludge or emulsion 4.2 Spent catalyst 4.3 Slop oil 4.4 Organic residue from processes Spent clay containing oil
5.	Industrial operations using mineral or synthetic oil as lubricant in hydraulic systems or other applications	5.1 Used or spent oil 5.2 Wastes or residues containing oil Waste cutting oils
6.	Secondary production and / or industrial use of zinc	6.1 Sludge and filter press cake arising out of production of Zinc Sulphate and other Zinc Compounds. 6.2 Zinc fines or dust or ash or skimming's in dispersible form 6.3 Other residues from processing of zinc ash or skimming's

		Flue gas dust and other particulates
7.	Primary production of zinc or lead or copper and other non-ferrous metals except Aluminum	7.1 Flue gas dust from roasting 7.2 Process residues 7.3 Arsenic-bearing sludge 7.4 Non-ferrous metal bearing sludge and residue. Sludge from scrubbers
8.	Secondary production of copper	8.1 Spent electrolytic solutions 8.2 Sludge and filter cakes Flue gas dust and other particulates
9.	Secondary production of lead	9.1 Lead bearing residues 9.2 Lead ash or particulate from flue gas Acid from used batteries
10.	Production and/or industrial use of cadmium and arsenic and their compounds	10.1 Residues containing cadmium and arsenic
11.	Production of primary and secondary aluminum	11.1 Sludges from off-gas treatment 11.2 Cathode residues including pot liningwastes 11.3 Tar containing wastes 11.4 Flue gas dust and other particulates Dross and waste from treatment ofsalt sludge
	Crude oil and natural gas production	2.3 Drill cuttings excluding those from water-based mud 2.4 Sludge containing oil Drilling mud containing oil
(1)	**(2)**	**(3)**
		11.6 Used anode butts 11.7 Vanadium sludge from

		alumina refineries.
12.	Metal surface treatment, such as etching, staining, polishing, galvanizing, cleaning, degreasing, plating, etc.	12.1 Acidic and alkaline residues 12.2 Spent acid and alkali 12.3 Spent bath and sludge containing sulfide, cyanide and toxic metals 12.4 Sludge from bath containing organic solvents 12.5 Phosphate sludge 12.6 Sludge from staining bath 12.7 Copper etching residues 12.8 Plating metal sludge
13.	Production of iron and steel including other ferrous alloys (electric furnace; steel rolling and finishing mills; Coke oven and by products plant)	13.1 Spent pickling liquor 13.2 Sludge from acid recovery unit 13.3 Benzol acid sludge 13.4 Decanter tank tar sludge 13.5 Tar storage tank residue 13.6 Residues from coke oven by product plant.
14.	Hardening of steel	14.1 Cyanide-, nitrate-, or nitrite - containingsludge 14.2 Spent hardening salt
15.	Production of asbestos or asbestos-containing materials	15.1 Asbestos-containing residues 15.2 Discarded asbestos 15.3 Dust or particulates from exhaust gas treatment.
16.	Production of caustic soda and chlorine	16.1 Mercury bearing sludge generated from mercury cell process 16.2 Residue or sludges and filter cakes 16.3 Brine sludge
17.	Production of mineral acids	17.1 Process acidic residue, filter cake, dust 17.2 Spent catalyst
18.	Production of nitrogenous and complex fertilizers	18.1 Spent catalyst 18.2 Carbon residue 18.3 Sludge or residue containing arsenic 18.4 Chromium sludge from water cooling tower
19.	Production of phenol	19.1 Residue or sludge containing phenol

		19.2 Spent catalyst
20.	Production and/or industrial use ofsolvents	20.1 Contaminated aromatic, aliphatic or naphthenic solvents may or may not be fit for reuse. 20.2 Spent solvents 20.3 Distillation residues 20.4 Process Sludge
21.	Production and/or industrial use ofpaints, pigments, lacquers, varnishes and inks	21.1 Process wastes, residues and sludges 21.2 Spent solvent
22.	Production of plastics	22.1 Spent catalysts 22.2 Process residues
23.	Production and /or industrial use of glues, organic cements,	23.1 Wastes or residues (not made with vegetable or animal materials)

(1)	(2)	(3)
	adhesive and resins	23.2 Spent solvents
24.	Production of canvas and textiles	24.1 Chemical residues
25.	Industrial production and formulation of wood preservatives	25.1 Chemical residues 25.2 Residues from wood alkali bath
26.	Production or industrial use of synthetic dyes, dye-intermediates and pigments	26.1 Process waste sludge/residues containing acid, toxic metals, organic compounds 26.2 Dust from air filtration system 26.3 Spent acid 26.4 Spent solvent 26.5 Spent catalyst
27.	Production of organic-silicone compound	27.1 Process residues
28.	Production/formulation of drugs/pharmaceutical and health care product	28.1 Process Residue and wastes 28.2 Spent catalyst 28.3 Spent carbon 28.4 Off specification products 28.5 Date-expired products 28.6 Spent solvents

29.	Production, and formulation of pesticides including stock-piles	29.1 Process wastes or residues 29.2 Sludge containing residual pesticides 29.3 Date-expired and off-specification pesticides 29.4 Spent solvents 29.5 Spent catalysts 29.6 Spent acids
30.	Leather tanneries	30.1 Chromium bearing residue and sludge
31.	Electronic Industry	31.1 Process residue and wastes 31.2 Spent etching chemicals and solvents
32.	Pulp and Paper Industry	32.1 Spent chemicals 32.2 Corrosive wastes arising from use of strong acid and bases 32.3 Process sludge containing adsorbable organic halides (AO_X)
33.	Handling of hazardous chemicals and wastes	33.1 Empty barrels/containers/linerscontaminated with hazardous chemicals /Wastes 33.2 Contaminated cotton rags or other cleaning materials
34.	De-contamination of barrels / containers used for handling of hazardous wastes/chemicals	34.1 Chemical-containing residue arising from decontamination. 34.2 Sludge from treatment of waste water arising out of cleaning / disposal of barrels / containers
35.	Purification and treatment of exhaust air/gases, water andwaste water from the processes in this Annexure and common industrial effluent treatment plants (CETP's)	35.1 Exhaust Air or Gas cleaning residue 35.2 Spent ion exchange resin containing toxicmetals 35.3 Chemical sludge from waste water treatment 35.4 Oil and grease skimming 35.5 Chromium sludge from cooling water
36.	Purification process for organic	36.1 Any process or distillation residue
(1)	**(2)**	**(3)**

	compounds/solvents	36.2 Spent carbon or filter medium
37.	Hazardous waste treatment processes, e.g. pre-processing, incineration and concentration	37.1 Sludge from wet scrubbers 37.2 Ash from incinerator and flue gas cleaningresidue 37.3 Concentration or evaporation residues
38.	Chemical processing of Ores containing heavy metals such as Chromium, Manganese, Nickel, Cadmium etc.	38.1 Process residues 38.2 Spent acid

*** The inclusion of wastes contained in this Annexure does not preclude the use of Annexure II to demonstrate that the waste is not hazardous. In case of dispute, the matter would be referred to the Technical Review Committee constituted by Ministry of Climate Change Forest and Climate Change.**

Note: *The high-volume low effect wastes such as fly ash, Phospho-gypsum, red mud, jarosite, Slags from pyrometallurgical operations, mine tailings and ore beneficiation rejects are excluded from the category of hazardous wastes. Separate guidelines on the management of these wastesshall be issued by EPA.*

ANNEXURE II

List of Waste Constituents with Concentration Limits

Class A:

Based on leachable concentration limits [Toxicity Characteristic LeachingProcedure (TCLP) or Soluble Threshold Limit Concentration (STLC)]

Class	Constituents	Concentration in mg/l
(1)	(2)	(3)
A1	Arsenic	5.0
A2	Barium	100.0
A3	Cadmium	1.0
A4	Chromium and/or Chromium (III) compounds	5.0
A5	Lead	5.0
A6	Manganese	10.0
A7	Mercury	0.2
A8	Selenium	1.0
A9	Silver	5.0
A10	Ammonia	50*
A11	Cyanide	20*
A12	Nitrate (as nitrate-nitrogen)	1000.0
A13	Sulfide (as H_2S)	5.0
A14	1,1-Dichloroethylene	0.7
A15	1,2-Dichloroethane	0.5
A16	1,4-Dichlorobenzene	7.5
A17	2,4,5-Trichlorophenol	400.0
A18	2,4,6-Trichlorophenol	2.0
A19	2,4-Dinitrotoluene	0.13
A20	Benzene	0.5
A21	Benzo (a) Pyrene	0.001
A22	Bromo-di-chloro-methane	6.0
A23	Bromoform	10.0
A24	Carbon tetrachloride	0.5
A25	Chlorobenzene	100.0
A26	Chloroform	6.0
A27	Cresol (ortho+ meta+ para)	200.0
A28	Dibromochloromethane	10.0

