Green Skill Development Programme (GSDP)
"Pollution Monitors: Air and Water Pollution"

Organized
by
ENVIS Hub Centre, Puducherry

Course Completion Report

A training programme on "Pollution Monitoring: Air and Water Pollution" under Green Skill Development Programme (GSDP) at level- 6 was conducted by Puducherry Envis Hub Centre, Puducherrry Pollution Control Committee at Dr. Abdul Kalam Science Centre and Planetarium, Lawspet, Puducherry. The training programme was for a period of 38 working days (11th Septemeber to 26th October 2018, 260 hours) and the training module included theoretical, practical, field visits and assignments.

The training programme was inaugurated by Dr. R. Sagaya Alfred, Senior Scientific Officer, Department of Science, Technology & Environment Government of Puducherry, Dr. S. Jayakumar, Professor from Pondicherry University, Mr. S. Samiuddin, Head, Confederation of Indian Industry(CII), Puducherry State Office, Dr. N. Ramesh, Environmental Engineer, Department of Science, Technology & Environment, Government of Puducherry. Following the inaugural session, a introduction about Puducherry Envis as well as the importance of GSDP was given by Mr. P. Vipin Babu, Scientist/ENVIS Coordinator & Nodal Officer – GSDP.

Er S. Sudalai, Assistant Professor, Centre for Pollution Control and Environmental Engineering from Pondicherry University taught about introduction on Air Pollution as well as skill development.

First Week: 12.09.2018 to 15.09.2018

From 12.09.2018 to 15.09.2018 various aspects on Water Pollution viz., introduction of water pollution, sources, pollutant causes and effects, types, mitigation of water pollution were taught to the trainees by Dr. Golda A Edwin Ph.D and Dr. Nandivarman, Ph.D from for Promoting Sustainability in Campuses and Communities.
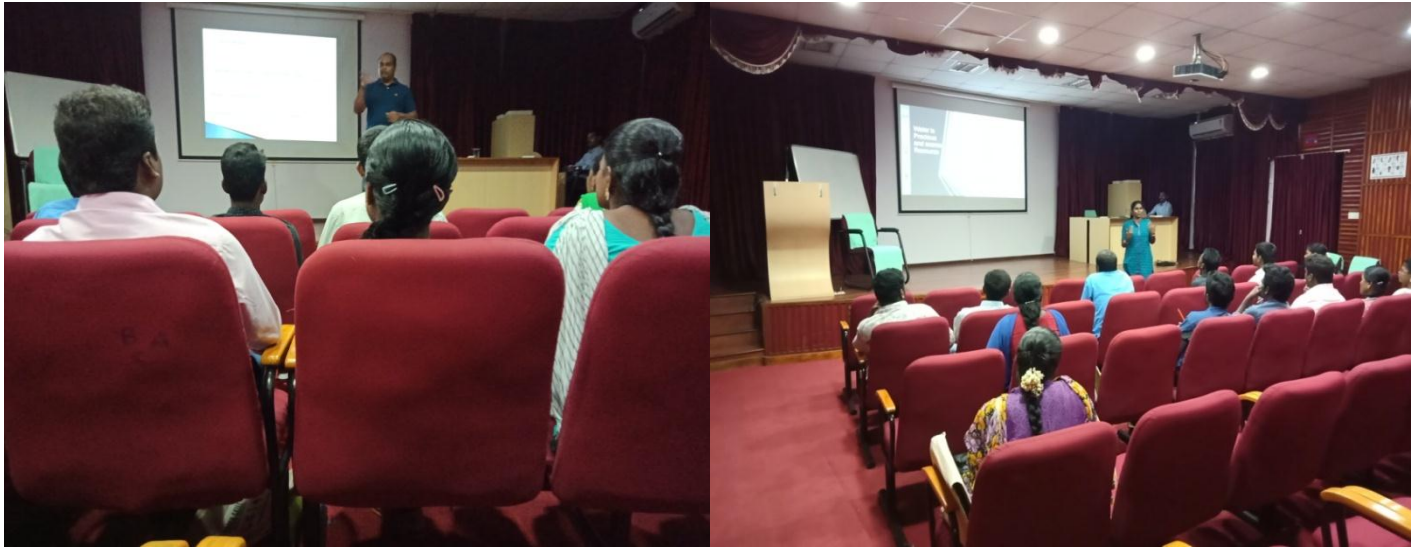
Dr. K. Sundar Ph.D, Associate Professor and Head, Department of Microbiology, PRIST University delivered a lecture on Enumeration of bacteria from water sample. Details about Sampling method, Inoculating techniques, Culturing practices & most probable Number

Introduction about air pollution, types, sources and effects of pollutants has been taught by Er. Devaanandan. S, Assistant Environmental Engineer, PPCC. Dr. S. Vasanth, Research Associate, Climate Change Cell, DSTE discussed on water pollution, types, causes and its effects.

