Facilitator Guide

Sector
Sanitation

Sub-Sector
Faecal Sludge Treatment

Occupation

Reference ID: 

Training of Faecal Sludge Treatment Plant Operation & Maintenance Technician
Skilling is building a better India. If we have to move India towards development then Skill Development should be our mission.
Why faecal sludge management?

In most of the urbanized areas in developing countries excreta are disposed of in facilities located on the housing plot itself. Whether these facilities are septic tanks, dry latrines, bucket latrines, communal toilets, or other types, they all accumulate faecal sludge, which needs to be removed periodically. If this sludge is not adequately managed, negative impacts on the urban environment and public health may result in:

- Environmental pollution is caused by effluents of not regularly de-sludged septic tanks pits
- Large amounts of faecal sludge removed from sanitation facilities are dumped indiscriminately into the environment due to lack of disposal facilities;
- Faecal sludge is used in an unhygienic way in agriculture because no sludge treatment is available.

All these problems can be avoided by proper management of faecal sludge, which may include adequate de-sludging of sanitation facilities, safe handling, and transport of sludge, treatment of sludge, and its safe disposal or reuse. Operating and maintaining the faecal sludge treatment plants (FSTPs) is an essential requirement for managing faecal sludge.

Faecal sludge treatment plants (FSTPs) require ongoing and appropriate operation and maintenance (O&M) activities in order to ensure long-term and efficient functioning. O&M activities are at the interface of the technical, administrative, and institutional frameworks that enable sustained FSTP function. “Operation” refers to all the activities that are required to ensure that an FSTP delivers treatment services as designed, and “maintenance” refers to all the activities that ensure long-term operation of equipment and infrastructure.

Background to preparation of the Trainers’ Handbook

Urban Management Centre (UMC) is the Technical Support Unit to support the National Urban Livelihood Mission of the Ministry of Housing and Urban Affairs (MoHUA). UMC is supporting preparation of Qualification Packs (QP) and National Occupational Standards (NOS) for work-force under the Faecal Sludge and Septage Management (NFSSM) Sector. One of the QPs is on FSTP operation and maintenance technician. The training for this QP will be done through a network of skill training providers. For this purpose, there is a need to prepare a training module for training organisations and a participants’ handbook.

For the purpose of developing content for the handbook and trainers’ manual, Consortium for DEWATS Dissemination Society (CDD Society) Bengaluru has been engaged. CDD Society is one of the leading organisations in the FSSM Sector. It has been instrumental in setting up India’s first stand-alone faecal sludge treatment plant (FSTP) in Devanahalli, Karnataka in November 2015. This has been one of the key milestones in FSSM Sector as it set an example for dedicated faecal sludge treatment plants in many towns of the country.
Training of Faecal Sludge Treatment Plant (FSTP) Operation & Maintenance Technician

What is the scope of this Trainers’ Manual?

This Trainers’ Manual is to be used in conjunction with the Participants’ Handbook for FSTP Operation & Maintenance (O&M) Technician. It is a step by step guidebook for the trainers to plan and deliver the sessions in training the O&M Technicians using the handbook as a key material. Also, the trainer can refer to relevant material outside the Participants’ Handbook wherever needed. This document has training information on skills, processes, and other information necessary to conduct training.

Who is this Trainers’ Manual for?

This manual intends to provide guidance to the trainers involved in training of faecal sludge treatment plant operations and maintenance technicians.

And how to use this Trainers’ Manual?

The Facilitator Guide has been prepared to serve as an aid to the trainers to train the FSTP operations and maintenance technicians. Each session has a session plan, methodology for training delivery, material required, brief explanation of what each session should convey and key references for the trainer in addition to the Participants’ Handbook. Overall, the trainer should keep in mind that the delivery of the session should be very simple and straightforward manner. Since the trainings are intended to impart practical skills to the O&M Technicians, the sessions delivery should be focused on direct application on the field.

Symbols Used

- Objectives
- Session Plan
- Key Outcomes
- Training Methodology
- Tips
- Learning Notes
- Key References
- Self Study
- Practical
- Excercise
- Timeline
- Ask
- Say
- Activity
Introduction

Key Learning Outcomes

At the end of this programme, you will be able to facilitate students to:

- Know each other and build rapport with fellow participants and the trainer
- Express the expectations and takeaway at the end of the course
- Learn and follow health and safety procedures
- Know responsibilities of FSTP O&M Technician
- Understand about carrying out day to day operations of FSTP
- Understand about carrying out routine maintenance of FSTP
- Aware of work effectively in a team
- Learn communication skills
- Understand employability & entrepreneurship skills
- Identify the abbreviations of FSTP and FSSM Value chain

Timeline

Total time needed for facilitation: 200 hours

- Theory: 60:00 hours
- Practical: 140:00 hours

Training Methodology

- Participant handbook
- Class room with audio video system
- Various videos related to FSTP
- White board
- Pen

Unit 1.1 General Guidelines for Trainers

General Guidelines

- Read the Trainers Guide carefully before conductiong the training. Familiarise yourself thoroughly with the domain knowledge as well as instructional style.
- Ensure familiarity with the local language and culture.
- Always enter the class at least 10 minutes before session is due to start.
- Ensure all material/aids/equipment required for the training and activities (as per checklist) is read and available, in advance.
- Carry out attendance check at the start of every session/day. Keep track of absentees.
- Ensure that all participants complete the required assessments. Maintain a careful record of assessment scores for every participant.
- Always encourage participants. Never discourage participants from actively engaging in discussions.
• Follow the lesson plan/session plan strictly.
• Ensure key learning are captured at the end of each session.
• Regularly check participant’s workbooks to ensure all exercises are being completed on time.
• Seek responses from participants on their experience, what they learnt and whether the learning objectives were met.
• How do you test understanding of concepts taught, at the end of each session? Reserve the last 5 to 10 minutes for a short test on the topic just covered. It could be in the form of multiple choice, true or false questions or a verbal quiz.

Sample Lesson Plan

• Room set up - Tables and chair which are comfortable for teaching
• Facilitation method - Scope and FSTP O&M Technician training

Unit 1.2 Icebreaker

Unit Objectives

At the end of this unit, you will be able to facilitate students to:
• Introduce themselves to each other
• Build rapport between students and with the trainer
• Create a better learning environment
• Relax and interact with fellow students more quickly

Activity

• Introduce yourself and other facilitators as facilitators of this course.
• Ask all of the participants to stand in a circle. Make sure they are not too far apart or too close together.
• Give the ball to any one person and ask him to throw it to someone else in the circle.
• The person who catches it says his name, few things about himself (hobbies, favorite things, etc.) and throws it to another person who does the same.
• As the ball moves around the circle, everyone in the group gets to learn one another's name.

<table>
<thead>
<tr>
<th>Skill Practice</th>
<th>Time</th>
<th>Resources</th>
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</thead>
<tbody>
<tr>
<td>Ice Breaker</td>
<td>0:30 min</td>
<td>Tennis Ball</td>
</tr>
</tbody>
</table>

Say

• Thank the students for their participation

Notes for Facilitation

• Motivate students by stating that they are going to achieve something great in their life.
• Promote all the students in a much positive note and do not allow anybody to share any negative stories
Unit 1.3 About the Programme

Unit Objectives

At the end of this unit, you will be able to facilitate students to:

- Know each other and build rapport with fellow participants and the trainer
- Talk about their expectations and takeaway after the course completion
- Carry out health and safety procedures
- Know responsibilities of FSTP O&M Technician
- Understand about carrying out day to day operation of FSTP
- Understand about carrying out routine maintenance of FSTP
- Aware of work effectively in a team
- Know communication skills
- Understand employability & entrepreneurship skills
- Identify the abbreviation of FSTP and FSSM Value chain
- Evaluate their calendar and learning plan

Explain

- Duties of FSTP O&M Technician
- Carrying out day to day operation of FSTP
- Carry out routine maintenance of FSTP
- Comply with health and safety procedures

Unit 1.4 About the FSTP O&M Technician

Unit Objectives

At the end of this unit, you will be able to facilitate students to:

- Discuss about overview on FSSM activities and FSTP
- Explain roles and responsibilities of a FSTP O&M Technician
- Evaluate day to day operations of FSTP
- Explain the routine maintenance of FSTP
- Explain the health and safety procedures
- Describe the personal attributes of FSTP O&M Technician

Say

- What do you understand by the term FSTP and various processes in the FSSM value chain
A set of National Occupational Standards (NOS), aligned to a job role, called Qualifications Pack (QP), would be available for every job role in each industry sector. These drive both the creation of curriculum and assessments. These job roles would be at various proficiency levels and aligned to the National Skill Qualifications Framework (NSQF). Example would be Qualifications Pack for job roles such as Septic Tank Technician, Desludging Operator, FSTP O&M Technician, Safai Karmacharis and Waste Pickers.
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**Training Methodologies**

**Annexure**

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1. Introduction

Session 1.1 - Introduction to FSSM
Session 1.2 - Introduction to FSTP and technologies overview
Self-study for the Chapter
Practical Session
Chapter 01: Faecal Sludge and Septage Management

1. Chapter Objective

This chapter intends to provide the participants:

- Basic understanding of faecal sludge and septage management
- Basic understanding of challenges in FSSM in the Indian cities
- Awareness about technical approaches in faecal sludge and septage management with examples.
- A clear understanding of the roles and responsibilities of Faecal Sludge Treatment Plant (FSTP) Operations & Maintenance Technician

