

PROFORMA

**APPROVAL OF LABORATORY BY
DELHI POLLUTION CONTROL COMMITTEE**

1. General

(i) Name of Organization : _____

(ii) Name of the Laboratory : _____

(iii) Address

a) Postal : _____

b) Telephone : _____

c) Fax : _____

d) E-mail : _____

(iv) Year of establishment of organization : _____

(v) Year of establishment of environmental laboratory/wing : _____

(vi) Type of Organization
(Please tick the appropriate
to your Organization)

Government	Autonomous	Public Sector
Pollution Control Board/Committee	Educational Institute (Govt./Govt. added/private)	
Private	NGO	Any other

(vii) If laboratory/organization is private/NGO, give details:

- a. Whether registered with local, state or central govt. authorities : Yes / No
- b. If yes, mention Registration No. and date : _____
- c. Nationality of owner/head of the Organization : _____
- d. Laboratory is located in (tick relevant)
- Commercial/Business complex
 - Residential area
 - Industrial area
 - Other
- e. Laboratory is situated in authorized/ approved area notified by the govt. : Yes / No

(viii) Objectives & scope of the organization*

(Please indicate, among others, whether it includes specialized testing, measurement, services)

(ix) Head of the Organization :

- a) Name : _____
- b) Designation : _____
- c) Address : _____

- d) Telephone : _____
- e) Fax No. : _____
- f) E-mail : _____

(x) Laboratory Incharge, if different than (ix) above.

a) Name and Designation : _____

b) Address : _____

c) Telephone: _____ Fax _____ E-mail _____

(xi) Name of accreditation body(s)/organization i.e. ISO, NABL, GLP, SPCB's, PCC's etc. from which the laboratory has been already recognized/accredited, give details.

S. No.	Name of the certification/recognition body/organization	Accreditation / recognition granted for the activities	Environmental Parameter covered	Validity up to

(xii) If applied for renewal of laboratory recognition under EPA, 1986, give previous recognition details:

a. Validity period : From _____ to _____

b. Reference of Gazette notification : _____

c. CPCB/MOEF reference No. : _____

(xiii) Whether laboratory ever been de-recognized before its validity period of recognition under The Water Act, 1974, The Air Act, 1981 and The E(P) Act, 1986 by State Pollution Control Board/Pollution Control Committee/Central Government/ CPCB, if yes, give details:

2. Infrastructural details of Laboratory: (please enclose brief lay out plan map of laboratory) with organizational chart and laboratory position in there to:

(i) Total floor space of the environmental laboratory (in sq. mtr): _____

a) Water Laboratory = Sq. mtr

b) Biological & Microbiological Laboratory = Sq. mtr

c) Air Laboratory = Sq. mtr

d) Provide scanned photograph of above with layout plan.

(ii) Details of major projects undertaken pertaining to environmental studies:
[Please attach separate sheet, if space is insufficient]

(iii) Which of the following type of analytical tests are being carried out in the laboratory [please mark Yes (✓)/No (x)]:

- | | |
|--|-------------------------------------|
| a) Physical | k) Hazardous waste Characterization |
| b) Inorganics general and non metallic | l) Ambient air |
| c) Inorganic (Trace metals) | m) Source emission |
| d) Organics (General) | n) Air Toxics |
| e) Trace Organics | o) Hazardous Air Pollutants |
| f) Microbiological | p) Volatile Organic Carbon |
| g) Toxicity | m) Noise measurement |
| h) Biological | n) Meteorological |
| i) Hazardous waste | o) Vehicular emission/Auto exhaust |
| j) Soil, sludge, sediment | |

(iv) Laboratory scientists/chemist or officials are fully conversant for sampling, monitoring, preservation and transportation [please tick Yes(✓)/No(x)].

- | | |
|-----------------------------------|--|
| (a) Water & wastewater | (i) Hazardous Air Pollutants analysis |
| (b) Hazardous waste | (j) Volatile Organic Carbon analysis |
| (c) Solid waste | (k) Noise monitoring |
| (d) Soil | (l) Meteorological monitoring |
| (e) Municipal waste | (m) Source emission |
| (f) Biomedical waste | (n) Auto exhaust monitoring |
| (g) Ambient air/fugitive emission | (o) On line ambient air quality monitoring |
| (h) Air Toxics analysis | |

- (v) Laboratory scientists/chemists or officials are capable of analyzing desired/ relevant parameters in various types of matrix [please tick [Yes(✓)/No (x)]
- Liquid Samples (water & wastewater)
 - Solid Samples (soil/mud/solid waste/sludge etc.)
 - Semi-solid samples (sludge/slurry)
 - Gaseous samples (Ambient air, source emission, vehicular emission)
- (vi) a) Mark the parameters given in Appendix `A` which can be analyzed in the laboratory:
- Mark the equipment given in Appendix `B` which are available in the laboratory:
 - Mark the glass apparatus/assembly given in Appendix `C`, which are available in the laboratory.
 - Mark the Instruments given in Appendix `D` which are available in the laboratory.
 - Mark the methodology employed for analysis in Appendix `E`.
 - Mark the Air Quality Parameters, which can be analyzed in the laboratory in Appendix `F`.
 - Mark the Instruments/equipment given in Appendix `G`.
 - Give details about instruments/equipment in Appendix `H`.
 - Give details about the analytical methods adopted in Appendix `I`.
 - Give details about the facilities available for analysis of specific organic compounds in Appendix `J`.
- (vii) Which of the methods given below are being followed for the [Tick ✓]:

(a) Water and Wastewater Analysis:

- | | | |
|---------|--------|--------------|
| 1. APHA | 2. BIS | 3. USEPA |
| 4. ASTM | 5. ISO | 6. Any other |

(b) Air Pollution Monitoring and Analysis

- | | | |
|--------------|---------|----------|
| 1. APHA | 2. BIS | 3. USEPA |
| 4. CPCB | 5. ASTM | 6. ISO |
| 7. Any other | | |

- (viii) Provide details for participation in inter-laboratory (between laboratories) Analytical quality control proficiency testing programme during last 5 years. Attach copy of performance report with the application

