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CEE
Centre for Environment Education

Report on State level training programs for wastewater treatment technicians and helpers



Co-Sponsors



State level training program for wastewater treatment technicians and helpers

Abbreviations

CEE: Center for Environment Education

CETP: Common Effluent Treatment Plant

CIPET: Central Institute for Plastic Engineering & Technology

CPCB: Central Pollution Control Board

EMG: Environment Management Group

EMS: Environment Management System

ETP: Effluent Treatment Plant

GESCSL: The Green Environment Services Co-op. Soc. Ltd

GIDC: Gujarat Industrial Development Corporation

GPCB: Gujarat Pollution Control Board

HWM: Hazardous Waste Management

IIT: Indian Institute of Technology

L.D.C.E.: L. D. College of Engineering

MEE: Multiple Effect Evaporator

MoEFCC: Ministry of Environment, Forest & Climate Change

NCL: National Chemical laboratory

NIA: Nandesari Industries Association

NIO: National Institute of Oceanography

NIOH: National Institute of Occupational Health

PIL: Pandesara Infrastructure Ltd.

PPE: Personal Protective Equipment

SCGJ: Skill Council for Green Jobs

SDG: Sustainable Development Goals

TSDF: Treatment, Storage Disposal Facility

UNEP: United Nations Environment Program

UPL: United Phosphorous Ltd.

UNESCO: The United Nations Educational, Scientific and Cultural Organization

VIA: Vatva Industries Association

ZLD: Zero Liquid Discharge

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Acknowledgment

The Environment Management Group (EMG), CEE, Ahmedabad is truly thankful to GIZ, Germany especially Mr. Raghubabu (Project director), Mr. Tushar Jani (Technical Advisor) and Ms. Alokandana Nath (Technical Advisor) for restoring faith in CEE and assigning the training project of training for the workers and helpers of ETPs/CETPs at three different locations in the state of Gujarat.

CEE approached different CETP operating authorities of Gujarat and it was decided to conduct three training programs at the following locations,

- 1) Vatva Industries Association (VIA), GIDC-Vatva, Ahmedabad
- 2) Nandesari Industries Association (NIA), GIDC-Nandesari, Vadodara
- 3) South Gujarat Textile Processors Association (SGTPA), GIDC-Pandesara, Surat

CEE is deeply thankful to Shri Shankarbhai Patel (Chairman, GESCSL) and Shri Deepak Davda (CEO, GESCSL) for providing necessary assistance to CEE by arranging participants from their society members, using their facilities and arranging site visit of Vatva CETP.

CEE further conveys sincere thanks to Shri Babubhai C. Patel (Chairman, NIA), Shri Bharatbhai Shah (President, NIA) and other members of Nandesari Industrial Association for supporting us enthusiastically in steering the training program for helpers and operators of ETPs/CETP.

CEE is also grateful to Shri Jitendra Vakharia (President, SGTPA), Shri Kamalbhaji Tulsiyan (President, PIL) and other members of SGTPA and PIL for showing enthusiasm and extending necessary support for this training program.

CEE conveys sincere thanks to all the experts from reputed institutes and organizations like Central Pollution Control Board, Gujarat Pollution Control Board, SVNIT, L. D. College of Engineering, M. S. University, UPL, Ramans Pvt Ltd, GESCSL, E-Coli Waste Management Pvt. Ltd., National Institute for Occupational Health, Enpro Consultancy Ltd., Naik & Associates, Clean Enviro Consultancy Ltd. & others for agreeing to be the resource persons, sharing their knowledge & experience and making these training program highly successful.

I am also truly thankful to my following team members who have put very hard work while conducting these training programmes at different places.

- Mr. Vipul Patel, APO,
- Ms. Ketki Gadre, POC,
- Mr. Ketan Umaraliya, PO,
- Mrs. Lekha Rajan, Office Assistant
- Mr. Ramdev Pandey, Supporting staff

J. K. Vyas

Head, Environment Management Group

Centre for Environment Education, Ahmedabad.

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(Head, Environment
Management Group-
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Mr. Paresh Mevawala
(Director, Enpro
Consultants Pvt Ltd -
Surat)



Mr. B. R. Naidu
(Zonal Officer, Central
Pollution Control Board-
Vadodara)



Mr. Navin Patel
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Dr. A. K. Jha
(Scientist B, Central
Pollution Control Board-
Vadodara)



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(Professor, SVNIT-
Surat)



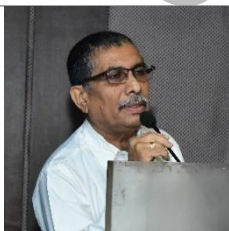
Dr. Pratik Bharne
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Dr. Yagnesh Naik
(BBS trainer & safety
auditor-Surat)



Dr. B. Y. Rathod
(Former S.E.S. Gujarat
Pollution Control Board)



Mr. L. K. Dungrani
(Former Dy. Director
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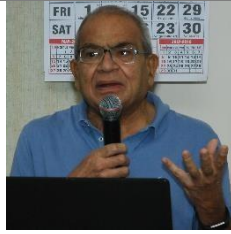
Mr. Munjal Parikh
(S.S.O. MANTRA-
Surat)



Dr. Sachin Parikh
(Head,
Chemical Engi. Dept.,
L.D.C.E. - Ahmedabad)



Mr. Babubhai Patel
(Chairman, NIA
Vadodara)



Mr. Samir Choksi
(Director, Ramans
Consultancy Pvt. Ltd.
Ahmedabad)



Mr. Deepak Davda
(CEO, GESCSL-
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**Dr. Avinash
Pagdhune**
(Scientist B, NIOH
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(Former SES, Gujrat
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Mr. Prakash Vaghela
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Mr. Ritvij Patel
(Plant Manager,
GESCSL-
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Mr. Upendra Patel
(Prof. Civil Engg. Dept.
MSU-Vadodara)



Mr. Niraj Shah
(RO, GPCB-Vadodara)



Mr. Parmeshwaran
(Consultant and
advisor-Environment
Bharuch)



Schedule of Trainings:

- First training program was conducted at Vatva, Ahmedabad from 19 to 21 June 2018. The detailed report was submitted to GIZ on June 29, 2018.
- The second training program was conducted at Nandesari, Vadodara from 26 to 28 September 2018. The detailed report was submitted to GIZ on October 5, 2018.
- The last training program was conducted at Pandesara, Surat from 11 to 13 December 2018. The detailed report of this training at SGTPA, Surat placed on p- 26 to p- 35 .
- The recommendations from CEE after organizing and conducting three successful training programs at different locations across the state of Gujarat.