A29	Hexachlorobenzene	0.13
A30	Hexachlorobutadiene	0.5
A31	Hexachloroethane	3.0
A32	Methyl ethyl ketone	200.0
A33	Naphthalene	5.0
A34	Nitrobenzene	2.0
A35	Pentachlorophenol	100.0
A36	Pyridine	5.0
A37	Tetrachloroethylene	0.7
A38	Trichloroethylene	0.5
(1)	**(2)**	**(3)**
A39	Vinyl chloride	0.2
A40	2,4,5-TP (Silvex)	1.0
A41	2,4-Dichlorophenoxyacetic acid	10.0
A42	Alachlor	2.0
A43	Alpha HCH	0.001
A44	Atrazine	0.2
A45	Beta HCH	0.004
A46	Butachlor	12.5
A47	Chlordane	0.03
A48	Chlorpyriphos	9.0
A49	Delta HCH	0.004
A50	Endo-sulfan (alpha+ beta+ sulphate)	0.04
A51	Endrin	0.02
A52	Ethion	0.3
A53	Heptachlor (& its Epoxide)	0.008
A54	Iso-proturan	0.9
A55	Lindane	0.4
A56	Malathion	19
A57	Methoxy-chlore	10
A58	Methyl parathion	0.7
A59	Mono-crotophos	0.1
A60	Phorate	0.2
A61	Toxaphene	0.5
A62	Antimony	15
A63	Beryllium	0.75
A64	Chromium (VI)	5.0

A65	Cobalt	80.0
A66	Copper	25.0
A67	Molybdenum	350
A68	Nickel	20.0
A69	Thallium	7.0
A70	Vanadium	24.0
A71	Zinc	250
A72	Fluoride	180.0
A73	Aldrin	0.14
A74	Dichlorodiphenyltrichloroethane(DDT), Di-chloro-diphenyl-dichloroethylene (DDE), Dichlorodiphenyldichloroethane (DDD)	0.1
A75	Dieldrin	0.8
A76	Kepone	2.1
A77	Mirex	2.1
A78	Polychlorinated biphenyls	5.0
A79	Dioxin (2,3,7,8-TCDD)	0.001

Class B:

Based on Total Threshold Limit Concentration (TTLC)

Class	**Constituent**	**Concentration in mg/kg**
(1)	**(2)**	**(3)**
B1	Asbestos	10000
B2	Total Petroleum Hydrocarbons(TPH) (C5 - C36)	5,000

Note:

(1) The testing method for list of constituents at A1 to A61 in Class-A, shall be based on Toxicity Characteristic Leaching Procedure (TCLP) and for extraction of leachable constituents, USEPA Test Method 1311 shall be used.

(2) The testing method for list of constituents at A62 to A79 in Class- A, shall be based on Soluble Threshold Limit Concentration (STLC) and Waste Extraction Test (WET) Procedure given in Appendix II of section 66261 of Title 22 of California Code regulation (CCR) shall be used.

(3) In case of ammonia (A10), cyanide (A11) and chromium VI (A64), extractions shall

be conducted using distilled water in place of the leaching media specified in the TCLP/STLC procedures.

(4) A summary of above specified leaching/extraction procedures is included in manual for characterization and analysis of hazardous waste published by EPA and in case the method is not covered in the said manual, suitable reference method may be adopted for the measurement.

(5) In case of asbestos, the specified concentration limits apply only if the substances are in a friable, powdered or finely divided state.

(6) The hazardous constituents to be analyzed in the waste shall be relevant to the nature of the industry and the materials used in the process.

(7) Wastes which contain any of the constituents listed below shall be considered as hazardous, provided they exhibit the characteristics listed in Class-C of this Annexure:

1.	Acid Amides
2.	Acid anhydrides
3.	Amines
4.	Anthracene
5.	Aromatic compounds other than those listed in Class A
6.	Bromates, (hypo-bromides)
7.	Chlorates (hypo-chlorites)
8.	Carbonyls
9.	Ferro-silicate and alloys
10.	Halogen- containing compounds which produce acidic vapors on contact with humid air or water e.g., silicon tetrachloride, aluminum chloride, titanium tetrachloride
11.	Halogen- silanes
12.	Halogenated Aliphatic Compounds
13.	Hydrazine (s)
14.	Hydrides
15.	Inorganic Acids
16.	Inorganic Peroxides
17.	Inorganic Tin Compounds
18.	Iodates
19.	(Iso- and thiol-) Cyanates
20.	Manganese-silicate
21.	Mercaptans

22.	Metal Carbonyls
23.	Metal hydrogen sulphates
24.	Nitrides
25.	Nitriles
26.	Organic azo and azo-oxy Compounds
27.	Organic Peroxides
28.	Organic Oxygen Compounds
29.	Organic Sulphur Compounds
30.	Organo- Tin Compounds
31.	Organo-nitro- and nitroso compounds
32.	Oxides and hydroxides except those of hydrogen, carbon, silicon, iron, aluminum, titanium, manganese,magnesium, calcium
33.	Phenanthrene
34.	Phenolic Compounds
35.	Phosphate compounds except phosphates of aluminum, calcium and iron
36.	Salts of pre-acids
37.	Total Sulphur
38.	Tungsten Compounds
39.	Tellurium and tellurium compounds
40.	White and Red Phosphorus
41.	2-Acetylaminofluorene
42.	4-Aminodiphenyl
43.	Benzidine and its salts
44.	Bis (Chloromethyl) ether
45.	Methyl chloromethyl ether
46.	1,2-Dibromo-3-chloropropane
47.	3,3'-Dichlorobenzidine and its salts
48.	4-Dimethylaminoazobenzene
49.	4-Nitrobiphenyl
50.	Beta-Propiolactone

CLASS C:

This class is Based on hazardous Characteristics.

Apart from the concentration limit given above, the substances or wastes shall be classified as hazardous waste if it exhibits any of the following characteristics due to the presence of any

hazardous constituents:

Class C1: Flammable-

A waste exhibits the characteristic of flammability or ignitability if arepresentative sample of the waste has any of the following properties, namely-

(i) flammable liquids, or mixture of liquids, or liquids containing solids in solution or suspension (for example, paints, varnishes, lacquers, etc; but not including substances or wastes otherwise classified on account of their dangerous characteristics), which give off a flammable vapor at temperature less than 60°C. This flash point shall be measured as per ASTM D 93-79 closed-cup test method or as determined by an equivalent test method published by EPA;

(ii) it is not a liquid and is capable, under standard temperature and pressure, of causing fire through friction, absorption of moisture or spontaneous chemical changes and, when ignited, burns vigorously and persistently creating a hazard;

(iii) it is an ignitable compressed gas;

(iv) It is an oxidizer and for the purposes of characterization is a substance such as a chlorate, permanganate, inorganic peroxide, or a nitrate, that yields oxygen readily to stimulate the combustion of organic matter.

Class C2: Corrosive-

A waste exhibits the characteristic of corrosivity if a representativesample of the waste has either of the following properties, namely-

(i) it is aqueous and has a pH less than or equal to 2 or greater than or equal to 12.5;

(ii) it is a liquid and corrodes steel (SAE 1020) at a rate greater than 6.35 mm per year ata test temperature of 55 °C;

(iii) it is not aqueous and, when mixed with an equivalent weight of water, produces a solution having a pH less than or equal to 2 or greater than or equal to 12.5;

(iv) it is not a liquid and, when mixed with an equivalent weight of water, produces a liquid that corrodes steel (SAE1020) at a rate greater than 6.35 mm per year at a test temperature of 55 °C.

Note:

For the purpose of determining the corrosivity, the standard methods for pH determination, Laboratory Corrosion Testing of Metals and EPA 1110A method for corrosivity towards steel to establish the corrosivity characteristics shall be adopted.