Coordinating Agency i.e. CPCB, WHO, NABL, SPCB/PCC etc.	Period (Month / year)	Parameter covered	Percentage of performance

- (ix) Name, designation and qualifications of staff/officials posted at environmental laboratory/branch (with expertise in environmental analysis/testing): *(Please enclose separate sheet if space is inadequate)*

S. No.	Name	Designation	Qualification	Total experience in any. Field (years & months)	Nature of present job assignment (✓ only)		
					Administrative	Supervisory	Analysis/sampling

- (x) Details of training programme/s related with the environment field attended within last five years by the officials working at the laboratory as mentioned at (ix)

S. No.	Name of official/s	Training conducted by the institution/organization	Title/topic	Duration

- (xi) Please indicate by asterisk (*) the name/s of personnel (maximum three) & having desired qualification and experience as mentioned in Annexure-IV to be considered for nomination as Govt. Analysts. Brief bio-data of these persons should be enclosed as per annexure-V.

S. No.	Name	Designation	Qualification	Experience in years related with Environmental Analysis

- (xii) If applied for renewal of recognition under EPA 1986, please outline steps taken for up gradation of laboratory (please attach details as annexure) during recognition period with respect to:

- Procurement of new sophisticated instrument
- Addition of new parameters
- Participation in Analytical Quality Control (AQC) exercise of CPCB.

Signature : (Head of organization)

(Head of laboratory)

Full name : _____
(In capital letters)

Seal of laboratory

(Forward application for consideration of inspection/recognition, if fulfill minimum criteria to MOEF (Private & NGOs only) and others to CPCB at following address with duly completed applications along with enclosures)

- (i) Private/NGOs/Cooperative Organization Laboratory:

Director / Addl. Director (CP Division)
Ministry of Environment & Forests
Paryavaran Bhawan
CGO Complex, Lodi Road
New Delhi-110 003

- (ii) Govt./Semi-Govt./Autonomous Organization/Public Sector Undertaking and Educational Institute Laboratories:

The Member Secretary
Central Pollution Control Board
'Parivesh Bhavan', East Arjun Nagar
Delhi - 110 032

SELF ASSESSMENT CHECK-LIST BY THE LABORATORY

The laboratory should ensure that it fulfills the essential requirement and submit duly signed checklist alongwith the application.

{ Please Mark Yes (✓) or No (X) }

- | | | Yes/No |
|------|--|--------------------------|
| (i) | Laboratory (Private / NGO) is registered by the local govt./State Govt./ Central Govt. | ☐ |
| (ii) | Laboratory has minimum 9 nos. of full time working skilled manpower with following qualifications: | ☐ |

S. No.	Qualification	Nature of Job	Nos. of Manpower	
1.	High School/Intermediate with Science	Assistance in sampling & analysis	2	☐
2.	Bachelor's Degree in Basic Science or equivalent.	Sampling and analysis	4	☐
3.	Master's Degree in Science or equivalent or Bachelors Degree in Engineering / Technology or equivalent or Ph.D.	Sampling & Analysis. Supervision of Analysis	3	☐
Total Manpower (Minimum)			9	☐

- | | | |
|-------|--|--------------------------|
| (iii) | Environmental laboratory should have minimum 150 Sq. mtr Work Area | ☐ |
| (iv) | Essential Parameters Requirement at Appendix 'A'. | ☐ |

(A) Physical Tests

- | | | |
|-----|---|--------------------------|
| (a) | Laboratory has facilities and expertise for 10 no's of Mandatory parameters | ☐ |
| (b) | Laboratory has facilities and expertise for minimum 3 no's of Secondary parameters. | ☐ |

(B) (i) Inorganic (General and non metallic)

- | | | |
|-----|---|--------------------------|
| (a) | Laboratory has facilities and expertise for 13 no's of Mandatory parameters | ☐ |
| (b) | Laboratory has facilities and expertise for minimum 3 no's of Secondary parameters. | ☐ |

(ii) Trace Metals

- | | | |
|-----|---|--------------------------|
| (a) | Laboratory has facilities and expertise for 15 no's of Mandatory parameters | ☐ |
| (b) | Laboratory has facilities and expertise for minimum 4 no's of Secondary parameters. | ☐ |

(C) Organics

- (a) Laboratory has facilities and expertise for 5 no's of Mandatory parameters ☐
- (b) Laboratory has facilities and expertise for minimum 3 no's of Secondary parameters. ☐

(D) Microbiological Test

- (a) Laboratory has facilities and expertise for 4 no's of Mandatory parameters. ☐
- (b) Laboratory has facilities and expertise for 1 no of Secondary parameters. ☐

(E) Toxicological Test

- (a) Laboratory has facilities and expertise for 1 no of Mandatory parameters ☐
- (b) Laboratory has facilities and expertise for minimum 1 no of Secondary parameters. ☐

AIR PARAMETERS (Appendix F)

(A) Ambient Air/ Fugitive Emission

- (a) Laboratory has facilities and expertise for minimum 4 no's of Mandatory parameters ☐
- (b) Laboratory has facilities and expertise for minimum 4 no's of Secondary parameters. ☐

(B) Stack Gases / Source Emission

- (a) Laboratory has facilities and expertise for 8 no's of Mandatory parameters ☐
- (b) Laboratory has facilities and expertise for minimum 5 no's of Secondary parameters. ☐

(C) Noise Level

- (a) Laboratory has facilities and expertise for 2 no's of Mandatory parameters. ☐

(D) Meteorological Monitoring

- (a) Laboratory has facilities and expertise for 4 no's of Mandatory parameters. ☐
- (b) Laboratory has facilities and expertise for minimum 1 no of Secondary parameters. ☐
- (v) (a) Laboratory has minimum no's of equipment as mentioned in brackets () of Appendix-B. ☐
- (b) Laboratory has minimum no's of instruments as mentioned in brackets () of Appendix-D ☐
- (c) Laboratory has minimum no's of equipment/ Instrument as mentioned in brackets () of Appendix-G. ☐