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The Report on State level Training Program for Wastewater Treatment Plant Technicians and Helpers

VIA, AHMEDABAD



ACKNOWLEDGEMENT

The Environment Management Group, CEE, Ahmedabad is indeed thankful to GIZ especially Mr. Raghubabu (Project director), Mr. Tushar Jani (Technical Advisor) and Ms. Alokandana Nath (Technical Advisor) for restoring faith in CEE and assigning training project of training for the workers and helpers of ETPs/CETPs at three different location in the state of Gujarat.

The Environment Management Group, CEE, Ahmedabad is also thankful to Shri Shankarbhai Patel (Chairman, GESCSL), Shri Deepak Davda (CEO, GESCSL) and other staff members of the Green Environment Services Co-op. Service Ltd. for supporting us wholeheartedly in conducting the training program for helpers and operators of ETPs/CETP.

We further like to thank all the resource persons from CPCB, GPCB, NIOH, L. D. College of Engineering & Directors of Ramans and E-Coli Waste Management Pvt. Ltd. and others.

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Submitted to GIZ

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The Report on State level Training Programme for Wastewater Treatment Plant Technicians and Helpers

Background

The Gujarat state has large number of polluting industries situated all along the golden corridor and at other places. These units have established Effluent Treatment Plants (ETP) to treat their effluent. Many industrial estates have Common Effluent Treatment Plants (CETP) to treat the partially treated wastewater from the member units. Unfortunately, majority of the operators of these ETPs/CETPs do not have essential qualifications and experience, are semiskilled/unskilled and do not have adequate knowledge regarding operation and maintenance of ETPs/CETPs. This, together with very complex nature of the effluent from member units has resulted in deviation of the norms in respected of quality of treated effluent at the out let from the prescribed standards by GPCB.

CEE was established in 1984 as a 'Centre of Excellence' of the Ministry of Environment Forests and Climate Change, (MoEF&CC) Government of India, CEE targets to improve public awareness and capacity building with the support of enforcing agencies through interaction with the stakeholders and encourage the conservation and sustainable use of natural resources. Further, it also aims for improved environmental compliance leading to a better environment and improvement in the quality of life. CEE works at the international and national level through regional offices and several State offices. CEE has organized several International conferences on Education as a driver for Sustainable Development Goals (SDGs) with UNEP, UNESCO and Government of India. CEE develops interpretation centers and mobile exhibitions. For MoEF&CC, CEE has designed and developed exhibitions mounted on a train; the "Science Express: Biodiversity Special (2012) and "Climate Change" Special (2015).

The EMG Group at CEE undertakes activity on execution of diverse projects and acts as advisory for techno/legal aspects. It helps industries, local bodies, institutions and communities on scientific hazardous/solid/ E-waste Waste management, Wastewater treatment, ETPs/CETPs upgradation and better Environmental compliance. It also assists industries for Sustainable/Eco industrial development, Environmental monitoring, Waste to wealth of different industrial wastes, Subjective and Technical document preparation for industries, certification of hospitality industry and training and capacity building of stockholders.

CEE and GIZ therefore decided to organize training programmes for the operators and helpers of ETP/CETP to make them aware about the fundamental aspects of operation and maintenance of ETP/CETP. It was strongly believed that the training would assist them to a cost effective operation, improved performance and abatement of environmental pollution.

CEE discussed this matter with the Green Environment Services Co-op. Service Ltd (GESCSL) that is located in GIDC Estate in Vatva, Ahmedabad. GESCSL runs a Common Effluent Treatment Plant (CETP) and operates a common facility (NOVEL spent acid management project) for treatment of acidic effluent generated from the industries. The society agreed to impart training to the operators and helpers of their members and to their own operators and helpers, accordingly the training was scheduled from 19th to 21st June, 2018 at VIA hall in GIDC estate Vatva, Ahmedabad.

Objective

The aim of this training is to raise the awareness and develop the skills of helpers and operators of ETPs/CETPs using the knowledge and experience of the resource persons who are experts in this field. It is expected that this would improve their skill and performance leading to enhanced compliance and improved environmental pollution control. It would further help them to understand the aspects of health and safety in a better way.

Methodology

The EMG of CEE acted as an expert agency and also brought expert resource persons from the other parts of state. Following resource persons were invited by CEE to conduct technical sessions. The training schedule is attached as **Annexure-1**.

The list of resource persons

Shri J. K. Vyas (Head, Environment Management Group-CEE)

Shri B. R .Naidu (Zonal Officer, Central Pollution Control Board)

Shri T. B. Shah (Regional Officer, Gujarat Pollution Control Board).

Shri Deepak Davda (CEO, GESCSL- Ahmedabad)

Shri Samir Choksi (Director, Ramans consultancy Pvt. Ltd)

Dr. Sachin Parikh (HOD, Chem. Engineering Dept., LDCE)

Shri S.M.Jha (Former SES, Gujarat Pollution Control Board)

Shri Prakash Vaghela (Director, ECWMP Ltd.)

Dr. Avinash Pagdhune (Scientist B, National Institute for Occupational Health).

Shri Manali Bhatt (Environment Engineer, Gujarat Pollution Control Board).

Shri Ritvij Patel (Plant manager, GESCSL).

Training

About sixty participants registered for the training. They were provided kit containing technical material for operation and maintenance of ETP/CETP. The entire training was spread into three days. First two days covered theoretical part and the last day included practical part in which all the participants were taken to witness the operation of CETP, MEE and spray drier. After evaluation on the final day, participants were provided with certificates for the training. Keeping in view the difficulties of the participants to understand the English language fully, the experts were requested to talk in either Gujarati or Hindi language only. All the participants were served breakfast and lunch on all three days during training.

Inaugural Session

In his welcome speech, **Mr. J. K. Vyas** welcomed all the participants, from different industries for taking part in training program. He informed participants about the importance of such training program for better, efficient and environmental friendly performance of the industry. He also briefed them about valuable assistance provided by the GIZ.

Mr. Shankarbhai Patel, Chairman, the Green Environmental Services Co-operative Society Ltd., stated that he had created a monitoring team for checking adequacy and current situation of ETPs, for all the 500

Industries in GIDC Vatva who are the members of CETP. Transparency is the key factor, in monitoring effluents discharging into CETP from all the industries in Vatva. He expected that this training will led to the improvement in the performance of ETPs/CETP.

Mr. B.R. Naidu, Scientist E and in charge Zonal office Vadodara, Central Pollution Control Board, stated that it is our collective and collaborative responsibility towards betterment of environment. He also said that we are lacking in skilled manpower and briefed about the Green Skilled Development Plan launched by the central government. He further said that such training on regular basis are necessary for betterment of environment.