Class C3: Reactive or Explosive-

A waste exhibits the characteristic of reactivity if arepresentative sample of the waste it has any of the following properties, namely-

(i) it is normally unstable and readily undergoes violent change without detonating;

(ii) it reacts violently with water or forms potentially explosive mixtures with water;

(iii) when mixed with water, it generates toxic gases, vapors or fumes in a quantity sufficient

to present a danger to human health or the environment;

(iv) it is a cyanide or sulfide bearing waste which, when exposed to pH conditions between 2 and 12.5, can generate toxic gases, vapors or fumes in a quantity sufficient to present a danger to human health or the environmental;

(v) it is capable of detonation or explosive reaction if it is subjected to a strong initiating source or if heated under confinement;

(vi) it is readily capable of detonation or explosive decomposition or reaction at standard temperature and pressure;

(vii) it is a forbidden explosive.

Class C4: Toxic-

A waste exhibits the characteristic of toxicity, if, :-

(i) the concentration of the waste constituents listed in Class A and B (of this Annexure) are equal to or more than the permissible limits prescribed therein;

(ii) it has an acute oral LD50 less than 2,500 milligrams per kilogram;

(iii) it has an acute dermal LD50 less than 4,300 milligrams per kilogram;

(iv) it has an acute inhalation LC50 less than 10,000 parts per million as a gas or vapor;

(v) it has acute aquatic toxicity with 50% mortality within 96 hours for zebra fish (*Brachidanio rerio*) at a concentration of 500 milligrams per liter in dilution water and test conditions as specified in BIS test method 6582 — 2001.

(vi) it has been shown through experience or by any standard reference test- method to pose a hazard to human health or environment because of its carcinogenicity, mutagenicity, endocrine disruptively, acute toxicity, chronic toxicity, bio-accumulative properties or persistence in the environment.

Class C5: Substances or Wastes Liable to Spontaneous Combustion–

Substances or Wastes which are liable to spontaneous heating under normal conditions encountered in transport, or to heating up on contact with air, and being then liable to catch fire.

Class C6: Substances or Wastes Which, in Contact with Water Emit Flammable Gases-

Substances or Wastes which, by interaction with water, are liable to become spontaneously flammable or to give off flammable gases in dangerous quantities.

Class C5: Oxidizing–

Substances or Wastes which, while in themselves not necessarily combustible, may, generally by yielding oxygen cause, or contribute to, the combustion of other materials.

Class C8: Organic Peroxides–

Organic substances or Wastes which contain the bivalent O–O structure, which may undergo exothermic self-accelerating decomposition.

Class C9: Poisons (Acute)–

Substances or wastes liable either to cause death or serious injury or to harm human health if swallowed or inhaled or by skin contact.

Class C10: Infectious Substances-

Substances or Wastes containing viable micro-organisms or their toxins which are known or suspected to cause disease in animals or humans.

Class C11: Liberation of Toxic Gases in Contact with Air or Water–

Substances or Wastes which, by interaction with air or water, are liable to give off toxic gases in dangerous quantities.

Class C12: Eco-Toxic-

Substances or Wastes which if released, present or may present immediate or delayed adverse impacts to the environment by means of bioaccumulation or toxic effects upon biotic systems or both.

Class C13: Capable-

By any means, after disposal, of yielding another material, e.g., leachate, which possesses any of the characteristics listed above.

ANNEXURE III

Part A

List of Hazardous Wastes Applicable for Import and Export with Prior Informed Consent [Annexure VIII of the Basel Convention*]

Basel No.	**Description of Hazardous Wastes**
(1)	**(2)**
A1	**Metal and Metal bearing wastes**
A1010	Metal wastes and waste consisting of alloys of any of the following but excluding such wastes specifically listed in Part B and Part D
	- Antimony
	- Cadmium
	- Lead
	- Tellurium
A1020	Waste having as constituents or contaminants, excluding metal wastes in massive form, any or the following:
	- Antimony, antimony compounds
	- Cadmium, cadmium compounds
	- Lead, lead compounds
	- Tellurium, tellurium compounds
A1040	Waste having metal carbonyls as constituents
A1050	Galvanic sludges
A1070	Leaching residues from zinc processing, dust and sludges such as jarosite, hematite, etc.
A1080	Waste zinc residues not included in Part B, containing lead and cadmium in concentrations sufficient to exhibit hazard characteristics indicated in Part C
A1090	Ashes from the incineration of insulated copper wire
A1100	Dusts and residues from gas cleaning systems of copper smelters
A1120	Waste sludges, excluding anode slimes, from electrolyte purification systemsin copper electrorefining and electrowinning operations
A1140	Waste cupric chloride and copper cyanide catalysts not in liquid form note the related entry in Annexure VI
A1150	Precious metal ash from incineration of printed circuit boards not included in Part B
A1160	Waste lead acid batteries, whole or crushed
A1170	Unsorted waste batteries excluding mixtures of only Part B batteries. Waste batteries not specified in Part B containing constituents mentioned in Annexure II to an extent to render them hazardous

A2	**Wastes containing principally inorganic constituents, which may contain metals and organic materials**
A2010	Glass waste from cathode-ray tubes and other activated glasses
A2030	Waste catalysts but excluding such wastes specified in Part B
A3	**Wastes containing principally organic constituents, which may contain metals and inorganic materials**
A3010	Waste from the production or processing of petroleum coke and bitumen
A3020	Waste mineral oils unfit for their originally intended use
A3050	Wastes from production, formulation and use of resins, latex, plasticizers, glues or adhesives excluding such wastes specified in Part B (B4020)
A3120	Fluff-light fraction from shredding
(1)	**(2)**
A3130	Waste organic phosphorus compounds
A4	**Wastes which may contain either inorganic or organic constituents**
A4010	Wastes from the production, preparation and use of pharmaceutical products but excluding such waste specified in Part B
A4040	Wastes from the manufacture, formulation and use of wood-preserving chemicals (does not include wood treated with wood preserving chemicals)
A4070	Waste from the production, formulation and use of inks, dyes, pigments, paints, lacquers, varnish excluding those specified in Part B (B4010)
A4100	Wastes from industrial pollution control devices for cleaning of industrial off-gases but excluding such wastes specified in Part B
A4120	Wastes that contain, consist of or are contaminated with peroxides.
A4130	Wastes packages and containers containing Annexure II constituents in concentration sufficient to exhibit Part C of Annexure III hazard characteristics.
A4140	Waste consisting of or containing off specification or outdated chemicals (unused within the period recommended by the manufacturer) corresponding to constituents mentioned in Annexure II and exhibiting Part C of Annexure III hazard characteristics.
A4160	Spent activated carbon not included in Part B, B2060

*This List is based on Annexure VIII of the Basel Convention on Transboundary Movement of Hazardous Wastes and comprises of wastes characterized as hazardous under Article I, paragraph 1(a) of the Convention. Inclusion of wastes on this list does not preclude the use of hazard. Characteristics given in Annexure VIII of the Basel Convention (Part C of this Annexure) to demonstrate that the wastes are not hazardous. **Hazardous wastes in Part-A are restricted and cannot be allowed to be imported without permission from the Ministry of Climate Change and the Directorate General of Foreign Trade license, if applicable.**

Part B

List of other Wastes Applicable for Import and Export and Not Requiring Prior Informed Consent [Annex IX of The Basel Convention*]

Basel No.	Description of wastes
(1)	**(2)**
B1	**Metal and metal-bearing wastes**
B1010	Metal and metal-alloy wastes in metallic, non-dispersible form:
	- Thorium scrap
	- Rare earths scrap
B1020	Clean, uncontaminated metal scrap, including alloys, in bulk finished form (sheet, plates, beams, rods, etc.), of:
	- Antimony scrap
	- Beryllium scrap
	- Cadmium scrap
	- Lead scrap (excluding lead acid batteries)
	- Selenium scrap
	- Tellurium scrap
B1030	Refractory metals containing residues
(1)	**(2)**
B1031	Molybdenum, tungsten, titanium, tantalum, niobium and rhenium metal andmetal alloy wastes in metallic dispersible form (metal powder), excluding such wastes as specified in Part A under entry A1050, Galvanic sludges
B1040	Scrap assemblies from electrical power generation not contaminated with lubricating oil, PCB or PCT to an extent to render them hazardous
B1050	Mixed non-ferrous metal, heavy fraction scrap, containing cadmium, antimony, lead & tellurium mentioned in Annexure II in concentrations sufficient to exhibit Part C characteristics
B1060	Waste selenium and tellurium in metallic elemental form including powder
B1070	Waste of copper and copper alloys in dispersible form, unless they contain any of the constituents mentioned in Annexure II to an extent that they exhibit Part C characteristics
B1080	Zinc ash and residues including zinc alloys residues in dispersible form unless they contain any of the constituents mentioned in Annexure II in concentration such as to exhibit Part C characteristics
B1090	Waste batteries conforming to a standard battery specification, excluding those made with lead, cadmium or mercury
B1100	Metal bearing wastes arising from melting, smelting and refining of metals:

