

BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL, NEW DELHI

Original Application No. 693 of 2023

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

INDEX

Sr.no.	Particulars	Page no.
1	Reply of Additional Secretary to Government of Punjab, Department of Science, Technology and Environment on respondent no. 20 i.e. the Secretary, Environment, State of Punjab	1-7
2	<u>Annexure-A</u> The detail of Regional Offices, Zonal Offices and Laboratories of Punjab Pollution Control Board with addresses	8-9
3	<u>Annexure-B</u> The cadre-wise list of sanctioned, filled and vacant posts in the Punjab Pollution Control Board	10-11
4	<u>Annexure-C</u> The details of Infrastructure and Equipment available with the Laboratories of the Punjab Pollution Control Board	12-15
5	<u>Annexure-D</u> Proposal for Upgradation of Punjab Pollution Control Board laboratories	16-23



Date: 19.1.24
 Place: Chandigarh
 Additional Secretary to Government of Punjab,
 Department of Science, Technology and Environment
 On behalf of Secretary, Department of Science,
 Technology and Environment

BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL, NEW DELHI

Original Application No. 693 of 2023

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

Reply of Additional Secretary to Government of Punjab, Department of Science, Technology and Environment on respondent no. 20 i.e. the Secretary, Environment, State of Punjab

Respectfully showeth

1. That briefly submitted, the Hon'ble National Green tribunal was pleased to take Suo moto cognizance of News item appearing in Deccan Herald dated 24.10.2023 titled "Pollution Control Boards are the weak link". The news item was treated as Original Application no. 693/2023 and notices were issued in the case including to the State of Punjab through Principal Secretary, Department of Environment and Forests (respondent no. 20) to file their reports vide order dated 23.11.2023. The relevant extract of paragraph 12 of the order dated 23.11.2023 is reproduced herein below for kind perusal and reference:

"The above respondents are directed to file their reports showing the sanctioned strength and working strength of staff in the concerned SPCBs/PCCs, CPCB the ratio of administrative, Ministerial and Technical staff in the SPCBs/PCCs, CPCB and the regulating and monitoring facilities which are available with the SPCBs/PCCs/CPCB. In respect of laboratories, the report will disclose the sanctioned strength and present working strength of staff, the infrastructure which is available in the labs and further need for equipment and infrastructure in those labs and the provisions made in laboratories for enforcement and monitoring of hotspots in critically polluted areas. The report should also include the

rh,

availability of budget and its sources and expenditure in last two years (2020-2021 and 2021-2022). Let these reports be submitted within a period of 8 weeks by e-mail at judicial-ngt@gov.in preferably in the form of searchable PDF/OCR Support PDF and not in the form of Image PDF."

2. That in compliance to order dated 23.11.2023, the report on the relevant aspects of the Punjab State Pollution Control Board is given herein below:

A. Sanctioned and working strength.

- i) The Punjab Pollution Control Board is having its head office at Patiala and functions with sixteen (16) Regional Offices, seven (7) zonal offices and three (3) laboratories. The detail of Regional Offices, Zonal Offices and Laboratories with addresses is given in **Annexure-A** enclosed herewith.
- ii) The cadre-wise list of sanctioned, filled and vacant posts in the Punjab Pollution Control Board is enclosed herewith as **Annexure-B**.
- iii) It is relevant to mention here that the Government and the Punjab Pollution Control Board are in the process of making fresh recruitment to different cadre of the Board. The details of the recruitment made and being made is given herein below:-
- a) 33 posts of Clerk cum Data Entry Operators were advertised and after the conduct of written test and declaration of results 16 candidates have joined the post of Clerk cum Data Entry Operators. A fresh requisition of 20 vacant posts is under process for filing up.
- b) 15 posts of Clerk Accounts are in process for filing up. Written test has been conducted and merit has been made. The candidates will join after verification of documents by the Board.
- c) The written test for 19 posts of Steno-typist has been conducted and results has been declared. Further, filing up of the posts is in process.
- d) 32 posts of Assistant Environmental Engineers were advertised in various newspapers for direct recruitment through Punjab Public

sh,

Service Commission. However, some candidates have challenged the advertisement by filing Civil Writ Petition no. 29072 of 2022 titled as Harmanpreet Singh and another Vs Punjab Pollution Control Board and others and the Hon'ble Punjab & Haryana High Court has stayed the recruitment process vide order dated 11-1-2023. The application for vacation of stay has been filed in the case by the Punjab Pollution Control Board and the case is now listed for hearing on 21-2-2024.