1.1.1 Session Plan

<table>
<thead>
<tr>
<th>S. No</th>
<th>Activities</th>
<th>Time</th>
<th>Materials/methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Introductory video on FSSM</td>
<td>10.00 min</td>
<td>CDD video <a href="https://www.youtube.com/watch?v=4pQ0kXZmugk">https://www.youtube.com/watch?v=4pQ0kXZmugk</a></td>
</tr>
<tr>
<td>02</td>
<td>Introduction to Sanitation value chain and role of FSTP O&amp;M technician</td>
<td>60.00 min</td>
<td>PowerPoint Presentations, flipcharts, colour cards</td>
</tr>
<tr>
<td>03</td>
<td>Draw sanitation service value chain</td>
<td>30.00 min</td>
<td>flipcharts, colour cards</td>
</tr>
<tr>
<td>04</td>
<td>Introduction to FSSM and its components</td>
<td>40.00 min</td>
<td>PowerPoint Presentations, flipcharts, colour cards</td>
</tr>
</tbody>
</table>

Session time: 140 min

1.1.2 Key Outcomes of the session

At the end of this session participants will be able to:

- Explain the difference between non-sewered and sewered sanitation systems.
- Define Faecal sludge and septage management and List the five components of an FSSM/ sanitation service chain.
- Understand the importance of the role of FSTP Operation & Maintenance Technician

1.1.3 Training Methodology

The methodologies used for this session are:

- Visual information
- Powerpoint presentation
- Group discussion
- Use of flipchart
- Use of Videos
1.1.4 Tips for Trainers

- Refer to the Chapter 01 & 02 of the Participants’ Handbook of FSTP O&M Technician to detail out the session to prepare the pre-written flip charts. And if needed (optional), write the session learning outcomes on flipchart paper.
- Keep the session interactive and interesting by engaging the participants.

1.1.5 Learning Notes

Elements of the session include

1. **Introductory movie** - Visual information is easier to remember. It is the perfect way to start a session with an interesting movie. Make sure the copy of the movie from CDD introducing FSM is set in the computer. Try to play it before to avoid any last-minute technical issue.

2. **Introduction to Sanitation/FSSM value chain and the role of the FSTP O&M technician** – Lecture will provide the detailed introduction to Sanitation/FSSM value chain and the role to be played by FSTP Operation & Maintenance Technician in the value chain. Detail out the roles and responsibilities. Encourage them to ask questions about this. Explain that sanitation (or managing human excreta) is much more than building on-site sanitation technologies (like a latrine) and stopping people from open defecation. Sanitation requires an entire service chain, and people interacting at each step in the chain, rather than a single technology. The objective is to make them understand the bigger picture.

3. **Draw the sanitation/FSSM service value chain**: Divide the participants into groups and ask them to draw a sanitation/FSSM value chain. Instruct them to draw the sanitation/FSSM service chain components on the flip chart paper. Engage participants to discuss the terminology such as:

   - **User interface**: Toilet, slab, superstructure, latrine accessories (e.g., anal cleansing materials, a place to dispose of menstrual hygiene products, handwashing station). May also be called: User experience, toilet, or latrine.
   - **Containment**: On-site sanitation technologies need to include some type of pit (as per the CPHEEO norms), tank or chamber to safely collect and store human excreta until it is removed. Treatment may or may not occur in the containment. May also be called: human excreta storage. Note: User Interface and Containment together are referred to as an on-site sanitation technology.
   - **Collection and transport**: Semi-mechanized methods (such as gulper pumps, gobbler, screw auger etc.) or fully mechanized methods to remove faecal sludge and transport it (for example, vacuum trucks/cesspool vehicle). May also be called: emptying and transport.
   - **Treatment**: This refers to treatment after the faecal sludge is collected at the FSTP. It does not include the treatment that happens in the containment.
   - **Reuse or disposal**: May also be called end-use or resource recovery. Disposal is the return of faecal sludge to the environment, ideally in a way that poses less risk to the environment and public health. Disposal is sometimes described as the containment of faecal sludge on-site. This is not disposal – it is containment of faecal sludge.

Each group will present their work and Trainer will moderate the session.

4. **Introduction to FSSM and components**: Lecture will explain that faecal sludge management consists of the last three components of the sanitation/FSSM service chain. Participants will understand that the sanitation/FSSM service chain is a general term for both non-sewered and sewer sanitation. Ask “What is a sewer sanitation system? What is a non-sewered
sanitation system?” Define faecal sludge, septage, and sewage and explain the difference. Use the definition from the handbook. Define the roles and responsibilities of FSTP Operation & Maintenance Technician. Refer Chapter 01 of the Handbook for the same.

5. **Self-study**: Once the session is over, participants can take some time to go through the Chapter 01 of the Participants’ Handbook. After reading the session, the participants will go attempt the self-learning questionnaire.

### 1.1.6 Key references


### Self-study for the Chapter: 30 minutes

Once the session is over, you can address the queries from the participants.

**Self-study**: Once the session is over, participants can take some time to go through Chapter 01 of the Participants’ Handbook.

### Session 1.2 - Introduction to FSSM

#### 1.2.1 Session Plan

<table>
<thead>
<tr>
<th>S. No</th>
<th>Activities</th>
<th>Time</th>
<th>Materials/methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Introduction to various types of FSTP and different stages of faecal sludge treatment</td>
<td>40.00 min</td>
<td>PowerPoint Presentation, flipcharts</td>
</tr>
<tr>
<td>02</td>
<td>Introduction to nature-based treatment technology</td>
<td>30.00 min</td>
<td>PowerPoint Presentations, Video <a href="https://www.youtube.com/watch?v=9KsWLsxWZjk">https://www.youtube.com/watch?v=9KsWLsxWZjk</a>, <a href="https://www.youtube.com/watch?v=AkmC4TE54JY">https://www.youtube.com/watch?v=AkmC4TE54JY</a></td>
</tr>
<tr>
<td>S. No</td>
<td>Activities</td>
<td>Time</td>
<td>Materials/methods</td>
</tr>
<tr>
<td>-------</td>
<td>------------</td>
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<td>-------------------</td>
</tr>
<tr>
<td>03</td>
<td>Introduction to mechanized treatment technology</td>
<td>30.00 min</td>
<td>PowerPoint Presentations, <a href="https://www.youtube.com/watch?v=v-GIfMcQ_nw">https://www.youtube.com/watch?v=v-GIfMcQ_nw</a>, <a href="https://www.youtube.com/watch?v=BKPMhiNjmRI">https://www.youtube.com/watch?v=BKPMhiNjmRI</a></td>
</tr>
<tr>
<td>04</td>
<td>Group activity on case studies of various types of FSTP</td>
<td>30.00 min</td>
<td>PowerPoint Presentations, one-pager on each FSTP components/plant machinery, chart papers, bowl, marker/pens</td>
</tr>
</tbody>
</table>

Session time: 130 min

1.2.2 Key Outcomes of the session

At the end of this session participants will be able to:

- Understand the need for FS treatment and treatment principle, objectives and outcomes.
- Define faecal sludge treatment plant and the stages of treatment of faecal sludge.
- List the basic components or plant machinery of an FSTP corresponding to each stage of FS treatment.
- Understand the three different approach or technologies for FS treatment and its key features.
- Identify group components or plant machinery by treatment objectives to make a system.

1.2.3 Training Methodology

The methodologies used for this session are:

- Visual information
- PowerPoint presentation
- Group activity
- Film or video on a case study
- Flipcharts/Colour cards

1.2.4 Tips for Trainers

- Refer unit 2.2 of Chapter 2 of the Participants’ Handbook of FSTP O&M Technician to prepare an outline of your presentations and make sure to have more graphics (pictorial representations) than texts in your slide.
- Keep a flipchart to note down the queries raised by the participants which can be addressed at the end of the session.
- Make sure to download the videos in advance to avoid any last-minute technical glitch.
1.2.5 Learning Notes

Elements of the session include:

1. **Introduction to FSTP and different stages of faecal sludge treatment** – This lecture will establish the base of faecal sludge treatment. Enable discussion between participants by asking “what is the need to treat FS?” Explain the four main objectives of FS treatment and detail out the various stages where these objectives are met. The following process flow along with plant components will be revealed to the participants using PowerPoint slides:
   - Screening (screen and grit chamber)
   - Solid-liquid separation (settling tank/thickening tank, Imhoff tank, mMechanical dewatering: centrifuge, belt press, screw press; geobags, deep row entrenchment)
   - Stabilization of sludge (biogas digester, UASB, stabilization reactor)
   - Sludge dewatering (unplanted drying bed, planted drying bed, solar drying, mechanical dewatering: centrifuge, belt filter press, and geo-bags, mechanical conveyor belt dryer)
   - Pathogen removal (co-composting, pyrolysis, incineration, pasteurisation)

To review the learnings of the participants, ask the participants to remember and jot down the steps involved in FS treatment; this is then listed on the board.

2. **Introduction to nature-based treatment technology** – Lecture will provide the detailed introduction of two most commonly used nature-based treatment technologies i.e. planted drying bed and unplanted drying bed. Explain how they work and under what circumstances they can be used, you can take the examples given in the handbook. Play the video to explain the process flow of the treatment system.

3. **Introduction to mechanized treatment technology** – In continuation to the previous lecture, introduce the participants to the working principle, components and features of a mechanized treatment technology using PowerPoint slides and videos.