Lecture delivered by P. Vipin Babu, Envis Co-ordinator/Scientist, PPCC on laboratory activities and Water and Air Act.

The following topics were discussed during the first week:

- Introduction of water pollution
- Sources of water pollution
- Causes of pollution
- Types of water pollution
- Biological effects of water pollution
- Water pollutants and their effects
- Introduction of Air Pollution
- Indoor and outdoor pollution

- Types of Air pollution
- Major primary pollutants produced by human activity
- Secondary pollutants
- Sources and effects of air pollution
- Objectives of the Laboratories
- Provision of the environmental laboratories and analysts under the various environmental legislations
- Function of the Environmental Laboratories under Water and Air Act
- Research and Development
- List of instruments/equipment available in laboratories
- List of Parameters In AQC
- List of CPCB sponsored ongoing project
- Ozone layer formation

Second Week: 17.09.2018 to 22.09.2018

During the second week from 17.09.2018 to 22.09.2018, Atmosphere, Meteorology and Automatic Weather Station, Air Pollution Dispersion and Modelling was taught by Dr. S. Sudalai, Assistant Professor, Centre for Pollution Control and Environmental Engineering, Pondicherry University. Er. Devaanandan. S, Assistant Environmental Engineer, PPCC discussed on Monitoring of Air Pollutants, Guidelines, Selection of Monitoring Location, Selection of Pollutants, Meteorological Measurements, Operation of Air Quality Monitoring Equipments.

Dr. K. Sundar Ph.D, Associate Professor and Head, Department of Microbiology, PRIST University discussed on water microbiology, Membrane filtration method Most Probable Number Method (MPN) methodology and culturing techniques. Freshwater Ecology, Macroinvertebrates and Pollution Indices delivered by P. Vipin Babu, Envis Co-ordinator/Scientist, PPCC.

Lecture on water chemistry, water sampling analysis was delivered by Dr. S. Gajalakshmi, Assistant Professor & Centre Head i/c, Centre for Pollution Control & Environmental Engineering, Pondicherry University. Dr. S. Vasanth, Research Associate, Climate Change Cell, DSTE dealt River pollution in water pollution monitoring and Air Pollution Control Equipments, types and its uses in air pollution monitoring and Dr. Nandivarman, Ph.D.(Environmental Sciences) dealt water sampling.

A visit to Puducherry Port for idol immersion sample collection where they were briefed about collection methods, type and techniques followed. Marine Sample were collected and physiochemical parameters analyzed like Dissolved oxygen in the Puducherry port premises by Shri. P. Vipin Babu, Envis Coordinator, Mr. P. Tamilarasan, JLA and Mr. M. Anandan, JLA, DSTE/PPCC.

Trainees were taken into Puducherry Pollution Control Committee Laboratory at Mettupalayam, Puducherry. Dr. V.R. Sumathi, Scientist I, Tmt. G. Rukmai, Scientist II, DSTE and her team (Mr. T. Ponram, Junior Scientific Assistant-II, Ms. Radhika, Scientific

Assistant, Ms. Koperum Devi, Scientific Assistant, Smt. K. Dheeba, Project Assistant, Climate Change Cell and Ms. K. Sangeetha, Lab Assistant, Thiru. P. Sathiamurugan, Lab Attendant & S. Manikandan, Laboratory Assistant, PPCC) explained the procedures, analysis methodology and gave hands on training on Chemical Oxygen Demand(COD), Alkalinity, Total Hardness, Calcium Hardness, Magnesium Hardness and Chloride, Total Suspended Solids(TSS), pH & Conductivity and Weather Monitoring System were briefed.

The following topics were discussed during the second week:

- Study on Polluted River Stretches
- Water Quality Management
- Use based classification of surface waters in India
- Water Use Map
- Integrated solution to control River Pollution
- Available Techniques to control River Pollution.
- What is Weather?
- Weather versus Climate?