Mr. N.M. Tabhani, Senior Environment Engineer & unit head Ahmedabad East, Gujarat Pollution Control Board, said that we are supposed to maintain the wholesomeness of the water and the water pollution is due to agricultural, domestic and industrial sector. He advised all the participants that they should take pledge for self-awareness towards environment and for most efficient running of ETPs that will eventually reduce CETP working cost.

Mr. Kartikeya Sarabhai, Director CEE, stated that the word 'pollution' may be eliminated because, as such there is nothing like waste in the nature and explained about the concept of circular economy and producing zero waste. He suggested that if we can rename CETP to Common Recovery Treatment Plant and try to recover valuable products if possible. He added that some powers might be given to the associations for action against the erring units. He also emphasized on creating awareness among the stakeholders and developing of skilled manpower with collaboration with GESCSL, CEE, CPCB and GPCB.

Technical Session (DAY-1)

Following the inauguration session Shri J. K. Vyas conducted first technical session. In his detailed presentation, he briefed the participants about the history of CETP and major provisions of the Water Act 1974. He further discussed about some important and landmark court cases and their outcomes from his work experience.

Shri B. R. Naidu informed participants about the concept, advantages, planning of CETP and selection criteria of technology in CETP based on the characteristics of effluent.

Shri T. B. Shah informed the participants about advanced techniques and methods of wastewater treatment plant and disposal of treated effluent.

Shri Deepak Davda, in his presentation, covered the concept of ZLD and advance methods in wastewater treatment plant as well as its important components of CETP.

In Q&A session, the participants raised questions related to their issues, which were answered by the respective resource person.

Shri Samir Choksi took the first technical session post lunch. In his presentation, he covered three stages of wastewater treatment and described about the key parameters observed in respective stages.

Dr. Sachin Parikh informed participants with different types of wastewater treatment methods.

In the Q & A, session the participants were answered their queries.

Technical Session (DAY – 2)

Shri S. M. Jha spoke about various sampling and analysis procedures, techniques and their importance in ETP/ CETP operation. He also explained the role of laboratory for ETP/CETP and in the industry as well.

Shri Ritvij Patel, in his address, informed participants about accidental avoidance, hazard identification and importance of reporting, to avoid accidents in industry.

Dr. Avinash Pagdhane gave very useful information about safe and healthy habits at wastewater treatment plant. He also explained why PPEs are necessary and their importance in the industry. He also demonstrated some first aid activity if someone meets with an industrial accident.

Ms. Manali Bhatt from Gujarat Pollution Control Board briefly educated participants about the provisions of the A.A.-81 and HWM rules 2016. She also briefed them about CTE/CC&A conditions mentioned in the documents issued to the industries.

Dr. Sachin Parikh explained recent trends in operation and maintenance of APC devices and its impact on CETP/ETP operation. He also talked about the working of various devices used in wastewater treatment.

Shri Prakash Vaghela briefed about the stages of treatment and importance of operation and regular maintenance of and its impact on CETP/ETP operation.

Q & A session was scheduled after the last lecture.

Field Visit (DAY – 3)

Last day of the training process was for field visits and evaluation purpose.

To begin with, a video on working of Common Effluent Treatment Plant (GESCSL) was shown to the participants. Mr. Ritvij Patel explained working of CETP to all the participants.

Participants were divided into two teams for the better learning experience from the actual site. One team was taken to understand working and operations in MEE and Spray Dryer. Mr. Jay Patel from the GESCSL guided all the participants and explained in detail about the process as well as operation of both these equipment. He answered all the queries raised by the participants during their field visit to their satisfaction.

Another team led by Mr. Ritvij Patel (Plant manager, GESCSL) was taken to see actual operation and working of Common Effluent Treatment Plant. He explained the steps of treatment conducted in CETP. He also briefed participants about the latest technology installed in GESCSL for the flow measurement and norms set by the Government. Participants visited laboratory of GESCSL to witness the actual demonstration of working of different lab equipment's and the procedure for wastewater sample testing.

Shri S. M. Jha gave practical demonstration of sample collection and method to find MLSS and MLVSS ratio. The lab technicians of GESCSL provided practical demonstration to measure various chemical parameters of wastewater.

Evaluation of participants

The participants were evaluated through a MCQ test and the quiz sheet to the participants was in mother tongue as well as in English. Satisfactory results of the evaluation test revealed that participants were able to understand the subjects to the acceptable level.

Feedback from the participants

- The participants were happy to note that the topics of presentations were explained in Gujarat/Hindi language and it was therefore easy to understand the subjects.
- The participants noted that the resource persons covered topics the relevant to the operation and maintenance of ETP/CETP.
- It was opined that this training helped them to be familiar with many important aspects of environment and ETP/CETP like, laws, standards, EMS, treatment processes/methods, safety and health aspects and use of PPEs, sampling and analytical procedure and methods of preservation, reduction in power consumption of the treatment system, their responsibilities and other aspects of ETP/CETP operation and maintenance.
- It was also commented that the two days theoretical sessions backed by the field visit to the CETP and its related system on the final day, helped them to understand the different theoretical aspects of the training in a better way.
- CETP operators/helpers felt that now since ETP operators have better knowledge about O & M of their ETP, it will help them to achieve their improved results and this may lead to enhanced of performance of CETP. They also asked for more such trainings in future.

Certificate

Shri Shankarbai Patel (Chairman, GESCSL), Shri Deepak Davda (CEO, GESCSL) and Shri J.K.Vyas (Head, EMG-CEE) issued certificates to the participants. The sample of certificate issued is attached as **Annexure-2**.

Photo Gallery

The photographs of the training sessions are at **Annexure-3**.

Presentations

All the presentations from the resource persons are attached to this report at **Annexure-4**.

Banner

The banners were exhibited at two prominent places at VIA complex. The digital banner was exhibited continuously in the auditorium. Please see **Annexure-5**.

Representatives of CEE, GESCSL and Participants



The Report on State level Training Program for Wastewater Treatment Plant Technicians and Helpers

NIA, Vadodara



ACKNOWLEDGEMENT

The Environment Management Group, CEE, Ahmedabad is truly grateful to GIZ especially Mr. Raghubabu (Project director), Mr. Tushar Jani (Technical Advisor) and Ms. Alokandana Nath (Technical Advisor) for restoring faith in CEE and assigning training project of training for the workers and helpers of ETPs/CETPs at three different location in the state of Gujarat.