4. **Group activity**: This group activity will enhance the learnings of the participants and they will be able to take a decision on selection of technology, combinations of technology to make a system and compatibility of the available technologies with each other. Make sure the instructions are given in simple language. Print out the FSTP components and keep it ready for the group work.
   - Divide the participants into groups
   - Each group is provided with one-pagers and pictures of FSTP components
   - The groups are asked to paste the pictures of FSTP components in the right order of treatment to form a complete system

1.2.6 Key references

- **TIDE TECHNOCRATS** Thermal treatment for FSSM (2018) URL: https://www.tidetechnocrats.com/thermal-fsstp
Training of Faecal Sludge Treatment Plant (FSTP) Operation & Maintenance Technician


Self-study for the Chapter: 60 minutes

Once the session is over, you can address the queries from the participants.

**Self-study:** Once the session is over, participants can take some time to go through Chapter 02 of the Participants’ Handbook. After reading the session, the participants will go attempt the self-learning questionnaire.

Practical Session (16 hrs)

Once the session is over, you can address the queries from the participants.

**Self-study:** Once the session is over, participants can take some time to go through Chapter 02 of the Participants’ Handbook. After reading the session, the participants will go attempt the self-learning questionnaire.
2. Operation of faecal sludge management Plant

Session 2.1 - Day to Day operation of FSTP
Session 2.2 - Sampling at the FSTP
Session 2.3 - Monitoring of FSTP
Session 2.4 - Group Exercise
Self-study for the Chapter
Practical Session
Chapter 02: Operation of faecal sludge management Plant

2. Chapter Objective

This chapter intends to provide the participants the understanding the critical operation schedule of running the FSTP namely operational tasks, maintenance and monitoring activities.

2.1 Session 2.1 - Introduction to FSSM

2.1.1 Session Plan

<table>
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<th>Activities</th>
<th>Time</th>
<th>Materials/methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Introduction to operations and maintenance of FSTP</td>
<td>20 minutes</td>
<td>PowerPoint Presentation, Video by David Robbins</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><a href="https://www.youtube.com/watch?v=HCYTR6WldJw&amp;t=323s">https://www.youtube.com/watch?v=HCYTR6WldJw&amp;t=323s</a></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><a href="https://www.youtube.com/watch?v=tBg9xgSv2to">https://www.youtube.com/watch?v=tBg9xgSv2to</a></td>
</tr>
<tr>
<td>02</td>
<td>The procedure of receiving and off-loading of FS at the FSTP</td>
<td>45 minutes</td>
<td>PowerPoint Presentation, Sample of personal protective equipment</td>
</tr>
<tr>
<td>03</td>
<td>Question and answer session; give break if needed</td>
<td>20 minutes</td>
<td>Printed Questionnaire</td>
</tr>
<tr>
<td>04</td>
<td>Operating the FSTP machinery and equipment</td>
<td>120 minutes</td>
<td>Powerpoint presentation Process flow charts and pictures</td>
</tr>
<tr>
<td>05</td>
<td>Question and answer session; give break if needed</td>
<td>20 minutes</td>
<td>Printed Questionnaire</td>
</tr>
<tr>
<td>06</td>
<td>Nature of reporting O&amp;M activities and of end-products</td>
<td>45 minutes</td>
<td>PowerPoint Presentation</td>
</tr>
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<td>07</td>
<td>Housekeeping at FSTP</td>
<td>45 minutes</td>
<td>Flipcharts, PowerPoint Presentation</td>
</tr>
<tr>
<td>08</td>
<td>Inspection activities at FSTP</td>
<td>45 minutes</td>
<td>PowerPoint Presentation</td>
</tr>
</tbody>
</table>

Session time: 360 min

2.1.2 Key Outcomes of the session

At the end of this session participants will be able to:

- Understand the various steps to ensure FS is safely delivered into the FSTP.
- Understand the role of Operation and Maintenance technician in safe execution of the entire operational plan of FSTP.
- Define and explain the various treatment units/technologies and equipment.
- Understand safe handling and effective use of equipment to ensure treatment performance.
2.1.3 Training Methodology

The methodologies used for this session are

- Visual information
- PowerPoint presentation
- Group discussions

2.1.4 Tips for Trainers

- Refer Unit 3.1 and 3.2 of Chapter 3 of the Participants’ Handbook of FSTP O&M Technician to detail out the session.
- Keep the session very interactive by sharing examples and experiences of key insights of O&M from various cases.
- Make sure to that all the process flow charts and pictures are clearly visible. Refer to Annexure 1. Treatment Technologies for the sample.
- Since this session is very theoretical, conduct a 3-minute breathing exercise after 30 minutes to freshen up the participants.

2.1.5 Learning Notes

Elements of the session include

1. **Introduction to operations and maintenance of FSTP:** This lecture explains that long-term functionality of faecal sludge treatment plants depends on the ongoing and appropriate operation and maintenance (O&M) activities. Share pictures of unkept treatment plants and the effect on its treatment efficiency.

2. **The procedure of receiving and off-loading of FS at the FSTP:** This lecture gives a detailed description of the step by step procedure for receiving FS into the treatment plant irrespective of the size of the plant or the complexity of treatment technology. Along with the checklist of things to be done at FS receiving station, explain the Do’s and Don’ts and safety equipment required while carrying out the activities.

3. **Operating the FSTP machinery and equipment:** in this lecture, you should introduce the participants to

   - Description of them (Explain the working principle of each plant machinery through videos)
     - Screen and grit chamber
     - Settling and thickening tank
     - Imhoff tank
     - Geo bags
     - Deep row entrenchment
     - Biogas digesters
     - Up flow anaerobic sludge blanket reactor (UASB)
     - Stabilization reactor
     - Centrifuge
     - Belt filter press
     - Screw press
     - Planted/Unplanted drying bed
Solar drying
Co-composting
Mechanical conveyor belt dryer
Pyrolysis
Incineration
Anaerobic baffle reactor
Waste stabilization pond
Activated sludge process
Sequential batch process
Membrane bio-reactor
Pasteurization
Anaerobic filter
Constructed wetlands
Horizontal planted gravel filter
Polishing pond

- Description of equipment which are used for the upkeep of the FSTP such as
  - Rake/broom
  - Trowel
  - Bucket
  - Shovels
  - Personal Protective Equipment
  - Wire, sieve
  - Water pipes/hose
  - Screwdriver
  - Sludge measuring equipment
  - Desludging pumps, motors
  - Sampling tool
  - measuring tape
  - Garden scissors, sickle
  - Wheel barrow
  - Steel rod
  - Wheel chocks
  - Hammers
  - Pumps
  - Generators
  - Blowers
  - Compressors

- Rules for safe handling as Do’s and Don’ts

4. Nature of reporting O&M activities and of end-products: Reporting of daily activities is an integral part of the day to day operations. Explain how the reports can help in optimizing the plant performance. These structured reports give comprehensive information about the plant infrastructure, operations, employees and finance.

5. Housekeeping at FSTP: The lecture briefly explains the importance of maintaining cleanliness at FSTP and the schedule of housekeeping activities which are to be taken out daily/weekly/monthly or whenever it needed

6. Inspection activities at FSTP: The lecture briefly explains the following activities
- Inspection of inlet and outlets of treatment modules
- Inspection of the free flow of water in distribution pipes, percolation collection pipes and vent pipes
- Inspection of the condition of tools and equipment including safety equipment
- Inspection of the cleanliness of FSTP
  - To check if there is the growth of grass/weed in an around treatment units
  - To check if garbage bins are routinely emptied
  - To check the cleanliness of toilets and wash areas
  - To check if there is an accumulation of scum in the treatment unit
- Inspection of the treatment efficiency by checking sample reports weekly
- Inspection of all the light fixtures in FSTP: lighting in operator’s room, FSTP premises lighting etc.

The PowerPoint slides should include pictures of each inspection activity so that participants are familiar with the relevant location of FSTP that requires inspection.

### 2.1.6 Key references


### Session 2.2 - Sampling at the FSTP

#### 2.2.1 Session Plan

<table>
<thead>
<tr>
<th>S. No</th>
<th>Activities</th>
<th>Time</th>
<th>Materials/methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>A sampling of faecal sludge at FSTP</td>
<td>20 minutes</td>
<td>PowerPoint Presentation</td>
</tr>
<tr>
<td>02</td>
<td>Parameters to be tested</td>
<td>50 minutes</td>
<td>PowerPoint Presentation,</td>
</tr>
<tr>
<td>03</td>
<td>Testing the safety of incoming faecal sludge</td>
<td>50 minutes</td>
<td>During the demonstration, use all the sampling equipments such as a beaker, pH meter, thermometer, and personal protective equipment.</td>
</tr>
<tr>
<td>04</td>
<td>Sample collection for on-site</td>
<td>180 minutes</td>
<td>The demonstration should be given at a faecal sludge treatment plant. Use all the sampling equipments such as a beaker, pH meter, thermometer, Imhoff cone, electric conductivity meter, bottles and ice-box, and personal protective equipment.</td>
</tr>
<tr>
<td>05</td>
<td>Sample collection for laboratory</td>
<td>60 minutes</td>
<td></td>
</tr>
</tbody>
</table>

Session time: 360 min
2.2.2 Key Outcomes of the session
At the end of this session participants will be able to:

- Understand and apply the different type of samples to be collected and analyzed
- Collect, test, store and transport faecal sludge samples safely
- Follow the does and don’ts of sample collection for the different purpose

2.2.3 Training Methodology
The methodologies used for this session are

- Powerpoint presentation
- Demonstration at a classroom and at a faecal sludge treatment plant

2.2.4 Tips for Trainers
- Refer to Unit 3.3 of Chapter 3 of the Participants’ Handbook of FSTP O&M Technician to detail out the session.
- This session is conducted best if done along with a site visit to an FSTP site. Try to arrange for this.
- Keep the equipment ready
- In case of a classroom demonstration for the safety of the faecal sludge, please keep the samples ready in a beaker.