- Atmospheric Air Pollutant Dispersion?
- Concept of Plume Penetration?
- Vertical Dispersion Of Pollutants?
- Saturated adiabatic lapse rate, (Γs)?
- Temperature lapse rate and stability?
- Atmospheric Stability?
- Automatic Weather station (AWS)?
- What is the MPN method?
- How to determine the amount of bacteria from the MPN method?
- Advantages and Disadvantages of Most Probable Number Method (MPN)?
- Introduction of Air Pollution Control Equipments
- Common air pollution Control equipment
- Factors for selecting a particular air pollution control hardware
- Types of equipment used to control air pollution and its uses
- What is the Structure of atmosphere?
- Composition of Atmosphere
- What is Radiation Inversion?
- What is Topographical Effects?
- What is the Types of Inversion?
- Coriolis force and effects?
- Types of clouds?

Third Week: 24.09.2018 to 29.09.2018

The third week (24.09.18 to 29.09.18) various topics were covered i.e., on Impact of Air Pollution on Environment, Air Pollution Emission Inventory, International Governing Bodies   for Climate Change, International Legal and Policy Framework to Address Climate Change by Er. T. Balaji, Junior Research Fellow, Puducherry Climate Change Cell and Er. Devaanandan. S, Assistant Environmental Engineer, PPCC.

Dr. K. Sundar PhD, Associate Professor and Head, Department of Microbiology, PRIST University explained on Air Microbiology i.e., ambient air sampling techniques, problems, microflora present in air, methods, types of samples, Unresolved Issues and Microbiologic Air Sampling, Common biological contaminants in air and Bergey's Manual of Determinative Bacteriology.

Dr. S. Vasanth, Research Associate, Climate Change Cell, DSTE delivered a lecture on Inventorisation of sources of water pollution, Detailed about Polluted River stretches, Water Quality Management and classification of surface water in India were explained to the participants.

Dr. S. Jayakumar, Head of the Department, Department of Ecology and Environmental Science, Pondicherry University taught about Fundamentals and Applications of Geographical Information System.

Dr. Nandivarman, Ph.D.(Environmental Sciences), Secretary, Association for Promoting Sustainability in Campuses and Communities discussed on Monitoring Techniques & Analysis of Water Pollutants

Trainees were taken into Puducherry Pollution Control Committee Laboratory at Mettupalayam, Puducherry. Dr. V.R. Sumathi, Scientist I, Tmt. G. Rukmai, Scientist II, DSTE and her teams gave hands on training on Chemical Oxygen Demand(COD), Alkalinity, Total Hardness, Calcium Hardness, Magnesium Hardness and Chloride, Total Suspended Solids(TSS), pH & Conductivity.

As a field trip to Industries to understand the treatment system. The participants visited the Chemfab Alkalis Limited(CCAL), Kalapet and Solara Active Pharma Sciences, Puducherry where they were exposed Effluent Treatment Plant, Technology & Innovation, Process Safety Management System and Research and Development carried out in the plant. The participants gained experience about operating the ETP in real-time and various challenges faced during the operation and maintenance. They were also made aware about troubleshooting of the ETP.

The following topics were discussed during the third week:

- Introduction to GIS – Definition
- Fundamentals of GIS
- Components of GIS
- What is Emission Inventory?
- Monitoring Techniques & Analysis of Water Pollutants
- Guidelines for Water Quality Monitoring
- What is monitoring?
- What is Monitoring Strategy?

- Objectives of Water Quality Monitoring
- Assessment Resources Availability
- What is Reconnaissance Survey
- Designing the sampling network

Fourth week (01.10.18 to 06.10.18)

P. Vipin Babu, Envis Co-ordinator/Scientist, PPCC discussed on sample collection methods, instruments types and how to analyze Dissolved Oxygen in onsite and laboratory during the fourth week (01.10.18 to 06.10.18).

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Lecture on impacts of Water Pollution and Hydrosphere was delivered by Dr. A. Yogamoorthi, Professor, Department of Ecology & Environmental Science, Pondicherry University and Dr. Golda A Edwin Ph.D. (Environmental Sciences), Executive Director, Association for Promoting Sustainability in Campuses and Communities.

