

**BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL, NEW DELHI  
(PRINCIPAL BENCH)**

Original Application No. 693 of 2023

(IA no. 512 of 2024)

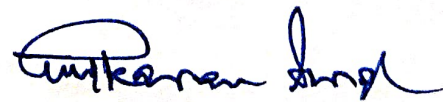
In Re: News item titled "Pollution control boards are the weak link" appearing in Deccan Herald dated 24.10.2023

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Date: 7/1/26

Place: Patiala (Punjab)



**(Er. Gurkaran Singh)  
Environmental Engineer  
Punjab Pollution Control Board  
Water Laboratory, Patiala.**

Through



**Vikas Saini, Advocate  
(For State of Punjab)**

5758

**BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL, NEW DELHI  
(PRINCIPAL BENCH)**

Original Application No. 693 of 2023

(IA no. 512 of 2024)

In Re: News item titled "Pollution control boards are the weak link" appearing in Deccan Herald dated 24.10.2023

Status report by way of affidavit of Er. Gurkaran Singh, Environmental Engineer (Water Laboratory), Punjab Pollution Control Board, Nabha Road, Patiala on behalf of Punjab Pollution Control Board in compliance of order dated 14.10.2025.

I, the above-named deponent, do hereby solemnly affirm and state as under:

**RESPECTFULLY SHOWETH**

- 1) That the deponent namely Er. Gurkaran Singh is working as Environmental Engineer in the Punjab Pollution Control Board and is posted in the Head Office of the Board at Patiala and is also holding the charge of Water Laboratory at Patiala. The deponent is well conversant with the facts and circumstances of the case and is competent and authorized to swear and file the present status report by way of affidavit on behalf of Punjab Pollution Control Board.
- 2) That the above-mentioned case is pending before this Hon'ble Tribunal and the Board is furnishing the information with regard to vacant posts in the establishment of the Punjab Pollution Control Board to the Central Pollution Control Board from time to time.
- 3) That after consideration of the matter, this Hon'ble Tribunal was pleased to pass an order dated 14.10.2025 thereby directing all the State Pollution Control Boards to file status report in terms of earlier direction and to furnish a copy thereof to the counsel for the Central Pollution Control Board. The relevant



extract of paragraph 5 of the order dated 14.10.2025 is reproduced herein below for kind perusal and reference.

"5. All PCBs of the States/PCCs of UTs are directed to file the status report in terms of the earlier direction and furnish an advance copy thereof to the Counsel for the CPCB, if not already submitted, who will compile the information in the tabulated form and place it before the Tribunal at least one week before the next date of hearing."

4) That it is pertinent to mention here that the Central Pollution Control Board has sought the information from the State Pollution Control Boards in the prescribed formats of Annexure-1 and Annexure-2 through google sheet in the following terms.

**i) Annexure-1**

Status of filling of vacant posts

**ii) Annexure-2**

The information in Annexure-2 was sought in five parts with regard to laboratory infrastructures as on 30.11.2025 as under.

**Part-I:** Facility available for monitoring of environmental parameters

**Part-II:** Details of Laboratory infrastructure (instruments and equipment)

**Part-III:** Details of Laboratories established under the Water (Prevention and Control of Pollution) Act, 1974

**Part-IV:** Details of Laboratories established under the Air (Prevention and Control of Pollution) Act, 1981

**Part-V:** Details of laboratories participated on analytical quality control and quality assurance (AQC and QA) conducted by CPCB in respect of Water quality parameters.

**Part-VI:** Details of Laboratories participated on proficiency testing (PT) performance (information to be given for last 3 years)

5) That the Punjab Pollution Control Board has updated the information with regard to the vacant posts and laboratory infrastructure on the google sheet prepared and forwarded by the Central Pollution Control Board. A copy of the information uploaded by the Board on google sheet is enclosed herewith as **Annexure-A.**

6) That the relevant aspects of the information supplied to the Central Pollution Control Board on google sheet with regard to the filling up of vacant posts in the establishment of Punjab Pollution Control Board are summarized herein below.

- A. The above information and status of vacancies is as per the contents of the affidavit dated 08.08.2024 of the Chief Secretary to Government of Punjab submitted before the Hon'ble Supreme Court of India in Writ Petition (Civil) No. 13029 of 1985 titled as M.C. Mehta Versus Union of India and Others.
- B. There were total 652 number of sanctioned posts in the establishment of Punjab Pollution Control Board.
- C. As on 30.06.2024, 343 number of posts were filled and 309 number of posts were lying vacant.
- D. Out of the said 309 posts, 60 posts are to be filled by way of promotion (as and when the candidate become eligible as per service regulation). Out of 60 posts (of Promotion) 23 posts have been filled and for remaining 37 posts, eligible candidates in accordance with the provisions of the Punjab Pollution Control Board Service Regulations, 2002

are not available. The Promotion quota posts are filled as and when eligible candidates are available.

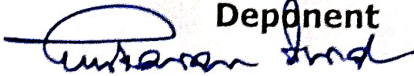
- E. Out of the remaining 249 vacant posts, 75 posts (18 posts of Driver and 57 posts of Group-D) have been filled on outsource basis as per the policy of the Government.
- F. Hence, the posts which were to be filled through direct recruitment were (249-75) 174.
- G. Substantial vacancies in the technical cadre have been filled after 30.06.2024.
- H. 131 posts have already been filled out of the total 174 vacant posts of direct recruitment.
- I. Remaining 43 vacancies are in the process of being filled as per details given below:
- i) 07 posts are to be re-advertised due to non-availability of eligible candidates {03 posts of Junior Environmental Engineer, 03 posts of Junior Scientific Officer and 01 post of Clerk (Accounts)}.
  - ii) 23 posts of Steno-typist are to be filled after the conduct of English and Punjabi Stenography test.
  - iii) 02 posts of Clerk-cum-Data Entry Operator are to be filled from the merit list prepared by the Punjab Subordinate Services Selection Board.
  - iv) 06 posts of Assistant Scientific Officer are to be advertised for selection of candidates.
  - v) 04 posts of Assistant Environmental Engineer are under consideration for following reasons: -
    - 01 post is kept vacant due to non-availability of Sports (Women).

- 01 post of General (Economically Weaker Section) women is kept vacant till the decision of Hon'ble Punjab and Haryana High Court in CWP No. 3056 of 2023.
  - 01 post is kept vacant due to non-eligibility of a Backward Class (women).
  - 01 post is kept vacant in the view of the orders passed by the Hon'ble Punjab and Haryana High court in CWP No. 31652 of 2024. The advice of the Advocate General Punjab has been sought.
- J. Sincere efforts are being made to fill up the remaining vacancies.
- K. The remaining 43 vacancies in various cadres as explained above will be filled at the earliest.
- L. Out of the 43 vacancies, 33 vacancies have been filled through outsourced basis, 01 post has been filled on regular basis and 09 posts are to be filled. These (33 + 9) posts will be filled through regular candidates in due course of time at the earliest.
- 7) That apart from the desired information as sought by the Central Pollution Control Board on google sheet with regard to the laboratory infrastructure, some relevant aspects disclosed by the Punjab Pollution Control Board are summarized herein below.
- a. The Central Laboratory at Head Office Patiala has been upgraded with modular furniture.
  - b. Stack Gas Analyzers have been procured for Laboratories of the Board at Patiala, Ludhiana and Jalandhar.

- c. Atomic Absorption Spectrometer (AAS) has been newly commissioned at the Central Laboratory at Head Office, Patiala and Zonal Laboratory, Ludhiana.
  - d. Cold Rooms has been constructed and commissioned at the Water Laboratory, Head Office, Patiala and Zonal Laboratory, Ludhiana.
  - e. Water Purification Systems, Sound Level Meter-I units, and Multi Stack Analyzers have been procured for Laboratories of the Board at Patiala, Ludhiana and Jalandhar.
- 8) That the status report on behalf of Punjab Pollution Control Board is hereby submitted in compliance to order dated 14.10.2025 for kind consideration of the Hon'ble National Green Tribunal.

Date: 7/1/26

Place: Patiala (Punjab)

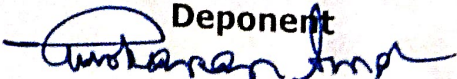
Deponent  
  
(Er. Gurkaran Singh)  
Environmental Engineer  
Punjab Pollution Control Board  
Water Laboratory, Patiala.

### Verification

Verified that the contents of paragraphs 1 to 8 of the above status report by way of affidavit of the deponent are true and correct as derived from the official record. No part of the above status report is false and nothing material has been kept concealed therein.

Date: 7/1/26

Place: Patiala (Punjab)

Deponent  
  
(Er. Gurkaran Singh)  
Environmental Engineer  
Punjab Pollution Control Board  
Water Laboratory, Patiala.