2.2.5 Learning Notes
The element of the session includes:

1. A sampling of faecal sludge at FSTP – This lecture explains what are the activities to be undertaken as a part of a sampling of faecal sludge, why is it necessary to sample faecal sludge and what are the different types of samples to be collected.

2. Parameters to be tested – This is a theory session. Explain the parameters to be tested for testing the safety of the faecal sludge for disposal at the faecal sludge treatment plant and on-site parameters. It is enough to list down the parameters to be tested at a laboratory set-up.

3. Demonstrations of collecting and testing different types of samples – This demonstration is to show the step-by-step process of collecting samples for testing safety, testing on-site parameters and sending for laboratory analysis. This demonstration should be ideally conducted at a faecal sludge treatment plant. In case of unavailability of a faecal sludge treatment plant, a classroom demonstration can be conducted. But it is possible only for demonstrating testing the safety of the faecal sludge for disposal at a faecal sludge treatment plant. Explain the Do’s and Don’ts and safety equipment required while carrying out the activities. Participants will get a chance to do it individually at the site.
2.2.6 Key references

  URL: https://www.cseindia.org/scoping-paper-development-and-validation-8338

Session 2.3 - Monitoring of FSTP

2.3.1 Session Plan

<table>
<thead>
<tr>
<th>S. No</th>
<th>Activities</th>
<th>Time</th>
<th>Materials/methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>What are monitoring activities</td>
<td>20 min</td>
<td>PowerPoint Presentation</td>
</tr>
<tr>
<td>02</td>
<td>Things/Equipment to be monitored</td>
<td>30 min</td>
<td>PowerPoint Presentation</td>
</tr>
<tr>
<td>03</td>
<td>Sample logbook and manifest forms</td>
<td>30 min</td>
<td>Photocopies of sample logbook and manifest forms</td>
</tr>
</tbody>
</table>

Session time: 360 min

2.3.2 Key Outcomes of the session

At the end of this session participants will be able to:

- Differentiate between operational activities and monitoring activities.
- Understand the importance of monitoring activities.
- Understand the procedure for filling the log book and manifest forms.
- Define and explain the operations of essential plant machinery and equipment.
- Understand safe handling and effective use of plant machinery and equipment to ensure treatment performance.

2.3.3 Training Methodology

The methodologies used for this session are

- Powerpoint presentation
- Group discussions

2.3.4 Tips for Trainers

- Refer to Unit 3.5 of Chapter 3 of the Participants’ Handbook of FSTP O&M Technician to detail out the session.
- Make sure to keep the photocopies ready and have it distributed before the start of the session.
- The photocopies of samples of logbook reports and manifest forms will keep the participants interested and it can also be used to cross-reference during the lecture.
Elements of the session include

1. **What are monitoring activities**: Explain that maintenance of FSTP is not just about understanding the treatment process and performance requirements but it should also include a monitoring procedure that requires specific planning, infrastructure (e.g. laboratory), employees, and finance. Monitoring activities will assist FSTP technicians in collecting and organizing the data that is required, relevant, and accurate.

2. **Things to be monitored**: This lecture will include the description on the following points
   
a. Monitoring of physical, chemical and biological parameters
      • Explain the different kinds of parameters such as:
        - **Physical parameters**:
          - Turbidity
          - Colour
          - Odour
          - Total suspended solids
          - Temperature
          - Electrical conductivity
        - **Chemical parameters**:
          - pH
          - Biological Oxygen Demand (BOD)
          - Chemical Oxygen Demand (COD)
          - Ammoniacal nitrogen
          - Phosphate
          - Nitrates
          - Settleable sulphates
        - **Biological parameters**:
          - Helminths
          - E-coli
          - Total coliforms
      • Explain that it is necessary to maintain the records of these parameters from the samples taken at the inlet and outlet of the faecal sludge treatment plant and at each module within the treatment plant. Test-results of on-site and laboratory analysis should be carefully maintained as these are essential documents to monitor and improve the performance of a treatment system.
   
b. Monitoring of daily operational activities, emergency response activities, maintenance activities
   
c. Monitoring of load reception reports
   
d. Monitoring of treatment operations at each stage of treatment
   
e. Monitoring of plant security and safety
   
f. Monitoring of FSTP finances

3. **Sample logbook and manifest form**: Participants will be given samples of logbook sheet and manifest form to expose them to the format of reporting. Explain that such written documents will be frequently referred to for identifying previous fluctuations in the operation of the facility and operational problems that may recur periodically, review the effectiveness of mitigation measures that may have been used to correct past operating problems, and optimize the O&M procedures.
2.4 Group Exercise

This group exercise is for reference. The trainer can write about cases on all various operational issues at FSTPs. The participants are divided into groups of 4 people each. Give one case study to each group. Below is the session plan.

<table>
<thead>
<tr>
<th>S. No</th>
<th>Activities</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Explaining the cases</td>
<td>5 minutes per case</td>
</tr>
<tr>
<td>02</td>
<td>Demonstration</td>
<td>10 minutes per case</td>
</tr>
</tbody>
</table>

Case 1

It is 9:30 in the morning and truck operator Raju has arrived with a tank full of faecal sludge at the faecal sludge treatment plant. The load is from Vidyamandir College, established 6 months back. It has a 4 cubic meter concrete septic tank which is located at the end of the playground. Due to this, Raju could reach very close to the septic tank easily and desludge easily. He finished the entire desludging between 9:00 AM to 9:15 AM. The following are the details of Raju’s truck:

- Vehicle type: Suction
- Registration Number: KA01A0D9967
- Name of the driver: Raju
- Contact number: 998877756993
- Time of desludging: 9:00 AM

Activity:

Tasks for Group 1:
- List down the steps to be taken once the truck arrives at the FSTP
- Fill out the manifest form based on the details given above.

Tasks for Group 2:
- List down the tests to be conducted to accept or reject the sludge and parameters for on-site.
- Test the faecal sludge sample and decide whether to accept or reject the sludge

Case 2

Sundarpur FSTP has been operational for over a month. You are the O&M technician for the plant. You are receiving visitors to the plant tomorrow. There is the growth of weed around the treatment modules. Mosquito menace is also high at the plant.

Tasks for Group 3:
- List down how will you prepare the plant to before the visitors come.
2.4.1 Key Outcomes of the session

The participants will be able to get hands experience of filling out different types of forms needed for day to day operations and get an opportunity to clarify any doubts which may arise.

2.4.2 Training Methodology

- Hands-on exercise

2.4.3 Tips for Trainers

Refer to various tasks illustrated in the handbook to create more cases. This will give the opportunity to the additional participants to work hands-on. Make sure all the required items such as faecal sludge samples in a beaker, pH meter or strip, thermometer, manifest form, pen and paper, gloves etc. are in place.

Self-study for the Chapter: 100 minutes

Once the session is over, you can address the queries from the participants.

**Self-study**: Once the session is over, participants can take some time to go through Chapter 03 of the Participants’ Handbook. After reading the session, the participants will go attempt the self-learning questionnaire.

Practical Session (40 hrs)

Once this session is over, participants will be given hands on training for a week at faecal sludge treatment plants. Trainers will be monitoring the participants while they do on the job training. During this time, the participants should be able to:

- Understand the treatment technology of the plant
- Take part in the day to day operations of the treatment plant at all stages of the operation; from receiving the sludge to sampling to operating the plant specific equipments such as pumps, generators, blowers, compressors, control panels etc.
- Learn how to clean the receiving station and equipment in use
- Identify and use personal protective equipment as required in the treatment plant
- Perform documentation functions such as filling out forms, tables and reports.
3. Repair and Maintenance of FSTP

Session 3.1 - Repair and Maintenance of FSTP
Self-study for the Chapter
Practical Session
Chapter 03: Repair and Maintenance of FSTP

3. Chapter Objective

This chapter intends to make participants aware of the repair and maintenance schedules required to keep the FSTP in good working condition. The chapter includes common causes of failure of equipment, repair techniques and preventive maintenance for equipment.

Session 3.1 - Repair and Maintenance of FSTP

3.1.1 Session Plan

<table>
<thead>
<tr>
<th>S. No</th>
<th>Activities</th>
<th>Time</th>
<th>Materials/methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>The need for repair and maintenance work</td>
<td>40 min</td>
<td>PowerPoint Presentation</td>
</tr>
<tr>
<td>02</td>
<td>Common issues and corrective measures</td>
<td>60 min</td>
<td>Flipcharts, PowerPoint Presentation</td>
</tr>
<tr>
<td>03</td>
<td>Types of inspection activities</td>
<td>90 min</td>
<td>PowerPoint Presentation and/or video</td>
</tr>
<tr>
<td>04</td>
<td>Replacement of damaged equipment</td>
<td>90 min</td>
<td>PowerPoint Presentation</td>
</tr>
<tr>
<td>05</td>
<td>Handling of repair and maintenance tools</td>
<td>100 min</td>
<td>PowerPoint Presentation</td>
</tr>
<tr>
<td>06</td>
<td>How to prepare daily, weekly, monthly Logbook of replacement of damaged</td>
<td>60 min</td>
<td>PowerPoint Presentation</td>
</tr>
<tr>
<td></td>
<td>equipment and requirement of new equipment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>07</td>
<td>Maintenance training at the site</td>
<td>480 min</td>
<td>Practical training at the FSTP site</td>
</tr>
</tbody>
</table>

Session time: 920 min

3.1.2 Key Outcomes of the session

At the end of this session participants will be able to:

- understand the causes of equipment failure
- understand the need of documenting repair and maintenance activities
- undertake repair and maintenance work in a cost-effective and timely manner
- understand how to maintain a logbook of replacement of damaged equipment

3.1.3 Training Methodology

The methodologies used for this session are:

- PowerPoint presentation
- Group discussions
3.1.4 Tips for Trainers

- Refer Chapter 4 of the Participants’ Handbook of FSTP O&M Technician to detail out the session.
- The PowerPoint presentation should demonstrate the method of repair and maintenance task. This chapter is related to the previous chapter. Hence, you can use this as a revision session and compose specific questions related to the repair & maintenance activities to be taken up for each treatment module.