The Environment Management Group, CEE, Ahmedabad conveys its sincere thanks to Shri Babubhai C. Patel (Chairman, NIA), Shri Bharatbhai Shah (President, NIA) and other staff members of Nandesari Industrial Association for supporting us enthusiastically in steering the training program for helpers and operators of ETPs/CETP.

We further like to thank all the resource persons from NIA, GPCB, CPCB, NIOH, MS University, UPI & and others.

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Ahmedabad

The report prepared by:

Vipul Patel, Associate Program Officer, EMG-CEE, Ahmedabad

Reviewed by:

J K Vyas, Head, EMG-CEE, Ahmedabad

Submitted to GIZ

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The Report on State level Training Programme for Wastewater Treatment Plant Technicians and Helpers

Background

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The EM Group at CEE undertakes activity on execution of diverse projects and acts as advisory for techno/legal aspects. It helps industries, local bodies, institutions and communities on scientific hazardous/solid/ E-waste Waste management, Wastewater treatment, ETPs/CETPs up gradation and better environmental compliance. It also assists industries for Sustainable/Eco industrial development, Environmental monitoring, Waste to wealth of different industrial wastes, Subjective and Technical document preparation for industries, certification of hospitality industry and training and capacity building of stockholders.

CEE and GIZ therefore decided to organize training programmes for the operators and helpers of ETP/CETP to make them aware about the fundamental aspects of operation and maintenance of ETP/CETP. It was strongly believed that the training would assist them to a cost effective operation, improved performance and abatement of environmental pollution.

CEE discussed this matter with the Nandesari Industrial Association (NIA) that is located in GIDC Estate in Nandesari, Vadodara. NIA runs a Common Effluent Treatment Plant (CETP) and operates a common facility, NECL for disposal of the hazardous waste generated from the industries. The society agreed to impart training to the operators and helpers of their members and to their own operators and helpers and an MoU was signed between CEE and NIA on April 30, 2018 and accordingly the training was scheduled from 26th to 28th September, 2018 at NIA hall in GIDC estate Nandesari, Vadodara.

Objective

The aim of this training is to raise the awareness and develop the expertise of helpers and operators of ETPs/CETPs using the knowledge and experience of the resource persons who are experts in this field. It is expected that this would improve their skill and performance leading to enhanced compliance and improved environmental pollution control. It would further help them to understand the aspects of health and safety in a better way.

Methodology

The EMG of CEE acted as an expert agency and also brought expert resource persons from the other parts of state. Following resource persons were invited by CEE to conduct technical sessions. The training schedule is attached as **Annexure-6**.

The list of resource persons:

Shri J. K. Vyas (Head, Environment Management Group-CEE)

Shri B. R. Naidu (Zonal Officer, Central Pollution Control Board- Vadodara)

Shri Niraj Shah (RO, Gujarat Pollution Control Board-Vadodara)

Shri Babubhai C Patel (Chairman, NIA-Vadodara)

Prof. Upendra Patel (M. S. University - Vadodara)

Dr. A. K. Jha (Scientist B, ZO, Central Pollution Control Board - Vadodara)

Shri S.M.Jha (Former SES, Gujarat Pollution Control Board)

Dr. P.N. Parmeshwan (Former UPL technocrat)

Dr. Avinash Pagdhune (Scientist B, National Institute for Occupational Health - Ahmedabad)

Dr. Pratik Bharne (Scientist D, ZO Central Pollution Control Board - Vadodara)

Training

About sixty participants registered for training. They were provided kit containing technical material for operation and maintenance of ETP/CETP. The entire training was spread into three days. First two days covered theoretical part and the last day included practical part in which all the participants were taken to witness the operation of CETP, MEE and spray drier. After evaluation on the final day, participants were provided with certificates for the training. Keeping in view the difficulties of the participants to understand the English language fully, the experts were requested to talk in Gujarati or Hindi languages only. All the participants were served breakfasts and lunch on all three days during training.

Inaugural Session

In his welcome speech, Mr. J. K. Vyas welcomed all the participants, from different industries for taking part in training program. He informed participants about the importance of such training program for better, efficient and environmental friendly performance of the industry. He also briefed them about valuable assistance provided by the GIZ.

Mr. Babubhai C Patel, Chairman NIA, stated the importance of the such training programme and quote the examples of those who had not engineering or graduate degrees but now a days those people are running the CETPs, ETPs, TSDF sites for encouragement of the participants. He further added some examples of the some court cases and their decisions. At last he expected that this training will led to the improvement in the performance of ETPs/CETP and thankful to GIZ and CEE for organizing such training programme for the helpers and technicians of the NIA.

Mr. B.R. Naidu, In-charge Zonal office Vadodara, Central Pollution Control Board, stated that the role and responsibilities of the enforcing agencies, Industries and Industrial Associations towards betterment of environment. He further said that such training on regular basis are necessary for capacity building of the helpers and technician, industrial development and betterment of environment.

Technical Session (DAY-1)

Following the inauguration session Shri B. R. Naidu informed participants about overview of the ETP/CETP operation and its inlet norms, issues and troubleshooting for the wastewater treatment. He further added about the importance of segregation of wastewater, issues regarding hazardous sludge management and challenges for the monitoring of online air/Wastewater monitoring system. NIA members, Naidu sir and other experts discussed a lot about the implementation of ZLD, salt generation after MEE and Spray dryer operation and Rule 9 of Haz. and other waste management rules 2016.

Shri J. K. Vyas in his detailed presentation, briefed the participants about the history of CETP and major provisions of the Water Act 1974. He further discussed about some important and landmark court cases and their outcomes from his work experience.

Shri Niraj Shah informed the participants about advanced techniques and methods of wastewater treatment plant and disposal of treated effluent.

Shri Babubhai C Patel, in his speech, covered the concept of hydrodynamic cavitation and advance methods in wastewater treatment plant as well as its important components of CETP.

In Q&A session, the participants raised questions related to their issues, which were answered by the respective resource person.

Shri Babubhai C Patel, briefly explain accidental avoidance, hazard identification and importance of reporting, to avoid accidents in industry. He further explains about the things to be taken care during the industrial operations and wastewater treatment especially in hydrodynamic cavitation.

Dr. Upendra Patel informed participants with different types of wastewater treatment methods.

In the Q & A, session the participants were answered their queries. The participants were shown the videos of 1) CETP operation and maintenance and 2) the plastic waste management and recycling.

Technical Session (DAY – 2)

Shri S. M. Jha briefed the participants about various sampling and analysis procedures, techniques and their importance in ETP/ CETP operation. He also explained the role of laboratory for ETP/CETP and in the industry as well.

Dr. Avinash Pagdhune gave very useful information about safe and healthy habits at wastewater treatment plant. He also explained why PPEs are necessary and their importance in the industry. He also demonstrated some first aid activity if someone meets with an industrial accident.