- e) The case for recruitment of following posts is in process with the Punjab Public Service Commission.
- i) Junior Scientific Officer : (4) Four Posts
 - ii) Junior Environmental Engineer : (21) Twenty One Posts
- f) The case for recruitment of following posts is in process with the Punjab Subordinate Service Selection Board
- i) Law Officer Grade-II : 03 Posts
 - ii) Scientific Assistants : 19 Posts

B. Ratio of Administrative Staff, Ministerial and Technical Staff.

The ratio of filled posts in technical / administrative-cum-ministerial / scientific cadre is worked out to be as under:

Cadre	Technical	Administrative-cum-Ministerial	Scientific
Working personnel Ratio	94	107	23

C. Regulating and Monitoring facilities available.

i) **Regulatory work**

The Regional Offices, Zonal Offices of the Board are performing the regulatory work in accordance with the provisions of the environmental laws and are performing the functions in accordance with the mandate of the Water (Prevention and Control of Pollution) Act, 1974, Air (Prevention and Control of Pollution) Act, 1981, Environment (Protection) Act, 1986 and the Rules made thereunder.

ii) **Monitoring work**

The scientific staff and the laboratories established by the Board is/ are performing the monitoring activities according to the mandate of the Water (Prevention and Control of Pollution) Act, 1974, Air (Prevention and Control of Pollution) Act, 1981, Environment (Protection) Act, 1986 and the Rules made thereunder. The relevant facts relating to the monitoring of air, water and noise pollution by the scientific staff and the laboratories of the Board are mentioned and described herein below:

- sh,
- a. The Board has established a Central Laboratory at Patiala equipped with sophisticated equipment/instruments to carry out the analysis of various pollutants. The main function of the Laboratory is to analyze the surface water, trade effluent, ground water, soil, air (ambient and source monitoring) samples. Besides, the Board has two Zonal Laboratories located at Ludhiana and Jalandhar to cater the need of sampling and analysis work of effluent and emission samples in the respective regional Offices.
 - b. Besides preparation of specifications of scientific instruments and equipment required by the Board's laboratory. The Laboratory is assisting the technical branch of the Board to evolve standards to be prescribed by the Board under the provisions of various Acts. The Board has taken up various projects for the monitoring of rivers i.e., Sutlej, Beas, Ravi & Ghaggar, soil irrigated by industrial effluent, sewage, groundwater in certain towns. Ambient air and Noise Monitoring is also carried out during the Dussehra and Diwali Festivals. Besides this source apportionment studies are also carried out. The Scientific staff also assists the technical staff of the Board for conduct of visits to industrial units/projects and others related activities.
 - c. The Board also conducts studies in collaboration with other institutes/organizations of repute on air/water pollution in the State of Punjab.
 - d. The Board is also monitoring surface water quality of 4 major rivers i.e., Sutlej, Beas, Ravi & Ghaggar and various drains of the State at 53 locations under National Water Monitoring Programme (NWMP) on monthly basis being funded by Central Pollution Control Board on 50% basis. The data is shared to Central Pollution Control Board through

Environment Water Quality Data Entry System (EWQDES) Portal. It is relevant to mention here that, 11 no. Real Time Water Quality Monitoring Stations (RTWQMS) two on Buddha Nallah, four on River Sutlej, four River Ghaggar & one at River Beas have been installed for obtaining of real time water quality data of the surface water streams in which these stations have been installed.

- bkh
- e. The ground water quality of the State is being monitored at 43 locations under National Water Monitoring Programme (NWMP) of Central Pollution Control Board.
 - f. The monitoring of the sewage treatment plants (STPs) and common effluent treatment plants (CETPs) installed at different locations of the State is being carried out on regular basis and the data is shared with Punjab Water Supply & Sewage Board (PWSSB) and the Directorate of Environment & Climate Change (DECC), Government of Punjab for remedial actions, if required.
 - g. The Ambient Air Quality of the State of Punjab is being monitored at 69 locations (45 stations in urban Areas and 24 Stations in rural Areas) under National Ambient Air Monitoring Program (NAMP) for 24 hours thrice a week. The data is shared with Central Pollution Control Board through Environmental Air Quality Data Entry System (EAQDES) Portal. It is relevant to mention here that six no. of Continuous Ambient Air Quality Monitoring Stations (CAAQMS), one each at Mandi Gobindgarh, Khanna, Jalandhar, Patiala, Amritsar and Ludhiana have been installed for obtaining of the real time Air Quality data of the said regions.
 - h. The laboratories of the Board are maintaining the Quality Control by participating in Analytical Quality Control/Proficiency Testing (AQC/PT) exercise conducted by Central Pollution Control Board.