3.1.5 Learning Notes

Elements of the session include

1. **The need for repair and maintenance work**: The technician must understand how the equipment and treatment units work, what its limitations are, and what it can and cannot do. All of these are to be briefly explained. You should also explain the need for reporting faults and should include in discussions about repair and maintenance with staff and plant manager.

2. **Common issues and corrective measures**: Start the session by showing pictures of treatment units and equipment one by one and ask the participant to think of the kind of issues it may face. Then explain the corrective measures for each machinery or equipment. The PowerPoint presentation includes pictures that demonstrate a stepwise process of repair and maintenance work for each FSTP equipment. The list of treatment units or equipment covered are
   - Screen chamber
   - Filter media in treatment modules
   - Wastewater pipes
   - Pumps and motors
   - Valve
   - Sand and carbon filter
   - Maintenance tools used for cleaning such as a rake, trowel, brooms, shovel, sieve, steel rod, and garden scissors
   - Sampling tools
   - Personal protective equipment
   - Control panels
   - Treatment modules

3. **Types of inspection activities**: participants should be trained to do the following preventive maintenance tasks on a regular basis:
   - Inspection of inlet and outlets of treatment modules
   - Inspection of free flow of water in distribution pipes, percolation collection pipes and vent pipes
   - Inspection of the condition of tools and equipment
   - Inspection of the condition of safety equipment and repair and replace as needed
   - Inspection the cleanliness of the plant
• checking for growth of grass/weed in an around treatment units and removing them
• checking if garbage bins are routinely emptied
• checking of the cleanliness of toilets and wash areas
• Inspection of accumulation of scum in treatment unit
• Inspection of the treatment efficiency by checking sample reports weekly.
• Inspection of all the light fixtures in FSTP: lighting in operator’s room, FSTP premises lighting etc.
• The session also covers the format for inspection report which is required to record the status of the machinery and equipment of FSTP

4. Replacement of damaged equipment: In this session, participants should learn the procedure of procurement of new supplies/machinery for the FSTP. You should explain the various factors that need to be considered before deciding whether to repair or replace any equipment or components of the treatment units. Explain the following steps for replacement of equipment/machinery:

• Inspection and evaluation of the equipment/tool/machinery
• Creating a notification of a malfunction
• Checking the warranty of the equipment, checking the availability of equipment in stock
• Discussion with plant manager for replacement or repair of equipment
• Releasing an order notice with permission of plant manager or in charge person
• Documentation of relevant details

5. Handling of repair and maintenance tools: Instil the importance of safe handling of repair and maintenance tools as they can pose a safety risk if they are misplaced or improperly handled by workers. You should explain rules of handling which are not specific to the type of tool and thus can be applied to anything they require on duty. These include:

• Basic do’s and don’ts when handling equipment
• cleaning of equipment
• safety procedure
• inventory i.e. stock-keeping of tools

6. Preparing repair and maintenance report: Explain the importance of keeping records of every repair as well as maintenance work carried out on any equipment and/or treatment unit and explain that it will also help in monitoring the status of the plant machineries and equipment. Share with them a sample of repair and maintenance form given in the handbook. Explain the method of filling the form in a stepwise manner explaining each component of the form.

7. Maintenance training at the site: Participants will be taken to FSTP site for one or two day where they will learn from experienced operator day to day maintenance of the FSTP.

Self-study for the Chapter: 100 minutes

Once the session is over, you can address the queries from the participants.

Self-study: Once the session is over, participants can take some time to go through Chapter 04 of the Participants’ Handbook. After reading the session, the participants will go attempt the self-learning questionnaire
Practical Session (35 hrs)

Participants will be assigned to FSTP’s for 4-5 days to get on the job training on the repair and maintenance schedules required to keep the FSTP in good working condition. During this time, the participants should be able to:

- Learn how to inspect for any maintenance requirements
- Perform routine plant specific maintenance task such as changing generator oil, applying grease etc.
- Learn the procedure of replacing equipment
- Learn maintenance related documentation
04: Health & Safety planning at FSTP

Session 4.1 - Health & Safety planning for workers at FSTP
Session 4.2 - Medication and first aid
Session 4.3 - Contingency measures
Session 4.4 - Group Exercise
Self-study for the Chapter
Practical Session
Chapter 04: Health & Safety planning at FSTP

4. Chapter Objective

This chapter will provide the participants practical information on health and safety best practices for faecal sludge treatment plant workers, as well as desludging drivers, operators, and other staff while working at the plant.

Session 4.1- Health & Safety planning for workers at FSTP

4.1.1 Session Plan

<table>
<thead>
<tr>
<th>S. No</th>
<th>Activities</th>
<th>Time</th>
<th>Materials/methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Major and minor hazards at FSTP</td>
<td>30 min</td>
<td>PowerPoint Presentation</td>
</tr>
<tr>
<td>02</td>
<td>Personal Protective equipment</td>
<td>30 min</td>
<td>Demonstration, use of various personal protective equipment’s</td>
</tr>
<tr>
<td>03</td>
<td>General health and safety practices</td>
<td>30 min</td>
<td>PowerPoint Presentation, flipcharts, and whiteboards</td>
</tr>
<tr>
<td>04</td>
<td>Electric safety</td>
<td>10 min</td>
<td>PowerPoint Presentation, flipcharts, and whiteboards</td>
</tr>
<tr>
<td>05</td>
<td>Confined safety</td>
<td>10 min</td>
<td>PowerPoint Presentation, flipcharts, and whiteboards</td>
</tr>
<tr>
<td>06</td>
<td>Protection against fall</td>
<td>10 min</td>
<td>PowerPoint Presentation, flipcharts, and whiteboards</td>
</tr>
<tr>
<td>07</td>
<td>Chemical and material storage safety</td>
<td>10 min</td>
<td>PowerPoint Presentation, flipcharts, and whiteboards</td>
</tr>
<tr>
<td>08</td>
<td>Sampling safety</td>
<td>10 min</td>
<td>PowerPoint Presentation, flipcharts, and whiteboards</td>
</tr>
<tr>
<td>09</td>
<td>Managing vehicle safety</td>
<td>10 min</td>
<td>PowerPoint Presentation, flipcharts, and whiteboards</td>
</tr>
</tbody>
</table>

Session time: 920 min

4.1.2 Key Outcomes of the session

At the end of this session participants will be able to:

- understand the nature of hazards at an FSTP
- wear and remove the personal protective equipment safely
- understand the procedures for health and safety, handling electric equipment, confined, handling chemical and material storages, sampling safety procedures and managing vehicle safety
4.1.3 Training Methodology

The methodologies used for this session are

- PowerPoint Presentation
- Flipcharts
- White Boards
- Demonstration

4.1.4 Tips for Trainers

- Refer from 5.1 to 5.9 units of Chapter 5 of the Participants’ Handbook of FSTP O&M Technician to detail out the session.
- Demonstrate hand hygiene as a part of the use of personal protective equipment. It is best done at a place where provision for hand washing such as wash basins and soap are available. If wash basins are unavailable, two buckets and a mug can be used: one bucket to take the water from and the other one is to be used as a basin and hands should be a wash over it. The mug is to be used to pour water.
- Make sure to keep the materials such as personal protective equipment, PowerPoint presentations, flipcharts, whiteboard, markers etc. ready before the start of the session.
- Use pictures to detail out the session. Use of text should be minimal.
- Encourage them to ask questions and clear any doubt which they may have.

4.1.5 Learning Notes

Elements of the session include

1. **Major and minor hazards at FSTP:** In this lecture, introduce the participants to the different types of hazards at FSTP as listed in Unit 5.1 of Chapter 5 of the Participants’ Handbook of FSTP O&M Technician to detail out the session.

2. **Personal Protective equipment:** This part of the session needs a demonstration.
   - Start with performing hand hygiene. Perform the hand hygiene yourself and ask the participants to do the same by following you. This exercise is best performed at a washing area with wash basins and soap. If wash basins are not available, use two buckets and one mug. One bucket to take the water from and the other one is to be used as a basin and hands should be a wash over it. The mug is to be used to pour water. The wastewater collected in the bucket should then be disposed off in an appropriate location. Use a small amount of water so that it can be carried easily.
   - For demonstrating the correct way of wearing and removing personal protective equipment, ask each of the participants to come forward one by one and instruct him/her to wear each of the personal protective equipment one by one in the correct sequence. Encourage them to ask questions and clear any doubt which they may have.

3. **Health and safety practices:** In this lecture, discuss the health and safety practices to be followed by the participants as a part of their job. Encourage them to talk to their superiors for infrastructure such as bathrooms and toilets at the FSTP.
4. **Electric safety:** In this lecture, discuss the electric safety measures as written in unit 5.4. of Chapter 5 of the Participants’ Handbook of FSTP O&M Technician.

5. **Confined spaces:** In this lecture, define what do confine spaces mean and why is it necessary to take precautions before entering them. Use pictures to help them understand better.

6. **Protection against fall:** In this lecture, give the participants a list of the cases when one can fall or trip in the FSTP.