- | | | |
|--------|--|--------------------------|
| (vi) | Laboratory analyzes samples adopting validated methods i.e. USEPA, APHA, BIS, ASTM, ISO, EU, DIN or CPCB. | ☐ |
| (vii) | Laboratory has adequate environmental journals/books/analytical methods for sample analysis. | ☐ |
| (viii) | Laboratory has applied strictly as per the format with desired enclosures and nothing has been changed / alter in the contents of application format. | ☐ |
| (ix) | Details of Equipments / Instruments available at the laboratory have been provided at Appendix–H. | ☐ |
| (x) | Methods details of test parameters marked as (√) at Appendix-A & F have been provided in appendix-I and no column has been left blank. | ☐ |
| (xi) | Name of Compounds being analyzed have been provided at Appendix–J. | ☐ |
| (xii) | List of Reference Standards (Please refer appendix D(d) of application) with their names, makes and expiry date have been provided. | ☐ |
| (xiii) | Proposed Govt. analysts (Please refer 2(xi) of application) fulfills the required qualification and experience and their bio-data have been submitted exactly as per Annexure-V of Guidelines. | ☐ |
| (xiv) | Bio-data of remaining officials (please refer 2 ix) being provided as per Annexure-V of Guidelines. | ☐ |
| (xv) | Scanned photographs of various Sections of the laboratory have been provided with the application. | ☐ |
| (xvi) | Laboratory has provided details of participation in Inter-laboratory AQC programme conducted by CPCB as per Clause 2 (viii). | ☐ |
| (xvii) | Duly filled application in all respect along with all enclosures with binded form in triplicate has been submitted (Private / NGOs to MoEF and others to CPCB). | ☐ |

Declaration:

I declare that the foregoing information is correct and complete to the best of my knowledge and belief and nothing has been concealed / distorted.

(Signature of the Head of the Laboratory)

Full Name:

SEAL OF THE LABORATORY

LIST OF PARAMETERS BEING ANALYSED**A) Physical Tests : [Please mark Yes(✓)/No (x)]**

S. No.	Mandatory parameter	S. No.	Secondary parameter
1.	Conductivity	1.	Flocculation test (Jar test)
2.	Colour	2.	Odour
3.	pH	3.	Salinity
4.	Fixed & volatile solids	4.	Settleable solids
5.	Total solids	5.	Sludge volume index (SVI)
6.	Total dissolved solids		
7.	Total suspended solids		
8.	Turbidity		
9.	Temperature		
10.	Velocity & discharge Measurement of industrial effluent stream		

Minimum required - All 10 nos. of parameters

Minimum required 3 parameters

B) Inorganic [Please mark Yes (✓)/No (x)]**(i) General & Non-metallic**

S. No.	Mandatory parameter	S. No.	Secondary parameter
1.	Acidity	1.	Bromide
2.	Alkalinity	2.	Carbon dioxide
3.	Ammonical nitrogen	3.	Chlorine demand
4.	Chloride	4.	Iodine
5.	Chlorine residual	5.	Sulphite
6.	Dissolved oxygen	6.	Silica
7.	Fluoride	7.	Cyanide
8.	Total hardness	8.	Sulphide
9.	Total kjehldal nitrogen (TKN)		
10.	Nitrite nitrogen		
11.	Nitrate nitrogen		
12.	Phosphate		
13.	Sulphate		

Minimum required – All 13 parameters

Minimum required– Atleast 3 parameters

(ii) Trace Metals [Please mark Yes(✓)/No (x)]

S. No.	Mandatory parameter	S. No.	Secondary parameter
1.	Boron (B)	1.	Arsenic (As)
2.	Cadmium (Cd)	2.	Aluminium (Al)
3.	Calcium (Ca)	3.	Beryllium (Be)
4.	Chromium (Cr) Total	4.	Barium (Ba)
5.	Chromium (Cr) Hexavalent	5.	Lithium (Li)
6.	Copper (Cu)	6.	Manganese (Mn)
7.	Iron (Fe)	7.	Selenium (Se)
8.	Lead (Pb)	8.	Silver (Ag)
9.	Magnesium (Mg)	9.	Strontium (Sr)
10.	Mercury (Hg)	10.	Tin (Sn)
11.	Nickel (Ni)	11.	Antimony (Sb)
12.	Potassium (K)	12.	Cobalt (Co)
13.	Sodium (Na)	13.	Vanadium (V)
14.	Sodium absorption ratio (SAR)		
15.	Zinc (Zn)		

Minimum required – All 15 parameters

Minimum required – Atleast 4 parameters

(C) Organics (General) and Trace Organics [Please mark Yes(✓)/No (x) and give details at Appendix J for Trace organics]

S. No.	Mandatory parameter	S. No.	Secondary parameter
1.	Bio-chemical oxygen demand (BOD)	1.	Total organic carbon (TOC)
2.	Chemical oxygen demand (COD)	2.	Adsorbable organic halide (AOX)
3.	Oil & Grease	3.	Surfactants
4.	Phenol	4.	Tannin & lignin
5.	Pesticide (each)	5.	Poly-chlorinated biphenyl (PCB's) each
	(i) Organo-chlorine (BHC, DDT, Aldrin, Endosulphan)	6.	Polynuclear aromatic hydrocarbon (PAH) each
	(ii) Organo nitrogen-phosphorous (Malathion, methyl parathion, Chloropyriphos)	7.	Organic Carbon (in solid)
		8.	Carbon/Nitrogen ratio

Minimum required – All 5 parameters

Minimum required – Atleast 3 parameters

D) Microbiological Tests [Please mark Yes(✓)/No (x)]

S. No.	Mandatory parameter	S. No.	Secondary parameter
1.	Total Coliform	1.	Total plate count
2.	Faecal Coliform	2.	Enterococcus
3.	Faecal Streptococci	3.	Coliphage
4.	E. Coli		

Minimum required – All 4 parameters

Minimum required – Atleast 1 parameters

E) Toxicological Tests [Please mark Yes(√)/No (x)]