Trainees were taken into Puducherry Pollution Control Committee Laboratory at Mettupalayam, Puducherry. Tmt. G. Rukmai, Scientist II, DSTE and her team members (K. Koperum Devi, Scientific Assistant, PPCC & M. Sangeetha, Laboratory Assistant, PPCC explained the procedures and analysis method of Sulphate estimation in water samples. The trainees were given in hand training to analyse the water samples for the sulphate.

Lecture on Impacts of Air Pollution on Environment and Air Pollution Control Equipments delivered by Er. T. Balaji, Junior Research Fellow and Dr. S. Vasanth, Research Associate, Puducherry Climate Change Cell.

Mr. P. Tamilarasan, Junior Laboratory Assistant, from PPCC Laboratory given a demo of Respirable dust sampler instrument, explained about the parameters PM_{10} & $PM_{2.5}$ and also he dealt about mechanism for gaseous sample collection, techniques involved in monitoring including location fixing, pre-treatment, filter paper and weighing the samples.

Lecture on Air and water pollution, solid & hazardous waste management, impacts on environment and health was dealt by J. Selvanayaki, Junior Scientific Assistant, PPCC.

E. Sivakumar, Technical Assistant, Puducherry Council for Science & Technology, Puducherry taught on Atmosphere, temperature inversion, radiation inversion and impacts on ozone depletion.

Lecture on Micro-Teaching, Skills types, skill Cycle, Skill of Set Induction, Explanation, Stimulus Variation, Reinforcement, Questioning, blackboard writing and Maslow's Hierarchy of Needs by Mr. Tulsi Raj, Assistant Professor, Vasavi college of Arts and Science.

The following topics were discussed during the fourth week:

- Effect of Water Pollution on Humans and other organism.
- Water Pollution Effect on Humans-Pesticides.
- Water borne diseases.
- Water Pollution Effect on Humans-Nutrients and its role.
- Health Effects on exposures to Lead.
- Bromine in Drinking Water.
- Polluted River India Scenario.
- Effects of Water Pollution- Facts
- Effects of water pollution on plants and animals
- Water Pollution- Increase of toxic Substances
- Growth of aquatic Plants
- Water Pollution Suffocating Aquatic creatures
- Water Pollution-Eutrophication
- Atmospheric Air Pollution
- Air pollution and Climate change
- What is mean by Air Pollution?
- What are all the causes of Air pollution?
- Climate Change
- Impacts of Global warming?
- What is Green House Effect?
- Natural Greenhouse Effect?
- Effects of increased greenhouse gas concentration?
- What is mean by desertification?
- How desertification is related to environment?
- Common air pollution Control equipment
- Factors to be considered prior to selecting a particular air pollution control hardware

Fifth Week: 08.10.2018 to 13.10.2018

From 08.10.2018 to 13.10.2018 various aspects on Social Issues and Environment, EIA(Environmental Impact Assessment) and Phytoremediation were taught to the trainees by Ms. Ilakia, Ecology and Environmental Science. Er. T. Balaji, Puducherry Climate Change Cell delivered the lecture on Ozone layer depletion and Acid Rain.

Air Pollution Dispersion and Modelling has been taught by Er. S. Sudalai, Assistant Professor, Centre for Pollution Control and Environmental Engineering, Pondicherry University.

Dr. Nandivarman, Ph.D.(Environmental Sciences), Secretary, Association for Promoting Sustainability in Campuses and Communities dealt about Resource Recycling Approach" for Sustainable Solid Waste Management.

Dr. S. Jayakumar, Head of the Department, Department of Ecology and Environmental Science, Pondicherry University taught both theoretical and practical session on cartography and Map terraces in GIS.

Industrial visit has been arranged on 09.10.2018 to visit Whirlpool Corporation of India, Thirubuvanai, Puducherry where they were exposed about Sewage Treatment Plant. Mr. Madavan, EHS Official, Whirlpool explained unit process, manufacturing products and sewage treatment process carried out in the plant.

The participants were taken to industrial visit at Lucas TVS, Nettapakkam, Puducherry to gained the knowledge and experience about Sewage Treatment Plant, Biogas Production, MIYA Walky way and RO Treatment plant. Mr. Sambath and his team from Lucas TVS explained about process of treating domestic wastewater from canteen and toilet waste in Treatment plant. The team members also discussed about Technology for CO_2 Emission Reduction.