7. **Chemical and material storage safety:** In this lecture, show them signs of different types of chemicals and materials such as flammable, volatile and odorous and how to store them. These signages are given in Annexure 2: Posters

8. **Sampling safety:** In this lecture, instruct the participants about the sampling safety measures required to take in order to avoid contamination, spillage, change in the characteristics of the samples.

9. **Managing vehicle safety:** In this lecture, list down the measures to be taken to manage vehicular traffic in the plant.

---

### 4.2.6 Key references

- CENTRE FOR DISEASE CONTROL AND PREVENTION (n.d.): When and how to wash your hands? URL: https://www.cdc.gov/handwashing/when-how-handwashing.html
- CENTRE FOR DISEASE CONTROL AND PREVENTION (n.d.): Chemical Storage Guidelines from the CDC. URL

### Session 4.2- Medication and first aid

#### 4.2.1 Session Plan

<table>
<thead>
<tr>
<th>S. No</th>
<th>Activities</th>
<th>Time</th>
<th>Materials/methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Precautions</td>
<td>15 minutes</td>
<td>PowerPoint Presentation</td>
</tr>
<tr>
<td>02</td>
<td>First Aid kit</td>
<td>15 minutes</td>
<td>Demonstration</td>
</tr>
<tr>
<td>03</td>
<td>Diarrhoea</td>
<td>15 minutes</td>
<td>Posters and demonstration</td>
</tr>
<tr>
<td>04</td>
<td>When breathing and/or heartbeat has stopped?</td>
<td>15 minutes</td>
<td>Posters and demonstration with the help of a dummy</td>
</tr>
<tr>
<td>05</td>
<td>Choking</td>
<td>15 minutes</td>
<td>Posters and demonstration with the help of a dummy</td>
</tr>
<tr>
<td>06</td>
<td>Minor Cuts</td>
<td>15 minutes</td>
<td>Posters and demonstration with the help of a dummy</td>
</tr>
<tr>
<td>07</td>
<td>Heavy Bleeding</td>
<td>15 minutes</td>
<td>Posters and demonstration with the help of a dummy</td>
</tr>
<tr>
<td>08</td>
<td>Abdominal Wound</td>
<td>15 minutes</td>
<td>Posters and demonstration with the help of a dummy</td>
</tr>
<tr>
<td>09</td>
<td>Head injury</td>
<td>15 minutes</td>
<td>Posters and demonstration with the help of a dummy</td>
</tr>
</tbody>
</table>
### S. No | Activities | Time | Materials/methods
---|---|---|---
10 | Burns | 15 minutes | Posters and demonstration with the help of a dummy
11 | Unconsciousness | 15 minutes | Posters and demonstration with the help of a dummy
12 | Nose bleeding | 15 minutes | Posters and demonstration with the help of a dummy
13 | Poisoning | 15 minutes | Posters and demonstration with the help of a dummy
14 | Snakebite | 15 minutes | Posters and demonstration with the help of a dummy
15 | Fractures | 15 minutes | Posters and demonstration with the help of a dummy
16 | Electrocution | 15 minutes | Posters and demonstration with the help of a dummy

Session time: 240 min

### 4.2.2 Key Outcomes of the session

At the end of this session participants will be able to:

- Precautions to be taken as part of their work at FSTP to avoid injuries and diseases
- Things to keep at the FSTP First Aid kit
- Administering first aid in a different situation.

### 4.2.3 Training Methodology

The methodologies used for this session are

- PowerPoint Presentation
- Demonstration
- Poster
- Flipchart

### 4.2.4 Tips for Trainers

- This session is mostly a practical session.
- Take a 3-minute break between every session to clear any queries and doubts the participants may have.
- Ensure the safety of everyone present while giving a demonstration
- For the demonstration, ask for volunteers from among the participants and give them first aid. You can ask for 2 volunteers for each of the situations. One of the participants should become the patient and other the first aid provider. In some situations, you can try with 1 volunteer to show how an individual can apply first aid onto themselves.
- Make sure to keep the materials such as first aid equipment, PowerPoint presentations, posters, flipcharts, whiteboard, markers etc. ready before the start of the session.
- Posters are given in Annexure 2: Posters
- Refer to Unit 5.10 in Chapter 5 of the Participants’ Handbook of FSTP O&M Technician to detail out the session.
4.2.5 Learning Notes

Elements of the session include

1. **Precautions:** This is the only part of the session that is to be delivered in the form of a lecture. This lecture should focus on why it is necessary to take all the safety measures in an FSTP, why vaccines should be taken and which one. The participants should be made aware of vaccinations they should get before they start working at the treatment plant.

2. **First aid session and administering first aid in a different situation:** These are to be delivered by means of demonstration and posters. Ask the participants to volunteer for the demonstration.

4.2.6 Key references

- WEBMD MEDICAL REFERENCE (2018): Cuts or Lacerations Treatment URL: https://www.webmd.com/first-aid/cuts-or-lacerations-treatment
- READER’S DIGEST (n.d.): How to Do CPR: 7 Essential Steps of CPR Everyone Should Know URL: https://www.readersdigest.ca/health/conditions/essential-cpr-steps/
- JASSAL, R (2016): Infographic: How to wear SCBA incorrect way? My Sea Time URL: \Users\Sreevidya\Downloads\i.%09https:\www.myseatime.com\blog\detail\infographic-how-to-wear-scba-in-correct-way
- OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION, UNITED STATES DEPARTMENT OF LABOUR (n.d.): Electrical Safety. URL: https://www.osha.gov/Publications/electrical_safety.html
- WORLD HEALTH ORGANISATION. (n.d.): Steps to put on personal protective equipment. URL: https://www.who.int/csr/disease/ebola/put_on_ppequipment.pdf
Session 4.3 - Contingency measures

4.3.1 Session Plan

<table>
<thead>
<tr>
<th>S. No</th>
<th>Activities</th>
<th>Time</th>
<th>Materials/methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Contingency measures and different types of emergencies</td>
<td>20 minutes</td>
<td>PowerPoint Presentation</td>
</tr>
<tr>
<td>02</td>
<td>Handling medical emergency</td>
<td>20 minutes</td>
<td>Posters and demonstration with the help of a dummy</td>
</tr>
<tr>
<td>03</td>
<td>Operational emergencies</td>
<td>20 minutes</td>
<td>PowerPoint Presentation</td>
</tr>
<tr>
<td>04</td>
<td>Fire emergencies</td>
<td>40 minutes</td>
<td>Posters and Demonstration</td>
</tr>
<tr>
<td>05</td>
<td>Security emergency</td>
<td>20 minutes</td>
<td>PowerPoint Presentation</td>
</tr>
<tr>
<td>06</td>
<td>Natural disaster</td>
<td>30 minutes</td>
<td>PowerPoint Presentation</td>
</tr>
</tbody>
</table>

Session time: 180 min

4.3.2 Key Outcomes of the session

This session is to familiarise the participants with different types of emergencies occurring in an FSTP and how to handle them.

4.3.3 Training Methodology

The methodologies used for this session are

- Powerpoint Presentation
- Demonstration
- Poster
- Flipchart

4.3.4 Tips for Trainers

- Connect The session related to handling medical emergency to the previous session on medication and first aid.
- Ensure the safety of everyone present while giving a demonstration.
- Take up an evacuation and safety drill for a demonstration of fire emergencies. Teach the participants regarding how to use fire extinguishers, only if:
  - you are confident
  - There is a performed outside in an open space
  - You can easily control the fire.
  - Don’t allow participant near the fire for the first demonstration. Then allow the participants to use different types of fire extinguisher in a controlled way. The participants are to be allowed one by one to handle the fire. If possible, an outside expert (such as from the local fire department)
can be called for teaching how to deal with fire emergencies and how to use a fire extinguisher

- Make sure to keep the materials such as fire extinguishers, first aid equipment, PowerPoint presentations, posters, flipcharts, whiteboard, markers etc. ready before the start of the session.
- Posters are given in Annexure 2: Posters
- Refer to Unit 5.11 in Chapter 5 of the Participants’ Handbook of FSTP O&M Technician to detail out the session.

4.3.5 Learning Notes

Elements of the session include:

1. **Contingency measure and different type of emergencies at the plant**: This lecture details out the types of emergencies which can occur at an FSTP and the preparatory measures needed to be taken up to deal with such a situation. Emphasise the importance of documenting and reporting each emergency situation.

2. **Handling medical emergencies**: This is a practical session. Refer to the previous session and link it up. Refer to Unit 5. 10.4 of Chapter 5 of the Participants’ Handbook of FSTP O&M Technician for details. For demonstration ask for a volunteer among the participants.

3. **Operational emergencies**: In this lecture, gives an overview of the emergency situation that can occur in the day to day operations of the plant.

4. **Fire emergencies**: This part of the session can be either in the form of a poster session or a demonstration depending on availability of space and safety equipment. Strictly adhere to the safety norms. The demonstration should primarily focus on safe evacuation under fire emergency. Teach the participants regarding how to use fire extinguishers, only if:
   - You are confident
   - There is a performed outside in an open space
   - You can easily control the fire.
   - Don’t allow participant near the fire for the first demonstration. Then allow the participants to use different types of fire extinguisher in a controlled way. The participants are to be allowed one by one to handle the fire. If possible, an outside expert (such as from the local fire department) can be called for teaching how to deal with fire emergencies and how to use a fire extinguisher.

5. **Security emergency**: In this lecture, the participants should learn how to handle a security threat at the plant without putting one’s life into danger.