PART A: STATUS OF FILLING OF VACANT POSTS							
Name of the Board / Committee: Punjab Pollution Control Board, Head Office, Patiala (Punjab)							
Category of post	Status of Sanctioned posts in Number			Details of current vacancies in number		Action Taken (Approval of the Govt. , Engagement agency, Advertisement, Exam date etc.)	The time line by which the vacancy will be filled (in months)
	Sanctioned	Filled posts as on 30.11.2025	Current Vacancy as on 30.11.2025				
a) Scientific	65	52	13	a) Direct	9	1. Recruitment through Punjab Public Service Commission and Punjab Subordinate Selection Service Board is being undertaken.	Due to technical and Administrative reasons these posts could not be filled.
				b) Promotion	4		Candidates are not eligible for promotion as per service regulations
				c) Deputation	-		-
b) Engineering	163	153	10	a) Direct	8	2. Exam already held. 3. Selection list is out. 4. Appointment letters are being issued to the selected candidates.	Due to technical and Administrative reasons these posts could not be filled.
				b) Promotion	2		Candidates are not eligible for promotion as per service regulations
				c) Deputation	-		-
c) Administration	424	367	57	a) Direct	26		Due to technical and Administrative reasons these posts could not be filled.
				b) Promotion	31		Candidates are not eligible for promotion as per service regulations
				c) Deputation	-		-
<b>Total</b>	<b>652</b>	<b>572</b>	<b>80</b>				
<b>Specific remarks, if any:</b>							
<b>Note:</b>							
1. The above information and status of vacancies is as per the contents of the affidavit dated 08.08.2024 of the Chief Secretary to Government of Punjab submitted before the Hon'ble Supreme Court of India in Writ Petition (Civil) No. 13029 of 1985 titled as M.C. Mehta Versus Union of India and Others.							
2. There was total 652 number of sanctioned posts in the establishment of Punjab Pollution Control Board.							
3. As on 30.06.2024, 343 number of posts were filled and 309 number of posts were lying vacant.							
4. Out of the said 309 posts, 60 posts are to be filled by way of promotion (as and when the candidate become eligible as per service regulation). Out of 60 posts (of Promotion) 23 posts have been filled and for remaining 37 posts, eligible candidates in abundance with the provisions of the Punjab Pollution Control Board Service Regulations, 2002 are not available. The Promotion quota posts are filled as and when eligible candidates are available.							
5. Out of the remaining 249 vacant posts, 75 posts (18 posts of Driver and 57 posts of Group-D) have been filled on outsource basis as per the policy of the Government.							
6. Hence, the posts which were to be filled through direct recruitment were (249-75) 174.							
7. Substantial vacancies in the technical cadre have been filled after 30.06.2024.							

8.	131 posts have already been filled out of the total 174 vacant posts of direct recruitment.				
9.	<p>Remaining 43 vacancies are in the process of being filled as per details given below:</p> <p>i. 07 posts are to be re-advertised due to non-availability of eligible candidates {03 posts of Junior Environmental Engineer, 03 posts of Junior Scientific Officer and 01 post of Clerk (Accounts)}.</p> <p>ii. 23 posts of Steno-typist are to be filled after the conduct of English and Punjabi Stenography test.</p> <p>iii. 02 posts of Clerk-cum-Data Entry Operator are to be filled from the merit list prepared by the Punjab Subordinate Services Selection Board.</p> <p>iv. 06 posts of Assistant Scientific Officer are to be advertised of selection for Candidates.</p> <p>v. 04 posts of Assistant Environmental Engineer are under consideration for following reasons: -</p> <ul style="list-style-type: none"> <li>• 01 post is kept vacant due to non-availability of Sports (Women).</li> <li>• 01 post of General (Economically Weaker Section) women is kept vacant till the decision of Hon'ble Punjab and Haryana High Court in CWP No. 3056 of 2023.</li> <li>• 01 post is kept vacant due to non-eligibility of a Backward Class (women).</li> <li>• 01 post is kept vacant in the view of the orders passed by the Hon'ble Punjab and Haryana High court in CWP No. 31652 of 2024. The advice of the Advocate General Punjab has been sought.</li> </ul>				
10.	Sincere efforts are being made to fill up the remaining vacancies.				
11.	The remaining 43 vacancies in various cadres as explained above will be filled at the earliest.				
12.	Out of the 43 vacancies, 33 vacancies have been filled through outsourced basis, 01 post has been filled on regular basis and 09 posts are to be filled. These (33 + 9) posts will be filled through regular candidates in due course of time at the earliest.				



Note: It is requested to please ensure that each sheet is created separately for each laboratory and rename the sheet accordingly . For e.g. Central Laboratory, Regional Laboratory etc

**LABORATORY ANALYTICAL FACILITIES**

Name of the Board / Committee: Punjab Pollution Control Board, Water/Air Laboratory, Head Office, Patiala (Punjab)

**PART I: Facility available for monitoring of environmental parameters:**

S. No.	Parameters	Facilities Available (Yes / No)	If facility is not available, Specify Timeline for addition of this parameter. (in months)	Action Taken for addition of this parameter (Specification finalized / procurement initiated / work awarded / outsourced )
<b>A. Sample Matrix / Group of Water and Wastewater</b>				
<b>(a) Physical Tests</b>				
1	Temperature	Yes		
2	Colour	Yes		
3	pH	Yes		
4	Turbidity	Yes		
5	Conductivity	Yes		
6	Total Solids	Yes		
7	Total Dissolved Solids (TDS)	Yes		
8	Total Suspended Solids (TSS)	Yes		
<b>(b) Inorganic Tests</b>				
<b>(i) General &amp; Non-metallic</b>				
1	Alkalinity	Yes		
2	Chloride	Yes		
3	Cyanide	Yes		
4	Dissolved oxygen	Yes		
5	Nitrite nitrogen	Yes		
6	Nitrate nitrogen	Yes		
7	Ammonical nitrogen	Yes		
8	Fluoride	Yes		
9	Hardness (Total)	Yes		
10	Calcium	Yes		
11	Magnesium	Yes		
12	Phosphate	Yes		
13	Sulphate	Yes		
14	Sulphide	Yes		
15	Total Residual chlorine (TRC)	Yes		
<b>(ii) Trace Metals Tests</b>				
1	Aluminium (Al)	Yes		
2	Arsenic (As) Total	Yes		
3	Barium	Yes		
4	Boron	Yes		
5	Chromium (Cr) Hexavalent	Yes		
6	Chromium (Cr) Total	Yes		
7	Cadmium (Cd)	Yes		
8	Cobalt (Co)	Yes		
9	Copper (Cu)	Yes		
10	Iron (Fe)	Yes		
11	Lead (Pb)	Yes		
12	Manganese (Mn)	Yes		
13	Mercury (Hg)	Yes		
14	Nickel (Ni)	Yes		
15	Potassium (K)	Yes		
16	Sodium (Na)	Yes		
17	Vanadium (V)	Yes		
18	Zinc (Zn)	Yes		
19	Selenium (Se)	Yes		
<b>(c) Organics (General) and Trace Organics Tests</b>				
1	Biological Oxygen Demand (BOD)	Yes		
2	Chemical oxygen demand (COD)	Yes		
3	Oil & Grease	Yes		
4	Phenolic Compounds as C <sub>6</sub> H <sub>5</sub> OH	Yes		
5	Benzopyrene	No		Outsourced

6	<b>Pesticides</b>		
6.a	<b>Organochlorine Pesticides (OCPs) Tests</b>		
i	Aldrin	Yes	
ii	Alpha Endosulphan	Yes	
iii	p,p'-DDT	Yes	
iv	Alpha-HCH	Yes	
v	Beta HCH	Yes	
vi	Beta Endosulphan	Yes	
vii	Gama-HCH	Yes	
viii	o,p'-DDT	Yes	
ix	p,p'-DDE	Yes	
6.b	<b>Organophosphorus Pesticides (OPPs) Tests</b>		
i	Malathion	Yes	
ii	Methyl parathion	Yes	
iii	Chlorpyrifos	Yes	
iv	Dimethoate	Yes	
v	Dieldrin	Yes	
vi	Ethion	Yes	
<b>(d) Microbiological Tests</b>			
1	Total Coliform	Yes	
2	Faecal Coliform	Yes	
3	E. Coli	Yes	
4	Faecal Streptococci	No	
<b>(e) Toxicological Tests</b>			
1	Bioassay method for evaluation of toxicity using fish (90% survival of fish after 96 hrs in 100% effluent)	Yes	
<b>B. Sample Matrix / Group of Solid / Solid Waste</b>			
<b>(a) Soil / Sediment / Compost Tests</b>			
1	Cation Exchange Capacity (CEC)	Yes	
2	Electrical Conductivity (EC)	Yes	
3	Organic carbon (Chemical Method )	Yes	
4	pH	Yes	
5	Soil moisture	Yes	
6	Total nitrogen	Yes	
7	Metals by digestion (As, Cd, Cr, Pb, Ni etc.)	Yes	
<b>(b) Hazardous Waste (Liquid / Slurry / Sludge / Solid / Semi-Solid) Tests</b>			
1	Corrosivity	No	No Hazardous waste section hence no samples are being received
2	Ignitability (Flash Point)	No	No Hazardous waste section hence no samples are being received
3	Loss on Drying at 1050C (% Moisture Content)	No	No Hazardous waste section hence no samples are being received
4	Loss on Drying at 5500C (% Organic Content)	No	No Hazardous waste section hence no samples are being received
5	pH	No	No Hazardous waste section hence no samples are being received
6	Organic carbon/matter (Chemical Method )	No	No Hazardous waste section hence no samples are being received
7	Calorific Value	No	No Hazardous waste section hence no samples are being received
8	Toxicity Characteristics leaching procedure (TCLP) Leachate and Metals in Leachate (As,Cd,Cr, Pb, Ni)	No	No Hazardous waste section hence no samples are being received
<b>C. Sample Matrix / Group of Analytes: Air</b>			
<b>(a) Ambient Air</b>			
1	Nitrogen dioxide as NO2	Yes	
2	Sulphur dioxide (SO2)	Yes	
3	Particulate matter (PM10)	Yes	
4	Particulate matter (PM2.5)	Yes	
5	Carbon Monoxide	Yes	
6	Ozone	Yes	
7	Benzene	No	Outsourced
8	Ammonia	Yes	
9	Metals in Particulate Matter, Pb	Yes	
10	Metals in Particulate Matter, As	Yes	
11	Metals in Particulate Matter, Ni	Yes	
12	Particulate Benzo-a-Pyrene (BaP)	No	Outsourced
<b>(b) Stack Gas / Stationary Source Emission</b>			
1	Particulate Matter	Yes	
2	Sulphur Dioxide	Yes	