Trainees were taken into Pulkit Metals Pvt Ltd Nettapakkam, Puducherry where they were briefed about Steel manufacturing process, Air pollution control equipment and Cooling Tower, air pollution control equipments to control pollution. Mr. Rajesh Kumar Jha from Pulkit Metals Pvt Ltd explained about stack monitoring to control air pollution and also he taught about control measures used in the unit. The participants gained more knowledge about pollution control and monitoring.

On 10.10.2018, the participants were taken to visit Aravind Eye Hospital, Puducherry where they were explained about Decentralised wastewater treatment system. Mr. Danabal, Environmentalist from Aravind Eye Hospital explained about the treatment process carried out in the hospital. He explained that the treatment facility which receives 2.7- 3KLD from hospital building that includes only domestic sewage. DEWATS was adopted to meet the demand of huge water requirement for horticulture and maintaining the lush green area of 15 acres within the hospital premises.

A visit to Sica Breweries Limited, Ayyankuttipalayam Puducherry where the participants were exposed about Effluent Treatment Plant. Mr. Amuthamani, EHS Official explained about manufacturing process, operation and maintenance process of ETP, Treatment level & Mechanisms of treating effluent water and various challenges faced during the operation and maintenance.

On 12.10.2018, trainees were taken into Karaikal where they visited six different industries i.e.,

1. Department of Science, Technology & Environment laboratory, Karaikal
2. Praveen Chem Industry, Keezhvanjore, Karaikal
3. Karaikal Port, Karaikal
4. Karaikal Chlorates, Karaikal.
5. Continuous Air Pollution Monitoring(NAMP), Karaikal.
6. Godrej Pvt. Ltd, Karaikal.

Department of Science, Technology & Environment laboratory at Karaikal where they exposed the instruments used to measure Air and Water Pollution. Mr. Ashok Kumar, Junior Laboratory Assistant from DSTE Lab explained the procedure and experimental method to measure pollution in Air and Water sample. He also explained how to measure the emission from stationary sources.

General Manager from Praveen Chem Industry, Keezhvanjore, Karaikal briefly discussed about the Manufacturing Process, Raw material used for processing, Safety Measure and environmental compliance followed in the industry. Participants are very much exposed how to control indoor air pollution by using air pollution control equipments i.e., Bag filter.

Manager from Karaikal Chlorates, Karaikal dealt about the Demonstration of Stack Monitoring, Sampling Procedure, APCS functions, manufacturing process and chlorine control emission. Participants are exposed and actively interacted with Team Members from Karaikal Chlorate industry.

Trainees were taken into Karaikal Port, Karaikal where they exposed the port activities and Environmental related activities carried out. Mr. Sudhakar, Manager and Mr. Jayachandran, Manager, Fire and Safety from port dealt about On-line Air Monitoring Station, Technology involved to control pollution, Mitigation Measures, ETP/STP functioning in port.

Mr. Ashok Kumar from DSTE Laboratory along with the participants were visited National Air Quality Monitoring Programme (NAMP) explained about the project, Air Quality Monitoring and Analysis Procedure of four different air pollutants viz., SO_2, PM_{10}, $PM_{2.5}$ and NO_2 carried out. He also explained how to measure the emission from stationary sources. He briefly taught the status and trends of ambient air quality.

Participants were visited Godrej Consumer Products, Nedungadu, Karaikal where they exposed the manufacturing process and Sewage Treatment Plant functioning.

The following topics were discussed during the fifth week:

- Climate Change, Global Warming, Acid Rain, Ozone Layer depletion, Nuclear accidents and Holocausts
- Meteorology and Air Pollution
- Atmospheric Air Pollutant Dispersion
- Concept of Plume Penetration
- Vertical Dispersion Of Pollutants
- Saturated adiabatic lapse rate, (Γs)
- Temperature lapse rate and stability
- Atmospheric Stability
- Automatic Weather station (AWS)
- Atmospheric Stability
- Automatic Weather station (AWS)
- Introduction
- Necessity of Meteorology
- Meteorological Parameter
- Meteorological Tools for Air Pollution
- Reducing Air Pollution Effects
- Guidelines for installation of Meteorological station
- Measurement of primary meteorological parameter
- Wind speed
- Wind direction
- Atmospheric stability
- Measurement of Secondary Meteorological Parameters
- Analysis of Meteorological Data
- Wind rose
- Construction of wind rose
- What is Cartography?
- Scales
- Projections
- Global Positioning System
- GPS Component

