National Accreditation Board for Testing and Calibration Laboratories (NABL), India

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Proficiency Testing (PT) – An Assessment Technique

Enhancing Public Health and Sustainability:
NABL's Initiatives for Clean Water, Medical Testing, and Soil Health in India

Introduction

Proficiency testing (PT) is widely recognized as an essential tool for demonstrating the competence of conformity assessment bodies (CABs). It is an external and independent assessment of a CAB's capability to conduct a specific test or measurement.

National Accreditation Board for Testing and Calibration Laboratories (NABL) in India, has introduced three schemes based on 100% PT participation for the scope. These schemes are focused on three critical domains: Clean water, Medical testing, and Soil health. Schemes are based on achieving proficiency in all the parameters to ensure standardized testing, enhance laboratory competence, and safeguard essential resources.

Access to clean drinking water, high-quality medical testing, and fertile soil is fundamental for public health and sustainable development, and NABL's initiatives in these areas aim to uphold these vital necessities.

NABL's Water Quality Testing Scheme

Scope for recognition

S. No	Discipline – Group – Sub Group	Test Parameter	Range	Measurement Technique	CRM / RM
1	Chemical – Water – Drinking Water	pH	2 to 12	pH Meter	Buffer pH 4,7 and 10
2	Chemical – Water – Drinking Water	Turbidity	0.5 NTU to 100 NTU	Turbidity Meter	Turbidity Standard
3	Chemical – Water – Drinking Water	Total Dissolved Solids	10 mg/L to 10000 mg/L	TDS Meter	KCL
4	Chemical – Water – Drinking Water	Chloride (as Cl)	10 mg/L to 5000 mg/L	Titration	Sodium Chloride
5	Chemical – Water – Drinking Water	Total Hardness (as $CaCO_3$)	10 mg/L to 5000 mg/L	Titration	Calcium standard
6	Chemical – Water – Drinking Water	Total Alkalinity (as $CaCO_3$)	5 mg/L to 2000 mg/L	Titration	Sodium Carbonate
7	Chemical – Water – Drinking Water	Calcium (as Ca)	5 mg/L to 2000 mg/L	Titration	Calcium Standard
8	Chemical – Water – Drinking Water	Magnesium (as Mg)	5 mg/L to 1000 mg/L	Calculation	-
9	Chemical – Water – Drinking Water	Colour	1 HU to 100 HU	Visual comparison	Potassium chloroplatinate
10	Chemical – Water – Drinking Water	Odour	Qualitative	Observation	-
11	Chemical – Water – Drinking Water	Taste	Qualitative	Observation	-

Independent Quality Assurance

NABL has launched scheme to sensitize the Government Drinking Water Testing Laboratories at Block / Sub Divisional Level performing basic water quality testing to ensure the availability of standard water quality testing laboratories, for people living in rural, urban & peri urban areas.

This scheme is based on satisfactory proficiency testing (PT) performance and valid for a cycle of three years. This is applicable only for the critical tests specified for water and will be continued on renewal basis after every three years.
The laboratory shall continue participation for its scope in PT programs during recognition period (minimum 1 PT program per year covering the entire scope).

Ensuring Clean Drinking Water

Access to clean drinking water is vital for public health. Contaminated water can lead to severe waterborne diseases. NABL's scheme enhances the availability of standardized water quality testing facilities, ensuring safe drinking water through rigorous proficiency testing in all parameters.

This scheme ensure access to clean drinking water in India, thus contributing quality in health sector.

704 laboratories

benefited by the scheme

NABL's Soil Testing Laboratory Scheme

Scope for recognition

S. No	Discipline – Group – Sub Group	Test Parameter	Range	Test Method(s)
1	CHEMICAL – Soil & Rock – Agriculture Soil	pH	1 to 14	Soil Water Suspension method/Woodruff's Method/Shoe Maker Method/IS 2720 (Part 26)
2	CHEMICAL – Soil & Rock – Agriculture Soil	Electrical Conductivity	0.1dS/m to 10 dS/m	IS 14767
3	CHEMICAL – Soil & Rock – Agriculture Soil	Organic Carbon	0.1% to 5%	Loss of Weight on Ignition method/Volumetric Method/ Colorimetric Method
4	CHEMICAL – Soil & Rock – Agriculture Soil	Available Nitrogen	0.1kg/ha to 1000 kg/ha	Subbiah and Asija method
5	CHEMICAL – Soil & Rock – Agriculture Soil	Available Phosphor	0.1kg/ha to 1000 kg/ha	Olsen et al./Bray and Kurtz method/ICP
6	CHEMICAL – Soil & Rock – Agriculture Soil	Available Potassium	0.1kg/ha to 1000 kg/ha	Toth and Prince method/ICP
7	CHEMICAL – Soil & Rock – Agriculture Soil	Available Sulphur	0.1mg/kg to 200 mg/Kg	Chesnin and Yien method, 1950 / ICP
8	CHEMICAL – Soil & Rock – Agriculture Soil	Zinc	0.1mg/kg to 20 mg/kg	Lindsay and Norvell, AAS /ICP
9	CHEMICAL – Soil & Rock – Agriculture Soil	Iron	0.1mg/kg to 20 mg/kg	Lindsay and Norvell AAS/ICP
10	CHEMICAL – Soil & Rock – Agriculture Soil	Copper	0.1mg/kg to 20 mg/kg	Lindsay and Norvell AAS/ICP
11	CHEMICAL – Soil & Rock – Agriculture Soil	Manganese	0.1mg/kg to 20 mg/kg	Lindsay and Norvell, AAS/ICP
12	CHEMICAL – Soil & Rock – Agriculture Soil	Boron	0.1mg/kg to 20 mg/kg	Lindsay and Norvell, AAS/ICP

Independent Quality Assurance for Soil Testing

NABL has launched scheme to sensitize the Soil Testing Laboratories performing basic testing to ensure the quality of soil for the majority of citizens especially those residing in villages and small towns.