3	Carbon Dioxide	Yes		
4	Carbon Monoxide (NDIR based Method)	Yes		
5	Temperature	Yes		
6	Moisture	Yes		
7	Oxygen	Yes		
8	Oxides of Nitrogen	Yes		
9	Halides (HCL/HF)	No		Outsourced
<b>(c) Noise Level</b>				
1	Ambient Noise level measurement (20 to 140 dB)	Yes		
2	Source Noise Level Measurement (Industrial process, DG set- 20 to 140dB)	Yes		
<b>(d) Meteorological Monitoring</b>				
1	Ambient Temperature	Yes		
2	Wind direction	Yes		
3	Wind speed	Yes		
4	Relative Humidity	Yes		
5	Mixing Height	No		Field parameter

Specific remarks, if any:

### PART II: Details of Laboratory Infrastructure (Instruments and Equipment)

S. No.	Name of Instrument / Equipments	Available Yes / No	If the Instrument / Equipment is not available, Specify Timeline for procurement of this instrument (in months)	Action Taken for procurement of this Instrument / Equipment (Specification finalized / procurement initiated / work awarded / outsourced )
<b>A. List of Instruments / Equipment for Sampling of Water, Wastewater and Soil / Hazardous Wastes</b>				
<b>a) Mandatory Requirements</b>				
1	Portable / Pen type pH meter / pH strip	Yes		
2	Portable Dissolved Oxygen Meter / Field Fixing using chemicals	Yes		
3	Electrical Conductivity meter pen type	Yes		
4	Flow meter / Physical flow measuring	No		Field Parameter
5	GPS / Mobile with GPS app	Yes		
6	Ice Box (2 nos.) (150 litre & 100 litre capacities)	Yes		
7	Thermometer	Yes		
8	Stainless steel bucket with nylon rope and mug	Yes		
9	Ground water level measuring device	No		Field Parameter
10	Scoop / shovel	Yes		
11	Auger / core sampler	Yes		
<b>b) Optional Requirements</b>				
1	Bottom Sampler / Depth sampler	Yes		
2	Chloroscope for residual chlorine	No		Alternative method for Residual chlorine
3	Vandom or equivalent water sampler (Automatic sampler when composite sampling to be done)	No		Not Required
4	Ekman Dredge	No		Alternative equipment available
<b>B. List of Instruments / Equipment for Sampling of Ambient Air and Source Emission monitoring</b>				
<b>a) Mandatory Requirements</b>				
1	Fine dust samplers PM2.5 (*4 Nos)	Yes		
2	Respirable Dust Sampler PM 10 (* 4 Nos)	Yes		
3	High Volume Sampler ( SPM ) (4 Nos)	Yes		
4	Handy Sampler with set of glass impingers (*2 Nos)	Yes		
5	Low Volume Sampler (LVS)	Yes		
6	Tedler bags different sizes	No		Outsourced
7	Meteorological tower (All in one telescopic Mast) with sensors comprising wind speed, wind direction, ambient temp., Relative humidity, Solar radiation, rainfall etc.	Yes		Facility to analyse these parameters available at CAAQMS installed at Head Office, Patiala.
8	Nitrogen Cylinder portable	No		Outsourced

9	Activated Charcoal tubes/ Tenex	No		Outsourced
10	Barometer (Digital)	Yes		
11	Isokinetic Stack Monitoring Kit complete with Stack monitoring instrument panel with inclined cum vertical manometer, Cold Box, Vacuum pump, Glass assembly impingers	Yes		
12	Modified S type Stainless steel Pitot tube (Standard length) with Assembly	Yes		
13	Monoblock type, rotary design vacuum pump	Yes		
14	Orsat Apparatus	Yes		
15	Source emission monitoring Impingers train set with spare impingers 100 ml & 225 ml capacity	Yes		
16	Stainless steel heated Sampling Probes with thimble holders short and long	Yes		
17	Flue Gas analyzer	Yes		
18	Thermometer/ Thermocouple	Yes		
19	Calibrator for Noise Meters	Yes		
20	Digital Sound level ( Noise ) Metres	Yes		
21	Portable TOC Analyzer for emission monitoring.	No		Outsourced
22	Polyurethane Foam PUF Sampler	No		Outsourced
<b>b) Optional Requirements</b>				
1	Anemometer	Yes		
2	Weather Monitoring system	Yes		
3	Wind speed/wind direction monitor	Yes		
4	Continuous Ambient Air Monitoring System, Fixed	Yes		
5	Continuous PM10 Analyzer	Yes		
6	Continuous Ambient Air Monitoring System, Mobile	Yes		
7	Continuous PM2.5 analyzer	Yes		
8	Ambient Nitrogen Oxides (NO-NO2-NOx Analyzer	Yes		
9	Ambient Ozone Analyzer	Yes		
10	Ambient BTEX Analyzer	Yes		
11	Multipoint Gas Calibration system	Yes		
12	Ambient Sulphur Dioxide analyzer	Yes		
13	Ambient Carbon Monoxide & Carbon dioxide analyzer	Yes		
14	Total Hydrocarbon analyzer	No		Outsourced
15	Ambient Ammonia analyzer	Yes		
16	Zero Gas Generator	Yes		
17	Synthetic Air Cylinder	No		Outsourced
18	Calibration Gas Cylinders, SO2, NO, CO, NH3, benzene and Toluene One each with stainless steel Regulators	Yes		
19	Continuous emission monitoring equipment	Yes		
20	19 inch Rack mounting system for air analyzers	Yes		
21	Dry Gas Meter	No		Outsourced
22	Diesel Exhaust analyzer	No		Outsourced
23	Exhaust CO/HC analyzer with Sampling Probe	No		Outsourced
24	Automated Noise Monitoring System	No		Outsourced
25	Integrating Sound level meter	Yes		
26	Continuous PM10& PM2.5 Monitoring Analyzer TEOM system	Yes		Parameters analysed at CAAQMS installed at Head Office Patiala
27	Top loading orifice kit for calibration of HVS	Yes		
28	Permeation tubes (SO2, NO-NO2-NOx, NH3, BTX)	Yes		Parameters analysed at CAAQMS installed at Head Office Patiala
<b>C. List of Equipment required for processing of Environmental Samples:</b>				
<b>a) Mandatory Requirements</b>				
1	Accelerated Solvent Extraction (ASE) System	Yes		
2	Ammonia distillation assembly/TKN Analyzer	Yes		
3	Analytical Balance 4/5 digit & 6 digit (Digital)	Yes		
4	Aquarium for Toxicity bioassay test with complete accessories (*4 Nos)	Yes		