	- Slags from copper processing for further processing or refining containing arsenic, lead or cadmium
	- Slags from precious metals processing for further refining
	- Wastes of refractory linings, including crucibles, originating from copper smelting
	- Tantalum-bearing tin slags with less than 0.5% tin
B1110	Used Electrical and electronic assemblies other than those listed in Part D of Annexure III
	Electronic assemblies consisting only of metals or alloys Waste electrical and electronic assemblies or scrap (including printed circuit boards) not containing components such as accumulators and other batteries included in Part A of Annexure III, mercury-switches, glass from cathode-ray tubes and other activated glass and PCB-capacitors, or not contaminated with Annexure II constituents such as cadmium, mercury,lead, polychlorinated biphenyl) or from which these have been removed, to an extent that they do not possess any of the characteristics contained in Part C of Annexure III (note the related entry in Annexure VI, A1180)
B1120	Spent catalysts excluding liquids used as catalysts, containing any of: Transition metals, excluding waste catalysts (spent catalysts, liquid used catalysts or other catalysts) in Part A and Annexure VI: - Scandium - Titanium - Vanadium - Chromium - Manganese - Iron - Cobalt - Nickel - Copper - Zinc - Yttrium - Zirconium - Niobium - Molybdenum - Hafnium - Tantalum

(1)	**(2)**
	- Tungsten - RheniumLanthanides (rare earth metals): - Lanthanum - Cerium

	- Praseodymium - Neodymium - Samarium - Europium - Gadolinium - Terbium - Dysprosium - Holmium - Erbium - Thulium - Ytterbium - Lutetium
B1130	Cleaned spent precious metal bearing catalysts
B1140	Precious metal bearing residues in solid form which contain traces of inorganic cyanides
B1150	Precious metals and alloy wastes (gold, silver, the platinum group but not mercury) in a dispersible form, non-liquid form with appropriate packaging and labelling
B1160	Precious metal ash from the incineration of printed circuit boards (note the related entry in Part A A1150)
B1170	Precious metal ash from the incineration of photographic film
B1180	Waste photographic film containing silver halides and metallic silver
B1190	Waste photographic paper containing silver halides and metallic silver
B1200	Granulated slag arising from the manufacture of iron and steel
B1210	Slag arising from the manufacture of iron and steel including slags as a source of Titanium dioxide and Vanadium
B1220	Slag from zinc production, chemically stabilized, having a high iron content (above 20%) and processed according to industrial specifications mainly for construction
B1230	Mill scale arising from the manufacture of iron and steel
B1240	Copper Oxide mill-scale
B2	**Wastes containing principally inorganic constituents, which may contain metals and organic materials**
B2010	Wastes from mining operations in non-dispersible form:
	- Natural graphite waste
	- Slate wastes
	- Mica wastes
	- Leucite, nepheline and nepheline syenite waste
	- Feldspar waste
	- Fluorspar waste
	- Silica wastes in solid form excluding those used in foundry Operations

B2020	Glass wastes in non-dispersible form: - Cullet and other waste and scrap of glass except for glass from cathode-ray tubes and other activated glasses
B2030	Ceramic wastes in non-dispersible form: - Cermet wastes and scrap (metal ceramic composites) - Ceramic based fibers
B2040	Other wastes containing principally inorganic constituents: - Partially refined calcium sulphate produced from flue gasdesulphurization (FGD) - Waste gypsum wallboard or plasterboard arising from the demolitionof buildings

(1)	(2)
	- Slag from copper production, chemically stabilized, having a high iron content (above 20%) and processed according to industrial specifications mainly for construction and abrasive applications - Sulphur in solid form - Limestone from production of calcium cyanamide (pH<9) - Sodium, potassium, calcium chlorides - Carborundum (silicon carbide) - Broken concrete - Lithium-tantalum and lithium-niobium containing glass scraps
B2060	Spent activated carbon not containing any of Annexure II constituents to the extent they exhibit Part C characteristics, for example, carbon resulting from the treatment of potable water and processes of the food industry and vitamin production (note the related entry in Part A A4160)
B2070	Calcium fluoride sludge
B2080	Waste gypsum arising from chemical industry processes not included in Annexure VI (note the related entry in A2040)
B2090	Waste anode butts from steel or Aluminum production made of petroleum coke or bitumen and cleaned to normal industry specifications (excluding anode butts from chlor alkali electrolysis and from metallurgical industry)
B2100	Waste hydrates of Aluminum and waste alumina and residues from alumina production, excluding such materials used for gas cleaning, flocculation orfiltration processes
B2130	Bituminous material (asphalt waste) from road construction and maintenance, not containing tar (note the related entry in Annexure VI,

	A3200)
B3	**Wastes containing principally organic constituents, which may contain metals and inorganic materials**
B3027	Self-adhesive label laminate waste containing raw materials used in label material production
B3030	Textile wastes The following materials, provided they are not mixed with other wastes and are prepared to a specification: - Silk waste (including cocoons unsuitable for reeling, yarn waste andgarneted stock) • not carded or combed • other - Waste of wool or of fine or coarse animal hair, including yarn wastebut excluding garneted stock • noels of wool or of fine animal hair • other waste of wool or of fine animal hair • waste of coarse animal hair - Cotton waste (including yarn waste and garneted stock) • yarn waste (including thread waste) • garneted stock • other - Flax tow and waste - Tow and waste (including yarn waste and garneted stock) of true hemp (Cannabis sativa L.) - Tow and waste (including yarn waste and garneted stock) of jute and other textile bast fibers (excluding flax, true hemp and ramie) - Tow and waste (including yarn waste and garneted stock) of sisal
(1)	**(2)**

	and other textile fibers of the genus Agave - Tow, noels and waste (including yarn waste and garneted stock) of coconut - Tow, noels and waste (including yarn waste and garneted stock) of abaca (Manila hemp or Musa textilis Nee) - Tow, noels and waste (including yarn waste and garneted stock) of ramie and other vegetable textile fibers, not elsewhere specified or included - Waste (including noels, yarn waste and garneted stock) of man- made fibers • of synthetic fibers • of artificial fibers - Worn clothing and other worn textile articles - Used rags, scrap twine, cordage, rope and cables and worn-out articles of twine, cordage, rope or cables of textile materials • sorted • other
B3035	Waste textile floor coverings, carpets
B3040	Rubber Wastes The following materials, provided they are not mixed with other wastes: - Waste and scrap of hard rubber (e.g., ebonite) - Other rubber wastes (excluding such wastes specified elsewhere)
B3050	Untreated cork and wood waste: - Wood waste and scrap, whether or not agglomerated in logs, briquettes, pellets or similar forms - Cork waste: crushed, granulated or ground cork
B3060	Wastes arising from agro-food industries provided it is not infectious: - Wine lees - Dried and sterilized vegetable waste, residues and by-products, whether or not in the form of pellets, of a kind used in animal feeding, not elsewhere specified or included - Degras: residues resulting from the treatment of fatty substances oranimal or vegetable waxes - Waste of bones and horn-cores, unworked, defatted, simply prepared (but not cut to shape), treated with acid or DE gelatinized - Fish waste - Cocoa shells, husks, skins and other cocoa waste