Shri Niraj Shah from Gujarat Pollution Control Board briefly educated participants about the provisions of the A.A.-81 and HWM rules 2016. She also briefed them about CTE/CC&A conditions mentioned in the documents issued to the industries.

Dr. A K Jha from Z.O. CPCB explained recent trends in operation and maintenance of APC devises and its impact on CETP/ETP operation. He also talked about the working of various devises used in wastewater treatment.

Dr. Pratik Bharne from Z.O. CPCB briefed about the stages of treatment and importance of operation and regular maintenance of and its impact on CETP/ETP operation.

Dr. P. N. Parmeswar covered three stages of wastewater treatment and described about the key parameters observed in respective stages.

Field Visit (DAY – 3)

Last day of the training process was for field visits and evaluation purpose. Mr. Mayur Patel explained working of CETP to all the participants.

Participants were divided into two teams for the better learning experience from the actual site. One team was taken to understand working and operations in NECL, a Hazardous Waste Treatment, Storage, and Disposal Facilities. Mr. Upendra from the NECL guided all the participants and explained in detail about the process as well as operation of TSDF site. He answered all the queries raised by the participants during their field visit to their satisfaction.

Another team led by Mr. Mayur Patel (Plant manager, NIA) was taken to see actual operation and working of Common Effluent Treatment Plant. He explained the steps of treatment conducted in CETP and demonstration of sample collection. Participants visited laboratory of NIA to witness the actual demonstration of working of different lab equipment's and the procedure for wastewater sample testing. The lab technicians of NIA provided practical demonstration to measure various chemical parameters of wastewater.

Evaluation of participants

The participants were evaluated through a MCQ test and the quiz sheet distributed to the participants was in mother tongue as well as in English. Satisfactory results of the evaluation test revealed that participants were able to understand the subjects to the acceptable level.

Feedback from the participants

- The participants felt that the training has helped them to increase their knowledge about the different aspects of treatment of wastewater and operation of ETP/CETP.
- Further, they also felt that during training, they were able to know about various causes of accidents and how to avoid it; they were also able to know about the use of personal protective equipment and the importance of safety and maintaining cleanliness.
- The participants were happy to note that the topics of presentations were explained in Gujarat/Hindi language and it was therefore easy to understand the subjects.
- The participants noted that the resource persons covered the topics related to the operation and maintenance of ETP/CETP and these topics were explained to their satisfaction.
- It was also commented that the two days theoretical sessions backed by the field visit to the CETP and its related system on the final day, helped them to understand the different theoretical aspects of the training in a better way.
- The participants felt that now that have better knowledge about O & M of ETP, it will help them to achieve their improved results and this may lead to enhanced of performance of ETP/CETP.
- The participants were of the opinion that such trainings shall be organized on a regular basis in future.
- The participants were quite happy with the overall arrangement of the training programme.

Certificate

Shri Babubhai C Patel (Chairman, NIA), Shri Bharatbhai Shah (President, NIA), Shri J.K.Vyas (Head, EMG-CEE) and other board members of NIA Shri Rajeshbhai Davane, Kamleshbhai Palan, Jayeshbhai Vishavadiya and Jayesh Jain and Vipul Patel of CEE issued certificates to the participants. The sample of certificate issued is attached as

Annexure-7.

Photo Gallery

The photographs of the training sessions are at **Annexure-8**.

Presentations

All the presentations from the resource persons are attached to this report at **Annexure-9**.

Banner

The banners were exhibited at two prominent places at NIA complex. The digital banner was exhibited continuously in the auditorium. Please see **Annexure-10**.

CEE-EMG

The Report on State level Training Program for Wastewater Treatment Plant Technicians and Helpers SGTPA, Surat



Environment Management Group | Centre for Environment Education | 20 December 2018

ACKNOWLEDGEMENT

The Environment Management Group, CEE, Ahmedabad is truly grateful to GIZ especially Mr. Raghubabu (Project director), Mr. Tushar Jani (Technical Advisor) and Ms. Alokandana Nath (Technical Advisor) for restoring faith in CEE and assigning training project of training for the workers and helpers of ETPs/CETPs at three different location in the state of Gujarat.

The Environment Management Group, CEE, Ahmedabad convey its sincere thanks to Shri Jitendra Vakharia (President, SGTPA), Shri Kamalbai Tulsian (President, PIL) and other staff members of South Gujarat Textile Processors Association for supporting us enthusiastically in steering the training program for helpers and operators of ETPs/CETP.

We further like to thank all the resource persons from SGTPA, PIL, CPCB, GPCB, MANTRA, SVNIT & others.

J K Vyas
Head, EMG-CEE,
Ahmedabad

The report prepared by:
Ketan Umaraliya, Project Officer, EMG-CEE, Ahmedabad

Reviewed by:
J K Vyas, Head, EMG-CEE, Ahmedabad

Submitted to GIZ

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The Report on State level Training Program for Wastewater Treatment Plant Technicians and Helpers

Background

The Gujarat state has large number of polluting industries situated all along the golden corridor and at other places. These units have established Effluent Treatment Plants (ETP) to treat their effluent. Many industrial estates have Common Effluent Treatment Plants (CETP) to treat the partially treated wastewater from the member units. Unfortunately, majority of the operators of these ETPs/CETPs do not have essential qualifications and experience, are semiskilled/unskilled and do not have adequate knowledge regarding operation and maintenance of ETPs/CETPs. This, together with very complex nature of the effluent from member units has resulted in deviation of the norms in respected of quality of treated effluent at the out let from the prescribed standards by GPCB.

CEE was established in 1984 as a 'Centre of Excellence' of the Ministry of Environment Forests and Climate Change, (MoEF&CC) Government of India, CEE targets to improve public awareness and capacity building with the support of enforcing agencies through interaction with the stakeholders and encourage the conservation and sustainable use of natural resources. Further, it also aims for improved environmental compliance leading to a better environment and improvement in the quality of life. CEE works at the international and national level through regional offices and several State offices. CEE has organized several International conferences on Education as a driver for Sustainable Development Goals (SDGs) with UNEP, UNESCO and Government of India. CEE develops interpretation centers and mobile exhibitions. For MoEF&CC, CEE has designed and developed exhibitions mounted on a train; the "Science Express: Biodiversity Special (2012) and "Climate Change" Special (2015).