S. No.	Mandatory parameter	S. No.	Secondary parameter
1.	Bioassay method for evaluation of toxicity using fish (90% survival of fish after 96 hrs in 100% effluent)	1.	Bio-accumulation, bio magnification and bio-transformation studies
		2.	Estimation of the effect at tissue level
		3.	Measurement of toxicity using Daphnia or other organism
		4.	Measurement of toxicity factor using zebra fish (dimensionless toxicity test

Minimum required – 1 parameter

Minimum required – 1 parameter

F) Biological Tests [Please mark Yes(√)/No (x)]

S. No.	Parameter	S. No.	Parameter
1.	Benthic organism identification and count	5.	Saprobity Index
2.	Macrophytic identification	6.	Chlorophyll
3.	Planktonic identification count	7.	Primary productivity
4.	Measurement of various diversity index	8.	P/R Ratio

Minimum required – Atleast 3 parameter

G) Characterization of Hazardous Waste [Please mark Yes(√)/No (x)]

S. No.	Parameter
1.	Preparation of Leachate (TCLP extract/water extract)
2.	Corrosivity
3.	Ignibility (Flash point)
4.	Reactivity
5.	Toxicity
6.	Measurement of heavy metals/pesticides in the waste/leachate

Minimum required – Atleast 3 parameters

H) Soil/Sludge/Sediment and Solid Waste [Please mark Yes(√)/No (x)]

S. No.	Mandatory parameter	S. No.	Secondary parameter
1.	Boron	1.	Ammonia
2.	Cation Exchange Capacity (CEC)	2.	Bicarbonate
3.	Electrical Conductivity (EC)	3.	Calcium
4.	Nitrogen available	4.	Calcium carbonate
5.	Organic carbon/matter (chemical method)	5.	Chloride
6.	pH	6.	Colour
7.	Phosphorous (available)	7.	Exchangeable sodium percentage (ESP)
8.	Phosphate (ortho)	8.	Gypsum requirement
9.	Phosphate (total)	9.	H. Acid
10.	Potassium	10.	Heavy metal
11.	SAR in soil extract	11.	Magnesium

S. No.	Mandatory parameter	S. No.	Secondary parameter
12.	Sodium	12.	Mechanical soil analysis
13.	Soil moisture	13.	Nitrate
14.	TKN	14.	Nitrite
15.	Calorific value	15.	PAH
		16.	Pesticide
		17.	Potash (available)
		18.	Sulphate
		19.	Sulphur
		20.	TOC
		21.	Total water soluble salt
		22.	Water holding capacity

Minimum required: All 15 parameters

Minimum required: Atleast 10 parameters

Remarks: Besides minimum instruments/equipment facilities laboratory must qualify minimum 5 essential groups i.e. A to E for water and similarly A to D for air analysis.

a) **LIST OF EQUIPMENT FOR WATER / WASTEWATER ANALYSIS**

[Note: Please mark Yes (✓)/No(x)]

S. No.	Equipment	Yes/No	Nos. available**
BASIC EQUIPMENTS			
1.	Ice Box/s* (2)		
2.	Filtration assembly* (1)		
3.	Heating Mantle		
4.	Stop watch		
5.	Hot air oven* (2)		
6.	Hot plate* (2)		
7.	Muffle furnace* (1)		
8.	Standard weight		
9.	Water bath		
10.	Thermometer/s* (4)		
11.	Refrigerator/s big size* 300 litres or above (2)		
SPECIFIC EQUIPMENTS			
1.	Autoclave* (1)		
2.	Bottom sampler		
3.	BOD Incubator* (1)		
4.	Centrifuge* (1)		
5.	Aquarium for bioassay test* (4)		
6.	COD Digester with aluminium heating blocks * (1)		
7.	Colony Counter		
8.	Depth Sampler		
9.	Digester with condensers		
10.	Digestion chamber* (1)		
11.	Dissolved oxygen sampler		
12.	Flocculator (Jar testing apparatus)		
13.	Flow meter		
14.	Incubator for bacteriological test* (2)		
15.	Laminar flow* (1)		
16.	Magnetic Stirrer with hot plate* (2)		
17.	Mechanical Shaker *(1)		
18.	Microwave digester		
19.	TKN Analyzer semi automatic with aluminum block digester		
20.	Ultrasonic water bath		
21.	Vacuum pump* (1)		
22.	Water purification / distillation assembly* (1)		
23.	Ekman Dredge		
24.	Water sampler		

S. No.	Equipment	Yes/No	Nos. available**
25.	Oil & Grease sampler		
26.	Water Testing kit		
27.	Chloroscope for residual chlorine		
28.	Any other equipment (please attach details on separate sheet)		

* Besides minimum analytical capabilities, expertise, laboratory must be equipped with these items if seeking recognition with desired nos. as mentioned against each item.

** Provide minimum numbers of items, in case exact numbers are not available.

Certified that all the above equipments are properly of _____
 _____ (Name of laboratory) and procurement records/bills of
 instruments/equipment are available at the laboratory. The list of instruments /
 equipment taken on loan is appended herewith.

Signature of Laboratory Incharge

a) **LIST OF GLASS APPARATUS AND DISTILLATION ASSEMBLIES**

[Note: Please mark Yes (✓)/No (x)]

S. No.	Particulars	Yes or No	Total nos. available
1.	Fluoride distillation assembly		
2.	Cyanide distillation assembly		
3.	Ammonia distillation assembly		
4.	Water distillation assembly		
5.	Soxlet extraction assembly		
6.	Arsenic estimation assembly		
7.	Phenol distillation assembly		
8.	Any other (please enclose details on separate sheet)		

Remarks: If actual figures are not available give minimum / least nos. available.