6. **Natural disaster**: Usually FSTPs are constructed by keeping in mind the typical natural disasters to which the location of the FSTP is prone to. Flood plains and flood prone areas are usually not chosen for FSTP. Precaution against earthquakes and cyclones by making buildings which can withstand the pressure of the tremors and high-speed winds. Still, it is a good practice to discuss the usual natural disasters that the region is prone to and how the FSTP O&M technicians should conduct themselves if they are within or around the premises. Standard procedures as prescribed by National Disaster Management Authority are to be explained for this session for each of the following natural disasters:
   - Floods
   - Cyclone
   - Earthquakes
4.3.6 Key references

- ii. YALE UNIVERSITY (n.d.) Emergency Management: theft or vandalism URL: https://emergency.yale.edu/be-prepared/theft-or-vandalism

Session 4.4 Group Exercise (120 Minutes)

This group exercise is for reference. The trainer can write about cases on various operational issues at FSTPs. The participants are divided into groups of 3 people each. One person should play the role of the patient, one person should give the first aid and another should call the hospital. Give one case study to each group. Below is the session plan.

<table>
<thead>
<tr>
<th>S. No</th>
<th>Activities</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Explaining the cases</td>
<td>10 minutes per case</td>
</tr>
<tr>
<td>02</td>
<td>Demonstration</td>
<td>20 minutes per case</td>
</tr>
<tr>
<td>03</td>
<td>Concluding</td>
<td>10 minutes per case</td>
</tr>
</tbody>
</table>

**Case 1**

The sludge in the unplanted drying bed needs to be removed. Demonstrate how will you get ready to do so.

**Case 2**

You were cleaning the laboratory equipment. You accidentally broke a glass. A small piece of glass cut your hand. What will you do?

**Case 3**

You find a colleague lying on the ground unconscious next to the switchboard. Demonstrate what will you do?

**Case 4**

A colleague of yours entered a manhole for maintenance. You notice that the movement of the person has stopped. Demonstrate how will you respond.

**Case 5**

Your colleague fell down from a ladder while performing maintenance work. He is unable to move his hand. Demonstrate the first steps which you will take before he reaches the hospital.

**Case 6**

You bruised yourself against an iron nail at the FSTP. Demonstrate how will you respond.
4.4.1 Key Outcomes of the session
After the session, the participants should have hands-on experience on:
• The precautions to be taken to stay safe at the FSTP
• Responding to any medical issue occurring at the FSTP and give basic first aid
• Implementing contingency measures at FSTP.

4.4.2 Training Methodology
• Hands-on exercise

4.4.3 Tips for Trainers
• Ensure that the participants are safe while performing the exercises.
• Design similar case studies for more group exercises.
• For the purpose of demonstration, fill bottles with plain drinkable water and label them as anti-septic lotion, ointment etc. Don’t use actual medicines and lotions.

Self-study for the Chapter: 30 minutes
Once the session is over, you can address the queries from the participants.

**Self-study:** Once the session is over, participants can take some time to go through Chapter 05 of the Participants’ Handbook. After reading the session, the participants will go attempt the self-learning questionnaire

Practical Session (28 hrs)
Participants will be given on the job training at an FSTP to understand personal health & safety in the treatment unit. Safety drills are an essential key part of this session.
05: Visitors’ plan for FSTP

Self-study for the Chapter
**Chapter 05: Visitors’ plan for FSTP**

### 5.1.1 Session Plan

<table>
<thead>
<tr>
<th>S. No</th>
<th>Activities</th>
<th>Time</th>
<th>Materials/methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Visit Plan</td>
<td>40 min</td>
<td>PowerPoint Presentation</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Practical session on preparing the visit plant</td>
</tr>
<tr>
<td>02</td>
<td>Communication with visitors</td>
<td>40 min</td>
<td>Roleplay</td>
</tr>
<tr>
<td>03</td>
<td>Handling emergency situation involving visitors</td>
<td>30 min</td>
<td>PowerPoint Presentation</td>
</tr>
<tr>
<td>04</td>
<td>Questions frequently asked by the visitors</td>
<td>30 min</td>
<td>PowerPoint Presentation</td>
</tr>
<tr>
<td>05</td>
<td>Brochure of Plant to be given to the visitors</td>
<td>10 min</td>
<td>Sample brochures</td>
</tr>
</tbody>
</table>

Session time: 180 min

### 5.1.2 Key Outcomes of the session

The main objective of this session is to help the participants plan for the visitors they would receive at the FSTP as a part of their job.

### 5.1.3 Training Methodology

The methodologies used for this session are:

- PowerPoint Presentation
- Practical session on preparing a visit plan
- Roleplay

### 5.1.4 Tips for Trainers

- Keep the PowerPoint Presentations ready for use.
- For preparing the visit plan, ask the participants to prepare a 3-hour plan which includes various aspects as included in units 5.13 to 5.16 of the Participants’ Handbook of FSTP O&M Technician

### 5.1.5 Learning Notes

1. **Visit Plan:** The participants should be briefed about the essential details they must know about the visit and the visitors and what should the visit plan include. Proceed to ask the participants to prepare a 3-hour visit plan. You may divide the participants into a group of 2-3 participants each if there are a large number of participants.

2. **Communication with visitors:** This part of the session can be delivered by means of a role play.
showing a conversation between visitors and participants. Ask 2-3 participants to volunteer for this.

3. **Handling emergency involving visitors:** This lecture should be linked to the Session 4.2 Medication and First aid and Session 4.3 Contingency Measures. But the focus of this lecture is on how to handle emergency situations involving visitors. Emphasize that the incidents should be reported to the plant manager and the coordinator from the visitors’ side.

4. **Questions frequently asked by the visitors:** This lecture should list out the frequently asked questions by the visitors.

5. **Brochure to be prepared and printed:** List of various brochures to be printed and given such as that of the faecal sludge treatment plant technology, about the company operating and maintaining the faecal sludge treatment plant and so on.

**Self-study for the Chapter: 30 minutes**

**Self-study:** Participants are encouraged to read through the units 5.13 to 5.16 of the Participants’ Handbook and attempt the self-learning questionnaire.
06: Work ethics at FSTP

Session 6.1 - Human resource management at FSTP
Session 6.2 - Working effectively with co-workers
Self-study for the Chapter
Practical Session
Chapter 06: Work ethics at FSTP

6. Chapter Objective

This chapter intends to familiarise the participants with the fundamentals of productive work culture and the importance of professional ethics. Participants will have an understanding of the following components of work ethics:

- Inclusive atmosphere
- Personal responsibility
- Teamwork
- Risk management

Session 6.1- Human resource management at FSTP

6.1.1 Session Plan

<table>
<thead>
<tr>
<th>S. No</th>
<th>Activities</th>
<th>Time</th>
<th>Materials/methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Introduction to Human resource management</td>
<td>40 minutes</td>
<td>PowerPoint Presentation</td>
</tr>
<tr>
<td>02</td>
<td>Reporting structure</td>
<td>30 minutes</td>
<td>PowerPoint Presentation</td>
</tr>
<tr>
<td>03</td>
<td>Rules of employee ethics</td>
<td>40 minutes</td>
<td>PowerPoint Presentation</td>
</tr>
<tr>
<td>04</td>
<td>Overview of Employee assistance programme and Grievance redressal system</td>
<td>40 minutes</td>
<td>PowerPoint Presentation</td>
</tr>
<tr>
<td>05</td>
<td>Information and data security policy</td>
<td>40 minutes</td>
<td>PowerPoint Presentation</td>
</tr>
</tbody>
</table>

Session time: 190 min

6.1.2 Key Outcomes of the session

At the end of the session, participants should be able to

- Understand the importance of employee relations
- Understand the importance of ethics and responsibility when handling the resources at the FSTP
- Understand public, non-public and confidential data
- Understand the basic process of how to handle grievances of employees and unethical conduct/behaviour of employees

6.1.3 Training Methodology

The methodologies used for this session are

- PowerPoint presentation
- Group discussions
- Flipchart
6.1.4 Tips for Trainers

- Refer to chapter 6 of the handbook of FSTP O&M Technician to set the outline of the session. Keep the session interactive and ask for inputs from the participants. You can have a 5-minute revision session and ask the participants to mention the steps involved in reporting grievances. They can also be requested to draw the reporting structure in flipcharts.

6.1.5 Learning Notes

Elements of the session include

1. **Introduction to Human resource management**: Lecture defines the organizational rules that can maximize employee performance in order to meet the goals and objectives of the treatment plant. More precisely, focused on the importance of management of the workers, emphasizing on policies and organizational system. Also, explain the process of recruitment and the need for proper orientation and induction for new employees.

2. **Reporting structure**: Explain the top down organization structure in an FSTP.

3. **Rules of employee ethics**: Lecture gives a list of simple Do’s and Don’ts in the professional field. Explain that rules of professionalism and ethics are designed for all employees, from entry level to the plant managers. Highlight the following points which an FSTP worker must follow apart from professional duties:
   - Protection of the treatment plant infrastructure and the environment
   - Giving utmost priority to health and welfare of the employees
   - Proper and accurate record-keeping and/or preparation of reports
   - Practicing professional habits:
     - Always being honest and truthful
     - Always being on time
     - Always being respectful to co-workers and managers; Not intimidating and/or bullying other workers
     - Always using professional language in reports and in professional meetings
     - Avoiding the use of cell phones on duty unless it is an emergency
     - Accepting personal responsibility for one’s actions not criticizing others untruthfully
     - Wearing appropriate clothing to work
     - Never using loud, offensive or abusive language

4. **Overview of Employee assistance programme and Grievance redressal system**: Start by briefly explaining the importance of having an employee assistance programme and grievance redressal system as it improves the reputation of workspace and improves employee satisfaction. In this lecture, chart out the process of reporting any grievances or issues that an employee is facing to his senior. It also includes the method of reporting any illegal/unethical behaviour.