5	Autoclave (*2 Nos)	Yes		
6	Bacteriological Incubators Stainless steel (*2 Nos)	Yes		
7	Bio safety cabinets	Yes		
8	BOD Incubators (2 nos.)	Yes		
9	Centrifuge	No		Outsourced
10	COD Digestion heated Blocks (2) with capacity 16 nos. or more	Yes		
11	Cyanide Distillation Assembly (3)	Yes		
12	Deep Freezer- Capacity 500 litre	Yes		
13	Laboratory Ball Mill Grinder	No		Outsourced
14	Laboratory Grinder	No		Outsourced
15	Laminar Flow bench for Microbiological analysis	Yes		
16	Magnetic Stirrer with heating system (*2 Nos)	No		Outsourced
17	Mechanical Shaker	No		Outsourced
18	Membrane Filtration assembly with vacuum pump (2 nos.)	Yes		
19	Microbial culture refrigerator	Yes		
20	Microwave Digester with 16 vessels/ Hot Plate	Yes		
21	Muffle Furnace (*1 Nos), Range 1200 C	Yes		
22	Phenol distillation assembly (3)	Yes		
23	Plate counter, Manual/Automatic	No		Outsourced
24	Digestion Chambers/ Fume hood	Yes		
25	Digital Thermometer & Humidity meter- All lab area	Yes		
26	Dispensers (Various capacities ) up to 5, 10, 25 & 50 ml	Yes		
27	Filtration Assembly with vacuum pump	Yes		
28	Fluoride Distillation Assembly (3)	Yes		
29	Arsenic / Fluoride Glass Distillation assemblies	Yes		
30	Glass Double Distillation Assembly /Water Purification System	Yes		
31	Heating mantles (2 nos.)	Yes		
32	Hot plates (small, Medium and Large ) (*2 nos.)	Yes		
33	Thermo Hygrometer	Yes		
34	Imhoff Cone	Yes		
35	Top loading Precision Digital Balance (minimum detection 0.001mg/0.01 mg) with anti-vibration facility- 3 nos. i.e 4/5 Digit (2 nos), - 6 Digit (1 no)	Yes		
36	Refrigerators Big Size 300 litres or more, double door- 2 nos.	Yes		
37	Rotary Evaporator (Buchi type) with water recirculating chiller	Yes		
38	Separating funnel shaker	Yes		
39	Soxhlet Apparatus	No		Outsourced
40	Solid Phase Extraction (SPE) /SPME Extraction system	No		Outsourced
41	Thermometer (Alcohol)	Yes		
42	Dry & wet bulb Thermometer	Yes		
43	Toxicity characteristic leaching procedure (TCLP) Extractors (Zero head and Bottle)	No		Outsourced
44	Ultra sonic water bath- Capacity 3 litre	No		Outsourced
45	Water Bath with temperature control (*2 Nos)	Yes		
46	Water Bath with temp. for mercury sample digestion- 20 BOD Bottles	Yes		Alternative Facility available
<b>D. Analytical Instruments at Environmental Laboratories</b>				
<b>a) Mandatory Requirements</b>				
1	Atomic Absorption spectrometer (AAS)- Flame, Hydride & Graphite Tube Atomizer (GTA)	Yes		
2	Binocular Stereo Zoom Microscope	No		Outsourced
3	Bomb Calorimeter	No		Outsourced
4	BTX Analyzer with BTX calibrator	No		Outsourced
5	Colony counter	No		Outsourced

6	Conductivity meter- 2 nos.	Yes		
7	Environment conditioning chamber	Yes		
8	Digital Burettes- 50 ml*2, 100 ml*2	Yes		
9	Dissolved Oxygen Meter (Bench model)	Yes		Alternative Facility Available
10	Flame Photometer	Yes		
11	Flash Point Apparatus	No		Outsourced
12	Gas Chromatograph Mass Spectrometer	Yes		
13	High Performance Liquid Chromatograph (HPLC)	No		Outsourced
14	Inductively Coupled Plasma (ICP) Spectrometer-OES	Yes		
15	Ion Chromatograph Anion & Cations	Yes		
16	Methane and Non Methane (NMHC) Analyzer	No		Outsourced
17	Microscope – 100x	No		Not Required
18	Microscope Binocular Research	No		Outsourced
19	CO (NDIR based) Analyzer	No		Outsourced
20	Nephelometer (Turbidity Meter)	Yes		
21	pH-Meter with combined electrode (3 point)- 2 nos.	Yes		
22	Specific ion Analyzer with ion selective electrodes	Yes		
23	Spectrophotometer Visible (Portable)	No		Outsourced
24	TKN Analyzer semi-automatic with aluminum block digester	Yes		
25	UV-Vis Spectrophotometer	Yes		
26	Moisture Content Analyzer	No		Alternative Facility Available
<b>b) Optional Requirements</b>				
1	Automatic Titration Assembly	No		Outsourced
2	Carbon, Hydrogen, Nitrogen and Sulphur (CHNS) Elemental Analyzer	No		Outsourced
3	EDXRF Analyzer/WDXRF Analyzer	No		Outsourced
4	Fourier-transform infrared Spectrometer (FTIR)	No		Outsourced
5	Flocculator ( Jar testing apparatus)	No		Outsourced
6	Toxic Gas Analyzer	No		Outsourced
7	Organic Halogen (AOX/TOX) Analyzer	No		Outsourced
8	TOC Analyzer	No		Outsourced
9	High Resolution Mass Spectrometer (HRGC-HRMS)	No		Outsourced
10	Inductively Coupled Plasma Mass (ICP-MS) Spectrometer	Yes		
11	X Ray Fluorescence (XRF) Spectrometer (Portable)	No		Outsourced
<b>Specific remarks, if any:</b>				
<b>Apart from the above information the following actions has been taken as on 30.11.2025 to upgrade the PPCB Laboratories:</b>				
1. The Central Laboratory at Head Office Patiala has been upgraded with modular furniture.				
2. Stack Gas Analyzers have been procured.				
3. AAS has been newly commissioned at the Head Office, Patiala.				
4. Cold Room have been constructed and commissioned at the Water Laboratory, Head Office, Patiala.				
5. Water Purification Systems, Sound Level Meter–I units, and Multi Stack Analyzers have been procured.				

Note: It is requested to please ensure that each sheet is created separately for each laboratory and rename the sheet accordingly . For e.g. Central Laboratory, Regional Laboratory etc

**LABORATORY ANALYTICAL FACILITIES**

Name of the Board / Committee: Zonal Laboratory, Ludhiana

**PART I: Facility available for monitoring of environmental parameters:**

S. No.	Parameters	Facilities Available (Yes / No)	If facility is not available, Specify Timeline for addition of this parameter. (in months)	Action Taken for addition of this parameter (Specification finalized / procurement initiated / work awarded / outsourced )
<b>A. Sample Matrix / Group of Water and Wastewater</b>				
<b>(a) Physical Tests</b>				
1	Temperature	Yes		
2	Colour	Yes		
3	pH	Yes		
4	Turbidity	Yes		
5	Conductivity	Yes		
6	Total Solids	Yes		
7	Total Dissolved Solids (TDS)	Yes		
8	Total Suspended Solids (TSS)	Yes		
<b>(b) Inorganic Tests</b>				
<b>(i) General &amp; Non-metallic</b>				
1	Alkalinity	Yes		
2	Chloride	Yes		
3	Cyanide	No		Outsourced
4	Dissolved oxygen	Yes		
5	Nitrite nitrogen	Yes		
6	Nitrate nitrogen	Yes		
7	Ammonical nitrogen	Yes		
8	Fluoride	Yes		
9	Hardness (Total)	Yes		
10	Calcium	Yes		
11	Magnesium	Yes		
12	Phosphate	Yes		
13	Sulphate	Yes		
14	Sulphide	Yes		
15	Total Residual chlorine (TRC)	Yes		
<b>(ii) Trace Metals Tests</b>				
1	Aluminium (Al)	Yes		
2	Arsenic (As) Total	Yes		
3	Barium	Yes		
4	Boron	No		Outsourced
5	Chromium (Cr) Hexavalent	Yes		
6	Chromium (Cr) Total	Yes		
7	Cadmium (Cd)	Yes		
8	Cobalt (Co)	Yes		
9	Copper (Cu)	Yes		
10	Iron (Fe)	Yes		
11	Lead (Pb)	Yes		
12	Manganese (Mn)	Yes		
13	Mercury (Hg)	Yes		
14	Nickel (Ni)	Yes		
15	Potassium (K)	Yes		
16	Sodium (Na)	Yes		
17	Vanadium (V)	Yes		
18	Zinc (Zn)	Yes		
19	Selenium (Se)	Yes		
<b>(c) Organics (General) and Trace Organics Tests</b>				
1	Biological Oxygen Demand (BOD)	Yes		
2	Chemical oxygen demand (COD)	Yes		
3	Oil & Grease	Yes		
4	Phenolic Compounds as C <sub>6</sub> H <sub>5</sub> OH	Yes		
5	Benzopyrene	No		Outsourced