APPENDIX `D`

a) LIST OF INSTRUMENTS FOR WATER / WASTEWATER ANALYSIS

[Note: Please mark Yes (√)/No (x)]

S. No.	Name of instrument	Yes/No	Total Nos. **
BASIC INSTRUMENTS			
1.	Analytical Balance +* (1) 1 mg		
2.	Conductivity Meter* (1)		
3.	Dissolved oxygen meter		
4.	pH Meter with combined glass electrode* (1)		
5.	Turbidity meter* (1)		
SPECIFIC INSTRUMENTS			
1.	Alpha/Beta Radioactivity Counter		
2.	Atomic Absorption Spectrophotometer (Flame) with the following cathode lamps + (√ available HCL)* (1)		
	(i) Aluminium (ii) Antimony (iii) Arsenic (iv) Barium (v) Barium (vi) Boron (vii) Cadmium (viii) Calcium (ix) Chromium (x) Copper (xi) Iron (xii) Lithium (xiii) Lead (xiv) Magnesium (xv) Manganese (xvi) Mercury (xvii) Nickel (xviii) Potassium (xix) Selenium (xx) Silver (xxi) Sodium (xxii) Strontium (xxiii) Tin (xxiv) Cobalt (xxv) Vanadium (xxvi) Zinc (xxvii) Other, pl. specify		
3.	Atomic Absorption Spectrophotometer with Graphite Furnace and Hydride Generation System		
4.	Organic Halogen Analyzer (AOX/TOX)		
5.	Binocular Microscope		
6.	Flame Photometer* (1)		
7.	Gas Chromatograph with following detector*++ (1)		
	- ECD-NPD - FID-TID - FPD - Other detector		
8.	Gas Chromatograph with Mass Spectrometer (GC-MS)		
9.	High Pressure Liquid Chromatograph (HPLC)		
10.	Ion Chromatograph		
11.	Inductively Coupled Plasma (ICP) Spectrometer		
12.	Mercury Analyzer Digital* (1)		
13.	Portable Analyzer Kit (DO, pH, Temp. Cond.)		
14.	Precision Balance weighing up to 1 mg* (water / air)		
15.	Rotary Evaporator* (1)		
16.	Spectrophotometer (Visible)* or Ultraviolet & visible* (1)		
17.	Stereo Microscope		
18.	Total Organic Carbon Analyzer		
19.	Any other instruments (Please enclose details on separate sheet)		

* Besides minimum analytical capabilities, expertise, laboratory must equipped with these items if seeking / applying for recognition with desired nos. as mentioned against each item.

** Provide minimum number of item, in case exact numbers are not available

+ All H.C.L. may not required essentially

++ GC equipped minimum ECD, NPD & FID with capillary column.

- If equipped with ICP Spectrophotometer then AAS is not required essentially.

- Mercury Analyzer Digital may not required essentially, if Mercury is measured 1 ppb or below by AAS/ICP.

b) LIST OF SPECIFIC EQUIPMENTS/INSTRUMENTS FOR HAZARDOUS WASTE ANALYSIS

[Note: Please mark Yes (√) /No (x)]

S. No.	Instruments	Nos. Available
1.	Bomb colorimeter	
2.	Elemental analyzer	
3.	Flash point apparatus	
4.	Moisture content meter	
5.	Rotary evaporator	
6.	Toxicity characteristic leaching procedure (TCLP) extractor	
7.	Toxic Gas analyzer	
8.	X-ray fluorescence (XRF) Spectrometer	
9.	Zero head space extractor (ZHE)	

c) MAINTENANCE CONTRACT STATUS OF IMPORTANT SOPHISTICATED INSTRUMENTS

[Note: Please mark Yes (√)/No (x)]

S. No.	Name of the instrument	Repair job undertaken on Annual Maintenance contract / emergency call basis	Whether sufficient spares available
1.	AAS (Flame & Flameless)		
2.	AOX		
3.	Total Organic Carbon Analyzer		
4.	Gas Chromatograph		
5.	Water purification system		
6.	Analytical balance		
7.	Specific ion meter		
8.	Mercury analyzer		
9.	UV-Visible spectrophotometer		
10.	Alpha/Beta Radioactivity Counter		
11.	Any other		

d) REFERENCE MATERIAL (RMS) AND CERTIFIED REFERENCE MATERIAL (CRMS)

S. No.	Parameters	Availability of RMS/CRMS	
		(√/X)	Nos. of standards
1.	Trace Metals		
2.	Organo-chlorine pesticides		
3.	Organo-nitrogen phosphorous pesticides		
4.	Polychlorinated Biphenyls (PCB's)		
5.	Polycyclic aromatic hydrocarbon (PAH)		
6.	Benzene, Ethylene, Toluene & Xylene		
7.	Dioxins and Furans		

Note: - Please enclose details on separate sheet, if space is inadequate.
 - Provide list of standards (RM/CRM) with their names, make & expiry date.

METHODOLOGY EMPLOYED FOR ANALYSIS

[Please tick ✓ relevant adopted method]

(A) PHYSICAL PARAMETERS

S. No.	PARAMETER	METHOD ADOPTED
1.	Colour	a. Visible comparison method (only potable waters)
		b. Spectrophotometric Method (All)
2.	Odour	Threshold odour test
3.	Conductivity	Conductivity Meter
4.	pH Value	Electronic (pH Meter)
5.	Total solids dried at 103-105 °C	Gravimetric
6.	Total suspended solids dried at 103-105 °C	Gravimetric
7.	Total dissolved solids dried at 180 °C	Gravimetric
8.	Fixed and volatile solids ignited at 550 °C	Gravimetric
9.	Settleable solids	Volumetric using Imhoff concentration
		Gravimetric
10.	Sludge volume index (SVI)	Volumetric followed by gravimetric (using Imhoff conc. and filtration device)
11.	Salinity	a. Electrical conductivity method
		b. Density method
12.	Settled sludge volume	Volumetric
13.	Turbidity	Nephelometric
14.	Temperature	Thermometer
15.	Velocity and discharge measurement of river, drain, industrial effluent stream etc	a. Cross-Section-velocity Method
		b. Weirs (Rectangular or V Notch or U-Notch)
		c. Chemical Methods.
16.	Flocculation test (Jar test)	Dosing of coagulants
17.	Other Parameters (Please specify)	