D. Laboratories: sanctioned and present strength, infrastructure available, further need for equipment and infrastructure for enforcement and monitoring of hot spots in critically polluted areas.

a) Sanctioned and present strength

There are three laboratories in the Board. The main and central laboratory is situated in the building of the head office of the Board at Patiala. There are two other laboratories known as zonal laboratories of the Board situated at Ludhiana and Jalandhar. The sanctioned and present strength relating to the scientific staff and laboratory is as under:-

	No. post sanctioned	No. of post filled	No. of post Vacant
Group-A	19	10	9
Group-B	21	10	11
Group-C	25	03	22
Total	65	23	42

b) **Infrastructure and equipment available**

The detail of the infrastructure and equipment available with the laboratories of the Board is given in **Annexure-C**.

c) **Further need for equipment and infrastructure for enforcement and monitoring of hot spots in critically polluted areas**

The Central and Zonal Laboratories of the Board are already in process of the up-gradation in respect of equipment, instruments and infrastructure. In view of the need for enforcement and monitoring of hot spots in critically polluted areas as well as functioning of the laboratories on day to day basis, considering the ever growing need for enforcement of environmental regulations, the Board has worked out the details of equipment, instruments and infrastructure needed for further upgradation. The proposal for further upgradation of the laboratories of the board, wherein the details have been given, is enclosed herewith as **Annexure-D**. The tentative budget estimate and financial requirement for the upgradation is given herein below:

Sr. no.	Name of laboratory	Tentative Budget requirement
1	Central Laboratory Water & Air Patiala	Rs. 567.00 Lakh
2	Zonal Laboratory Water & Air, Jalandhar	Rs. 145.50 Lakh
3	Zonal Laboratory Water & Air, Ludhiana	Rs. 145.50 Lakh

E. **Budge availability; Sources and expenditure in the last two years.**

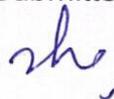
Availability of budget of the Punjab Pollution Control Board along with Sources of income and Expenditure for the financial year 2020-21 and 2021-22 is tabulated herein below:

Figures in Lakhs

Particulars	Year 2020-21	Year 2021-22
Approved Budget	7827.00	9105.00
(A) Sources of Income		
Income from fees	7301.00	7001.00
Encashment of Bank Guarantee	121.00	49.90
Interest Income	1254.15	1314.72
Other Receipts	69.97	74.18
Total of (A)	8746.12	8440.65
(B) Expenditure		
Administrative Expenditure (Salary/Pension & other)	8165.04	4779.71
Vehicle running & maintenance	133.62	156.68
Repair & Maintenance of Lab/Building	295.61	141.38
Research & Development	305.34	973.29
Advertising, Publicity & Awareness	109.63	87.00
Depreciation	239.51	226.51
Total of (B)	9248.75	6364.56

- 3) That the report relating to the Punjab Pollution Control Board is hereby submitted in compliance to order dated 23.11.2023 for kind perusal and consideration of the Hon'ble Tribunal.

Submitted by



Date: 19.1.24

Place: Chandigarh

Additional Secretary to Government of Punjab,
Department of Science, Technology and EnvironmentOn behalf of Secretary, Department of Science,
Technology and Environment

Annexure-A

The detail of Regional Offices, Zonal Offices and Laboratories of Punjab Pollution Control Board with addresses

Sr. no	Name of Regional Offices	Address
1	Regional Office, Patiala	Vatavaran Bhawan, Punjab Pollution Control Board, Nabha Road, Patiala
2	Regional Office, Amritsar	Plot No.164, Focal Point Mehta Road, Amritsar
3	Regional Office, Batala	#.10, Friends Colony, Jalandhar Road, Batala
4	Regional Office-1, Jalandhar	2nd Floor, Near Water Tank, Industrial Focal Point, G.T. Road, Amritsar bye Pass, Jalandhar
5	Regional Office, Hoshiarpur	E-18-A, Focal Point Hoshiarpur
6	Regional Office, Ludhiana-1	Phase V, Focal Point, Ludhiana
7	Regional Office, Ludhiana-2	Phase-V, Focal Point, Ludhiana
8	Regional Office, Ludhiana-3	Savitri Complex-1, Dada Motors, Third Floor, Dholewal Chowk, G.T. Road, Ludhiana
9	Regional Office, Ludhiana-4	Savitri Complex-1, Dada Motors, Third Floor, Dholewal Chowk, G.T. Road, Ludhiana
10	Regional Office, Bathinda	Room No.418-E, 3rd Floor, District Administration Complex, Bathinda
11	Regional Office, Faridkot	New Cantt Road, Opp. St No 5, Faridkot
12	Regional Office, Sangrur	Focal Point, Sunam Road, Sangrur
13	Regional Office, Fatehgarh Sahib	NIST Complex, Mandi Gobindgarh
14	Regional Office, Mohali	Plot No. 55, Opp. Bassi Theatre, Phase-II, Mohali
15	Regional Office, Ropar	281, Gain Zail Singh Nagar
16	Regional Office-2, Jalandhar	2nd Floor, Near Water Tank, Industrial Focal Point, G.T. Road, Amritsar Bye Pass, Jalandhar

Sr. no	Name of Zonal Office	Address
1	Zonal Office, Patiala-1	Vatavaran Bhawan, Punjab Pollution Control Board, Nabha Road, Patiala
2	Zonal Office, Patiala-2	Vatavaran Bhawan, Punjab Pollution Control Board, Nabha Road, Patiala
3	Zonal Office, Amritsar	Plot No.164, Focal Point Mehta Road, Amritsar