	- Other wastes from the agro-food industry excluding by-products which meet national and international requirements and standardsfor human or animal consumption
B3070	The following wastes: - Waste of human hair - Waste straw - Deactivated fungus mycelium from penicillin production to be usedas animal feed
B3080	Waste parings and scrap of rubber
B3090	Paring and other wastes of leather or of composition leather not suitable for the manufacture of leather articles, excluding leather sludges, not containing hexavalent chromium compounds and biocides (note the related entry in Annexure VI, A3100)
(1)	**(2)**
B3100	Leather dust, ash, sludges or flours not containing hexavalent chromium compounds or biocides (note the related entry in Annexure VI, A3090)
B3110	Fellmongery wastes not containing hexavalent chromium compounds or biocides or infectious substances (note the related entry in Annexure VI, A3110)
B3120	Wastes consisting of food dyes
B3130	Waste polymer ethers and waste non-hazardous monomer ethers incapable of forming peroxides
B3140	Waste pneumatic and other tires, excluding those which do not lead to resource recovery, recycling, reclamation but not for direct reuse
B4	**Wastes which may contain either inorganic or organic constituents**
B4010	Wastes consisting mainly of water-based or latex paints, inks and hardened varnishes not containing organic solvents, heavy metals or biocides to an extent to render them hazardous (note the related entry in Part A, A4070)
B4020	Wastes from production, formulation and use of resins, latex, plasticizers, glues or adhesives, not listed in Part A, free of solvents and other contaminants to an extent that they do not exhibit Part C characteristics

	(note the related entry in Part A, A3050)
B4030	Used single-use cameras, with batteries not included in Part A

* This list is based on Annexure IX of the Basel Convention on Transboundary Movement of Hazardous Wastes and comprises of wastes not characterized as hazardous under Article-Iof the Basel Convention. **The wastes in Part- B are restricted and cannot be allowed to be imported without permission from the Ministry of Climate Change and the Directorate General of Foreign Trade license, if applicable.**

Note:

(1) Copper dross containing copper greater than 65% and lead and Cadmium equal to or less than 1.25% and 0.1% respectively; spent cleaned metal catalyst containing copper; and copper reverts, cake and residues containing lead and cadmium equal to or less than 1.25% and 0.1% respectively are allowed for import without Director General of Foreign Trade license to units (actual users) authorized by EPA and with the Ministry of Climate Change's permission. Copper reverts, cake and residues containing lead and cadmium greater than 1.25% and 0.1% respectively are under restricted categoryfor which import is permitted only against Director General of Foreign Trade licensefor the purpose of processing or reuse by units permitted with the Ministry of Climate Change (actual users).

(2) Zinc ash or skimmings in dispersible form containing zinc more than 65% and lead and cadmium equal to or less than 1.25% and 0.1% respectively and spent cleaned metal catalyst containing zinc are allowed for import without Director General of Foreign Trade license to units authorized by Ministry of Climate Change and EPA, Punjab's permission (actual users) up to an annual quantity limit indicated in registration letter. Zinc ash and skimming's containing less than 65% zinc and lead and cadmium equal to or more than 1.25% and 0.1% respectively and hard zinc spelter and brass dross containing lead greater than 1.25% are under restricted category for which import is permitted against Director General of Foreign Trade license and only for purpose of processing or reuse by units registered with the Ministry of Climate Change and EPA, Punjab (actual users).

Part C: List of Hazardous Characteristics

Code *Characteristic*

H 1 *Explosive*

An explosive substance or waste is a solid or liquid substance or waste (or mixture of substances or wastes) which is in itself capable by chemical reaction of producing gas at such a temperature and pressure and at such a speed as tocause damage to the surrounding.

H 3 *Flammable Liquids*

The word "flammable" has the same meaning as "inflammable". Flammable liquids are liquids, or mixtures of liquids, or liquids containing solids in solution or suspension (for example, paints, varnishes, lacquers, etc. but not including substances or wastes otherwise classified on account of their dangerous characteristics) which give off a flammable vapour at temperatures of not morethan 60.5ºC, closed-cup test, or not more than 65.6ºC, open-cup test. (Since the results of open-cups tests and of closed-cup tests are not strictly comparable and even individual results by the same test are often variable, regulations varyingfrom the above figures to make allowance for such differences would be within the spirit of this definition).

H 4.1 *Flammable Solids*

Solids, or waste solids, other than those classed as explosives, which underconditions encountered in transport are readily combustible, or may cause orcontribute to fire through friction.

H 4.2 *Substances or Wastes Liable to Spontaneous Combustion*

Substances or wastes which are liable to spontaneous heating under normal conditions encountered in transport, or to heating up on contact with air, and being then liable to catch fire.

H 4.3 *Substances or Wastes Which, In Contact with Water Emit Flammable Gases*

Substances or wastes which, by interaction with water, are liable to become spontaneously flammable or to give off flammable gases in dangerous quantities.

H 5.1 *Oxidizing*

Substances or wastes which, while in themselves not necessarily combustible, may, generally by yielding oxygen cause, or contribute to, the combustion or other materials.

H 5.2 *Organic Peroxides*

Organic substances or wastes which contain the bivalent-o-o-structure are thermally unstable substances which may undergo exothermic self-accelerating decomposition.

H 6.1 *Poisons (Acute)*

Substances or wastes liable either to cause death or serious injury or to harm human health if swallowed or inhaled or by skin contact.

H 6.2 *Infectious Substances*

Substances or wastes containing viable micro-organisms or their toxins which are known or suspected to cause disease in animals or humans.

H 8 *Corrosives*

Substances or wastes which, by chemical action, will cause severe damage when in contact with living tissue, or, in the case of leakage, will materially damage, or even destroy, other goods or the

means of transport; they may also cause other hazards.

H 10 Liberation of Toxic Gases in Contact with Air or Water

Substances or wastes which, by interaction with air or water, are liable to give off toxic gases in dangerous quantities.

H 11 Toxic (Delayed or Chronic)

Substances or wastes which, if they are inhaled or ingested or if they penetrate the skin, may involve delayed or chronic effects, including carcinogenicity).

H 12 Eco-Toxic

Substances or wastes which if released, present or may present immediate or delayed adverse impacts to the environment by means of bioaccumulation or toxic effects upon biotic systems or both.

H 13 Capable

By any means, after disposal, of yielding another material, e.g., leachate, which possesses any of the characteristics listed above.

Part D

List of Other Wastes Applicable for Import and Export Without Permission From Ministry Of Climate Change [Annex IX Of The Basel Convention*]

Basel No.	**Description of wastes**
(1)	**(2)**
B1	**Metal and metal-bearing wastes**
B1010	Metal and metal-alloy wastes in metallic, non-dispersible form:
	- Precious metals (gold, silver, platinum but not mercury) * *
	- Iron and steel scrap * *
	- Nickel scrap * *
	- Aluminum scrap* *
	- Zinc scrap * *
	- Tin scrap * *
	- Tungsten scrap * *
	- Molybdenum scrap * *
	- Tantalum scrap * *
	- Cobalt scrap * *
	- Bismuth scrap * *
	- Titanium scrap * *
	- Zirconium scrap * *
	- Manganese scrap * *
	- Germanium scrap * *
	- Vanadium scrap * *
	- Hafnium scrap * *
	- Indium scrap * *
	- Niobium scrap * *
	- Rhenium scrap * *
	- Gallium scrap * *
	- Magnesium scrap * *
	- Copper scrap * *
	- Chromium scrap * *
B1050	Mixed non-ferrous metal, heavy fraction scrap, containing metals other than specified in Part B1050 and not containing constituents mentioned in Annexure II in concentrations sufficient to exhibit Part C characteristics* *
B1100	Metal bearing wastes arising from melting, smelting and refining of metals:
	- Hard Zinc spelter * *
	- Zinc-containing dross's * *:
	~ Galvanizing slab zinc top dross (>90% Zn)
	~ Galvanizing slab zinc bottom dross (>92% Zn)
	~ Zinc dies casting dross (>85% Zn)
	~ Hot dip galvanizers slab zinc dross (batch) (>92% Zn)

	~ Zinc skimming's
	– Aluminum skimming's (or skims) excluding salt slag
(1)	**(2)**
B1110	Electrical and electronic assemblies (including printed circuit boards, electronic components and wires) destined for direct reuse and not for recycling or final disposal
	- Used electrical and electronic assemblies imported for repair and to be re-exported back after repair within one year of import * * *
	- Used electrical and electronic assemblies imported for rental purpose andre-exported back within one year of import * * *
	- Used electrical and electronic assemblies exported for repair and to be re-import after repair
	- Used electrical and electronic assemblies imported for testing, research and development, project work purposes and to be re-exported back within a period of three years from the date of import * * *
	- Spares imported for warranty replacements provided equal number of defective or non-functional parts are exported back within one year of theimport * * *
	- Used electrical and electronic assemblies imported by Ministry of Defense, Department of Space and Department of Atomic Energy * * *
	- Used electrical and electronic assemblies (not in bulk; quantity less than orequal to three) imported by the individuals for their personal uses
	- Used Laptop, Personal Computers, Mobile, Tablet up to 01 number eachimported by organizations in a year
	- Used electrical and electronic assemblies owned by individuals and imported on transfer of residence
	- Used multifunction print and copying machines (MFDs)* * * *
	- Used electrical and electronic assemblies imported by airlines for aircraft maintenance and remaining either on board or under the custodianship of the respective airlines warehouses located on the airside of the custom bonded areas.
B3	**Wastes containing principally organic constituents, which may contain metals and inorganic materials**