(B) INORGANIC (GENERAL & NON-METALLIC)

S. No.	PARAMETER	METHOD ADOPTED
1.	Acidity	a. Electrometric/Potentiometric titration
		b. Color Indicator titration
2.	Alkalinity	a. Electrometric/Potentiometric titration
		b. Color Indicator titration
3.	Ammonical Nitrogen	a. Distillation followed by colorimetric method (Nesslerization or phenate)
		b. Distillation followed by titrimetric method
		c. Distillation followed by ion Selective electrode method
4.	Bromide	Colorimetric (Curcumin or Carmine)
5.	Carbon Dioxide	a. Titrimetric
		b. Nomographic
6.	Chloride	a. Titrimetric (Argentometric or Mercuric Nitrate)
		b. Potentiometric
7.	Chlorine demand	Dosing of sampling chlorine solution
8.	Chlorine Residual	Titrimetric
9.	Cyanide	a. Distillation followed by Titrimetric
		b. Distillation followed by Colorimetric
		c. Distillation followed by Cyanide - Selective Electrode
10.	Dissolved Oxygen	a. Winkler titrimetric-azide modification
		b. Membrane electrode method
11.	Fluoride	a. Distillation followed by Colorimetric (SPADNS or Alizarin Red)
		b. Distillation followed by Fluoride selective electrodes
12.	Iodine	a. Leuce Crystal violet method
		b. Amperometric titration method
13.	Total kjehldal nitrogen	a. Macro kjehldal method
		b. Semi micro kjehldal method
14.	Nitrite nitrogen	Colorimetric
15.	Nitrate nitrogen	a. Colorimetric
		b. Cadmium reduction method
		c. Electrode method
16.	Phosphate	Colorimetric
17.	Sulphate	a. Turbidimetric
		b. Gravimetric method with residual/ignition of residue
18.	Sulphide	a. Iodometric method
		b. Ion selective electrode method
		c. Methylene blue method
19.	Sulphite	a. Titrimetric
		b. Phenonthrallin method
20.	Silica	a. Molybdosilicate method
		b. Heterotopy blue method
21.	Total hardness	Titrimetric (EDTA method)
22.	Other parameters (pl. specify)	

II. TRACE METALS (Tick for applicable methods for elemental analysis)

S. No.	Elements	Flame atomic absorption (direct)	Flame atomic absorption (extracted)	Flame photometry	Electro thermal atomic absorption	Hydride/cold vapour atomic absorption	Inductively coupled plasma (ICP)	ICP/MASS Spectrometry ICP/MS	Anodic stripping voltametry	Alternative methods (colorimetric/ titrimetric by difference etc)
1.	Aluminium (Al)									
2.	Antimony (Sb)									
3.	Arsenic (As)									
4.	Barium (Ba)									
5.	Beryllium (Be)									
6.	Boron (B)									
7.	Cadmium (Cd)									
8.	Calcium (Ca)									
9.	Chromium (total) (Cr ³)									
10.	Chromium (Hexa) (Cr ⁺⁶)									
11.	Cobalt (Co)									
12.	Copper (Cu)									
13.	Iron (Fe)									
14.	Lead (Pb)									
15.	Lithium (Li)									
16.	Magnesium (Mg)									
17.	Manganese (Mn)									
18.	Mercury (Hg)									
19.	Nickel (Ni)									
20.	Potassium (K)									
21.	Selenium (Se)									
22.	Silver (Ag)									
23.	Sodium (Na)									
24.	Sodium Absorption Ratio (SAR)									
25.	Strontium (Sr)									
26.	Tin (Sn)									
27.	Vanadium (V)									
28.	Zinc (Zn)									

1. Total nos. of metal analysis claimed _____;
2. Metal digestion method adopted (pre treatment (please tick appropriate)
 - (a) Using hot plate
 - (b) Closed loop system
 - (c) Microwave digestion

C. ORGANIC (GENERAL) & TRACE ORGANICS

[Please mark Yes (✓) /No (x) for adopted method]

S. No.	PARAMETER	METHOD
GENERAL		
1.	Bio-chemical Oxygen Demand (BOD)	a. Three days BOD at 27 °C b. Five days BOD at 20 °C
2.	Chemical oxygen demand (COD)	a. Open reflux method b. Closed reflux titrimetric method c. Closed reflux colorimetric
3.	Oil & Grease	a. Grass metric (simple extraction) b. Soxhlet extraction
4.	Phenol	a. Distillation followed by colorimetric b. Chloroform extraction
5.	Adsorbable organic halogens	Adsorption pyrolysis titrimetric
6.	Organic carbon (in solids)	Rapid titrametration method
7.	Total organic carbon	a. High temperature combustion b. Persulphate ultraviolet or heated persulphate oxidation c. Wet oxidation method
8.	Surfactants	a. Surfactant separation by sublation b. Anionic surfactants as MBAS c. Non ionic surfactants as CTAS
9.	Carbon/Nitrogen Ratio	By calculation
10.	Tannin & lignin	Colorimetric method
TRACE ORGANICS		
11.	Pesticides	a. Organo-chlorine (Please specify adopted method) b. Organo-phosphorous (Please specify adopted method) c. Carbamates (Please specify adopted method) d. Herbicides (Please specify adopted method) e. Fungicides (Please specify adopted method)
12.	Polychlorinated biphenyl (PCB's)	Please specify adopted method
13.	Poly nuclear aromatic hydrocarbon	Please specify adopted method
14.	Volatile Organics	Please specify adopted method
15.	Trihalomethanes	Please specify adopted method

D. MICROBIOLOGICAL TESTS (Adopted method)

S. No.	PARAMETER	METHOD
1.	Total coliform	a. Multiple tube technique b. Membrane filter technique
2.	Faecal coliform	a. Multiple tube technique b. Membrane filter technique
3.	Faecal streptococci	a. Multiple tube technique b. Membrane filter technique
4.	Enterococcus	a. Multiple tube technique b. Membrane filter technique
5.	Total plate count	a. Pore plate method b. Spread plate method c. Membrane filter method
6.	E. Coli	a. Multiple tube technique b. Membrane filter technique
7.	Others (Please specify)	