The EM Group at CEE undertakes activity on execution of diverse projects and acts as advisory for techno/legal aspects. It helps industries, local bodies, institutions and communities on scientific hazardous/solid/ E-waste Waste management, Wastewater treatment, ETPs/CETPs up gradation and better environmental compliance. It also assists industries for Sustainable/Eco industrial development, Environmental monitoring, Waste to wealth of different industrial wastes, Subjective and Technical document preparation for industries, certification of hospitality industry and training and capacity building of stockholders.

CEE and GIZ therefore decided to organize training programs for the operators and helpers of ETP/CETP to make them aware about the fundamental aspects of operation and maintenance of ETP/CETP. It was strongly believed that the training would assist them to a cost effective operation, improved performance and abatement of environmental pollution.

CEE discussed this matter with the South Gujarat textile Processors Association (SGTPA) and Pandesara Infrastructure Ltd. (PIL) which are located in GIDC Estate in Pandesara, Surat. PIL runs a Common Effluent Treatment Plant (CETP). The association agreed to impart training to the operators and helpers of their members and to their own operators and helpers of PIL and an MoU was signed between CEE and PIL on April 30, 2018 and accordingly the training was scheduled from 11th to 13th December, 2018 at SGTPA hall in GIDC estate Pandesara, Surat.

OBJECTIVE

The Gujarat state has large number of polluting industries situated in golden corridor and at other places. These units create water pollution and have therefore established Effluent Treatment Plants (ETP). Many industrial estates have Common Effluent Treatment Plants (CETP). Unfortunately, majority of the operators of these ETPs/CETPs do not have essential qualification and experience, are semiskilled/unskilled and do not have adequate knowledge regarding operation and maintenance of ETPs/CETPs. This has resulted in inefficient operation of such facilities and violation of the norms and spoiling natural resources like rivers/seas/streams/ponds etc.

The aim of this training is to stimulate the potential of workers and operators of ETPs, using the outputs developed by Sustainable Environmental-friendly Industrial Production (SEIP) and partners in order to improve worker's safety, professional careers, and environmental protection, as well as to make the operation of high quality environmental technologies more sustainable.

METHODOLOGY

PIL, who runs their Common Effluent Treatment Plant, was approached by CEE for conducting this training program for the workers and helpers of ETPs of their industrial association. CEE and PIL with the assistance of SGTPA decided to work together for imparting training and upgradation of the performance of their ETP workers and helpers. PIL and SGTPA agreed to carry out arrangement of participants and their adequate fees, infrastructure for conducting program and arranging site visit.

CEE had tied up with GIZ for imparting training program to operators and workers of ETPs. GIZ agreed to extend all the necessary assistance to conduct this training program.

CEE acted as an expert agency and brought all resource persons from the other parts of India.

Following resource persons were invited by CEE to conduct technical sessions

- **Mr. J. K. Vyas** (Head, Environment Management Group- CEE)
- **Mr. B. R. Naidu** (Zonal Officer, Central Pollution Control Board- Vadodara)
- **Dr. A. K. Jha** (Scientist B, Central Pollution Control Board- Vadodara)
- **Dr. Pratik Bharne** (Scientist D, Central Pollution Control Board- Vadodara)
- **Dr. B. Y. Rathod** (Former S.E.S. Gujarat Pollution Control Board)
- **Mr. Navin Patel** (CMD, Clean Enviro Projects Consultancy Pvt. Ltd-Surat)
- **Dr. K. D. Yadav** (Professor, SVNIT- Surat)
- **Dr. Yagnesh Naik** (BBS trainer & safety auditor-Surat)
- **Mr. L. K. Dungrani** (Former Dy. Director Industrial health & Safety)
- **Mr. Munjal Parikh** (S.S.O. MANTRA - Surat)
- **Mr. Paresh Mevawala** (Director, Enpro consultants-Surat)

CEE-EMG

SCHEDULE OF THE TRAINIG PROGRAM

Schedule for GIZ training programme

At SGTPA, Gate No.1, 2nd Floor, Vrajtal Mohanlal Dhamanwala Service Complex, 200, Udhana - Sachin Hwy, GIDC Pandesara, GIDC, Pandesara, Udhna, Surat, Gujarat 394221 from 11th to 13th December 2018

Day one-Inaugural session- 11/12/2018			
Registration and breakfast		9.00 am to 9.30 am	
Welcome Address by S/J.K. Vyas Head EMG CEE		9.30 am to 10.30 am	
Address by S/Jitubhai Chairman SGTPA			
Address by S/Kamalbai-Chairman PIL			
Address by S/R.V. Patel R.O. GPCB Surat			
Address by S/ B.R.Naidu-Z.O.- CPCB			
Technical sessions:			
Sr. No.	Topic	Resource person	Time
1	Discussion of CETP/ETP history and significant of provisions of the W.A.-74 and important court cases	S/J K Vyas, Head EMG-CEE	10.30 am to 11.10 am
2	O & M of CETP/ETPs as per CPCB guide lines and local requirements	S/ B.R.Naidu-Z.O.- CPCB	11.10 am to 11.50 am
3	Industrial Wastewater Treatment Plant	S/Munjil Parikh-S.S.O. MANTRA-Surat	11.50 am to 12.30 pm
4	Recent trends in operation and maintenance of APC Devises and its impact on CETP/ETP operation.	Dr. A. K. Jha, Scientist B, ZO CPCB Vadodara	12.30 pm to 1.10 pm
Q & A session			1.10 pm to 1.30 pm
Lunch (1.30 pm to 2.30pm)			
5	Wastewater Treatment Processes: challenges and remedial measures for textile & other sectors.	S/Paresh Mevawala Director Enpro Consultants Surat	2.30pm to 3.10 pm
6	Monitoring and Maintenance of Wastewater Treatment Plant and record keeping as per the statute	Dr. Pratik Bharne, Scientist D, ZO Vadodara CPCB	3.10 pm to 3.50 pm
High Tea break			3.50 pm to 4.10 pm
Q & A and Discussion session, short video film on environment			4.10 pm onwards
Day two-12/12/2018			
Breakfast		10.00 am to 10.30 am	
7	Sampling and analysis procedures, techniques, and their importance	Dr. B.Y. Rathod Former S.E.S GPCB	10.30 am to 11.10 am
8	Types of Wastewater Treatment methods	S/Navin Patel CMD Clean Enviro Projects Consultancy Private Limited Surat	11.10 am to 11.50 am
9	Work Safety and health at Wastewater Treatment Plant and use of PPEs	S/L K Dungrani, Former Dy. Director Industrial Safety & Health	11.50 am to 12.30 pm
10	Salient features of the A.A.-81, HWM Rules 2016 and CTE/CC&A conditions.	Dr Kunwar Durg Vijay Singh Yadav, Professor, SVNIT, Surat	12.30 pm to 1.10 pm
Q & A session			1.10 pm to 1.30 pm
Lunch (1.30 pm to 2.30pm)			
11	Wastewater Treatment Plant and its Components	S/Navin Patel CMD Clean Enviro Projects Consultancy Private Limited Surat	2.30pm to 3.10 pm
12	Measures for avoidance of accidents and their mitigation during ETP/CETP/PLANT operation and maintenance.	Dr. Yagnesh Naik Surat,BBS trainer and safety auditor.	3.10pm to 3.50 pm
High Tea break			3.50 to 4.10 pm
Q & A and Discussion session, short video film on environment			4.10 pm onwards
Day three-13/12/2018			
Breakfast		10.00 am to 10.30 am	
13	Field visit to CETP PIL to observe various unit processes/operations for environment management	Team CEE and PIL	10.30 am to 1.00 pm
Q & A and Discussion session			1.00 pm to 1.30 pm
Lunch			1.30 pm to 2.30 pm
14	Feedback from participants and their Evaluation through test	Team CEE and PIL	2.30 pm to 3.00 pm
15	Distribution of certificates and vote of thanks	Team CEE and PIL	3.30 pm to 4.30 pm
High Tea break			4.30 pm

