

Announcement: December 20, 2011

Advanced International Training Programme 2012

“Air Pollution Management in Thermal Power Plants”



Module 2: July 15-21, 2012, NEERI, Nagpur, India

Module 3: September 2-8, 2012, SMHI, Sweden

**Module 5: October 9-11, 2012, NEERI, Nagpur, India
(Follow-up International Seminar)**

(Modules 1 & 4 are to be executed at respective organizations)

Introduction

Industrialization and urbanization have resulted in profound deterioration of India's air quality. Air pollution has become a major concern in India in recent years because large parts of the Indian urban population is exposed to some of the highest pollutant levels in the world due to increased vehicular movement, large industrial areas around and congested commercial activities. Annual average concentrations reported in urban areas in India for PM₁₀ (particles less than 10 microns in diameter), is in the range 90-600 $\mu\text{g}/\text{m}^3$, with a population mean of about 200 $\mu\text{g}/\text{m}^3$.

According to another study, while India's gross domestic product has increased 2.5 times over the past two decades; vehicular pollution has increased eight times, while pollution from industries has quadrupled. Major contributors to the poor urban air quality are coal-fired thermal electric power plants, heating boilers, coal-fired cooking & heating household stoves of individual dwellings, automobiles, waste disposal areas and soil erosion.



The main air pollutants are SO₂, NO_x, PM and its fractions, CO, ozone, VOCs etc. A detailed training programme for specific industrial emissions abatement targeting various stakeholders including industry, municipal and regulatory authorities would further strengthen the implementation of control strategies in these sectors. The Air Pollution Management training programme, organized by NEERI and SMHI aspire to communicate the European and in particular

the Swedish experience on how to achieve or maintain a clean air environment.

National Environmental Engineering Research Institute (CSIR-NEERI) and Swedish Meteorological and Hydrological Institute (SMHI) along with The Swedish International Development Cooperation Agency (Sida) offers, as part of its bilateral development assistance, Advanced International Training Programmes of strategic importance to the social and economic development in the participants' countries. The International Training Programmes is specially designed for persons qualified to participate in reform processes of strategic importance on different levels and holds a position in home organization with mandate to run processes of change. This methodology is based on the assumption that your organization wishes to carry out changes and is willing to invest own resources to achieve these changes. In long-term, the programmes shall contribute to institutional strengthening and capacity development.

Training is focused on support to individual or team plans for change. The plan shall be well established in the participant's organization and is a basic part of the programme concept.

We trust that the programme will be of value to you and hereby invite you to nominate candidates.

In this brochure you will find information on the specific objectives for this particular programme, its content and structure, and how and when to apply. You will also find an application form.

Programme Objectives and Expected Outcome

The major objective of the training programme is to disseminate the state of the art and advanced techniques on handling of air pollution problems in different environmental settings (power plants, urban areas) that will enable the participants to deal with the related activities with better understanding and effectiveness.

The participants are expected to improve their ability to carry out systematic work in the air pollution field in project form through the supervised project work included in the course program. The participants are expected to acquire up to date knowledge, experience and important contacts for their future work through the interaction with international experts in the air pollution field during the different modules of the training courses. In particular, the study visit to Sweden is considered important in this respect.

The study visit is expected to enable different Swedish actors to establish contacts on organizations in India working with air pollution in regulatory and industrial applications. The performance in the training programs is expected to facilitate the national networking among practising air pollution experts in private industry, power producers, municipal and regulatory authorities.

Contents

The training programme consists of five compulsory modules;

Module 1: Identification of key issues at the respective work places and formulation of individual project proposal related to air pollution management.

- Module 2: Structured Training program at NEERI consisting of lectures, discussions, field visits, lab visits etc.
- Module 3: Study visit to Sweden tailored to the topic of each individual training programme.
- Module 4: Pursuing individual project at respective organizations and preparation of project report.
- Module 5: Seminar to present and discuss the outcome of the individual projects, related follow up and certification.

Module 1: Preparation (part-time, in home organization)

Immediately after confirmed selection, the participants will continue to develop the detailed content of their individual projects. They will also prepare a short presentation of the project which will be given during the course in India in Module 2.

Module 2: Training programme in NEERI, India (1 week, full-time)

The training is built up around the following blocks focusing on thermal power plants:

- Emission sources and emission inventories
- Chemical and physical characteristics of air pollutants and their cycling in the environment
- Monitoring and modeling of air pollution
- Effects on human health, agriculture and forestry, materials, visibility, etc.
- Technical and structural measures for reduction of emissions; cost/benefit analysis
- International agreements; national legislation and regulations concerning the environment and human Health
- Energy efficiency
- Air pollution control systems
- Communication, management of change

The tuition during the course will be based on lectures, demonstrations, group discussions, exercises and study tours to relevant industries and institutions. There will also be time allocated for development of the individual project through discussions between the participants and their assigned Contact person. The course provides a forum for discussion and exchange of experience between participants, lecturers and others. Group exercises will be given throughout the course, giving the participants both theoretical and practical experience as well as bringing the different organizations closer together to find out solution to the specific problem.

