

VISIT OF DIGNITARIES/ STUDENTS



Dignitaries from MoWR



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IIRS Dehradun Student



International trainee participants under program "Entrepreneurship development in the water sector"

CAPACITY BUILDING PROGRAMS

- Water Quality Monitoring Planning, Sampling, and Analysis (In-situ and Lab)
- Hands on Trainings on Basic and Advanced Instrumentation
- Conservation and Management of Water Bodies
- Water & Wastewater Treatment
- Environmental Data Processing



CONTACT US

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Website: <https://nihrroorkee.gov.in/scientific-divisions/environmental-hydrology/water-quality-laboratory>



WATER QUALITY LABORATORY

ENVIRONMENTAL HYDROLOGY DIVISION NATIONAL INSTITUTE OF HYDROLOGY



Approved and Accredited by



TC-12019

ABOUT THE LAB

The Water Quality Laboratory is a state-of-the-art, NABL-accredited facility equipped with advanced monitoring and analytical instruments. Staffed by a highly qualified team of scientists and technical personnel, the laboratory serves as a vital hub for research and development in Environmental Hydrology. The laboratory is equipped with cutting-edge instrumentation to identify and quantify physical, chemical, and bacteriological parameters in water. It has the capability to analyze major ions, trace elements, organic compounds, pesticides, polycyclic aromatic hydrocarbons (PAHs), and bacteriological indicators in water and wastewater samples, ensuring high-precision and reliable assessments for scientific and applied research.



OBJECTIVES AND ACTIVITIES

The laboratory conducts comprehensive field and laboratory investigations to analyze the physical, chemical, and bacteriological characteristics of surface water, groundwater, and water and wastewater treatment systems. It provides critical data and insights to support research and applied studies in water quality assessment and treatment. Additionally, the laboratory facilitates laboratory-scale and pilot-scale experiments to evaluate the mobilization of pollutants into surface and ground water and performance evaluation of various physical-chemical and biological treatment processes for contaminated water remediation.

CAPABILITIES

The laboratory has the capability to analyze a comprehensive range of parameters as prescribed by the Bureau of Indian Standards (BIS) for drinking water quality (IS 10500:2012). Additionally, it is equipped to assess parameters mandated by the Honorable National Green Tribunal (NGT) and the Environmental Protection Act (1986) for monitoring municipal and industrial wastewater, ensuring compliance with regulatory and environmental standards.

MAJOR LAB FACILITIES



TRIPLE QUADRUPOLE GAS CHROMATOGRAPH MASS SPECTROMETER (GC-MS/MS)

Analyze the pesticides, polycyclic aromatic hydrocarbons (PAHs), volatile organic compounds, and gases composition.

LIQUID CHROMATOGRAPHY-INDUCTIVELY COUPLED PLASMA-MASS SPECTROMETRY (LC-ICP-MS)

Used for elemental analysis and speciation in water and solids samples.



ION CHROMATOGRAPH WITH AUTO-TITRATOR

Provide fully automatic analysis of anions and cations in liquid samples

PARALLEL EVAPORATION AND CONCENTRATION SYSTEM

Used to accelerate sample processing, remove solvents, and concentrate target compounds, enhancing efficiency and productivity.



TOTAL KJELDAHL NITROGEN (TKN) SYSTEM

Used for the quantitative determination of organic nitrogen plus ammonia (NH₃), and ammonium (NH₄⁺) as Total Kjeldahl Nitrogen (TKN) in the water & solids samples.

TOC ANALYZER

Measures the total amount of organic carbon contained in liquid and solid samples.



AUTO TITRATOR POTENTIOMETRIC (ATP)

Perform automatic sampling, titration, results calculations & experimental recording

TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP)

Used to determine the mobility of both organic and inorganic analytes present in liquid, solid, and multiphasic wastes.



BACTERIOLOGICAL TESTING KIT

Used to assess the microbiological quality of liquid or solid samples.



FIELD INSTRUMENTS

- Acoustic Doppler current profiler (ADCP)
- Multi-parameter Kits [Spectrophotometer, Turbidity, Conductivity meter, Ion analyser, DO & pH meter]
- Multiparameter Sonde (pH, EC, DO, Chlorophyll, ORP)
- Differential Global Positioning Systems (DGPS)
- Flow tracker for discharge measurement
- Sediment Grab (Van Veen Type)
- Water Level Indicator (Eijelkamp)

KEY STUDIES CONDUCTED USING LAB FACILITIES

- Assessment of GWQ in Metropolitan (30 Nos.) and Class - 1 (25 Nos.) Cities (CPCB funded)
- Characterization of Groundwater Dynamics in Krishna-Godavari Delta interims using groundwater levels, Hydrochemistry, Isotopes and Emerging Contaminants
- Water Quality Assessment of Southwest Punjab Emphasizing Carcinogenic Contaminants and Remedial Measures (NHP funded)
- Ground Water Quality Assessment with Special Reference to Sulphate Contamination in Bemetara District of Chhattisgarh State and Ameliorative Measures (NHP funded)
- Impact of Sewage Effluent on Drinking Water Sources of Shimla City and Suggesting Ameliorative Measures (HP-II funded)
- Petroleum Product Contamination at Akolner Village, District Ahmednagar, Maharashtra and Suggesting Remedial Measures (MPCB funded)
- Development of Low Cost Media for Fluoride Removal from Drinking Water of Fluoride Affected Areas (Patent No. 395135)
- IWRM Plan for Water Security in Identified Villages of Western U.P. (MoJS funded)
- Ionic Enrichment Dynamics of Glacial Sediment and Meltwater of Gangotri Glacier (DST funded)
- Preparation of Rejuvenation Plan for Rispana River System (UK Govt. funded)
- Assessment of Environmental Flows for Yamuna River (NMCG funded)

KEY SPONSORS, PARTNERS AND COLLABORATORS

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| • NMCG | • CIFRI | • State Pollution Control Boards |
| • CPCB | • WII | • Various State Government Departments |
| • DST | • UNICEF | |
| • DBT | • CPWD | • IITs, NITs, Central & State Universities |
| • THDC | • NEER | |
| • NTPC | • ICFRE | • Relevant Private Sector |