4	Zonal Office, Jalandhar	Focal Point, Opp. State Bank of India, G.T. Road, Amritsar By Pass, Jalandhar
5	Zonal Office, Ludhiana-1	E-648-B, Phase-5, Focal Point, Ludhiana
6	Zonal Office, Ludhiana-2	E-648-B, Phase-5, Focal Point, Ludhiana
7	Zonal Office, Bathinda	Street No.12, Power House Road, Bathinda

Sr. no	Name of Laboratories	Address
1	Central Laboratory, Patiala	Punjab Pollution Control Board, Vatavaran Bhawan, 3 rd floor, Nabha Road, Patiala.
2	Zonal laboratory Jalandhar	Punjab Pollution Control Board, Zonal Laboratory, Near Water Tank, Focal Point, Jalandhar.
3	Zonal laboratory Ludhiana	Punjab Pollution Control Board, Zonal Laboratory, Plot no. E-648-B, Phase-5, Focal Point, Ludhiana

The cadre-wise list of sanctioned, filled and vacant posts in the Punjab Pollution Control Board

Sr. No.	Name of the Cadre	No. of post Sanctioned	No. of Post Filled	Vacant
	Group A			
1	Chief Environmental Engineer	4	3	1
2	Special Secretary (P&G)	1	0	1
3	Senior Environmental Engineer	12	7	5
4	Senior Scientific Officer	1	-	1
5	Environmental Engineer	36	37	-1 (SEE Seat)
6	Assistant Environmental Engineer	81	38	43
7	Administrative Officer	1	1	-
8	Assistant Personnel Officer	1	-	1
9	Asstt. Admn. Officer	1	-	1
10	Deputy Director (Public Relations)	1	-	1
11	Senior Law Officer	4	0	4
12	Law officer	1	1	-
13	Deputy Controller (F & A)	1	1	-
14	Asstt. rController (F&A)	1	1	-
15	Scientific Officer	4	3	1
16	Asstt. Scientific Officer	14	7	7
17	Secretary to Chairman	1	1	-
18	System Analyst	2	1	1
	Total	167	101	66
	Group B			
19	Junior Environmental Engineer.	30	5	25
20	Junior Scientific Officer.	21	10	11
21	Programmer	2	1	1
22	Superintendent Grade-2	5	2	3
23	Section officer	2	1	1
24	Personal Assistant	2	1	1
25	Sr. Scale Stenographer	16	10	6
26	Senior Assistant	41	39	2
27	Senior Asstt.(A/cs)	8	7	1
28	Asstt. Programmer	3	2	1
29	Senior Technician	1	-	1
30	Law Officer Grade-II	4	-	4
31	Caretaker	1	-	1
	Total	136	78	58
	Group C			

32	Jr. Scale Stenographer	6	0	6
33	Scientific Asstt.	22	1	21
34	Librarian	1	-	1
35	Glass Blower-cum- Store Keeper	1	-	1
36	Data Entry Operator	4	1	3
37	Clerk/Jr. Asstt. /Receptionist	79	38	41
38	Clerk (A/cs)	19	1	18
39	Steno-typist	25	2	23
40	Restorer	1	-	1
41	Laboratory Attendant	3	1	2
42	Supervisor Driver	1	1	-
43	Driver	40	22	18
44	AC Operator- cum- Mechanic	1	-	1
	Total	203	68	135
	Group D			
45	Zamadar (Head Peon)	11	8	3
46	Daftari	3	3	-
47	Peon	20	9	11
48	Field Attendant	89	68	21
49	Chowkidar	11	0	11
50	Chowkidar-cum-cook	1	-	1
51	Mali	1	-	1
52	Helper to AC Operator cum Mech.	1	1	-
53	Cash Messenger	1	1	-
54	Sweeper	8	1	7 (Against these posts part time sweeper have been working in various Head Office/ Zonal Offices/Regional Offices.
	Total	146	91	55
	G. Total	652	338	314
The Ratio of Filled posts in Technical/Administrative cum Ministerial/Scientific Cadre is 94:107:23				