Module 3: Field visit in Sweden (1 week)

The short term visit in Sweden is suggested to focus entirely on study visits and allowing time for discussion with various organisations. These study visits, and discussions with scientists, governing bodies or industries are important to serve as examples on solutions and experiences in Sweden and Europe. A challenge is how to utilise knowledge to actually promote and achieve change in the air quality situation in India. We believe that interaction with Swedish organisations is a promising approach that could lead to enhanced co-operation between organisations in India and also provide

valuable additional experience that could be used for air quality amendments in India.

During the course, activities of a social character will also be arranged to deepen the contact between the participants and to make the stay in Sweden a positive experience.

Module 4: Assignment between the training programme and international seminar (July-Sept., 3 months, part-time, in home organization)

The participants will continue with their individual projects according to the plan developed during the course in India and Sweden. They are encouraged to present their project results for their colleagues in the home organization and together with them define complementary work to be completed during this phase.

Halfway through module four, the participants are required to send an abstract (including methods and expected outcome of the project) to the Programme Secretariat.

A final presentation shall be prepared for the international seminar, which constitutes the formal end of the training programme. Each participant has 1 hour (including 15 minutes for questions) to his/her disposal.

Module 5: International Seminar (3 days, full-time)

There will be an international seminar approximately 6 months after the course in Sweden. This compulsory international seminar will contain:

- Lectures given by experts,
- Presentations of individual projects,
- Discussions on topics of organizations interest

The programme organizers will also continue to keep contact with the participants after the international seminar to give additional advice and support, and to follow up and evaluate the results of the individual project.

Programme Details

Date and place

The programme consists of 1 week scheduled training in NEERI, Nagpur, India during July 15-21, 2012, followed by 1 week training in Norrköping, Sweden, during September 2-8, 2012. The follow-up international seminar will tentatively be held during October 9-11, 2012. A separate invitation to the seminar will be distributed to all participants well before the seminar is scheduled to occur.

The individual project

Before applying to the training programme, the applicant shall, together with his or her employer, formulate an individual project that will run during the whole training programme. The project shall be related to the programme content and reflect issues that are of concern for the participant's organization. A 1–2 page description of the specific problem to be addressed in the individual project shall be attached to the application to the Air Pollution Management programme in Thermal Power Plants. These headlines shall be included in the description:

- Background with motivation
- Role of parent organization

- General objective
- Specific objectives (my contribution)
- Work plan: Specific tasks and estimated dedication in time during module three

The individual project forms an important basis for all parts of the training programme, and should have an orientation towards change and development.

After being accepted each participant will be assigned a Contact person at NEERI/SMHI. During the period in NEERI/Sweden each participant will discuss with his/her assigned Contact person to find ways to complete his/her particular project. Approximately one day of the course will be set aside for the individual project at NEERI & SMHI. When the course in Sweden is completed each participant shall continue to work with his/her individual project. The Contact person(s) will set aside time to, via e-mail and other ways of distance communications, discuss solutions, help drafting reports, suggest actions that need to be taken, etc. The outcome of the project shall be presented at the international seminar.

Who Should Participate?

The programme is designed for persons active within: thermal power plants, ministries, authorities (local/region/national), environmental institutes and research organizations, consulting firms and other industries. The participants shall have managing or key positions in their organizations. They shall also be well-acquainted with air pollution issues and have technical/natural science degree on university level or other relevant education. It is an advantage with more than one participant from the same organization or group of organizations. Only candidates with an official nomination by an appropriate authority or organization will be accepted. To achieve good gender balance women are encouraged to apply. The number of participants is limited to 25 only.

Language requirements

The training programme will be conducted in English (and in Hindi as well in India). Consequently, a good knowledge of the English language is required. An English language test shall be made with an official person in the home country of the applicant, unless the applicant can provide other documentation to support his/ her ability.

Application Process

Closing date for application is February 28, 2012.

The application shall be filled in on the special form attached to this invitation. A recent photograph and required information and documents shall also be attached to the application. Application forms can be obtained from the Programme Secretariat.

Each applicant shall provide a fax number and an e-mail address on the application form. The e-mail address will be used as a main way of communication among NEERI, SMHI and the participant. The completed application form shall be sent to the Programme Secretariat.

Applications submitted after closing date will not be considered. Applications missing the description of the individual project are considered as not valid.

As a part of the selection process NEERI/SMHI may contact you in order to complement your application, especially regarding the individual project. If you are selected, you will be notified by e-mail or fax before October 31, 2011. Once accepted, confirm participation to the Programme Secretariat within two weeks. An invitation letter will be sent out; containing additional information on the programme and the practical arrangements.

Cost of Participation

INR 70,000/- per participant + Service Tax (as applicable)

The participation costs related to the stay in NEERI, India, Sweden and the international seminar, including all lectures, literature and documentation, study tours, local transports within the programme as well as general group insurance and some social activities will be covered. Also accommodation at NEERI, India and Sweden and full board will be covered in the charges.

National and international travel costs are **not** included. Each participant has to arrange funding for his/her own travel in India and for Sweden (from India to Norrköping, Sweden and back again). Personal expenses during the course in India & Sweden are also not included. Costs related to working with and realising the individual project during **Module 4** will be borne by the home organization.