6	<b>Pesticides</b>			
6.a	<b>Organochlorine Pesticides (OCPs) Tests</b>			
i	Aldrin	No		Outsourced
ii	Alpha Endosulphan	No		Outsourced
iii	p,p'-DDT	No		Outsourced
iv	Alpha-HCH	No		Outsourced
v	Beta HCH	No		Outsourced
vi	Beta Endosulphan	No		Outsourced
vii	Gama-HCH	No		Outsourced
viii	o,p'-DDT	No		Outsourced
ix	p,p'-DDE	No		Outsourced
6.b	<b>Organophosphorus Pesticides (OPPs) Tests</b>			
i	Malathion	No		Outsourced
ii	Methyl parathion	No		Outsourced
iii	Chlorpyrifos	No		Outsourced
iv	Dimethoate	No		Outsourced
v	Dieldrin	No		Outsourced
vi	Ethion	No		Outsourced
<b>(d) Microbiological Tests</b>				
1	Total Coliform	Yes		
2	Faecal Coliform	Yes		
3	E. Coli	Yes		
4	Faecal Streptococci	No		Outsourced
<b>(e) Toxicological Tests</b>				
1	Bioassay method for evaluation of toxicity using fish (90% survival of fish after 96 hrs in 100% effluent)	Yes		
<b>B. Sample Matrix / Group of Solid / Solid Waste</b>				
<b>(a) Soil / Sediment / Compost Tests</b>				
1	Cation Exchange Capacity (CEC)	Yes		
2	Electrical Conductivity (EC)	Yes	-	
3	Organic carbon (Chemical Method )	Yes	-	
4	pH	Yes	-	
5	Soil moisture	Yes	-	
6	Total nitrogen	Yes	-	
7	Metals by digestion (As, Cd, Cr, Pb, Ni etc.)	Yes	-	
<b>(b) Hazardous Waste (Liquid / Slurry / Sludge / Solid / Semi-Solid) Tests</b>				
1	Corrosivity	No		No section of Hazardous waste
2	Ignitability (Flash Point)	No		No section of Hazardous waste
3	Loss on Drying at 1050C (% Moisture Content)	No		No section of Hazardous waste
4	Loss on Drying at 5500C (% Organic Content)	No		No section of Hazardous waste
5	pH	No		No section of Hazardous waste
6	Organic carbon/matter (Chemical Method )	No		No section of Hazardous waste
7	Calorific Value	No		No section of Hazardous waste
8	Toxicity Characteristics leaching procedure (TCLP) Leachate and Metals in Leachate (As,Cd,Cr, Pb, Ni)	No		No section of Hazardous waste
<b>C. Sample Matrix / Group of Analytes: Air</b>				
<b>(a) Ambient Air</b>				
1	Nitrogen dioxide as NO2	Yes		
2	Sulphur dioxide (SO2)	Yes		
3	Particulate matter (PM10)	Yes		
4	Particulate matter (PM2.5)	Yes		
5	Carbon Monoxide	Yes		
6	Ozone	Yes		
7	Benzene	No		Outsourced
8	Ammonia	Yes		
9	Metals in Particulate Matter, Pb	Yes		
10	Metals in Particulate Matter, As	Yes		
11	Metals in Particulate Matter, Ni	Yes		
12	Particulate Benzo-a-Pyrene (BaP)	No		Outsourced
<b>(b) Stack Gas / Stationary Source Emission</b>				
1	Particulate Matter	Yes		
2	Sulphur Dioxide	Yes		
3	Carbon Dioxide	Yes		
4	Carbon Monoxide (NDIR based Method)	Yes		

5	Temperature	Yes		
6	Moisture	Yes		
7	Oxygen	Yes		
8	Oxides of Nitrogen	Yes		
9	Halides (HCL/HF)	No		Outsourced
<b>(c) Noise Level</b>				
1	Ambient Noise level measurement (20 to 140 dB)	Yes		
2	Source Noise Level Measurement (Industrial process, DG set- 20 to 140dB)	Yes		
<b>(d) Meteorological Monitoring</b>				
1	Ambient Temperature	Yes		
2	Wind direction	Yes		
3	Wind speed	Yes		
4	Relative Humidity	Yes		
5	Mixing Height	No		Field parameter

Specific remarks, if any:

**PART II: Details of Laboratory Infrastructure (Instruments and Equipment)**

S. No.	Name of Instrument / Equipments	Available Yes / No	If the Instrument / Equipment is not available, Specify Timeline for procurement of this instrument (in months)	Action Taken for procurement of this Instrument / Equipment (Specification finalized / procurement initiated / work awarded / outsourced )
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**A. List of Instruments / Equipment for Sampling of Water, Wastewater and Soil / Hazardous Wastes**

**a) Mandatory Requirements**

1	Portable / Pen type pH meter / pH strip	Yes		
2	Portable Dissolved Oxygen Meter / Field Fixing using chemicals	Yes		
3	Electrical Conductivity meter pen type	Yes		
4	Flow meter / Physical flow measuring	No		Field Parameter
5	GPS / Mobile with GPS app	Yes		
6	Ice Box (2 nos.) (150 litre & 100 litre capacities)	Yes		
7	Thermometer	Yes		
8	Stainless steel bucket with nylon rope and mug	Yes		
9	Ground water level measuring device	No		Outsourced
10	Scoop / shovel	Yes		
11	Auger / core sampler	Yes		

**b) Optional Requirements**

1	Bottom Sampler / Depth sampler	Yes		
2	Chloroscope for residual chlorine	No		Outsourced
3	Vandorn or equivalent water sampler (Automatic sampler when composite sampling to be done)	No		Outsourced
4	Ekman Dredge	No		Outsourced

**B. List of Instruments / Equipment for Sampling of Ambient Air and Source Emission monitoring**

**a) Mandatory Requirements**

1	Fine dust samplers PM2.5 (*4 Nos)	Yes		
2	Respirable Dust Sampler PM 10 (* 4 Nos)	Yes		
3	High Volume Sampler ( SPM ) (4 Nos)	Yes		
4	Handy Sampler with set of glass impingers (*2 Nos)	Yes		
5	Low Volume Sampler (LVS)	Yes		
6	Tedler bags different sizes	No		Outsourced
7	Meteorological tower (All in one telescopic Mast) with sensors comprising wind speed, wind direction, ambient temp., Relative humidity, Solar radiation, rainfall etc.	No		Outsourced
8	Nitrogen Cylinder portable	No		Outsourced
9	Activated Charcoal tubes/ Tenex	No		Outsourced
10	Barometer (Digital)	Yes		

11	Isokinetic Stack Monitoring Kit complete with Stack monitoring instrument panel with inclined cum vertical manometer, Cold Box, Vacuum pump, Glass assembly impingers	Yes		
12	Modified S type Stainless steel Pitot tube (Standard length) with Assembly	Yes		
13	Monoblock type, rotary design vacuum pump	Yes		
14	Orsat Apparatus	No		Outsourced
15	Source emission monitoring Impingers train set with spare impingers 100 ml & 225 ml capacity	Yes		
16	Stainless steel heated Sampling Probes with thimble holders short and long	Yes		
17	Flue Gas analyzer	Yes		
18	Thermometer/ Thermocouple	Yes		
19	Calibrator for Noise Meters	Yes		
20	Digital Sound level ( Noise ) Metres	Yes		
21	Portable TOC Analyzer for emission monitoring.	No		Outsourced
22	Polyurethane Foam PUF Sampler	No		Outsourced
<b>b) Optional Requirements</b>				
1	Anemometer	Yes		
2	Weather Monitoring system	Yes		
3	Wind speed/wind direction monitor	Yes		
4	Continuous Ambient Air Monitoring System, Fixed	Yes		
5	Continuous PM10 Analyzer	Yes		
6	Continuous Ambient Air Monitoring System, Mobile	Yes		
7	Continuous PM2.5 analyzer	Yes		
8	Ambient Nitrogen Oxides (NO-NO2-NOx Analyzer	Yes		
9	Ambient Ozone Analyzer	Yes		
10	Ambient BTEX Analyzer	Yes		
11	Multipoint Gas Calibration system	Yes		
12	Ambient Sulphur Dioxide analyzer	Yes		
13	Ambient Carbon Monoxide & Carbon dioxide analyzer	Yes		
14	Total Hydrocarbon analyzer	No		Outsourced
15	Ambient Ammonia analyzer	Yes		
16	Zero Gas Generator	Yes		
17	Synthetic Air Cylinder	No		Outsourced
18	Calibration Gas Cylinders, SO2, NO, CO, NH3B, benzene and Toluene One each with stainless steel Regulators	Yes		
19	Continuous emission monitoring equipment	Yes		
20	19 inch Rack mounting system for air analyzers	Yes		
21	Dry Gas Meter	No		Outsourced
22	Diesel Exhaust analyzer	No		Outsourced
23	Exhaust CO/HC analyzer with Sampling Probe	No		Outsourced
24	Automated Noise Monitoring System	Yes		
25	Integrating Sound level meter	Yes		
26	Continuous PM10& PM2.5 Monitoring Analyzer TEOM system	No		Parameters analysed at CAAQMS
27	Top loading orifice kit for calibration of HVS	Yes		
28	Permeation tubes (SO2, NO-NO2-NOx, NH3, BTX)	No		Parameters analysed at CAAQMS
<b>C. List of Equipment required for processing of Environmental Samples:</b>				
<b>a) Mandatory Requirements</b>				
1	Accelerated Solvent Extraction (ASE) System	Yes		
2	Ammonia distillation assembly/TKN Analyzer	Yes		
3	Analytical Balance 4/5 digit & 6 digit (Digital)	Yes		
4	Aquarium for Toxicity bioassay test with complete accessories (*4 Nos)	Yes		
5	Autoclave (*2 Nos)	Yes		