**The details of Infrastructure and Equipment available with the
Laboratories of the Punjab Pollution Control Board**

i) Central Water Laboratory, Patiala

Parameters Monitored in water and wastewater	Equipments/ Instruments available
Colour	Ice Box/s, Filtration assembly, Vacuum pump, Thermometer/s, Refrigerator/s, Analytical balance, Desiccator, UV-Vis-Spectrophotometer, pH meter, Conductivity meter, DO meter, Hot air Oven, BOD incubator, COD digester condensers, Auto Dispenser, Digital Burette Water Purification System/Distillation assembly, Flame Photometer, Ion meter, Muffle furnace, TKN Analyzer, Rotary Evaporator Bacteriological Incubator, Water bath, Autoclave Laminar Flow Bench,
TSS	
TDS	
Odour	
Temperature	
pH	
electrical conductivity (EC)	
Dissolved oxygen (DO)	
Ammoniacal Nitrogen	
Nitrate nitrogen	
Nitrite nitrogen,	
Total Phosphate	
Calcium	
Magnesium	
Total Hardness	
Total Acidity	
Total Alkalinity	
Sodium	
Potassium	
SAR	
Chloride	
Sulphate	
Sulphides	
BOD	
COD	
Fluoride	
Boron	
Total Coliform	
Faecal Coliform	
Toxic metals: As, Al, Ag, Cd, Co, Cu, Cr, Fe, Pb, Mn, Hg, Mo, Ni, Se, Zn,	Hotplate, Digestion chamber, Atomic Absorption Spectrophotometer (Flame, hydride generation system and Graphite furnace) with the cathode lamps/ ICP-OES, GC-MS

Pesticides: Alachlor, Atrazine, Aldrin/ Dieldrin, Alpha HCH, Beta HCH, Gamma — HCH (Lindane), Delta HCH, Butachlor, Chlorpyrifos, 2,4- Dichlorophenoxyacetic acid, DDT (o, p and p, p – Isomers of DDT, DDE and DDD), Endosulfan (alpha, beta, and sulphate), Ethion, Isoproturon, Malathion, Methyl parathion, Monocrotophos, Phorate	Gas Chromatograph-Mass Spectrophotometer (GCMS),
---	--

a) **Central Lab Air Laboratory, Patiala**

Ambient Air	Equipments/ Instruments available
Particulate matter (PM ₁₀ & PM _{2.5}), Sulphur dioxide (SO ₂) Nitrogen oxide (NO ₂), Ammonia, Chlorine, H ₂ S and Metals	Ice Boxes, Thermometers, Refrigerators, Respirable dust sampler, PM _{2.5} samplers, Analytical balances, Desiccators, Humidity Chamber, Vis-Spectrophotometer, UV-Vis-Spectrophotometer, pH meter, Conductivity meter, Hot air Oven, Digital Burette, Water Purification System, Low Volume Sampler, Stack Monitoring kit, Flue gas analyser
Source Emission Particulate Matter, Acid Mist, SO ₂ , NO ₂ , NO, CO, CO ₂ , O ₂ , H ₂ S and Metals	
Noise Level Monitoring	Sound Level Meter

- b) Zonal Laboratory Air & Water, Jalandhar is situated at Punjab Pollution Control Board, Zonal Laboratory, Near Water Tank, Focal Point, Jalandhar and list of parameters monitored and the infrastructure /equipment available is as under: -

Parameters Monitored in water and wastewater	Equipments/ Instruments available
TSS	Ice Box/s, Filtration assembly, Vacuum pump, Thermometer/s, Refrigerator/s, Analytical balance, Desiccator, Spectrophotometer, pH meter, Conductivity meter, DO meter, Hot air Oven, Auto Dispenser, Digital Burette, Water Purification System/Distillation assembly, BOD
TDS	
Odour	
Temperature	
pH	
electrical conductivity (EC)	
Dissolved oxygen (DO)	
Ammoniacal Nitrogen	
Nitrate nitrogen	

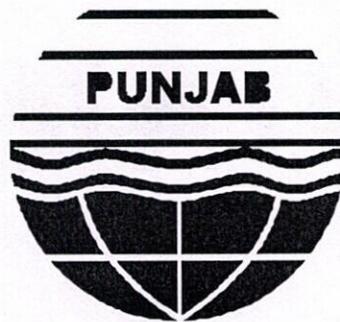
Nitrite nitrogen,	incubator, COD digester, Muffle Furnace, Atomic Absorption Spectrophotometer, Digital thermal Hygrometer, Bacteriological Incubator, Autoclave Vertical (02), Hot Plate, Laminar Flow, TKN Analyzer, Biosafety Cabinet, Digital Water Bath, Ion Analyzer, Digital Burette, Turbidity Meter, Flame Photometer
Total Phosphate	
Calcium	
Magnesium	
Total Hardness	
Total Acidity	
Total Alkalinity	
Sodium	
Potassium	
Chloride	
Sulphate	
BOD	
COD	
Fluoride	
Metals	
Total Coliform	
Faecal Coliform	
Ambient Air	Ice Boxes, Thermometers, Refrigerators, Respirable dust sampler, PM _{2.5} samplers, Analytical balances, Desiccators, Vis-Spectrophotometer, UV-Vis-Spectrophotometer, pH meter, Conductivity meter, Hot air Oven, Digital Burette, Water Purification System, Stack Monitoring kit, Flue gas analyser
Particulate matter (PM ₁₀ & PM _{2.5}), Sulphur dioxide (SO ₂) Nitrogen oxide (NO ₂), Ammonia, Chlorine, H ₂ S and Metals	
Source Emission	Ice Boxes, Thermometers, Refrigerators, Respirable dust sampler, PM _{2.5} samplers, Analytical balances, Desiccators, Vis-Spectrophotometer, UV-Vis-Spectrophotometer, pH meter, Conductivity meter, Hot air Oven, Digital Burette, Water Purification System, Stack Monitoring kit, Flue gas analyser
Particulate Matter, Acid Mist SO ₂ , NO ₂ , NO, CO, CO ₂ , H ₂ S, O ₂ and Metals	
Noise level Monitoring	Sound Level Meter

