Environmental Training Workshop and Site Visit, Bhubaneswar, Feb 8-10, 2019

Location: Sikshya O Anusandhan University, Bhubaneswar, Odisha

This 2-day workshop by the Rivers of the World (ROW) Foundation (USA) in collaboration with the Siksha O Anusandhan (SOA) University, Bhubaneswar, Odisha, will include a comprehensive training in water and renewable energy area. It should provide ideas and incentives for the new and upcoming professionals to begin these hands on practice for protecting the environment and make the local town/community a keystone model for renewable energy and green environment. The Workshop will be followed by a Site visit/water testing of local River/s on Feb 10th, Sunday.

The experts from US, India, will travel to Bhubaneswar to provide the training. The local organizations/NGOs and community leaders/organizations will provide the local hospitalities and facilities for the training.

Tentative Agenda

Day 1 (February 8, Fri, 2019) (9:30 AM – **5:30 PM**)

1. **Introduction & Scope** (1.0 hr)
    a. Opening Remarks (Local – VC/Dean SOA)
    b. Introduction (Local - TBA)
    c. Overview of the training (Subijoy Dutta and Subi Subramanian) – Brief Summary

2. **Water Treatment –** (1hr. 15min)
    a. Drinking Water (Subijoy Dutta)
    b. Wastewater Treatment - Dr. Prakasam Tata
    c. Water Management including Distribution/Lift Stations – Mr. Swapan Dutta

3. **Municipal Solid Waste – WTE Management** (1 hr. 15min)
    a. MSW - Options for treating/Disposal of MSW (Dutta)
    b. Recycle/Reuse and Composting (Dutta and Subramanian)

4. **Lunch (1 – 2 PM)**

5. **Renewable and Waste to Energy Options** (1 hr. 30 min)
    a. Waste to Energy (Subi Subramanian and Subijoy Dutta)
    b. Renewable Energy Options (Subramanian)

6. **Hazardous and Medical Waste Management -** (1 hr. 30 min)
    a. Hazardous Waste (Dutta)
    b. Medical Waste Management (Dutta)

Day 2 (February 9, Sat, 2019)

(9:30 AM – **5:30 PM**)

1. **Review of Day 1 (**30 minutes) (Subramanian, Dutta, & Tata)

2. **Innovative Treatment Technologies and Operations** (1 hr. 15 min)
    a. Wastewater treatment plant – Operations/Operator's perspective (Dr. Tata)
    b. Innovative Water Treatment technologies – (Roper/Dutta)
    c. Remote Sensing Technologies [Bill Roper (non-attending) and Subijoy Dutta]

3. **Stormwater Management and WQ Improvement** (1 hr.)
    a. Stormwater Management– (Dennis Haag/Dutta)
    b. Water Quality Improvement – Testing and Monitoring (Dutta)

4. **Climate Change** (45 mins)
    a. Global Climate Change (Dutta)
    b. Use of Environmental Indicators to Monitor Issues (Roper/Dutta)

5. **Lunch (1 – 2 PM)**

6. **Local Rivers and Water Bodies of Importance in Odisha** (1 hr.)
    a. Status of local Rivers and Lakes (Dutta and Tata)
    b. Specific Rivers and Lakes in Odisha needing Protection (Dutta and Local NGO)

7. **Education/Awareness**(Local Experts and Anup Samantaray) (1 hr.)
    a. Women Involvement and Community Interaction
    b. Media
    c. WWD (World Water Day plus Similar Events – Dr. Anup Samantaray)

8. **Wrap-up, Evaluation and Feedback** (1 hr.)

9. **Valediction**

Day 3 (February 10, Sun, 2019)

(10:00 AM – 2**:30 PM**) – Tentative Visit to a local School and show/demonstrate Water testing using digital TDS meter. Field Visit to Local Lakes and Rivers with NGOs and Others.

Proposed Course

This course should provide answers to many of the above items for the participants. This should have a direct benefit in their knowledge and understanding of environmental problems, issues, and possible remedies. The participants will have an evaluation at the end of the training to confirm their learning and comprehension of the specific subject area of their interest. Upon

successful completion of the two-day program, the participant should have a clear understanding of the following –

A. General -

- Appropriate scientific rules and methods adopted to solve problems.
- The logic and reasoning used to identify the strengths and weaknesses of alternative solutions, conclusions, or approaches to problems.
- Technical sentences and paragraphs in professional documents.
- Verbal communication to convey information effectively
- Active listening with full attention to what other people are saying, taking time to understand the points made.
- Raise questions at right time, and not interrupting at inappropriate times.
- Basics of - water treatment systems, Municipal Solid Waste management, Alternative Energy, Path to human wellbeing and environmental education/awareness.

B. Technical (Water and Environment)

- Drinking Water Treatment technologies –
    - Natural Filtration, Riverbank Filtration, Sand Filters, Membrane Filtration, Solar Distillation, Solar pasteurization
- Wastewater Treatment technologies -
    - Standard clarifier, degradation, sludge removal system; a few other alternatives, and installations in India
    - Other innovative treatment systems – Deep Pond system, Wetland-based treatment systems, and upcoming MicroDesal Technology performance and future developments
    - Wastewater treatment plants – operations issues and operator training needs.
- Storm water management alternatives – current practices
- Water Quality Testing and Monitoring – Tools and Techniques
- Municipal Waste Management –

- Door to Door Collection, segregation at source, composting, waste to energy alternatives, and possible funding sources/agencies.

- Renewable and waste to Energy
    - Waste to Energy – evolving technologies towards safe conversion of waste to energy
    - Solar, Wind, and other alternatives
- Hazardous Waste Management –
    - Serious health impacts of hazardous wastes, need for proper management, systematic, safe handling and collection of household hazardous waste
    - Environmental treatment technologies for remediating hazardous wastes
- Medical Waste Management –
    - Identification and Categorization of Medical Waste
    - Segregation of Medical Waste
    - Minimization, Treatment and disposal of Medical Waste
    - Education and Training of Medical professionals

<u>Day 2</u>

7. **Innovative Treatment Technologies and Operations**
    a. Wastewater treatment plant – Operations
    b. Innovative Water Treatment technologies
    c. Remote Sensing Technologies

- Environmental Problems/Climate Change Factors
    - Some relevant studies and simple local observations of sea-level/temperature rise over a period of time, trend analysis
    - Climate Monitoring, State of the Climate by NOAA
    - Use of simple environmental indicators to monitor issues and problems.
- Remote Sensing Technologies –
    - Hyperspectral analysis of streambeds, hifidelity image processing by AVIRIS (NASA) and Indian ISRO for science and application research.

    - Hyperspectral analysis of algal growth in water, forest cover and vegetation.

- Education/Awareness –
    - World water day activities involving river-bank cleanups, and other awareness practices including a seminar involving experts with full community participation
    - Interaction with the participants on new ideas and thoughts.

Day 3

- Visit to nearby Rivers with NGOs and others.