B3020	Paper, paperboard and paper product wastes * * The following materials, provided they are not mixed with hazardous wastes: Waste and scrap of paper or paperboard of: - unbleached paper or paperboard or of corrugated paper or paperboard - other paper or paperboard, made mainly of bleached chemical pulp, not colored in the mass - paper or paperboard made mainly of mechanical pulp (for example newspapers, journals and similar printed matter) - other, including but not limited to (1) laminated paperboard (2) unsorted scrap
B3140	Aircraft Tires exported to Original Equipment Manufacturers for re-treading and re-imported after re-treading by airlines for aircraft maintenance and remaining either on board or under the custodianship of the respective airline's warehouses located on the airside of the custom bonded areas

Note:

* This list is based on Annexure IX of the Basel Convention on Transboundary Movement of Hazardous Wastes and comprises of wastes not characterized as hazardous under Article-I ofthe Basel Convention.

* * Import permitted in the country to the actual user or to the trader on behalf of the actual users authorized by EPA, PUNJAB on one time basis and subject to verification of documents specified in Annexure VIII of these rules by the Custom Authority.

* * * Import permitted in the country only to the actual users from Original Equipment Manufacturers (OEM) and subject to verification of documents specified in Annexure VIII of these rules by the Custom Authority.

* * * * Import permitted in the country to the actual users or trader on behalf of the actual user in accordance with the documents required and verified by the Custom Authority as specified under Annexure VIII of these rules. The policy for free trade for multifunction print and copying machine to be reviewed once the MFDs are domestically manufactured.

All other wastes listed in Part D of Annexure III having no "Stars" are permitted without any documents from MoCC & EPA, Punjab subject to compliance of the conditions of the Customs Authority, if any.

ANNEXURE IV

List of Commonly Recyclable Hazardous Wastes

S. No.	**Wastes**
(1)	**(2)**
1.	Brass Dross
2.	Copper Dross
3.	Copper Oxide mill scale

4.	Copper reverts, cake and residue
5.	Waste Copper and copper alloys in dispersible from
6.	Slags from copper processing for further processing or refining
7.	Insulated Copper Wire Scrap or copper with PVC sheathing including ISRI-code material namely “Druid”
8.	Jelly filled Copper cables
9.	Spent cleared metal catalyst containing copper
10.	Spent catalyst containing nickel, cadmium, Zinc, copper, arsenic, vanadium andcobalt
11.	Zinc Dross-Hot dip Galvanizers SLAB
12.	Zinc Dross-Bottom Dross
13.	Zinc ash/Skimming’s arising from galvanizing and die casting operations
14.	Zinc ash/Skimming/other zinc bearing wastes arising from smelting and refining
15.	Zinc ash and residues including zinc alloy residues in dispersible from
16.	Spent cleared metal catalyst containing zinc
17.	Used Lead acid battery including grid plates and other lead scrap/ashes/residues not covered under Batteries (Management and Handling) Rules, 2001. [Battery scrap, namely: Lead battery plates covered by ISRI, Code word “Rails” Battery lugs covered by ISRI, Code word “Rakes”. Scrap drained/dry while intact, lead batteries covered by ISRI, Code word “rains”.
(1)	**(2)**
18.	Components of waste electrical and electronic assembles comprising accumulators and other batteries included in Part A of Annexure III, mercury- switches, activated glass cullets from cathode-ray tubes and other activated glass and PCB-capacitors, or any other component contaminated with Annexure II constituents (e.g., cadmium, mercury, lead, polychlorinated biphenyl) to an extent that they exhibit hazard characteristics indicated in part C of Annexure III.
19.	Paint and ink Sludge/residues
20.	Used oil and waste oil

ANNEXURE V

PART A

Specifications of Used Oil Suitable for Recycling

S. No.	Parameter	Maximum Permissible Limits
(1)	(2)	(3)
1.	Polychlorinated biphenyls (PCBs)	< 2ppm *
2.	Lead	100 ppm
3.	Arsenic	5 ppm
4.	Cadmium + Chromium + Nickel	500 ppm
5.	Polyaromatic hydrocarbons (PAH)	6%

Part B

Specification of Fuel Derived from Waste Oil

Sr. No.	Parameter	Maximum Permissible Limits
(1)	(2)	(3)
1.	Sediment	0.25%
2.	Lead	100 ppm
3.	Arsenic	5 ppm
4.	Cadmium+ Chromium + Nickel	500 ppm
5.	Polyaromatic hydrocarbons (PAH)	6%
6.	Total halogens	4000 ppm
7.	Polychlorinated biphenyls (PCBs)	<2 ppm *
8.	Sulfur	4.5%
9.	Water Content	1%

- The detection limit is 2 ppm by gas Liquid Chromatography (GLC) usingElectron Capture detector (ECD)

ANNEXURE VI

Hazardous and Other Wastes Prohibited for Import

Basel No	Description of hazardous and other wastes
(1)	**(2)**
A1	**Metal and Metal bearing wastes**
A1010	Metal wastes and waste consisting of alloys of any of the following but excluding such wastes specifically listed in Part B and Part D of Annexure III
	- Arsenic
	- Beryllium
	- Mercury
	- Selenium
	- Thallium
A1020	Wastes having as constituents or contaminants, excluding metal wastes in massive form, any of the following:
	- Beryllium; beryllium compounds
	- Selenium; selenium compounds
A1030	Wastes having as constituents or contaminants any of the following:
	- Arsenic; arsenic compounds
	- Mercury; mercury compounds
	- Thallium; thallium compounds
A1040	Waste having hexavalent chromium compounds as constituents
A1140	Waste cupric chloride and copper cyanide catalysts in liquid form (note the related entry in Part A of Annexure III)
A1060	Wastes liquors from the pickling of metals
A1110	Spent electrolytic solutions from copper electrorefining and electrowinning operations
A1130	Spent etching solutions containing dissolved copper
A1180	Waste electrical and electronic assembles or scrap (does not include scrap assemblies from electric power generation) containing components such as accumulators and other batteries included in Part A of Annexure III, mercury-switches, glass from cathode-ray tubes and other activated glass and PCB-capacitors, or contaminated with Annexure II constituents (e.g. cadmium, mercury, lead, polychlorinated biphenyl) to an extent that they exhibit hazard characteristics indicated in Part C of Annexure III (note the related entry in Part B B1110)
A1190	Waste metal cables coated or insulated with plastics containing or contaminated with coal tar, PCB, lead, cadmium, other organ halogen compounds or other constituents as mentioned in Annexure II to the extent that they exhibit hazardcharacteristics indicated in Part C of Annexure III

A2	**Wastes containing principally inorganic constituents, which may contain metals and organic materials**
A2020	Waste inorganic fluorine compounds in the form of liquids or sludges but excluding such wastes specified in Part B
(1)	**(2)**
A2040	Waste gypsum arising from chemical industry processes, if it contains any of the constituents mentioned in Annexure 2 to the extent that they exhibit hazard characteristics indicated in Part C of Annexure III (note the related entry in Part B B2080)
A2050	Waste asbestos (dusts and fibers)
A2060	Coal-fired power plant fly-ash containing Annexure II constituents in concentrations sufficient to exhibit Part C characteristics
A3	**Wastes containing principally organic constituents, which may contain metals and inorganic materials**
A3030	Wastes that contain, consist of or are contaminated with leaded anti-knock compounds sludges.
A3040	Waste thermal (heat transfer) fluids
A3060	Waste nitrocellulose
A3070	Waste phenols, phenol compounds including chlorophenol in the form of liquids or sludges
A3080	Waste ethers not including those specified in Part B
A3090	Waste leather dust, ash, sludges and flours when containing hexavalent chromium compounds or biocides (note the related entry in Part B B3100)
A3100	Waste paring and other waste of leather or of composition leather not suitable for the manufacture of leather articles, containing hexavalent chromium compound and biocides (note the related entry in Part B B3090)
A3110	Fellmongery wastes containing hexavalent chromium compounds or biocides or infectious substances (note the related entry in Part B B3110)
A3140	Waste non-halogenated organic solvents but excluding such wastes specified in Part B
A3150	Waste halogenated organic solvents
A3160	Waste halogenated or un-halogenated non-aqueous distillation residues arising from organic solvent recovery operations
A3170	Waste arising from the production of aliphatic halogenated hydrocarbons (such as chloromethane, dichloro-ethane, vinyl chloride, vinylidene chloride, allyl chloride and epichlorohydrin)

