NRTOL Laboratory

Instruments and Equipments Required for analysis OF PAHS, PCBS, THMS And Pesticides in water samples

1.0 Sample Extraction and Clean-up

I. Separatory funnel - 2-liter, with polytetrafluoroethylene (PTFE) stopcock.
II. Rotavapor with water circulating chiller and thermal controlled water bath.
III. Chromatography column - 300 mm x 20 mm ID, with a polytetrafluoroethylene (PTFE) stopcock.

2.0 Analytical Instruments

2.1 For Pesticides, PCBs and THMs:

Gas chromatography equipment with A flame photometric detector (FPD), A nitrogen-phosphorus detector (NPD) and Electron capture detector (ECD).

Analytical chromatography column:

I. 30-m x 0.25-mm or 0.32-mm ID fused-silica capillary column chemically bonded with SE-54 (DB-5 or equivalent), 1-µm film thickness.
II. 30-m x 0.53-mm ID fused-silica capillary column chemically bonded with 50 percent phenyl methylpolysiloxane (DB-1701, or equivalent), 1.0- µm film thickness.
III. 30-m x 0.53-mm ID fused-silica capillary column chemically bonded with 95 percent dimethyl - 5 percent diphenyl polysiloxane (DB-5, SPB-5, RTx-5, or equivalent), 1.5-µm film thickness.

2.2 For PAHs:

HPLC system equipped with UV-DAD or PDA (Diode Array Detector or Photon Array Detector).

Analytical chromatography column:

I. Analytical column, Reverse phase (C18), LC-PAH Supelcosil^{TM} (250 mm x 4.6 mm, 5 µm film) or equivalent.
II. Guard column, Eclipse XDB-C8 (4.6 x 12.5 mm, 5 µm) or equivalent.

Instrumentation Laboratory

List of the equipments required for analysis of heavy metals in water samples

Parameters to be analyzed	**Equipments required**
Arsenic, Aluminum, Silver, Cadmium, Cobalt, Copper, Chromium, Iron, Lead, Manganese, Mercury, Molybdenum, Nickel, Selenium, Zinc	1. Atomic Absorption Spectrophotometer with flame, graphite Furnace and Hydride Generation System and15 hollow cathode lamps 2. Acetylene, Nitrogen & Nitrous oxide filled 99.999 grade gases for operation of AAS 3. Mercury Analyzer digital 4. Microwave digester 5. Weighing Microbalance (up to 220mg, minimum display 0.1mg) 6. Hot plate with fume hood 7. Water bath 8. Water purification system for Nano pure water.

Water Laboratory

List of equipments required for the analysis of water samples

A. Mandatory Instruments/Equipments
1. Refrigerator
2. Hot Air Oven
3. Analytical/Precision Balance
4. Water Purification System (RO Based/Distillation Assembly)
5. Thermometer
6. UV-VIS-Spectrophotometer
7. pH Meter
8. Conductivity Meter
9. Turbidity Meter
10. Filtration Assembly with Vacuum Pump
11. BOD Incubator
12. COD Digester with Reflux Tube and Air Condenser
13. Flame Photometer
14. Magnetic Stirrer with Heating System

B. Optional meter/Multi Parameter Field Kit
1. D.O. Meter/Multi Parameter Field Kit
2. Water Bath
3. Heating Mantle
4. Digital Burette
5. Dispensers
6. Pipette Controller
7. Standard Weight

Bio-Science Laboratory

List of equipments required for the analysis of water samples

S. No.	Name of Instrument/equipment	Make
1.	pH System	Systronic
2.	DO Meter	Thermo Orion and WTW
3.	Digital Balance	Sartorius and Citizen
4.	Autoclaves	Sandeep instrument & Chemicals, Ferroteck and Gautam Scientific Works
5.	Hot Air Ovens	Gautam Scientific Works
6.	Bacteriological Incubator	Sisco India and Ferroteck
7.	Laminar Flow System	Matrix Eco Solution
8.	Compound Microscopes	Radical Instrument, Stemi and Getner India
9.	Stereo Microscopes	Wild Stero Heerbrugg and Leica Wild
10	Ultra-wide field advance research microscope	Leitz Wetzlar
11	Glassware washers	SMEG Instruments
12	Ultra-pure water system	Sartorius
13	Water purifier	Aqua guard
14	UV Spectrophotometer	Tech Comp
15	Refrigerators	L G
16	Pass box	Lab. Tech Solutions