TRAINING:

REGISTRATION

Training program started with the registration and verification of all the participants and providing them with a kit bag. 64 participants were registered. The breakfast session was followed by inauguration session. The list of the participants is attached at **annexure-11** photographs of registration is attached at **annexure-12**.

INAUGURAL SESSION

In his welcome speech Shri J. K. Vyas welcomed all the participants for taking part in training program. He informed participants about the importance of such training programs for better, efficient and environmental friendly performance of the industry. He also briefed about valuable assistance provided by the GIZ.

In his address, Shri Jitendrabhai Vakharia (President, SGTPA) thanked CEE and GIZ for conducting this training program for the members of their association. He added how this type of training programs are important for the industries in solving their problems and improve their performance.

Shri Kamalbhai Tulsian (President, PIL) congratulated all the participants for taking part in this training program jointly organized by GIZ and CEE. He also thanked GIZ and CEE and suggested more number of such training program should be held to address the issues of the industries. Photographs of the inaugural session is attached at **annexure-13**

Shri Kartikeya Sarabhai (Director, CEE) was not able to remain physically present in the inaugural session as he was out of the country but his recorded a video message was shown to the participants wherein he briefly outlined the training programme to the participants and requested them to get the maximum benefit of such programmes to achieve sustainable production. **Annexure-14**

On behalf of CEE and GIZ, all the dignitaries on the dais were presented with the memento, by Shri J. K. Vyas.

TECHNICAL SESSSION (DAY-1)

Following the inauguration session Shri J. K. Vyas conducted first technical session. In his detailed presentation, he briefed all the participants about the key provisions of the Water Act 1974 and important court cases from his work experience.

Shri B. R. Naidu informed participants about the operation and maintenance of ETPs and CETPs as per the guidelines given by Central Pollution Control Board and local requirements.

Next technical session was conducted by Shri Munjal Parikh. In his address to the participants, he gave detailed information about industrial wastewater treatment plant.

Thereafter, Dr. A. K. Jha, He briefed participants about the recent trends in operation and maintenance of Air Pollution Control Devices (APCD) and how the selection and establishment of APCD affects the performance of ETP/CETP operation.

After round of technical session, separate Q&A session was arranged, for solving queries of the participants.

Surat has Asia's largest Sewage treatment plant and 40 MLD of the treated sewage is used by the industries after treatment creating a win –win situation both for SMC as well as industries. A short video on working of the sewage treatment plant running in Surat was shown to the participants.

Shri Pares Mevawala informed the participants about wastewater treatment processes, challenges and remedial measures for textile & other sectors.

Last technical session of the day, was conducted by Dr. Pratik Bharne. In his brief address he informed participants about monitoring and maintenance of wastewater treatment plant and record keeping as per the statue.

Two sessions were followed by Q & A and discussion session wherein the experts answered the queries raised by the participants. Photographs of the technical sessions are attached at **annexure-15**.

TECHNICAL SESSION (DAY – 2)

Dr. B. Y, Rathod opened the training session and briefed them about various sampling and analysis procedures, preservation techniques and their importance in ETP/ CETP operation.

Shri Navin Patel, in his address, informed participants about the types of wastewater treatment methods, wastewater treatment plant and its component. Shri Patel discussed case study of CETPs at GIDC Dahej and Vapi.

Dr. Laxman Dungrani gave useful information about safe and healthy habits at wastewater treatment plant. He also explained the role and significance of use of PPEs.

Dr. K. D. Yadav educated participants about major provisions and salient features of the A.A.-81 and HWM Rules 2016 and CTE/CC&A conditions.

Since the 2018 year is dedicated to “Beat the plastic pollution” and India was the host country for this World Environment Day, a short video on plastic pollution was shown to the participants. Another video of forming vermi compost and fragrance sticks from the waste generated from temples located in Lucknow, Varanasi and Ganges was shown to the participants.

Dr. Yagnesh Naik informed participants about measures for avoidance of accidents and their mitigation during ETP and CETP plant operation and their maintenance. The Q & A session was scheduled after the last lecture.

On each day all the speakers were presented with a memento.

It was ensured by the CEE that all the practical as well as theoretical topics regarding operation and maintenance of ETPs/CETP as required by GIZ are covered in the technical sessions. CEE also ensured that all the speakers should deliver their lecture in either Hindi or a mother tongue Gujarati so that participants can understand more easily.

FIELD VISIT (DAY – 3)

Last day of the training process was assigned for field visits and evaluation purpose.

After breakfast, participants were welcomed by the CEO of Pandesara Infrastructure Ltd.

Participants were divided into two teams for the better learning experience from the actual site. One team was taken to understand working and operations of plant. Mr. Gaurang Parmar from PIL & CEE team members, guided all the participants and explained them in detail about the lab procedure. The questions raised by the participants were answered during this field visit.

Another team was led by Mr. Vijay Pal (Lab in charge, PIL). They went to see the laboratory of PIL. In the laboratory visit Mr. Pal demonstrated participants about various lab equipment, the procedure to collect samples for testing, about the different tests to be performed, how the tests are carried out and how the samples are preserved to ensure correct results. Photographs of the field visit is attached at **annexure-16**

EVALUATION

As per the evaluation process of the participants, a MCQ test of 25 question was conducted after the lunch. The participants appeared for the evaluation process. Questions were provided in Gujarati as well as in English.