E. HAZARDOUS WASTE PARAMETERS (Adopted method)

S. No.	PARAMETER	METHOD
1.	Preparation of Leachate (TCLP extract/water extract)	-
2.	Determination of various parameter in Leachate i.e. metal, pesticides etc.	Methods as prescribed in water analysis
3.	Corrosivity	a. Electrometric (by pH meter) b. Corrosivity toward steel
4.	Reactivity	Identification of characteristic properties i.e. explosive, reading violent, violently react with water forms potential explosive mixture with water etc.
5.	Ignitability	a. By Pen sky martens apparatus b. By seta flash closed cap tester
6.	Toxicity	Toxicity characteristics leaching procedure (TCLP)
7.	Other (Please specify)	

AIR QUALITY PARAMETERS

Facilities available [Please mark Yes (✓)/No (x)]

A. Ambient Air / Fugitive Emissions

S. No.	Group of parameter	Yes/No (✓ / x)	Adopted method
(i)	Mandatory Parameters		
1.	Nitrogen dioxide as NO ₂		
2.	Sulphur dioxide (SO ₂)		
3.	Total suspended particulate matter		
4.	Respirable suspended particulate matter (PM ₁₀)		
(ii)	Secondary Parameters		
1.	Ammonia		
2.	Carbon monoxide		
3.	Chlorine		
4.	Fluoride		
5.	Non methane hydrocarbon		
6.	Lead		
7.	Methane		
8.	Ozone		
9.	Benzene Toluene Xylene (BTX)		
10.	Polycyclic aromatic hydrocarbon (PAH) Benzo-a-pyrine & others		
11.	PM _{2.5}		
12.	Volatile Organics Carbon		

Minimum required - At least 4 parameters from secondary parameters

B. Stack gases/source emission

S. No.	Group of parameter	Yes/No (✓ / x)	Adopted method
(i)	Mandatory Parameters		
1.	Particulate matter		
2.	Sulphur dioxide		
3.	Velocity & flow		
4.	Carbon dioxide		
5.	Carbon monoxide		
6.	Temperature		
7.	Oxygen		
8.	Oxides of nitrogen		
(ii)	Secondary Parameters		
1.	Acid mist		
2.	Ammonia		
3.	Chlorine		
4.	Fluoride (Particulate)		
5.	Fluoride (Gaseous)		
6.	Hydro-chloric acid		
7.	Total Hydro carbon		
8.	Hydrogen Sulphide		
9.	Carbon disulphide		
10.	Mercaptan		

Minimum required - At least 5 parameters from Secondary parameter

C. Noise level

S. No.	Group of parameter	Yes/No	Adopted method
(i)	Mandatory Parameters		
1.	Noise level measurement (20 to 140 dba)		
2.	Ambient Noise & Source specific noise		

D. Meteorological Monitoring

S. No.	Group of parameter	Yes/No	Adopted method
(i)	Mandatory Parameters		
1.	Ambient Temperature		
2.	Wind direction		
3.	Wind speed		
4.	Relative Humidity		
(ii)	Secondary Parameters (Minimum required at least one parameter)		
1.	Solar radiation		
2.	Rain fall		

E. Vehicular Emission Monitoring

S. No.	Group of parameter	Yes/No	Adopted method
(i)	Mandatory Parameters		
1.	Carbon monoxide		
2.	Smoke Density		
3.	Hydrocarbon		
(ii)	Secondary Parameters (Optional)		
1.	Oxides of Nitrogen		

Remark: *Laboratory seeking recognition must qualify minimum 4 groups A to D groups of parameters with appropriate space requirement, skilled manpower and adequate infrastructure facilities.*

APPENDIX-G**LIST OF EQUIPMENT/INSTRUMENTS**

[Please mark Yes (✓)/No (x)]

S. No.	Instrument	Yes/No	If yes, give Total Nos. **
1.	BTX analyzer (PID/FID detector)		
2.	BTX calibrator		
3.	Charcoal Tubes		
4.	CO Analyzer (Non-dispersive Infrared principle)		
5.	Detector Tubes with Pump of different pollutants (Please specify details)		
6.	Dust analyzer (Beta Attenuation/TOEN)		
7.	Exhaust CO/HC analyzer		
8.	Flue gas analyzer		
9.	Gas Chromatograph with Air sampling port, FID & PFPD detectors		
10.	Handy sampler for gaseous monitoring* (2)		
11.	High Volume sampler with flow controller (4)		
12.	Low flow pump		
13.	Meteorological sensors with mast (WS, WD, Temp., Humidity)* (1)		
14.	Micro balance (Readability 1 µg)		
15.	Multi calibration system		
16.	Multi channel recorder		
17.	Multi calibration kit (portable)		
18.	Noise level meter* (2)		
19.	NO-NO ₂ -Nox Analyzer (Chemiluminescence based)		
20.	Ozone analyzer (Ultraviolet)		
21.	Permeation tubes for calibration		
22.	RSPM sampler with flow controller/brush less motor + calibration kit* (4)		
23.	Smoke density meter		
24.	SO ₂ Analyzer (Pulsed Fluorescence based)		
25.	Soap bubble meter		
26.	Stack monitoring kit with High Temp. Probes* (2)		
27.	Toddler Bags		
28.	Wet gas meter		
29.	Any other (please specify)		

LIST OF INFRASTRUCTURAL EQUIPMENT/ITEMS FOR AIR ANALYSIS

[Please mark Yes (✓)/No (x)]

S. No.	Items	Yes/No	If yes, give Total Nos.**
1.	Air conditioner (split type)		
2.	Air Conditioner (Window type)		
3.	Breathing apparatus		
4.	Cold room for sample storage		
5.	Computer with printer		
6.	Constant voltage transformer		
7.	Face shield and helmet		
8.	Gas mask		
9.	Refrigerator (frost free, CFC free)		
10.	Tool Kit (Electrical & Mechanical)		
11.	Uninterrupted power supply (UPS) system		
12.	First aid box		
13.	Trolley for sample transportation		
14.	Fume Hood		
15.	Exhaust System		
16.	Fire Extinguisher		
17.	Electricity Generator		
18.	Gas Cylinder Trolleys		
19.	Any other (please specify)		

** Provide minimum numbers of items, in case exact numbers are not available

* Besides minimum analytical capabilities, expertise laboratory must be equipped with these items, if seeking / applying for recognition with desired numbers as mentioned against each item.