6	Bacteriological Incubators Stainless steel (*2 Nos)	Yes		
7	Bio safety cabinets	Yes		
8	BOD Incubators (2 nos.)	Yes		
9	Centrifuge	No		Outsourced
10	COD Digestion heated Blocks (2) with capacity 16 nos. or more	Yes		
11	Cyanide Distillation Assembly (3)	No		Outsourced
12	Deep Freezer- Capacity 500 litre	Yes		
13	Laboratory Ball Mill Grinder	No		Outsourced
14	Laboratory Grinder	No		Outsourced
15	Laminar Flow bench for Microbiological analysis	Yes		
16	Magnetic Stirrer with heating system (*2 Nos)	No		Outsourced
17	Mechanical Shaker	No		Outsourced
18	Membrane Filtration assembly with vacuum pump (2 nos.)	Yes		
19	Microbial culture refrigerator	Yes		
20	Microwave Digester with 16 vessels/ Hot Plate	Yes		
21	Muffle Furnace (*1 Nos), Range 1200 C	Yes		
22	Phenol distillation assembly (3)	Yes		
23	Plate counter, Manual/Automatic	No		Outsourced
24	Digestion Chambers/ Fume hood	Yes		
25	Digital Thermometer & Humidity meter- All lab area	Yes		
26	Dispensers (Various capacities ) up to 5, 10, 25 & 50 ml	Yes		
27	Filtration Assembly with vacuum pump	Yes		
28	Fluoride Distillation Assembly (3)	No		Outsourced
29	Arsenic / Fluoride Glass Distillation assemblies	No		Outsourced
30	Glass Double Distillation Assembly /Water Purification System	Yes		
31	Heating mantles (2 nos.)	Yes		
32	Hot plates (small, Medium and Large ) (*2 nos.)	Yes		
33	Thermo Hygrometer	Yes		
34	Imhoff Cone	Yes		
35	Top loading Precision Digital Balance (minimum detection 0.001mg/0.01 mg) with anti-vibration facility- 3 nos. i.e 4/5 Digit (2 nos), - 6 Digit (1 no)	Yes		
36	Refrigerators Big Size 300 litres or more, double door- 2 nos.	Yes		
37	Rotary Evaporator (Buchi type) with water recirculating chiller	No		
38	Separating funnel shaker	Yes		
39	Soxhlet Apparatus	No		Outsourced
40	Solid Phase Extraction (SPE) /SPME Extraction system	No		Outsourced
41	Thermometer (Alcohol)	Yes		
42	Dry & wet bulb Thermometer	Yes		
43	Toxicity characteristic leaching procedure (TCLP) Extractors (Zero head and Bottle)	No		Outsourced
44	Ultra sonic water bath- Capacity 3 litre	No		Outsourced
45	Water Bath with temperature control (*2 Nos)	Yes		
46	Water Bath with temp. for mercury sample digestion- 20 BOD Bottles	No		Outsourced
<b>D. Analytical Instruments at Environmental Laboratories</b>				
<b>a) Mandatory Requirements</b>				
1	Atomic Absorption spectrometer (AAS)- Flame, Hydride & Graphite Tube Atomizer (GTA)	Yes		
2	Binocular Stereo Zoom Microscope	No		Outsourced
3	Bomb Calorimeter	No		Outsourced
4	BTX Analyzer with BTX calibrator	No		Outsourced
5	Colony counter	No		Outsourced
6	Conductivity meter- 2 nos.	Yes		

7	Environment conditioning chamber	No		Outsourced
8	Digital Burettes- 50 ml*2, 100 ml*2	Yes		
9	Dissolved Oxygen Meter (Bench model)	No		Outsourced
10	Flame Photometer	Yes		
11	Flash Point Apparatus	No		Outsourced
12	Gas Chromatograph Mass Spectrometer	No		
13	High Performance Liquid Chromatograph (HPLC)	No		Outsourced
14	Inductively Coupled Plasma (ICP) Spectrometer-OES	Yes		
15	Ion Chromatograph Anion & Cations	No		
16	Methane and Non Methane (NMHC) Analyzer	No		Outsourced
17	Microscope – 100x	No		Outsourced
18	Microscope Binocular Research	No		Outsourced
19	CO (NDIR based) Analyzer	No		Outsourced
20	Nephelometer (Turbidity Meter)	Yes		
21	pH-Meter with combined electrode (3 point)- 2 nos.	Yes		
22	Specific ion Analyzer with ion selective electrodes	Yes		
23	Spectrophotometer Visible (Portable)	No		Outsourced
24	TKN Analyzer semi-automatic with aluminum block digester	Yes		
25	UV-Vis Spectrophotometer	Yes		
26	Moisture Content Analyzer	No		Outsourced
<b>b) Optional Requirements</b>				
1	Automatic Titration Assembly	No		Outsourced
2	Carbon, Hydrogen, Nitrogen and Sulphur (CHNS) Elemental Analyzer	No		Outsourced
3	EDXRF Analyzer/WDXRF Analyzer	No		Outsourced
4	Fourier-transform infrared Spectrometer (FTIR)	No		Outsourced
5	Flocculator ( Jar testing apparatus)	No		Outsourced
6	Toxic Gas Analyzer	No		Outsourced
7	Organic Halogen (AOX/TOX) Analyzer	No		Outsourced
8	TOC Analyzer	No		Outsourced
9	High Resolution Mass Spectrometer (HRGC-HRMS)	No		Outsourced
10	Inductively Coupled Plasma Mass (ICP-MS) Spectrometer	No		Outsourced
11	X Ray Fluorescence (XRF) Spectrometer (Portable)	No		Outsourced
<b>Specific remarks, if any:</b>				
<b>Apart from the above information the following actions has been taken as on 30.11.2025 to upgrade the PPCB Laboratories:</b>				
1. Stack Gas Analyzers have been procured.				
2. Cold Room have been constructed and commissioned at the Zonal Laboratory, Ludhiana.				
3. Water Purification Systems, Sound Level Meter–I units, and Multi Stack Analyzers have been procured.				

Note: It is requested to please ensure that each sheet is created separately for each laboratory and rename the sheet accordingly . For e.g. Central Laboratory, Regional Laboratory etc

**LABORATORY ANALYTICAL FACILITIES**

Name of the Board / Committee: Zonal Laboratory, Jalandhar

**PART I: Facility available for monitoring of environmental parameters:**

S. No.	Parameters	Facilities Available (Yes / No)	If facility is not available, Specify Timeline for addition of this parameter. (in months)	Action Taken for addition of this parameter (Specification finalized / procurement initiated / work awarded / outsourced )
<b>A. Sample Matrix / Group of Water and Wastewater</b>				
<b>(a) Physical Tests</b>				
1	Temperature	Yes		
2	Colour	Yes		
3	pH	Yes		
4	Turbidity	Yes		
5	Conductivity	Yes		
6	Total Solids	Yes		
7	Total Dissolved Solids (TDS)	Yes		
8	Total Suspended Solids (TSS)	Yes		
<b>(b) Inorganic Tests</b>				
<b>(i) General &amp; Non-metallic</b>				
1	Alkalinity	Yes		
2	Chloride	Yes		
3	Cyanide	Yes		
4	Dissolved oxygen	Yes		
5	Nitrite nitrogen	Yes		
6	Nitrate nitrogen	Yes		
7	Ammonical nitrogen	Yes		
8	Fluoride	Yes		
9	Hardness (Total)	Yes		
10	Calcium	Yes		
11	Magnesium	Yes		
12	Phosphate	Yes		
13	Sulphate	Yes		
14	Sulphide	Yes		
15	Total Residual chlorine (TRC)	Yes		
<b>(ii) Trace Metals Tests</b>				
1	Aluminium (Al)	Yes		
2	Arsenic (As) Total	No		Outsourced
3	Barium	Yes		
4	Boron	No		Outsourced
5	Chromium (Cr) Hexavalent	Yes		
6	Chromium (Cr) Total	Yes		
7	Cadmium (Cd)	No		Outsourced
8	Cobalt (Co)	Yes		
9	Copper (Cu)	Yes		
10	Iron (Fe)	Yes		
11	Lead (Pb)	Yes		
12	Manganese (Mn)	Yes		
13	Mercury (Hg)	No		Outsourced
14	Nickel (Ni)	Yes		
15	Potassium (K)	Yes		
16	Sodium (Na)	Yes		
17	Vanadium (V)	Yes		
18	Zinc (Zn)	Yes		
19	Selenium (Se)	No		Outsourced
<b>(c) Organics (General) and Trace Organics Tests</b>				
1	Biological Oxygen Demand (BOD)	Yes		
2	Chemical oxygen demand (COD)	Yes		
3	Oil & Grease	Yes		
4	Phenolic Compounds as C <sub>6</sub> H <sub>5</sub> OH	Yes		
5	Benzopyrene	No		Outsourced