Sixth Week: 15.10.2018 to 20.10.2018

Lecture on Environmental Law, Rules and Regulation, Marine Pollution and its effects, Health Impact of Air Pollution and Water Pollution, water quality standards & Biomonitoring was delivered by Dr. S. Vasanth, Research Associate, Climate Change Cell, DSTE, Dr. Yogamoorthi, Professor, Department of Ecology & Environmental Science, Pondicherry University and Dr. Mahalakshmy T, MBBS, MD, DNB, MNAMS, PSGFRI fellow Associate Professor of PSM, JIPMER during the sixth week (15.10.2018 to 20.10.2018).

Dr. N. Ramesh, Environmental Engineer, Department of Science, Technology & Environment, Govt. of Puducherry delivered a lecture on "**Legal Sampling & Solid Waste Mangement**".

Lecture on Source Emission Monitoring, types of emission, emission discharge/dispersion, flue gas determination and Isokinetic sampling procedures were explained by Xavier Kennedy, Junior Scientific Assistant, Department of Science, Technology & Environment, Govt. of Puducherry.

On 15.10.2018, trainees were taken into Pondicherry Engineering College to attended one day workshop on "Recent Advances in Wastewater Treatment" where they understand about advance method to control water pollution and its treatment process by Prof. S. Mohan, Environmental & Water Resources Engineering Division, Department of Civil Engineering, IIT, Madras and his team members (Prof. Hadas Mamane, Visiting faculty IIT Madras, Tel-Aviv University, Israel, Sri. Raphael Gastebois, Ministry of Foreign Affairs, France, Dr. M. Velan, Advisor(Environment), NLCIL, Neyveli, Tamil Nadu, Dr. N. Ramesh, Environmental Engineer, Department of Science, Technology & Environment, Govt. of Puducherry, Dr. N. Suresh Nathan, General Manager, PIPDIC, Puducherry and Dr. R. Saravanane, Professor and Head, Department of Civil Engineering, Pondicherry

Engineering College, Puducherry). The following topics were covered:

1. Hidden Plastics in Wastewater: A challenge for treatment
2. Advanced Oxidation Process for Industrial Wastewater Treatment
3. Puducherry Smart City Mission – Urban Planning & Retrofitting
4. Utilization of a Mixed culture of sulfate reducing Bacteria for the removal of sulfate for Mine water.
5. Zero liquid discharge for a Bulk Drug Unit – A case study
6. Present scenario of Industrial Wastewater at Puducherry, India: An overview
7. Membrane Bio Reactor for Pharmaceutical Wastewater – A case study.

The participants visited the Pondicherry Centre for Biological Science and Educational Trust, Puducherry on 19.10.2018 the Principle, Procedure and hands on training on Enumeration of bacterial culture in air and water sample and Most Probable Number were taught. The trainees were exposed and given in hand on training on enumerating of coliform bacteria from water and air samples and Most Probable Number. It was dealt by Dr. K. Sundar PhD, Associate Professor and Head, Department of Microbiology, PRIST

University. On 20.10.2018, the trainees checked the result of Enumeration of bacterial culture in air and water sample and Most Probable Number dealt by Dr. K. Sundar PhD, Associate Professor and Head, Department of Microbiology, PRIST University and they were explained about techniques and trainees gained the practical and culturing techniques followed in laboratory for enumerating of coliform bacteria from water and air samples and Most Probable Number.
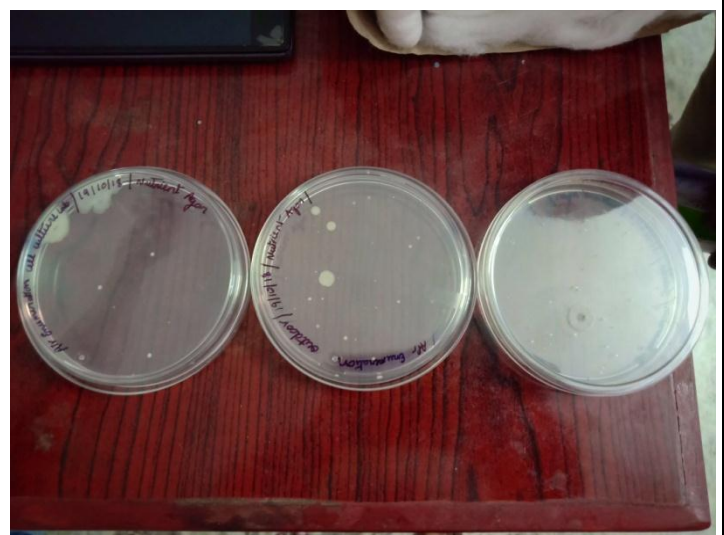
The following topics were discussed during the sixth week:

- The Environment (Protection) Act, 1986
- Air (prevention and control of pollution) Act, 1981
- Regulation of Vehicular Pollution
- what is noise pollution?
- Major Sources of Noise
- Control of noise pollution
- Policy Act of 1861
- Motor Vehicle Act of 1939
- The Noise Pollution (Regulation and Control) Rules, 2000
- Laws Relating to Prevention of water pollution
- The Water (Prevention and control of pollution) Act, 1974
- Central and State Water Boards
- The Functions of State Boards
- The River Boards Act, 1956
- Summary of Indian Scenario in water Legislation
- The Forest (Conservation) Act 1980
- Define Marine Pollution?
- Sources of oil pollution input into the marine environment
- Major pollutants of marine pollution
- Causes of marine pollution
- Threats to biodiversity in marine
- Causes of Air Pollution
- Barrier of invasion of pollution
- What do you want to know about health impact of air pollution?
- What do you think are the impact of air pollution on us?
- Effects of Harmful particles
- Health impacts of air pollution & Water borne disease
- Solution to control water pollution
- What is meant by Legal Sampling?
- Power to take sample and procedure to be followed in connection therewith
- Environment Protection Act
- Hazardous Air Pollutants (HAP) dispersing towards human settlement
- Groundwater contamination by percolation
- Standard Operation procedure for Domestic Sector
- Source Segregation, collection and disposal of domestic waste
- Standard Operation procedure for Commercial Sector
- Source Segregation, collection and disposal of commercial waste
- Standard Operation procedure for Bulk Waste Generator
- Source Segregation, collection and disposal of bulk waste
- Standard Operation procedure for C&D Waste Management
- Source Segregation, collection and disposal of C&D waste

Seventh Week: 22.0.2018 to 25.10.2018

During last week (22.10.18 to 25.10.18), Assessment & Evaluation was done by an external examiner from Pondicherry University staff and an in-house officer. The participants were assessed based on the performance in both theory (25%) and practical's (75%). All the participants cleared the examinations both in theory and practical's. Nineteen participants have successfully completed the training programme.

The Certificate Course on "Pollution Monitor: Air and Water Pollution" under the aegis of Ministry of Environment, Forest and Climate Change (MoEF&CC), Government of India, New Delhi was organized by Puducherry Envis Hub Centre from 11.09.2018 to 26.10.2018. The valedictory session of the Green Skill Development Program (GSDP) trainees held on October 26th, 2018 at Dr. Abdul Kalam Science Centre and Planetarium, Lawspet, Puducherry. The function began with welcome address by Dr. R. Sagaya Alfred, Senior Scientific Officer, Department of Science, Technology & Environment. Smt. Smitha. R, Director-cum-Member Secretary, Puducherry Pollution Control Committee delivered the valedictory address and Smt. P. Priyatarshny, Director, Department of Industry & Commerce, Puducherry distributed the Certificates to the participants and wished success in their future endeavours.

Feedback was given by the GSDP participants. In their feedback they thanked ENVIS Secretariat and Envis Staff for selecting them for the GSDP course and explained how the course improved their skills and knowledge and also thank all the expert who have contributed in making the course in a success grand manner.

Shr. Vipin Babu, Scientist/Envis Coordinator delivered the vote of thanks. During his speech, he thanked ENVIS Secretariat and Ministry of Environment, Forests & Climate Change,GoI for sanctioning the course to Puducherry Envis Hub. He thanked the Chief Guest Smt. P. Priyatarshny, Director, Department of Industry & Commerce, Puducherry for gracing the occasion. He also thanked Smt. Smitha. R, Director-cum-Member Secretary, Puducherry Pollution Control Committee for his support towards successful completion of the Certificate course. He thanked all the supporting staff for their support during the course. At the outset he thanked all the ENVIS staff for their involvement. Finally he extended his gratitude to all the invitees and participants for making the training a successful one.