Particulars of organization, functions and duties

OBJECTIVES

QUALITY POLICY

CSIR-NEERI is committed for excellence in R & D in Environmental Science and Engineering and to provide sustainable technological solutions to environmental problems of government, industry, and the society, especially the 800 million underprivileged people of India

QUALITY OBJECTIVES

CSIR-NEERI strives to achieve excellence and continual improvement through activities leading to scientific and technological innovations, technical solutions, sharing knowledge and expertise for enabling government, industry and society to improve quality of environment.

The sustainable improvement will be realized in terms of:

- Enhanced R & D performance resulting in:
    - ✧ Publications (Number in SCI journals and CIF)
    - ✧ Patents (Number)
    - ✧ ECF generation (Growth in %)
    - ✧ LR generation (Quantum)
    - ✧ Projects (Growth in Number)
- Technologies developed and transferred (Number)
- Enhanced customer satisfaction (CS Index)
- Environmental information dissemination (Website, NEERI Journals / Publications, Reports, Newsletters, Databases, etc.)
- Participation of scientists in societal missions and decision making in government and industry

CSIR-NEERI's VISION

Leadership in environmental science and engineering for sustainable development

CSIR-NEERI's MISSION

CSIR-NEERI would continue to strive for providing innovative and effective solutions for environmentally sustainable development and to help government, industry and the society, especially the 800 million underprivileged people of India

NEERI would continue to strive for

- Dedicating itself in the service of mankind by providing innovative and effective solutions to environmental and natural resource problems
- Leadership in environmental science, technology and management domestically and globally by working hand in hand with its partners
- Strong and effective working relationships with its stakeholders in ensuring ecological health of all regions in India
- Enabling individuals and organizations to achieve productive and sustainable use of natural resources on which all life and human activity depend.

Current R&D Areas in Environmental Science & Engineering

- **Air Pollution Control**
  - ☆ Ambient air quality and fugitive / vehicle emission monitoring
  - ☆ Development of analytical techniques
  - ☆ Air quality modeling
  - ☆ Designing and development of air pollution control systems
  - ☆ Delineation of air environment management plans
  - ☆ Carrying capacity based development planning

- **Environmental Biotechnology**
  - ☆ Environmental genomics
  - ☆ Genotoxicity based risk analysis
  - ☆ Product and process development
  - ☆ Eco-technology
  - ☆ Tissue culture (animals and plants)
  - ☆ Hazardous waste management
  - ☆ Cleaner process development
  - ☆ Designing and development of waste treatment facilities

- **Environmental Impact and Risk Assessment**
  - ☆ Environmental appraisal for suitability and selection of sites for locating industrial projects

- ☆ Environmental quality monitoring including assessment of biodiversity for identification of impacts
- ☆ Mathematical modeling for predicting and evaluating impacts on air, noise, surface and groundwater, land, biological, coastal and marine environment and parameters of socio-economic interests
- ☆ Social and health impact assessment, and preparation of rehabilitation and resettlement plans
- ☆ Risk assessment using Maximum Credible Accident (MCA) and Hazard and Operability (HAZOP) analysis
- ☆ Risk minimization and mitigation measures, and preparation of emergency preparedness and disaster management plans

- **Environmental Materials**

Development of materials that are useful in:

- ☆ Cleaner energy production systems
- ☆ Vehicular emission control
- ☆ Novel monitoring and control systems for non-conventional pollutants like VOCs, arsenates etc.
- ☆ Novel monitoring and control technologies for hazardous pollutants in water / wastewater
- ☆ Soil remediation: *In situ* immobilization of heavy metals

Material synthesis and characterization

- ☆ Molecular sieves and zeolites
- ☆ Surface fuctionalized zeolites
- ☆ Perovskite based catalytic materials
- ☆ Multifunctional metals / metal oxide materials
- ☆ Photocatalytic materials
- ☆ Carbon materials

- **Environmental Systems Design Optimization and Modelling**
  - ☆ Development and application of numerical models for prediction of environmental quality
  - ☆ Development and application of Geographical Information System (GIS) and Remote Sensing (RS) based models and analytical tools for natural resources management
  - ☆ Development and application of environmental systems design, detailed engineering, costing and drawing for the design of water supply, sewerage systems, and water and wastewater treatment systems
  - ☆ Application of advanced numerical and graphical tools for environmental systems analysis and management

- **Water Technology and Management**
  - ☆ Surveillance of drinking water quality
  - ☆ Performance evaluation of treatment plants

- ☆ Development of analytical techniques for water quality assessment
- ☆ Monitoring and management of environmental contamination with POPs
- ☆ Evaluation of water resources for health related water quality parameters
- ☆ Technology development for improvement of water quality: arsenic detection, fluoride removal, iron removal, pesticides and THMs removal
- ☆ Eco-restoration of impounded surface water bodies
- ☆ Application of non-invasive methods in characterization of water and land environment
- ☆ Assessment of dam construction for irrigation projects - catchment and command areas
- ☆ Development of techniques and methodology for exploration, assessment and management of groundwater in hard rock areas
- ☆ Restoration and remediation of degraded land
- ☆ Techno-economic feasibility of steep slope stabilization through bio-engineering techniques
- ☆ Management of urban and industrial wastewater using root zone treatment process (RZTP)
- ☆ Recycling and reuse of industrial wastewater through land application using bio-techniques for tanneries, textiles, sugar and distilleries
- ☆ Green belt development -land use planning
- ☆ Assessment of salinity ingress in coastal areas

- **Solid and Hazardous Waste Management**
  - ☆ Rapid composting technologies
  - ☆ Waste to energy research projects
  - ☆ Bioprocessing of municipal solid waste through composting, biomethanation and vermicomposting
  - ☆ Recovery and recycling of waste products
  - ☆ Green house gas emission from landfills
  - ☆ Quantification and characterization of solid wastes from urban centers and industries
  - ☆ Environmental evaluation of landfill sites
  - ☆ Eco-toxicological assessments of landfills
  - ☆ Economic and eco-friendly utilization of solid wastes
- **Wastewater Technology**
  - ☆ Basic engineering designs for wastewater (ETPs & CETPs)
  - ☆ Zero-discharge based wastewater treatment technologies
  - ☆ Physico-chemical conversions
  - ☆ Bioconversions
  - ☆ Recycle and reuse
  - ☆ Development of treatment technologies for color and COD removal from wastewater
  - ☆ Modeling of wastewater treatment processes
  - ☆ Removal of dissolved solids and nutrients from wastewater
  - ☆ Monitoring and removal of volatile organic compounds
  - ☆ Natural purification systems for wastewater treatment
  - ☆ Land application of treated wastewater
  - ☆ Development of adsorbents for heavy metals removal

CSIR-NEERI's Organizational Chart