Appendix H

Details of equipment/instruments available in the Laboratory

(Please enclose separate sheet if space is inadequate)

S. No.	Instrument/Equipment	Make/Model	Procurement document/bills available (✓/x)	Standard operating procedure (SOP's) available (✓/x)	Measuring range	Accuracy % ±	Month & year of purchase	Month & year placed in service	Calibration Status Internal/External
1.	AAS								
2.	GC								
3.	Flame photometer								
4.	Mercury analyzer								
5.	BOD incubator								
6.	Analytical balances								
7.	Autoclave								
8.	pH meter								
9.	Conductivity meter								
10.	Bacteriological incubator								
11.	Spectrophotometer (visible)								
12.	Turbidity meter								
13.	Noise level meter								
14.	High volume sampler								
15.	Stack monitoring kit								
16.	RSPM sampler								
17.	Meteorological sensor								

(Please provide details on separate sheet, if space is inadequate)

* If external, mention date of calibration validity.

Appendix I

METHOD DETAILS OF TEST PARAMETERS MARKED AS $\checkmark$ AT APPENDIX A TO F (Please enclose separate sheet, if space is inadequate)

S. No.	Parameter	Method adopted (Please provide method details viz. Method Nos., page details)	Measuring Range	Minimum Detection Limit (MDL)	SOP's Available ($\checkmark/x$)
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					

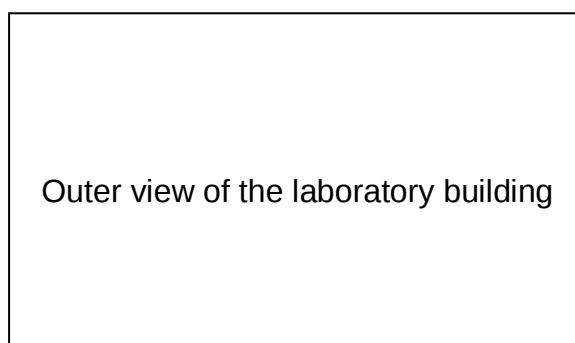
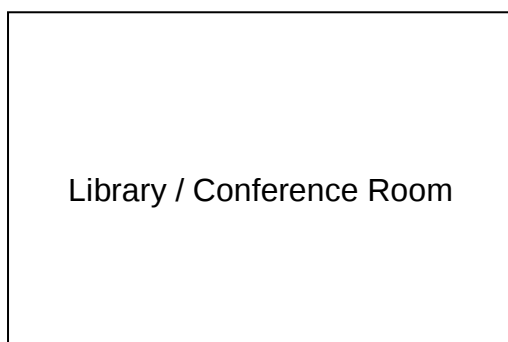
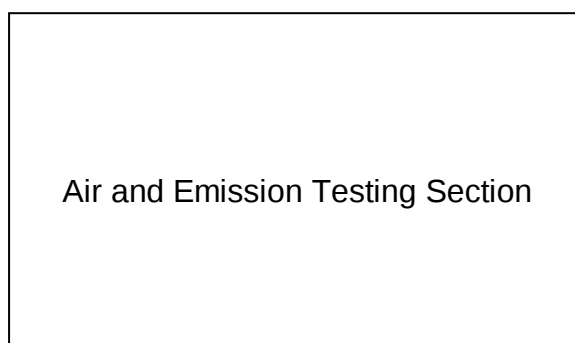
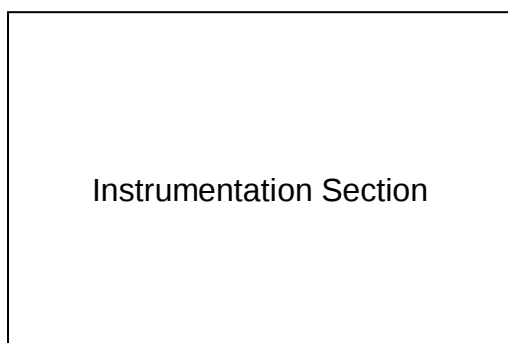
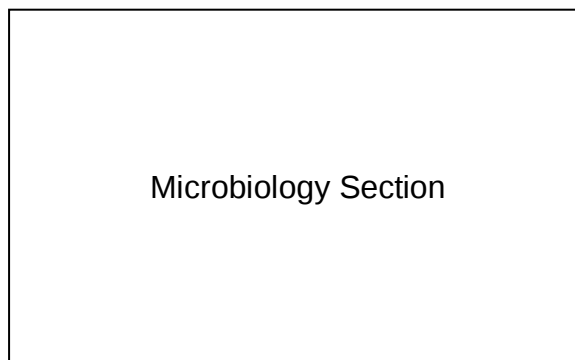
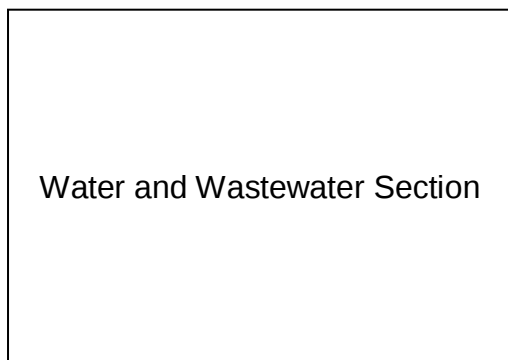
Appendix J

Please provide the name of compounds being analyzed in the laboratory using Gas Chromatography technique for the following groups:

[illegible]

Attachments

1. Provide coloured scanned photograph showing inner view / work area of the laboratory for the following sections.



2. Enclose Layout Plan of the laboratory with the application.