International travelling

The participants are responsible for making their own travel arrangements in India and also to and from Norrköping, Sweden. Participants are advised to book return flights on the day of departure from Norrköping Airport or e.g. Arlanda Airport (Stockholm), and to have their flights confirmed before leaving home country for Sweden.

Accommodation

Guest House / hotel accommodation for the participants shall be arranged by the Programme Secretariat for the full duration of the programme in India and Sweden. Each participant will have a single room. Participants may not be accompanied by family members.

Visa

Participants are responsible for obtaining all visas necessary for their journey and stay during the training programme. The visa shall be valid for the whole period of the programme and the passport shall be valid for three months longer than the entry visa. Inquires shall be directed to respective Swedish Embassy/ Consulate alternatively other Schengen representation as soon as possible after acceptance to the programme.

Participants visiting other countries on their way to or from Sweden must ensure that correct visas are obtained before leaving home country, especially for countries not included in the Schengen agreement.

The costs for obtaining visas are carried by the participant. For more information, this website offers Swedish visa information: <http://www.migrationsverket.se/english.html>

Insurance

All participants are covered by a group insurance while in Sweden and during the regional seminar. This insurance includes medical care in the event of acute illness or accident. Medical and dental checkups are not included.

About the Training Programme Organizing Institutes

NEERI (CSIR) - National Environmental Engineering Research Institute

NEERI, a constituent laboratory of CSIR endeavors to provide Leadership in environmental science and engineering for sustainable development. NEERI dedicates itself in the service of mankind by providing innovative and effective solutions to environmental and natural resource problems.



AN ISO 9001:2008 Organization

The R&D activities of the institute centre around environmental monitoring, modeling, biotechnology & genomics, system design and optimization, impact & risk assessment and policy. Increasingly, the institute performs advisory role for environmental management in industries, central/ state govt, ministries/boards, judiciary and represents in national/ international organizations and programmes.

NEERI's focus areas in Air Pollution are:

- Ambient Air Quality (AAQ) – Urban AQ data-bank, Source Apportionment Analysis, Analytical Techniques,
- Source Characterization, Emission Inventory, Air Quality Modeling, Cost Effective Control, Conservation and Delineation of Air Environment Management Plan
- Indoor Air Quality (IAQ) – VOCs, Monitoring, Health Impacts, Public Awareness and Training.

For more information on NEERI (CSIR), visit website: <http://www.neeri.res.in/>

Nagpur

Nagpur is second capital of Maharashtra and geographically in the centre of India. It has mostly dry weather with very less humidity in most of the seasons except monsoon. It is well linked by all the major means of transport and are easily accessible from the rest of the country. The city airport operates both domestic as well as international flights. The two important roads in the city are the NH 6 and 7. It has a railway junction which is situated on the railway routes of the south-eastern and the central parts of India thus linking it with many major places of India.

About SMHI - the Swedish Meteorological and Hydrological Institute

SMHI is a government agency dealing with oceanography, hydrology and meteorology, acting under the auspice of the Ministry of Sustainable Development. The original



activities of the institute centre around public requirements of forecasting, early warning, monitoring, research, and international co-operation. Operations include data acquisition networks, supercomputing facilities, laboratories, ships and representation in international organizations and programmes.

Increasingly, SMHI performs commercial services to meet weather and water related information needs within the sectors of construction, energy, environment, media, retail and transport. More than half of the total annual turnover derives from business activities in Sweden and abroad.

For more information on SMHI, visit website: <http://www.smhi.se/>

Norrköping

Norrköping is situated 170 km south of Stockholm and has 120,000 inhabitants. The climate of Norrköping in February is milder than in other places of corresponding latitudes but still temperatures below freezing can be expected. Typical features in the Swedish weather are constant changes. Average temperature in Norrköping in February is -3°C. The average total amount of rainfall is 30 mm in January and 40 mm in February.

Contact Persons

Patron:

Dr. S.R. Wate

Director, NEERI, Nagpur - 440 020

Email: director@neeri.res.in

Mentors:

Dr. C.V.C Rao

Chief Scientist and Head, Air Pollution Control Division, NEERI, Nagpur - 440 020

Email: cvc_rao@neeri.res.in

Dr. (Mrs.) Anjali Srivastava

Chief Scientist, NEERI Hyderabad Zonal Lab, Hyderabad, Andhra Pradesh, India

Email: a_srivastava@neeri.res.in

Programme Coordinators:

Er. (Mrs.) B. Padma S. Rao

Senior Principal Scientist, Air Pollution Control Division, NEERI, Nagpur - 440 020, Email: ps_rao@neeri.res.in

Dr. S.K.Goyal

Principal Scientist, Air Pollution Control Division, NEERI, Nagpur - 440 020
Email: sk_goyal@neeri.res.in
Tele-fax: +91 712 2249895/ 2249900

Sweden

Coordinator

Dr. Joakim Langner

Swedish Meteorological and Hydrological Institute
+46 11 495 84 50
+46 11 495 80 01
joakim.langner@smhi.se