A3180	Wastes, substances and articles containing, consisting of or contaminated with polychlorinated biphenyl (PCB), polychlorinated terphenyl (PCT),polychlorinated naphthalene (PCN) or polybrominated biphenyl (PBB) or any other polybrominated analogues of these compounds
A3190	Waste tarry residues (excluding asphalt cements) arising from refining, distillation and any pyrolytic treatment of organic materials
A3200	Bituminous material (asphalt waste) from road construction and maintenance, containing tar (note the related entry in Part B, B2130)
A4	**Wastes which may contain either inorganic or organic constituents**
A4020	Clinical and related wastes; that is wastes arising from medical, nursing, dental, veterinary, or similar practices, and wastes generated in hospitals or other facilities during the investigation or treatment of patients, or research projects.
A4030	Waste from the production, formulation and use of biocide and Phyto-pharmaceuticals, including waste pesticides and herbicides which are off-specification, outdated (unused within the period recommended by the manufacturer), or unfit for their originally intended use,
(1)	**(2)**
A4050	Wastes that contain, consist of, or are contaminated with any of the following: - Inorganic cyanides, excepting precious-metal-bearing residues in solidform containing traces of inorganic cyanides. - Organic cyanides
A4060	Waste oils/water, hydrocarbons/water mixtures, emulsions
A4080	Wastes of an explosive nature (but excluding such wastes specified in Part B)
A4090	Waste acidic or basic solutions, other than those specified at B2120 of this Annexure
A4110	Wastes that contain, consist of or are contaminated with any of the following: - Any congener of polychlorinated dibenzo-furan. - Any congener of polychlorinated dibenzo-P-dioxin.
A4150	Waste chemical substances arising from research and development or teaching activities which are not identified and /or are new and whose effects on human health and /or the environment are not known
B1	**Metal and Metal bearing wastes**
B 1110	Used critical care medical equipment for re-use
B1115	Waste metal cables coated or insulated with plastics, not included in A1190 of this Annexure, excluding those destined for operations which do not lead to resource recovery, recycling, reclamation, direct re-use or alternative uses or any other disposal operations involving, at any stage, uncontrolled thermal processes, such as open-burning.

B1250	Waste end-of-life motor vehicles, containing neither liquids nor other hazardous Components
B2	**Wastes containing principally inorganic constituents, which may contain metals and organic materials**
B2050	Coal-fired power plant fly-ash, note the related entry at A2060 of this Annexure
B2110	Bauxite residue (red mud) (pH moderated to less than 11.5)
B2120	Waste acidic or basic solutions with a pH greater than 2 and less than 11.5, which are not corrosive or otherwise hazardous (note the related entry at A4090of this Annexure)
B3	**Wastes containing principally organic constituents, which may contain metals and inorganic materials**
B3010	Solid plastic waste The following plastic or mixed plastic waste, prepared to a specification: - Scrap plastic of non-halogenated polymers and co-polymers, including but not limited to the following: Ethylene, Styrene, Polypropylene, polyethylene terephthalate, Acrylonitrile, Butadiene, Polyacetals, Polyamides, polybutylene tere- phthalate, Polycarbonates, Polyether's, polyphenylene sulphides, acrylic polymers, alkanes C10-C13 (plasticizer), polyurethane (not containing CFC's), Polysiloxanes, polymethyl methacrylate, polyvinyl alcohol, polyvinyl butyral, Polyvinyl acetate - Cured waste resins or condensation products including the following: urea formaldehyde resins, phenol formaldehyde resins, melamine formaldehyde resins, epoxy resins, alkyd resins, polyamides - The following fluorinated polymer wastes (excluding post-consumer wastes):
(1)	**(2)**
	perfluoroethylene/ propylene, perfluoro alkoxy alkane, tetrafluoroethylene/per fluoro vinyl ether (PFA), tetrafluoroethylene/per fluoro methylvinyl ether (MFA), polyvinylfluoride , polyvinylidenefluoride
B3026	The following waste from the pre-treatment of composite packaging for liquids, not containing constituents mentioned in Annexure II in concentrations sufficient to exhibit Part C characteristics: - Non-separable plastic fraction - Non-separable plastic-Aluminum fraction -
B3065	Waste edible fats and oils of animal or vegetable origin (e.g. frying oil)

B3140	Waste pneumatic tires for direct reuse
Y 46	Wastes collected from household/municipal waste
Y 47	Residues arising from the incineration of household wastes

ANNEXURE VII

List of Authorities and Corresponding Duties

S. No.	Authority	Corresponding Duties
(1)	(2)	(3)
1.	Ministry of Climate Change under the Environment (Protection)Act, 1997	(i) Identification of hazardous and other wastes (ii) Permission to exporters of hazardous and other wastes (iii) Permission to importer of hazardous and other wastes (iv) Permission for transit of hazardous and other wastes through Punjab. (v) Promote environmentally soundmanagement of hazardous and other waste. (vi) Sponsoring of training and awareness programmed on Hazardous and Other Waste Management related activities.
2.	EPA constituted under the Punjab Environment Protection Act, 1997	(i) Co-ordination of activities of EPAs (ii) Conduct training courses for authorities dealing with management of hazardous and other wastes (iii) Recommend standards and specifications for treatment and disposal of wastes and leachates, recommend procedures for characterization of hazardous wastes.

(1)	(2)	(3)

		(iv) Inspection of facilities handling hazardous waste as and when necessary. (v) Sector specific documentation to identify waste for inclusion in these rules. (vi) Prepare and update guidelines to prevent or minimize the generation and handling of hazardous and other wastes. (vii) Prepare and update guidelines/ Standard Operating Procedures (Sop's) for recycling, utilization, pre-processing, co-processing of hazardous and other wastes. (viii) To prepare annual review report on management of hazardous waste. (ix) Any other function assigned by the Ministry Climate Change, from time to time.
.	State Government/Union Territory Government/Administration	(i) Identification of site (s) for common Hazardous and Other Waste Treatment Storage and Disposal Facility (TSDF) (ii) Asses Environment Impact Assessment (EIA) reports and convey the decision of approval of site or otherwise Acquire the site or inform operator of facility or occupier or association of occupiers to acquire the site (iii) Notification of sites. (iv) Publish periodically an inventory of all potential or existing disposal sites in the State or Union Territory

4.	EPAs or Pollution Control Committees constituted under the PEPA Act, 1997, Amended 2012.	(i) Inventory of hazardous and otherwastes (ii) Grant and renewal of authorization (iii) Monitoring of compliance of various provisions and conditions of permission including conditions of permission for issued by Ministry of Climate Change for exports and imports (iv) Examining the applications for imports submitted by the importers and forwarding the same to Ministry of Climate Change (v) Implementation of programmed to prevent or reduce or minimize the generation of hazardous and other wastes. (vi) Action against violations of these rules. (vii) Any other function under these Rules assigned by Ministry of Climate Change from time to time.
5.	Directorate General of Foreign Trade constituted under theForeign Trade (Development and Regulation) Act.	(i) Grant of license for import of hazardous and other wastes (ii) Refusal of license for hazardous and other wastes prohibited for imports and export
6.	Port authority under Pakistan Ports Act, 1908 (15 of 1908) and Customs Authority under the Customs Act, 1963.	(i) Verify the documents (ii) Inform the Ministry of Climate Change Forestsand Climate Change of any illegal traffic (iii) Analyze wastes permitted for imports and exports, wherever required. (iv) Train officials on the provisions of these rules and in the analysis of hazardous and other wastes (v) Take action against exporter or importer for violations under the Pakistan Ports Act or Customs Act.