d) Zonal Laboratory Air & Water, Ludhiana is situated at Punjab Pollution Control Board, Zonal Laboratory, Plot no. E-648-B, Phase-5, Focal Point, Ludhiana list of parameters monitored and the equipment available is as under: -

Parameters Monitored in water & Wastewater	Equipments/ Instruments available
TSS	Ice Box/s, Filtration assembly, Vacuum pump, Thermometer/s, Refrigerator/s, Analytical balance, Desiccator, Spectrophotometer, pH meter, Conductivity meter, Hot air Oven, Auto Dispenser, Digital Burette, Water Purification System/Distillation
TDS	
Odour	
Temperature	
pH	
electrical conductivity (EC)	
Dissolved oxygen (DO)	
Ammoniacal Nitrogen	

Nitrate nitrogen	assembly, BOD incubator, COD digester, Muffle Furnace, Atomic Absorption Spectrophotometer, Digital thermal Hygrometer, Bacteriological Incubator, Autoclave Vertical, Hot Plate, Laminar Flow, TKN Analyzer, Biosafety Cabinet, Digital Water Bath, Ion Analyzer, Digital Burette, Turbidity Meter, Flame Photometer
Nitrite nitrogen,	
Total Phosphate	
Calcium	
Magnesium	
Total Hardness	
Total Acidity	
Total Alkalinity	
Sodium	
Potassium	
Chloride	
Sulphate	
BOD	
COD	
Fluoride	
Metals	
Total Coliform	Ice Boxes, Thermometers, Refrigerators, Respirable dust sampler, PM _{2.5} samplers, Analytical balances, Desiccators, Vis-Spectrophotometer, UV-Vis-Spectrophotometer, pH meter, Conductivity meter, Hot air Oven, Digital Burette, Water Purification System, Stack Monitoring kit, Flue gas analyser
Faecal Coliform	
Ambient Air Particulate matter (PM ₁₀ & PM _{2.5}), Sulphur dioxide (SO ₂) Nitrogen oxide (NO ₂), Ammonia, Chlorine, H ₂ S and Metals	
Source Emission Particulate Matter, Acid Mist SO ₂ , NO ₂ , NO, CO, CO ₂ , H ₂ S, O ₂ and Metals	
Noise Level Monitoring	Sound Level Meter

**PROPOSAL FOR
FURTHER
UPGRADATION OF
PPCB
LABORATORIES**



PUNJAB POLLUTION CONTROL BOARD

PATIALA-147001

Sr. No.	Name of Scheme	Funds required (In lacs)
1	Up-gradation of Central Air & Water Laboratory Patiala	567.00
2	Up-gradation of Zonal Air & Water Laboratory Jalandhar	145.50
3	Up-gradation of Zonal Air & Water Laboratory Ludhiana	145.50
	Total	858.00

A. UP-GRADATION OF CENTRAL WATER AND AIR LABORATORY

The Pollution Control Boards have been assigned the task of preservation and restoration of the environment in respect of water and air pollution. For the purpose, PPCB has set up a laboratory equipped with sophisticated equipments. Although it has set up a Zonal laboratories at Ludhiana & Jalandhar, but the majority of tests are conducted at Central Laboratory located at Patiala. Some Central and State Government projects have also been allotted to the Board in the area of river monitoring, ambient air quality monitoring and ground water monitoring etc.

The activities of the Board are multiplying day by day due to the increase in number of samples and number of parameters and increase in efficiency and accuracy. The laboratory is equipped with instruments required for routine analysis and some sophisticated equipment but due to the increased demand, more instruments are required to be purchased.

The Major analytical activities of the laboratory can be divided into the following fields.

1. INDUSTRIAL EFFLUENT, DOMESTIC SEWAGE AND EMISSION MONITORING

The parameters to be analysed depend upon the source including wastewater both from industrial and domestic use and for related parameters. The stack emission monitoring of the industry includes testing of SPM, gases like chlorine, fluorine, acid mist, ammonia and carbon dioxide etc.

2. SURFACE WATER MONITORING

The Board is monitoring the quality of rivers at 53 locations namely Sutlej (16), Beas (10), Ravi (1), Ghaggar (14) & Drains (12) regularly for the parameters prescribed under National Water Monitoring Programme (NWMP) i.e. for heavy metals, residual pesticides and biological parameters etc.. To cope-up with the increased load of monitoring and additional parameters, more instruments are required to be purchased.

