

WATER QUALITY MAPPING AND WATER MANAGEMENT PLAN

Activities in the Water Sector Include:

- Assessment of Water Quality for Various End-Use Applications for Optimal Management of Water Resources:
 - Water for Human Consumption
 - Drinking Water Quality Analysis as per BIS Specification & WHO Guidelines
 - Bottled Mineral Water and Packaged Water Analysis
 - Water for Industrial Applications
 - Boiler Feed & Boiler Blow-Down Water
 - Cooling Water
 - Process Water for Various Industrial Operations
 - Water for Irrigation Purpose
 - Water for Construction Purpose
 - Water for Swimming Pool Purpose
- National Survey of Rural Water Quality & Mapping
- Capacity Building to Promote Community Based Water Quality Monitoring & Purification
- Capacity Building of Stakeholder for Water Mapping and Remediation
- Evaluation of Fluorosis and Arsenicosis Control Programme in Rural Areas
- GIS Mapping of Contaminants for Decision Support System
- Analysis of Policies and Notifications on Water Security and Safety and Development of Opinion Reports
- River Action Plan (Point & Non-point Pollution Sources)
- Process Control Studies of Sewage Treatment Plants and Common Effluent Treatment Plants
- Water Management Plan for Cities & Urban Agglomerations
- Adequacy Studies of Wastewater Treatment Systems
- Toxic Metals, Pesticide Residues, Persistent Organic Pollutants (POPs), VOCs and Semi-VOCs, PCB's & PAH's etc. in Environment Media (Water, Air, Soil, Food etc.) and their uptake by Progressive Food Chain



AIR, EMISSION, MICRO-METEOROLOGY AND NOISE MONITORING

Major Activities Include:

- Air & Emission Study including Stationary, Mobile & Fugitive Emissions
- Ambient Air Quality and Indoor Air Quality
- Pollutant Dispersion and Diffusion Modeling
- Adequacy of Air Pollution Control Devices
- Ambient & Work Zone Noise Level Monitoring
- Acoustic Studies of Machines, Rooms, Buildings, DG Sets etc.
- Estimation of Heat Value of Waste Flue Gases of Coke Ovens & Blast Furnaces to Explore Potential of Energy
- Hydrocarbon Leaks Detection in Petroleum Refineries
- Micro-Meteorology including Wind Speed, Wind Direction, Relative Humidity, Rainfall and other Climatic Parameters and Development of Area Specific Windrose

CARBON FOOTPRINTS STUDIES, CARBON FINANCE AND CLEAN TECHNOLOGIES

Major Activities are as follows:

- Assessment & Validation of Carbon Footprints of Industrial Products
- Validation of Waste Flue Gases for Energy Recovery
- Assessment of Municipal Solid Waste Dumping Sites for Methane Potential and Carbon Finance Projects
- Validation of Green Buildings for Smoking and Non-smoking Rooms
- Analysis and Interpretations of National Green House Gas Inventories and Climate Change Reports
- Fuel Additive Performance for Emission Reductions for Fuel Saving



SOIL INVESTIGATION

CORE COMPETENCE:

- Safe Bearing Capacity of Soil by Standard Penetration Test at Site
- Safe Bearing Capacity of Soil by Plate Load Test at Site
- Electrical Resistivity of Soil at Site
- Static Cone Penetration Test at Site
- Field California Bearing Ratio
- Field Compaction Test by Core Cutting and Sand Replacement Method (Dry Bulk Density)
- Investigations of Soil Quality & Groundwater
- Quality Evaluation of Soil used for Construction of Road (Borrow Soil)
- Quality Evaluation of Soil used for Construction of High-Rise Building

FACILITIES FOR SOIL INVESTIGATIONS:

- **Physical Properties of Soil :** Texture, Classification, Compaction, Porosity, Permeability, Water Holding Capacity, Swelling Pressure, Free Swell Index, Moisture, Voids Ratio
- **Chemical Properties :** Salinity, Cation Exchange Capacity, pH, Conductivity, Sodium Absorption Ratio, Organic Matter, C/N Ratio, Soil Nutrients, Chemical Composition
- **Strength Stability :** Direct Shear, Triaxial Strength, Consolidation, Proctor Test, CBR, UCS, DBD
- **Index Properties :** Uniformity Coefficient, Liquid Limit, Plastic Limit, Plasticity Index, Shrinkage, Density, Specific Gravity, Sedimentation, Sand Equivalent Value, Particle Size Distribution, Grain Size Analysis, Sedimentation
- **Contaminants :** Leachability Studies, Heavy Metals, Pesticides, VOC's
- **Geo Technical Studies :** Safe Bearing Capacity by SPT & Plate Load Test, SCPT, Electrical Resistivity, Topography

MAJOR INSTRUMENTS

Consolidation Unit	Core Cutters for Soil Compaction
California Bearing Ratio	Standard Penetration Test Unit
Shrinkage Limit Unit	Safe Bearing Capacity Unit with Load Truss
Triaxial Shear Strength Unit	Earth Resistivity Meter
Automatic Direct Shear Unit	Field Density Unit for Sand Replacement
Soil Permeability Unit	Field Density Unit for Core Cutting
Grain Size Analyzer	Atomic Absorption Spectrophotometers
Swell Test Unit	Inductively Coupled Plasma-OES
Sand Equivalent Value Unit	UV-Visible Spectrophotometer
Automatic Compactors	pH Meters
Casagrande Units	Conductivity Meters
Soil Hydrometers	Turbidity Meters
Compressive Strength Machines	Specific Gravity Unit
Cone Penetrometer	Total Station

STANDARD SPECIFICATIONS FOLLOWED

- Indian Standard Specification (ISS)
- American Society for Testing & Materials (ASTM)
- German Standards (DIN)
- MOST / MORTH Specifications
- CPWD Specifications
- British Standard Specifications (BS)
- European Standards (EN)
- International Organisation for Standardization (ISO)
- Indian Road Congress (IRC)

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SOLID WASTE MANAGEMENT

Major areas in Solid Waste Management are:

- Characterization of Municipal Solid Waste
- Development of Solid Waste Management Plan
- Assessment of Solid Waste Dumping Sites for the Potential of Landfill Gas including Modeling.
- Comprehensive Characterization of Hazardous Waste
- Impact of Solid Wastes Dumping Sites on the Quality of Water in the Vicinity as well as Health Impacts on the Dwellers
- Consultancy for Recycling, Re-use and Value Added Products from Solid Waste
- Study of Leachate Potential of Flyash and Contaminant Transport Modeling

ENVIRONMENTAL IMPACT ASSESSMENT STUDIES

SRI is the Approved EIA Consultant by QCI/NABET (as per MoEF, Govt. of India Notification) for following Sectors:

- **Project Activities-7(c) as per EIA Notification (MoEF&CC, Govt. of India)**
 - Industrial Estates/Parks/Complexes/Areas
 - Export Processing Zones (EPZs)
 - Special Economic Zones (SEZs)
 - Biotech Parks
 - Leather Complexes
- **Project Activity-6 (a) as per EIA Notification (MoEF&CC, Govt. of India)**

Oil & Gas Transportation Pipeline (Crude and Refinery/Petrochemical Products), Passing through National Parks/Sanctuaries/Coral Reefs /Ecologically Sensitive Areas including LNG Terminal.
- **Project Activity-6 (b) as per EIA Notification (MoEF&CC, Govt. of India) Project Activity-6 (b)**

Isolated Storage & Handling of Hazardous Chemical (As per Threshold Planning Quantity indicated in Column 3 of Schedule 2 & 3 of MSIHC Rules 1989 Amended 2000).

QUANTITATIVE RISK ASSESSMENT

SRI has Specialization in the following Areas:

- Quantitative Risk Assessment (QRA) for
 - Petroleum, Oil & Lubricants (POL) Storage Installation
 - LPG Bottling Plant
 - Petroleum Product Transportation Pipeline
 - Chemical Storage Installation
- Onsite Disaster Management Plan
- Preparation of Emergency Response and Disaster Management Plan (ERDMP) as per the Guidelines of Petroleum and Natural Gas Regulatory Board (PNGRB)