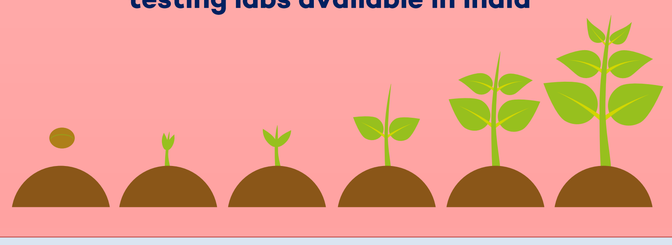
This scheme is based on satisfactory proficiency testing (PT) performance and valid for a cycle of three years, which will further be continued on renewal basis after every three years.

The purpose of this scheme is to ensure the availability of standard soil quality testing laboratories and the improvement of soil health..

Supporting Sustainable Agriculture

Soil, as a vital resource, underpins agricultural sustainability, environmental protection and food security. The availability of standardized soil quality testing laboratories and the assurance of accurate testing results, contribute significantly to achieve these objectives. NABL's initiatives align with India's commitment to sustainable agriculture and a healthier environment.

It's in the budding state, around 2000 soil testing labs available in India



NABL's Medical Testing Laboratory Scheme

Scope for recognition

1. **HIV-1 antibodies**
2. **Clinical Biochemistry**

Sodium	Chloride	Potassium	Magnesium	Glucose	Amylase	Lipase	Calcium
D. Bilirubin		Glycated Hb (HbA1C)		Inorganic Phosphorus		Lactic Acid Dehydrogenase (LDH)	
Creatine Phosphokinase (CPK/CK)		Lipid Profile Cholesterol, Triglyceride		High Density Lipoprotein Cholesterol (HDL)		Gamma Glutamyl Transferase (GGT)	
Low Density Lipoprotein Cholesterol (LDL)		Renal Function Tests (Urea/Blood Urea Nitrogen, Creatinine, Uric acid)		Liver Function Tests (Total Bilirubin, Alanine Aminotransferase (ALT/SGPT), Aspartate Aminotransferase (AST/SGOT), Alkaline Phosphatase (ALP), Albumin, Total Protein)			

3. **Haematology**

Haemogram/ CBC (Haemoglobin, Total Leucocyte Count (TLC), Differential Leucocyte Count (DLC – Lymphocyte, Monocyte, Basophils, Eosinophils, Neutrophils), Platelet count, Red Blood Cell Count (RBC) Count, Packed Cell Volume (PCV)/ Hematocrit (HCT), Mean Corpuscular Volume (MCV), Mean Corpuscular Hemoglobin (MCH), Mean Corpuscular Haemoglobin Concentration (MCHC)

4. **Clinical Pathology (Urine Routine Examination)**

Protein	Glucose	pH	Leukocytes	Specific Gravity
Ketones	Bilirubin	Nitrite	Blood (Haemoglobin)	Urobilinogen

5. **Infectious Serology/Immunology (Rapid tests)**

Rheumatoid (RA)Factor	C-Reactive Protein (CRP)	Anti HCV/ HCV Ab	Typhoid (IgG / IgM)	WIDAL for Typhoid	Antistreptolysin O (ASO)
Hepatitis B Surface Antigen (HBsAg)		HIV Antigen + HIV Ab		Syphilis Serology (Rapid Plasma Reagin), VDRL, Treponema pallidum hemagglutination assay (TPHA)	

Accessible Entry Point

The NABL Medical (Entry Level) Testing Laboratories {NABL M(EL)T Lab} Program is an entry level program for medical laboratory under which laboratory shall be recognized for basic routine tests based on the satisfactory proficiency testing (PT) performance. it empowers laboratories to establish credibility within their local communities.

This scheme is valid for one cycle of three years. The laboratory shall continue participation for its scope in PT programs during recognition period (minimum 1 PT program per year).

Local Community Impact

The NABL M(EL)T Lab scheme stands as a commendable initiative by NABL, striving to elevate the quality of medical testing in India. This program equips laboratories with the tools to improve the standard of healthcare sector at the grassroot level and strengthens patient's confidence.

694 laboratories

benefited by the scheme

Conclusion

NABL's proficiency testing based schemes for clean water, soil quality, and medical testing collectively contribute to achieve Sustainable Development Goals, particularly SDG 6 (Clean Water and Sanitation), SDG 15 (Life on Land), and SDG 3 (Good Health and Well-being). These efforts ensure quality testing and ultimately promotes public health and the sustainable development of the country.