1. GROUND WATER MONITORING

The Board is monitoring the Ground water quality of the state at 43 locations Biannually for the parameters prescribed under National Water Monitoring Programme

(NWMP) i.e. for heavy metals, residual pesticides and biological parameters etc.. To cope-up with the increased load of monitoring and additional parameters, more instruments are required to be purchased

2. SOIL MONITORING

In the State of Punjab, a large number of industries are using their treated effluents for irrigation purpose and characteristics of the soil where the effluents are used for irrigation /plantation /fertiirrigation is carried out by the Board as and when required to check the conditioning of the soil. More characterization study in this field is required to be done in the remaining areas, in future.

3. HAZARDOUS WASTE MONITORING

As per the Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016, the waste falling in Schedule-2 of the said rules requires analysis, as it is based on the concentration of certain parameters. It requires advance analytical techniques for the analysis of various organic compounds also. The increased requirement for monitoring, number of samples and the demand for higher accuracy & efficiency in the analysis requires that the laboratory be equipped with more sophisticated instruments. In order to do proper analysis and get accurate analytical results, the latest and more sophisticated instruments are required to match the international standards.

4. INDUSTRIAL AIR EMISSIONS MONITORING

The Laboratory has been analyzing primary pollutants such as Particulate matter, Sulphur dioxide, Oxides of Nitrogen and Acid Mist. The infrastructure and facilities for analyzing recently introduced parameters the latest and more sophisticated instruments are required.

6. AMBIENT AIR QUALITY MONITORING

At present the laboratory is capable of analyzing ambient air quality of RSPM, SO₂ and NO_x.

To analyse more number of samples with higher accuracy and efficiency the laboratory requires to be equipped with sophisticated instruments. In order to achieve accurate and efficient analysis results, the latest and more sophisticated instruments are required.

Requirement of Instruments / Equipments

List of Instruments/Equipments required for Upgradation of infrastructure in the Central Laboratory of Punjab Pollution Control Board at Patiala with tentative cost is given below:-

Sr. no.	Name of the equipment	Required units	Tentative Cost per unit in lacs	Amount in lacs
1	Inductive Coupled Plasma (ICP)-MS	1	120.00	120.00
2	Atomic Absorption Spectrometer with flame, graphite, hydride and cold vapour system	1	50.00	50.00
3	AOX analyzer	1	50.00	50.00
4	Gas chromatograph MS-MS	1	250.00	250.00
5	Spectrophotometer UV-Visible	2	7.00	14.00
6	Multi parameter kit pH, DO & Conductance meter	4	4.00	16.00
7	Digestion unit	3	4.00	12.00
8	Rotary evaporator	2	5.00	10.00
9	Water Purification System	1	7.00	7.00
10	Digital Burette	4	2.00	8.00
11	Muffle Furnace	2	1.00	2.00
12	Dispensers	6	1.00	6.00
13	Fume hood	2	2.50	5.00
14	Filtration assembly	2	1.00	2.00
15	Microwave Digester	1	15.00	15.00
			Total	567.00

The requirement of budget for the purchase of the equipments/instruments is Rs. 567.00 Lakh

B. UP-GRADATION OF ZONAL WATER & AIR LABORATORY JALANDHAR

The Punjab Pollution Control Board has set up a Zonal Laboratory at Jalandhar in the year 2003 to monitor the level of pollution in water and air and is catering to the needs of Districts Jalandhar, Hoshiarpur, Kapurthala, Nawanshahar, Amritsar, Tarn Taran, Pathankot and Gurdaspur. For this purpose, the effluent/emission samples of the industries are collected and analyzed. Simultaneously to keep a check on the quality of air, surface waters and wetlands of the area regular monitoring is also being carried out by the Board. Due to more awareness in the public, the activities of the board are multiplying day by day. There is a need for analyzing more number of samples, more parameters along with greater accuracy and efficiency. The Board is in the process recruitment of staff including scientific

staff in view of the manifold increase in the quantum of work. The Zonal laboratory, Jalandhar therefore is required to be equipped with more sophisticated instruments having more efficiency and accuracy are required. Some of the available instruments for analysis are required to be upgraded latest available technology in the market.

1. INDUSTRIAL /DOMESTIC WASTE WATER MONITORING

At present the Board's Zonal Laboratory, Jalandhar is capable of analyzing water samples for some core physic-chemical parameters. The infrastructure facilities for analyzing more parameters are required to be updated with the inclusion of various sophisticated instruments.

2. INDUSTRIAL AIR EMISSIONS MONITORING

The Zonal Laboratory, Jalandhar has been analyzing primary pollutants such as Particulate matter, Sulphur dioxide, Oxides of Nitrogen and Acid Mist. The infrastructure and facilities for analyzing recently introduced parameters as per requirement.

3. AMBIENT AIR QUALITY MONITORING

At present the Zonal Laboratory, Jalandhar is capable of analyzing ambient air quality of RSPM, SO₂ and NO_x.