6	<b>Pesticides</b>			
6.a	<b>Organochlorine Pesticides (OCPs) Tests</b>			
i	Aldrin	No		Outsourced
ii	Alpha Endosulphan	No		Outsourced
iii	p,p'-DDT	No		Outsourced
iv	Alpha-HCH	No		Outsourced
v	Beta HCH	No		Outsourced
vi	Beta Endosulphan	No		Outsourced
vii	Gama-HCH	No		Outsourced
viii	o,p'-DDT	No		Outsourced
ix	p,p'-DDE	No		Outsourced
6.b	<b>Organophosphorus Pesticides (OPPs) Tests</b>			
i	Malathion	No		Outsourced
ii	Methyl parathion	No		Outsourced
iii	Chlorpyrifos	No		Outsourced
iv	Dimethoate	No		Outsourced
v	Dieldrin	No		Outsourced
vi	Ethion	No		Outsourced
<b>(d) Microbiological Tests</b>				
1	Total Coliform	Yes		
2	Faecal Coliform	Yes		
3	E. Coli	Yes		
4	Faecal Streptococci	No		
<b>(e) Toxicological Tests</b>				
1	Bioassay method for evaluation of toxicity using fish (90% survival of fish after 96 hrs in 100% effluent)	Yes		
<b>B. Sample Matrix / Group of Solid / Solid Waste</b>				
<b>(a) Soil / Sediment / Compost Tests</b>				
1	Cation Exchange Capacity (CEC)	Yes		
2	Electrical Conductivity (EC)	Yes		
3	Organic carbon (Chemical Method )	Yes		
4	pH	Yes		
5	Soil moisture	Yes		
6	Total nitrogen	Yes		
7	Metals by digestion (As, Cd, Cr, Pb, Ni etc.)	Yes		
<b>(b) Hazardous Waste (Liquid / Slurry / Sludge / Solid / Semi-Solid) Tests</b>				
1	Corrosivity	No		Outsourced
2	Ignitability (Flash Point)	No		Outsourced
3	Loss on Drying at 1050C (% Moisture Content)	No		Outsourced
4	Loss on Drying at 5500C (% Organic Content)	No		Outsourced
5	pH	No		Outsourced
6	Organic carbon/matter (Chemical Method )	No		Outsourced
7	Calorific Value	No		Outsourced
8	Toxicity Characteristics leaching procedure (TCLP) Leachate and Metals in Leachate (As,Cd,Cr, Pb, Ni)	No		Outsourced
<b>C. Sample Matrix / Group of Analytes: Air</b>				
<b>(a) Ambient Air</b>				
1	Nitrogen dioxide as NO2	Yes		
2	Sulphur dioxide (SO2)	Yes		
3	Particulate matter (PM10)	Yes		
4	Particulate matter (PM2.5)	Yes		
5	Carbon Monoxide	No		Outsourced
6	Ozone	Yes		
7	Benzene	No		Outsourced
8	Ammonia	Yes		
9	Metals in Particulate Matter, Pb	Yes		
10	Metals in Particulate Matter, As	No		Outsourced
11	Metals in Particulate Matter, Ni	Yes		
12	Particulate Benzo-a-Pyrene (BaP)	No		Outsourced
<b>(b) Stack Gas / Stationary Source Emission</b>				
1	Particulate Matter	Yes		
2	Sulphur Dioxide	Yes		
3	Carbon Dioxide	Yes		
4	Carbon Monoxide (NDIR based Method)	No		Outsourced

5	Temperature	Yes		
6	Moisture	Yes		
7	Oxygen	Yes		
8	Oxides of Nitrogen	Yes		
9	Halides (HCL/HF)	No		Outsourced
<b>(c) Noise Level</b>				
1	Ambient Noise level measurement (20 to 140 dB)	Yes		
2	Source Noise Level Measurement (Industrial process, DG set- 20 to 140dB)	Yes		
<b>(d) Meteorological Monitoring</b>				
1	Ambient Temperature	Yes		
2	Wind direction	Yes		
3	Wind speed	Yes		
4	Relative Humidity	Yes		
5	Mixing Height	No		Field parameter

Specific remarks, if any:

**PART II: Details of Laboratory Infrastructure (Instruments and Equipment)**

S. No.	Name of Instrument / Equipments	Available Yes / No	If the Instrument / Equipment is not available, Specify Timeline for procurement of this instrument (in months)	Action Taken for procurement of this Instrument / Equipment (Specification finalized / procurement initiated / work awarded / outsourced )
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**A. List of Instruments / Equipment for Sampling of Water, Wastewater and Soil / Hazardous Wastes**

**a) Mandatory Requirements**

1	Portable / Pen type pH meter / pH strip	Yes		
2	Portable Dissolved Oxygen Meter / Field Fixing using chemicals	Yes		
3	Electrical Conductivity meter pen type	Yes		
4	Flow meter / Physical flow measuring	No		Field Parameter
5	GPS / Mobile with GPS app	Yes		
6	Ice Box (2 nos.) (150 litre & 100 litre capacities)	Yes		
7	Thermometer	Yes		
8	Stainless steel bucket with nylon rope and mug	Yes		
9	Ground water level measuring device	No		Outsourced
10	Scoop / shovel	Yes		
11	Auger / core sampler	Yes		

**b) Optional Requirements**

1	Bottom Sampler / Depth sampler	Yes		
2	Chloroscope for residual chlorine	No		Outsourced
3	Vandorn or equivalent water sampler (Automatic sampler when composite sampling to be done)	No		Outsourced
4	Ekman Dredge	No		Outsourced

**B. List of Instruments / Equipment for Sampling of Ambient Air and Source Emission monitoring**

**a) Mandatory Requirements**

1	Fine dust samplers PM2.5 (*4 Nos)	Yes		
2	Respirable Dust Sampler PM 10 (* 4 Nos)	Yes		
3	High Volume Sampler ( SPM ) (4 Nos)	No		Outsourced
4	Handy Sampler with set of glass impingers (*2 Nos)	Yes		
5	Low Volume Sampler (LVS)	Yes		
6	Tedler bags different sizes	Yes		
7	Meteorological tower (All in one telescopic Mast) with sensors comprising wind speed, wind direction, ambient temp., Relative humidity, Solar radiation, rainfall etc.	No		
8	Nitrogen Cylinder portable	No		
9	Activated Charcoal tubes/ Tenex	No		
10	Barometer (Digital)	Yes		

11	Isokinetic Stack Monitoring Kit complete with Stack monitoring instrument panel with inclined cum vertical manometer, Cold Box, Vacuum pump, Glass assembly impingers	Yes		
12	Modified S type Stainless steel Pitot tube (Standard length) with Assembly	Yes		
13	Monoblock type, rotary design vacuum pump	Yes		
14	Orsat Apparatus	Yes		
15	Source emission monitoring Impingers train set with spare impingers 100 ml & 225 ml capacity	Yes		
16	Stainless steel heated Sampling Probes with thimble holders short and long	Yes		
17	Flue Gas analyzer	Yes		
18	Thermometer/ Thermocouple	Yes		
19	Calibrator for Noise Meters	Yes		
20	Digital Sound level ( Noise ) Metres	Yes		
21	Portable TOC Analyzer for emission monitoring.	No		Outsourced
22	Polyurethane Foam PUF Sampler	No		Outsourced
<b>b) Optional Requirements</b>				
1	Anemometer	Yes		
2	Weather Monitoring system	Yes		
3	Wind speed/wind direction monitor	Yes		
4	Continuous Ambient Air Monitoring System, Fixed	Yes		
5	Continuous PM10 Analyzer	Yes		
6	Continuous Ambient Air Monitoring System, Mobile	Yes		
7	Continuous PM2.5 analyzer	Yes		
8	Ambient Nitrogen Oxides (NO-NO2-NOx Analyzer	Yes		
9	Ambient Ozone Analyzer	Yes		
10	Ambient BTEX Analyzer	Yes		
11	Multipoint Gas Calibration system	Yes		
12	Ambient Sulphur Dioxide analyzer	Yes		
13	Ambient Carbon Monoxide & Carbon dioxide analyzer	Yes		
14	Total Hydrocarbon analyzer	No		Outsourced
15	Ambient Ammonia analyzer	Yes		
16	Zero Gas Generator	Yes		
17	Synthetic Air Cylinder	No		Outsourced
18	Calibration Gas Cylinders, SO2, NO, CO, NH3B, benzene and Toluene One each with stainless steel Regulators	Yes		
19	Continuous emission monitoring equipment	No		Outsourced
20	19 inch Rack mounting system for air analyzers	Yes		
21	Dry Gas Meter	No		Outsourced
22	Diesel Exhaust analyzer	No		Outsourced
23	Exhaust CO/HC analyzer with Sampling Probe	No		Outsourced
24	Automated Noise Monitoring System	No		Outsourced
25	Integrating Sound level meter	Yes		
26	Continuous PM10& PM2.5 Monitoring Analyzer TEOM system	No		Outsourced
27	Top loading orifice kit for calibration of HVS	Yes		
28	Permeation tubes (SO2, NO-NO2-NOx, NH3, BTX)	No		Outsourced
<b>C. List of Equipment required for processing of Environmental Samples:</b>				
<b>a) Mandatory Requirements</b>				
1	Accelerated Solvent Extraction (ASE) System	Yes		
2	Ammonia distillation assembly/TKN Analyzer	Yes		
3	Analytical Balance 4/5 digit & 6 digit (Digital)	Yes		
4	Aquarium for Toxicity bioassay test with complete accessories (*4 Nos)	Yes		
5	Autoclave (*2 Nos)	Yes		