Annexure-17

Top three scorers among all the participants who appeared for the evaluation test were awarded a special prize from CEE for encouraging them. **Annexure-18**

Names of the top three scorers were:

- 1) Mr. Shahbaz Mansuri (Sachin Infra Environment Ltd.)
- 2) Mr. Shwetal Gandhi (PEPL)
- 3) Ms. Urvi Desai (PEPL)

FEEDBACK

After the evaluation process, participants were asked to write their anonymous feedback in the page as well as best 3 speakers according to individual preference from all the technical sessions. **Annexure-19**

Mr. Shahbaz Mansuri from Sachin Infra Environment Ltd. said that they were satisfied by the planning and arrangement of technical sessions, as it covered almost all the areas of wastewater treatment and CETP operations. It was very easy for them to understand subjects as these were explained by the experts in Gujarati.

Mr. Shwetal Gandhi from PEPL suggested that this kind of training should be held on the field instead of auditorium. According to him live exposure just after the theoretical demonstration will have more effect on the participants.

Ms. Urvi Desai from PEPL suggested that there are some analytical processes which do not end in the span of 1 or 2 hours and it takes longer time to finish the process and to arrive at results. So a one day can be scheduled where participants can get an exposure to this kind of tests.

CERTIFICATE

After receiving feedback from the participants, the participants were felicitated with participation & completion certificate. S/Manish Agarwal (Director-SGTPA), S/Gulshan Chopra (Director -SGTPA), S/Ramanlal Patel (SGTPA), S/Mehul Desai (PR Executive-PEPL) and Shri J. K. Vyas (Head, EMG-CEE) presented certificates to the participants. **Annexure-20.**

VOTE OF THANKS

S/Manish Agarwal conveyed vote of thanks to GIZ Germany and CEE Ahmedabad on behalf of SGTPA and PIL for organizing this training programme. He also suggested that more number of such program should take place and more and more participants should take benefit of such training programs to enhance their work performance. He further added that SGTPA is prepared to assist CEE for conducting such programmes in future. **Annexure-21**

MEDIA COVERAGE

This event was briefly covered by the local newspapers as well as regional newspapers. **Annexure-22**

Presentations

All the presentations from the resource persons are attached to this report at **Annexure-23.**

Banner

The banners were exhibited at two prominent places at NIA complex. The digital banner was exhibited continuously in the auditorium. Please see **Annexure-24.**

Recommendations by CEE-Ahmedabad for Training programme by GIZ for ETP/CETP operators/helpers:

The Environment Management Group of CEE- Ahmedabad conducted three training programmes in the state of Gujarat each at GIDC-Vatva Ahmedabad, GIDC-Nandesari Vadodara and finally at GIDC-Pandesara Surat. EMG designed the training programme as per the requirements of SCGJ-New Delhi and GIZ-Germany incorporating all the components of wastewater treatment including safety and health by engaging experts from NIOH and other state government/private organizations. EMG further informed participants about the flavour of provisions the Water Act-74, the Air Act-81, some important conditions of Consent To Establish (CTE) and Consolidated Consents and Authorization (CC& A) and H.W.Management Rules-16 and 18 relevant exclusively to ETP/CETP operation and maintenance.

EMG-CEE has very good experience gained during conducting training and capacity building programmes in the field of environment management and sustainable industrial production. Such programmes are conducted since August 2015 in partnership with GPCB and NEERI and with technical support of renowned technical institutes/organizations like IITs, NIO,NIOH, NCL,CPCB,LDCE, CIPET,GCPC,SMC and such others. Based on the above, we have the following recommendations;

- There is a serious dearth of such training programmes not only in the state of Gujarat but also in all other parts of our country where there are polluting clusters and ETPs/CETPs. Therefore, such programmes shall be organized by all SPCBs on regular basis (at least twice in a year) with the support of MoEFCC/FED-GoG, Industrial Associations, CPCB and the expert agencies.
- The owners of industries/common facilities and their staff engaged for the purpose of environment management shall regularly organize, attend and encourage the training and capacity-building programmes conducted by different agencies and make themselves abreast with the latest developments in this field.
- The owners of industries/common facilities shall always aim for improved quality of environment and sustainable production in their facility, use less hazardous chemicals/equipment and avoid all unsafe conditions.
- The owners of industries/common facilities shall always try to implement the most advanced systems for their ETPs/CETPs for pollution control and environment management, which has considered and used aspects of safety and health for operators/helpers.
- Information about the flavor of provisions the Water Act-74, the Air Act-81, some important conditions of Consent To Establish (CTE) and Consolidated Consents and Authorization (CC& A) and H. W. Management Rules-16 and 18 relevant exclusively to ETP/CETP operation and maintenance shall be considered as the components of training. This component was added in all the three trainings.
- There shall be a regular evaluation of the participants who are already trained. The outstanding participants shall be duly rewarded.
- A small booklet containing major aspects of ETP/CETP in vernacular language be prepared and distributed to the participants
- Regular meetings/discussion with the trained operators/helpers and heads of common facilities after some time to get feedback about how the training has actually helped them in daily operation and maintenance of ETPs/CETPs shall be arranged and the outcomes be added as the part of training.
- The trainees shall be explained about the significance of segregation and demoisturizing of liquid/solid waste.
- The association/CFO can declare a special prize every year to the best operator of ETPs/CETPs to encourage and motivate him.
- The ETPs/CETPs areas shall be adequately ventilated and shall have adequate lighting.
- It is essential that the operators/helpers regularly use PPEs for their safety. The owners of industries/common facilities shall be made responsible to see that all necessary PPEs are provided, are effectively and regularly used, essentially they must target for '**Zero Accidents**'.

Future plan for sustainability

- EMG-CEE will be interested to continue the project as EMG has signed a MoU with GPCB and MoA with NEERI-Nagpur and Gujarat Chemical Association (GCA) Ahmedabad for organizing awareness and skill development programmes in the field of environmental pollution prevention and control.
 - The funds are raised in these programmes through the fees from participants, sponsors and associations.
 - We will ensure that some components of these operators training are included in these programmes. Further, we will be in constant touch with the common environmental facility operators (CEFO) and thus explore the possibility of organizing such individual programmes.
 - The Industries and Mine department – Govt. of Gujarat has a scheme for training as per the G.R. no GID-102014-922945-G dated 19th January, 2015 at item 2.0 scheme -1 has provision for financial assistance from the Government as per item 2.1 (10). Further item (4.0) scheme-3 sub item 4.1 (IV) has provision for getting finance from the Govt. for awareness and capacity building programmes.
 - Considering all the facts stated above, we see no difficulty in continuation of such training programmes in future
-

CEE-EMG