ANNEXURE VIII

List of Documents for Verification by Customs for Import of Other Wastes Specified in Part D Of Annexure III

S. No.	Basel No.	Description of other wastes	List of Documents
(1)	(2)	(3)	(4)
1	B1010	Metal and metal-alloy wastes in metallic, non-dispersible form: Precious metals (gold, silver, platinum) - Iron and steel scrap - Nickel scrap - Aluminum scrap - Zinc scrap - Tin scrap - Tungsten scrap - Molybdenum scrap - Tantalum scrap - Cobalt scrap - Bismuth scrap - Titanium scrap - Zirconium scrap - Manganese scrap - Germanium scrap - Vanadium scrap - Hafnium scrap - Indium scrap - Niobium scrap - Rhenium scrap - Gallium scrap - Magnesium scrap - Copper scrap - Chromium scrap	(a) Duly filled up Form 6 - Movement document; (b) The import license from Directorate General of Foreign Trade, wherever applicable; (i) Pre-shipment inspection certificate issued by the inspection agency of the exporting country or the inspection and certification agency approved by Directorate General of Foreign Trade; (c) The valid consents to operate under the Air and Water Acts and the authorization under these rules,for actual users. For traders, only valid one-time authorization from concerned EPA, PUNJAB is required; (d) The chemical analysis report of the waste being imported; (e) an acknowledged copy of the annual return filed with concerned EPA for import in the last financial year.
(1)	(2)	(3)	(4)

2	B1050	Mixed non-ferrous metal, heavy fraction scrap, containing metals other than specified in Part B1050 and not containing constituents mentioned in Annexure II in concentrations sufficient to exhibit Part C characteristics* *	(a) Duly filled up Form 6 - Movement document; (b) The import license from Directorate General of Foreign Trade, wherever applicable; (b) Pre-shipment inspection certificate issued by the inspection agency of the exporting country or the inspection and certification agency approved by Directorate General of Foreign Trade; (c) The valid consents to operate under the Air and Water Acts and the authorization under these rules, for actual users. For traders, only valid authorization from concerned EPA, PUNJAB is required; (d) The chemical analysis report of the waste being imported; (e) An acknowledged copy of the annual return filed with concerned EPA, PUNJAB for import in the last financial year.

3	B1100	Metal bearing wastes arising from melting, smelting and refining of metals: - Hard Zinc spelter - Zinc-containing dross's: ~ Galvanizing slab zinctop dross (>90% Zn) ~ Galvanizing slab zinc bottom dross (>92% Zn) ~Zinc die casting dross (>85% Zn) ~ Hot dip galvanizers slab zincdross (batch) (>92% Zn) ~ Zinc skimming's — Aluminum skimming's (or skims) excluding salt slag	(c) Duly filled up Form 6 - Movement document; (d) The import license from Directorate General of Foreign Trade, wherever applicable; (e) Pre-shipment inspection certificate issued by the inspection agency of the exporting country or the inspection and certification agency approved by Directorate General of Foreign Trade; (f) The valid consents to operate under the Air and Water Acts and the authorization under these rules, for actual users. For traders, only valid authorization from concerned EPA, PUNJAB is required; (g) The chemical analysis report of the waste being imported; (h) An acknowledged copy of the annual return filed with concerned EPA, Punjab for import in the last financial year.
4	B1110	Electrical and electronic assemblies (including printed circuit boards, electronic components and wires) destined for direct reuse and not for recycling or final disposal	
(a)		Used electrical and electronic assemblies imported for repair and	(a) Duly filled up Form 6 - Movement document;
(1)	**(2)**	**(3)**	**(4)**
		to be re-exported after repairwithin one year of import	(b) Undertaking for re-export; (c) Details of previous import, if there has been any and confirmation regarding their re-export; (d) An acknowledged copy of the annual return filed with concerned EPA, Punjab for import in the last financialyear (e) Certificate from exporting company for accepting the repaired and

			unrepairable electrical and electronic assemblies and the spares or part or component or consumables being re-exported.
(b)		Used electrical and electronic assemblies imported for rental purpose and re-exported back within one year of import	(a) Duly filled up Form 6 - Movement document; (b) Undertaking for re-export; (c) Details of previous import, if there has been any and confirmation regarding their re-export; (d) An acknowledged copy of the annual return filed with concerned EPA, PUNJAB for import in the last financial year
(c)		Used electrical and electronic assemblies exported for repair andto be re-imported after repair	(a) Duly filled up Form 6 - Movementdocument; (b) Proof of export of the defective electrical and electronic assemblies i.e., shipping or airway document authenticated by Customs.
(d)		Used electrical and electronic assemblies imported for testing, research and development, project work purposes and to be re-exported back within a period of three years from the date of import	(a) Duly filled up Form 6 - Movement document; (b) Undertaking for re-export; (c) Details of previous import, if there has been any and confirmation regarding their re-export; (d) Chartered Engineer Certificate or certificate from accredited agencyof exporting country indicating the functionality, manufacturing date, residual life and serial number;

			(e) an acknowledged copy of the annual return filed with concerned EPA, PUNJAB for import in the last financialyear; (f) Certificate from exporting company for accepting the second hand functional or non-functional electrical and electronic assemblies and/or the spares or part or (c) component or consumables being
(1)	**(2)**	**(3)**	**(4)**
			re-exported at the end of threeyears.
(e)		Spares imported for warranty replacements provided equal number of defective / non-functional parts are exported back within one year of the import.	(a) Duly filled up Form 6 - Movement document; (b) if refurbished components being imported as replacement to defective component, then undertaking for export of equivalent numbers of defective components; (c) Details of previous import, if there has been any and confirmation regarding their re-export; (d) Certificate from exporting company for accepting the re-export of defective or non-functional spares or part or component or consumables being re-exported; (e) Documents on the declared policy regarding the use of second hand or refurbished spare parts for repairof electrical and electronic assemblies during warranty period.
(f)		Used electrical and electronic assemblies.	---

(g)		Used electrical and electronic assemblies (not in bulk; quantity less than or equal to three) imported by the individuals for their personal uses.	---
(h)		Used Laptop, Personal Computers, Mobile, tablet up to 03 number each imported by organizations in a year.	---
(i)		Used electrical and electronic assemblies owned by individuals and imported on transfer of residence.	As per existing guidelines of Custom Authority
(j)		Used electrical and electronic assemblies, spares, imported by airlines for aircraft maintenance and remaining either on board or under the custodianship of the respective airline's warehouses located on the airside of the custom bonded areas.	----
(1)	**(2)**	**(3)**	**(4)**
(j)		Used multifunction print and copying machines (MFDs)*	(a) The country-of-Origin Certificate along with bill of lading and packaging; (b) The certificate issued by the inspection agency as certified by the exporting country or the inspection and certification agency approved by Directorate General ForeignTrade (DGFT) for functionality, having residual life of not less than five years and serial number; (c) Extended Producer Responsibility-Authorization under e-waste (Management and Handling) Rules, 2011 as amended from time to time as Producer; (d) The MFDs shall be for printing A 3

			size and above; (e) An acknowledged copy of theannual return filed with concerned EPA, PUNJAB for import in the last financial year.
5	B3020	Paper, paperboard and paper product wastes The following materials, provided they are not mixed with hazardous wastes: Waste and scrap of paper or paperboard of: - unbleached paper or paperboard or ofcorrugated paper or paperboard - other paper or paperboard, made mainly of bleached chemical pulp, not colored in the mass - paper or paperboard made mainly of mechanical pulp (for example newspapers, journals and similar printed matter) - other, including but not limited to (1) laminated paperboard (2) unsorted scrap	(a) Duly filled up Form 6 – Movement document; (b) The import license from Directorate General of Foreign Trade, wherever applicable; (i) Pre-shipment inspection certificate issued by the inspection agency of the exporting country or the inspection and certification agency approved by Directorate General of Foreign Trade; (c) The valid consents to operate under the Air and Water Acts and the authorization under these rules, for actual users. For traders, only valid authorization from concerned EPA, PUNJAB is required; (d) The chemical analysis report of the waste being imported; (e) an acknowledged copy of the annual return filed with concerned EPA for import in the last financial year.

6.	B3140	Aircraft Tires exported to Original Equipment Manufacturers for re-treading and re-imported after re-treading by airlines for aircraft	As per existing guidelines of Custom Authority
(1)	**(2)**	**(3)**	**(4)**
		maintenance and remaining either on board or under the custodianship of the respective airline's warehouses located on theairside of the custom bonded areas	

Note: * The policy for free trade for multifunction print and copying machine to be reviewed oncethe MFDs are domestically manufactured