6	Bacteriological Incubators Stainless steel (*2 Nos)	Yes		
7	Bio safety cabinets	Yes		
8	BOD Incubators (2 nos.)	Yes		
9	Centrifuge	No		Outsourced
10	COD Digestion heated Blocks (2) with capacity 16 nos. or more	Yes		
11	Cyanide Distillation Assembly (3)	No		Outsourced
12	Deep Freezer- Capacity 500 litre	Yes		
13	Laboratory Ball Mill Grinder	No		Outsourced
14	Laboratory Grinder	No		Outsourced
15	Laminar Flow bench for Microbiological analysis	Yes		
16	Magnetic Stirrer with heating system (*2 Nos)	No		Outsourced
17	Mechanical Shaker	No		Outsourced
18	Membrane Filtration assembly with vacuum pump (2 nos.)	No		Outsourced
19	Microbial culture refrigerator	Yes		
20	Microwave Digester with 16 vessels/ Hot Plate	No		Outsourced
21	Muffle Furnace (*1 Nos), Range 1200 C	Yes		
22	Phenol distillation assembly (3)	Yes		
23	Plate counter, Manual/Automatic	No		Outsourced
24	Digestion Chambers/ Fume hood	No		
25	Digital Thermometer & Humidity meter- All lab area	Yes		
26	Dispensers (Various capacities ) up to 5, 10, 25 & 50 ml	Yes		
27	Filtration Assembly with vacuum pump	Yes		
28	Fluoride Distillation Assembly (3)	No		Outsourced
29	Arsenic / Fluoride Glass Distillation assemblies	No		Outsourced
30	Glass Double Distillation Assembly /Water Purification System	Yes		
31	Heating mantles (2 nos.)	Yes		
32	Hot plates (small, Medium and Large ) (*2 nos.)	Yes		
33	Thermo Hygrometer	Yes		
34	Imhoff Cone	No		
35	Top loading Precision Digital Balance (minimum detection 0.001mg/0.01 mg) with anti-vibration facility- 3 nos. i.e 4/5 Digit (2 nos), - 6 Digit (1 no)	Yes		
36	Refrigerators Big Size 300 litres or more, double door- 2 nos.	Yes		
37	Rotary Evaporator (Buchi type) with water recirculating chiller	No		Outsourced
38	Separating funnel shaker	Yes		
39	Soxhlet Apparatus	No		Outsourced
40	Solid Phase Extraction (SPE) /SPME Extraction system	No		Outsourced
41	Thermometer (Alcohol)	Yes		
42	Dry & wet bulb Thermometer	No		
43	Toxicity characteristic leaching procedure (TCLP) Extractors (Zero head and Bottle)	No		Outsourced
44	Ultra sonic water bath- Capacity 3 litre	No		Outsourced
45	Water Bath with temperature control (*2 Nos)	Yes		
46	Water Bath with temp. for mercury sample digestion- 20 BOD Bottles	No		Outsourced
<b>D. Analytical Instruments at Environmental Laboratories</b>				
<b>a) Mandatory Requirements</b>				
1	Atomic Absorption spectrometer (AAS)- Flame, Hydride & Graphite Tube Atomizer (GTA)	Yes		
2	Binocular Stereo Zoom Microscope	No		Outsourced
3	Bomb Calorimeter	No		Outsourced
4	BTX Analyzer with BTX calibrator	No		Outsourced
5	Colony counter	No		Outsourced
6	Conductivity meter- 2 nos.	Yes		

7	Environment conditioning chamber	No		Outsourced
8	Digital Burettes- 50 ml*2, 100 ml*2	Yes		
9	Dissolved Oxygen Meter (Bench model)	No		Outsourced
10	Flame Photometer	Yes		
11	Flash Point Apparatus	No		Outsourced
12	Gas Chromatograph Mass Spectrometer	No		Outsourced
13	High Performance Liquid Chromatograph (HPLC)	No		Outsourced
14	Inductively Coupled Plasma (ICP) Spectrometer-OES	No		Outsourced
15	Ion Chromatograph Anion & Cations	No		Outsourced
16	Methane and Non Methane (NMHC) Analyzer	No		Outsourced
17	Microscope – 100x	No		Outsourced
18	Microscope Binocular Research	No		Outsourced
19	CO (NDIR based) Analyzer	No		Outsourced
20	Nephelometer (Turbidity Meter)	Yes		
21	pH-Meter with combined electrode (3 point)- 2 nos.	Yes		
22	Specific ion Analyzer with ion selective electrodes	Yes		
23	Spectrophotometer Visible (Portable)	No		Outsourced
24	TKN Analyzer semi-automatic with aluminum block digester	Yes		
25	UV-Vis Spectrophotometer	Yes		
26	Moisture Content Analyzer	No		Outsourced
<b>b) Optional Requirements</b>				
1	Automatic Titration Assembly	No		Outsourced
2	Carbon, Hydrogen, Nitrogen and Sulphur (CHNS) Elemental Analyzer	No		Outsourced
3	EDXRF Analyzer/WDXRF Analyzer	No		Outsourced
4	Fourier-transform infrared Spectrometer (FTIR)	No		Outsourced
5	Flocculator ( Jar testing apparatus)	No		
6	Toxic Gas Analyzer	No		Outsourced
7	Organic Halogen (AOX/TOX) Analyzer	No		Outsourced
8	TOC Analyzer	No		Outsourced
9	High Resolution Mass Spectrometer (HRGC-HRMS)	No		Outsourced
10	Inductively Coupled Plasma Mass (ICP-MS) Spectrometer	No		Outsourced
11	X Ray Fluorescence (XRF) Spectrometer (Portable)	No		Outsourced
<b>Specific remarks, if any:</b>				
<b>Apart from the above information the following actions has been taken as on 30.11.2025 to upgrade the PPCB Laboratories:</b>				
1. Stack Gas Analyzers have been procured.				
2. Water Purification Systems, Sound Level Meter–I units, and Multi Stack Analyzers have been procured.				

## PART III: DETAILS OF LABORATORIES ESTABLISHED UNDER THE WATER (P &amp; CP) ACT, 1974

Laboratory established by the Board, as per Section 17 (2) of Water Act – Nos.				Laboratories / Institutes specified by State Govt., as State Water Laboratory as per Section 52 (1) of Water Act (other than those set up by Board) - Nos								NABL Accreditation			EPA Recognition		
No. of Laboratories established / recognised	No. of Laboratories (out of those given in column No. (1)) notified in Official Gazette	remaining Laboratories Planned for Notification (out of those laboratories given in column No.(1)).	Time line required for notification of Laboratories given in column No. (3) (in months)	No. of Laboratories established / specified		No. of Laboratories (out of those given in column No. (5 & 6)) notified in Official Gazette		No. of remaining Laboratories Planned for Notification (out of those laboratories given in column No. (5 & 6)).		Time line required for notification of Laboratories given in column No. (9 & 10) (in months)		No. of Board's Laboratories 17 (2)	No. of State Water Laboratories 52(1)		No. of Board's Laboratories 17 (2)	No. of State Water Laboratories 52(1)	
				Govt.	Pvt.	Govt.	Pvt.	Govt.	Pvt.	Govt.	Pvt.		Govt.	Pvt.		Govt.	Pvt.
-1	-2	-3	-4	-5	-6	-7	-8	-9	-10	-11	-12	-13	-14	-15	-16	-17	-18
3	None	3	12 months	-	-	-	-	-	-	-	-	1	-	-	Under Process	-	-

Note: The list of the laboratory may be attached separately (Board, State Govt. and Private)

Specific remarks, if any:

## PART IV: DETAILS OF LABORATORIES ESTABLISHED UNDER THE AIR (P &amp; CP) ACT, 1981

Laboratory established by the Board, as per Section 17 (2) of Air Act – Nos.				Laboratories / Institutes specified by State Govt., as State Air Laboratory as per Section 28 (1) of Air Act (other than those set up by Board) - Nos								NABL Accreditation			EPA Recognition		
No. of Laboratories established / recognised	No. of Laboratories (out of those given in column No. (1)) notified in Official Gazette	remaining Laboratories Planned for Notification (out of those laboratories given in column No.(1)).	Time line required for notification of Laboratories given in column No. (3) (in months)	No. of Laboratories established / specified		No. of Laboratories (out of those given in column No. (5 & 6)) notified in Official Gazette		No. of remaining Laboratories Planned for Notification (out of those laboratories given in column No. (5 & 6)).		Time line required for notification of Laboratories given in column No. (9 & 10) (in months)		No. of Board's Laboratories 17 (2)	No. of State Water Laboratories 28(1)		No. of Board's Laboratories 17 (2)	No. of State Water Laboratories 28(1)	
				Govt.	Pvt.	Govt.	Pvt.	Govt.	Pvt.	Govt.	Pvt.		Govt.	Pvt.		Govt.	Pvt.
-1	-2	-3	-4	-5	-6	-7	-8	-9	-10	-11	-12	-13	-14	-15	-16	-17	-18
3	None	3	12 months	-	-	-	-	-	-	-	-	1	-	-	Under Process	-	-

Note: The list of the laboratory may be attached separately (Board, State Govt. and Private)

Specific remarks, if any:

## PART V: DETAILS OF LABORATORIES PARTICIPATED ON ANALYTICAL QUALITY CONTROL AND QUALITY ASSURANCE CONDUCTED BY CPCB IN RESPECT OF WATER QUALITY PARAMETERS

S. No.	Name of the Laboratory with address	No. of Parameters in AQC Exercise				Number of Parameters Attempted				% Parameters Successful			
		33rd Exercise	34th Exercise	35th Exercise	36th Exercise	33rd Exercise	34th Exercise	35th Exercise	36th Exercise	33rd Exercise	34th Exercise	35th Exercise	36th Exercise
1	181-HO PPCB Water Patiala				18				18				100%
2													
3													
4													