To analyse more number of samples with higher accuracy and efficiency the laboratory requires to be equipped with sophisticated instruments. In order to achieve accurate and efficient analysis results, the latest and more sophisticated instruments are required.

INSTRUMENTS AND EQUIPMENTS REQUIRED FOR UPGRADATION OF LABORATORY AT JALANDHAR.

Sr. no.	Name of the equipment	Required units	Tentative Cost per unit in lacs	Amount in lacs
1	Atomic Absorption Spectrometer with flame, graphite, hydride and cold vapour system	1	50.00	50.00
2	Spectrophotometer UV-Visible	1	7.00	7.00
3	Selective ion analyzers	1	5.00	5.00
4	Multi parameter kit pH, DO & Conductance meter	2	4.00	8.00
5	Digester unit	1	4.00	4.00
6	Conductivity meter	2	4.00	8.00
7	Water Purification System	1	7.00	7.00
8	pH meter-microprocessor based	2	3.00	6.00
9	Digital Burette	1	2.00	2.00

10	Flame Photometer	1	3.00	3.00
11	Fume hood	1	2.50	2.50
12	Filtration assembly	1	1.00	1.00
13	Microwave Digester	1	15.00	15.00
14	Computer system (Printer, UPS) for management of data	1	2.00	2.00
15	Sampling vehicle	1	25.00	25.00
			Total	145.50

The requirement of budget for the purchase of the equipment/instruments and purchase of new equipments/instruments, as detailed above is Rs. 145.50 lacs

C. UP-GRADATION OF ZONAL WATER & AIR LABORATORY LUDHIANA

The Punjab Pollution Control Board has set up a Zonal Laboratory at Ludhiana in the year 1989 to monitor the level of pollution in water and air and is catering to the needs of District Ludhiana. For this purpose, the effluent/emission samples of the industries are collected and analyzed. Simultaneously to keep a check on the quality of air, surface waters and wetlands of the area regular monitoring is also being carried out by the Board. Due to more awareness in the public, the activities of the board are multiplying day by day. There is a need for analyzing more number of samples, more parameters along with greater accuracy and efficiency. The Board is in the process recruitment of staff including scientific staff in view of the manifold increase in the quantum of work. The Air and Water laboratory, Ludhiana therefore is required to be equipped with more sophisticated instruments having more efficiency and accuracy are required. Some of the available instruments for analysis /testing are quite old and are also based on old technology, hence required to be replaced with instruments based upon latest available technology in the market.

1. INDUSTRIAL /DOMESTIC WASTE WATER MONITORING

At present the Board's Air and Water Laboratory, Ludhiana is capable of analyzing water samples for some core physic-chemical parameters. The infrastructure facilities for analyzing more parameters are required to be updated with the inclusion of various sophisticated instruments.

2. INDUSTRIAL AIR EMISSIONS MONITORING

The Air and Water Laboratory, Ludhiana has been analyzing primary pollutants such as, Respirable Suspended Particulate Matter Particulate matter, Sulphur dioxide, Oxides of Nitrogen and Acid Mist. The infrastructure and facilities for analyzing recently introduced parameters are required as per requirement.

3. AMBIENT AIR QUALITY MONITORING

At present the Air and Water Laboratory, Ludhiana is capable of analyzing ambient air quality of RSPM, SO₂ and NO_x.

To analyse more number of samples with higher accuracy and efficiency the laboratory requires being equipped with sophisticated instruments. In order to achieve accurate and efficient analysis results, the latest and more sophisticated instruments are required.

INSTRUMENTS AND EQUIPMENTS REQUIRED FOR UPGRADATION OF LABORATORY AT AIR AND WATER LABORATORY, LUDHIANA

Sr. no.	Name of the equipment	Required units	Tentative Cost per unit in lacs	Amount in lacs
1	Atomic Absorption Spectrometer with flame, graphite, hydride and cold vapour system	1	50.00	50.00
2	Spectrophotometer UV-Visible	1	7.00	7.00
3	Selective ion analyzers	1	5.00	5.00
4	Multi parameter kit pH, DO & Conductance meter	2	4.00	8.00
5	Digester unit	1	4.00	4.00
6	Conductivity meter	2	4.00	8.00
7	Water Purification System	1	7.00	7.00
8	pH meter-microprocessor based	2	3.00	6.00
9	Digital Burette	1	2.00	2.00
10	Flame Photometer	1	3.00	3.00
11	Fume hood	1	2.50	2.50
12	Filtration assembly	1	1.00	1.00
13	Microwave Digester	1	15.00	15.00
14	Computer system (Printer, UPS) for management of data	1	2.00	2.00
15	Sampling vehicle	1	25.00	25.00
			Total	145.50

The requirement of budget for the purchase of the equipment/instruments and purchase of new equipment/instruments, as detailed above is Rs. 145.50 lacs