5. **Overview of information and data security**: Explain that as a part of FSTP, every technician has an obligation to adhere to data security rules. There are certain information which are confidential and certain information which needs to be shared with the public. Share with them the following list of confidential and non-confidential data:
Session 6.2 - Working effectively with co-workers

6.2.1 Session Plan

<table>
<thead>
<tr>
<th>S. No</th>
<th>Activities</th>
<th>Time</th>
<th>Materials/methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Professional etiquettes</td>
<td>20 min</td>
<td>Video <a href="https://www.youtube.com/watch?v=14bCsM16bYo">https://www.youtube.com/watch?v=14bCsM16bYo</a></td>
</tr>
<tr>
<td>02</td>
<td>Diversity and inclusion</td>
<td>20 min</td>
<td>PowerPoint Presentation, Sample of personal protective equipment</td>
</tr>
<tr>
<td>03</td>
<td>Behavioural rules that improve teamwork</td>
<td>20 min</td>
<td>PowerPoint Presentation</td>
</tr>
<tr>
<td>04</td>
<td>Drug-free workspace rules</td>
<td>20 min</td>
<td>Flipcharts, PowerPoint Presentation</td>
</tr>
</tbody>
</table>

Session time: 190 min

6.2.2 Key Outcomes of the session

At the end of the session, participants should be familiar with

- The standard behaviours expected from FSTP workers
- Rules for a diverse and inclusive workspace environment
- Distinguish between appropriate and non-appropriate behaviour
- Drug-free workspace policy and aware of the dangers of alcohol and drug abuse
6.2.3 Training Methodology

The methodologies used for this session are

- Visual information
- PowerPoint presentation
- Group discussions
- Flipchart

6.2.4 Tips for Trainers

• Refer to chapter 6 of the handbook to set the outline of the session. Keep the session interactive and ask for inputs from the participants. Make sure to download the video in advance to avoid any last-minute technical glitch.

6.2.5 Learning Notes

Elements of the session include

1. Professional etiquettes: Ask the participants on what they consider to be good habits in a workspace. You can note these points on the whiteboard and discuss them in details during the course of the session. The main content of the lecture includes

   - importance of obeying rules, laws, and regulations
   - data security rules
   - ways to avoid conflicts, harassment, theft etc. at the workspace

2. Diversity and inclusion: This lecture includes the key points to promote diversity in the workspace. Seek participants’ input on ways to avoid discrimination.

3. Behavioural rules that improve teamwork: The lecture should include the importance of gathering everyone’s opinion and best ideas. List the key characteristics or the necessary habits required for working effectively in teams.

   - Honesty and straightforwardness
   - Sharing workload equally and assisting others, whenever required
   - Treating others with respect and dignity
   - Being an active listener and speaking with discretion when communicating with co-workers
   - Acknowledging the contribution of others while working in a team

4. Drug-free workspace rules: Lecture defines the rules of a drug-free workspace. It explains how a drug-free policy protects any employee who may be working under the influence of alcohol or drugs from injuring himself or another employee. It can also help in avoiding other negative impacts of being under the influence of alcohol or drug such that absenteeism, lower productivity, unethical behaviour etc. Also, give an overview of the action that will be taken against anyone who violates the rule.
4.2.6 Key references

- AUTOMATIC.COM (n.d.): Diversity and Inclusion. URL: https://automattic.com/diversity-and-inclusion/
Training Methodologies
Training Methodologies

Adult education requires the use of different teaching methods and techniques. Methods can be classified into three general categories: a) methods of presentation (fast and comprehensive provision of information - difficulty to bring into action critical thinking of learners and relevance of teaching objects with other content or knowledge - danger for passive learners), b) instruction methods (the trainer organizes learning providing activity guided towards achieving a set of prescribed objectives – cultivation of reflection and critical thinking), c) discovery methods (helping learners to follow a process of intellectual and mental exploration – security – practical training – transfer of learning – not promoting communication and social relations).

Some of these categories of methods undoubtedly promote the active participation of learners which is one of the fundamental goals of adult education. Some of these are a) participatory methods developing interaction between instructors and learners, b) heuristic methods by which the trainee’s elaborate tasks and discover knowledge, c) interrogative methods helping learners to find out what the instructors want to teach d) active methods combining action with consideration and e) exploration and application methods. The use of these methods depend on the nature of the teaching content, the teaching situation and the group of learners. Their combination can prove effective because it stimulates the motivation of adult learners avoiding monotony. The Training of Operators and Maintenance technician is designed considering the adult learning principles and methodologies. Following are some methodologies used in the sessions;

1. PowerPoint presentation

Although this technique has received international criticism as to its adequacy in adult education, it is widely used. Despite its disadvantages, today it is one of the basic instructional techniques because if used following basic requirements it can have numerous positive effects. So instead of obliterating it, the trainer should know in which cases it is considered the most appropriate technique and especially how it can be improved through its combination with other more active methods. Some of the basic requirements on behalf of the trainer for an effective presentation is:

• Excellent preparation and knowledge of the subject on behalf of the trainer
• Presentation objectives to be announced at the beginning and be related to the learners’ needs
• Starting pleasantly surprising students in a way that attracts their attention
• Brevity
• Clearly speaking with definite messages, using carefully non-verbal communication and the technique of diaphragmatic breathing
• Use of humor and a lot of examples
• Use of supportive audio-visual material
• Observe and actively analyse nonverbal communication of learners (if they are interested, if they are watching etc.)
• Showing confidence and interest in the subject
• Avoiding jargon and having suitable appearance according to the group of trainees
• Maintaining eye contact with the group of trainees
• Asking feedback from trainees

In order to ensure an effective presentation some techniques that enhance the active participation of learners are also important to be exploited, such as a) the assignment of the role of active listener to trainees, b) guided note-taking, c) occasional challenges (presentation interruption and asking
learners for examples or answers to questions), d) collaborative learning (providing different data to participants and inviting their collaboration), e) clarification exercises.

2. Questions & answers – discussion

Questions/answers and discussion are two closely related training techniques aiming at facilitating learning through the development of dialogue between trainer and trainees or between learners. Their difference is that the questions / answers do not address an issue as thoroughly as a discussion which is used for the systematic consideration of a subject. In a discussion the trainer should have a prearranged series of questions while questions / answers are implemented with a relative improvisation. They can be used in combination with other techniques commonly used with presentation. Discussions are useful at the initial approach of an issue pushing learners to reflect on it and consider various aspects. Questions should be addressed to all, be open, push to substantiated reasoning, avoiding pseudo-question

3. Brainstorming

Using this technique the trainer provides a central idea or an issue to the learners calling them to express their ideas freely and spontaneously. It is a highly participatory technique, promoting the involvement of learners in the learning process, helping the development of intimacy, cooperation, and contributing to the improvement of the learning climate. Among its advantages are also: the utilisation of the experience and creativity of learners, the development of free expression, critical thinking and cooperation, as well as the examination of issues from new perspectives leading to the transformation of certain stereotypical beliefs. Disadvantages of this technique are that some learners may not participate and the whole activity can be turned to become a show of imagination rather than a creative expression. Applying this technique the trainer asks the trainees to suggest individually as many ideas as they can to a posed question; encouraging them to express themselves rapidly, spontaneously, one after the other in the form of storm. The familiarity of trainees with the learning subject is not an important issue

4. Group Discussion

In this technique learners are divided into subgroups (3-5 persons) in order to do some exercise or discuss a topic. Each subgroup announces to the plenary its findings and the trainer coordinates a discussion among subgroups. The implementation of this technique concludes with the trainer’s synthesis, comments and connection with training objectives.

This technique is the most mature way to develop self-awareness, critical thinking and an effective approach to an object. Within a group, a learner changes behaviors and response modes, forms common perceptions, ideas and beliefs, evaluates, judges, and criticizes in the same manner. This technique can be flexibly applied to every content and adult education activity. Among its advantages is the development of essential communication between learners, freedom of expression, reduction of failure feelings, development of reciprocity and mutual help. However this technique may not be effective if the trainer wants to coordinate everything, does not trust the capabilities of trainees, or does not allow taking initiatives.
5. Case studies

In the frame of this technique trainees receive the description of a problem which is either real or hypothetical and are invited to study it in depth and propose solutions to the problems described. Very often a lot of different solutions are proposed, presented and discussed in plenary identifying positive and negative aspects. If the case refers to a real problem at the end the applied solution is presented and discussed. The difference of working in groups consists in the fact that a case study is a synthetic exercise which requires more time to be completed. It must not be applied at the beginning of a learning subject but mostly when the learning subject has been investigated and learners have acquired some knowledge on it. Among the advantages of case studies are the following: they reinforce the critical and analytical ability of learners; specialized rather than general knowledge is developed if the case reflects real situations contributing to transformation of trainees attitudes; they promote communication and collaboration between groups of learners; they save teaching time. The disadvantages of the technique are that it is difficult to be associated with the experiences of all learners as well as it is difficult to have conclusions when solutions are not quantitative. For its effective implementation the trainer should have a significant educational and professional experience.

6. Role playing

In the frame of this technique trainees act roles associated with their professional or social environment so that through this experience to understand deeper the situation and their reactions on it. It is applied when the resolution of a problem or conflict requires specific skills, communication and behaviors. Role playing provides learners with the opportunity to act and experience real situations in a protected learning environment in which testing, mistakes and practice are permitted. Through feedback from trainees and the trainer it is possible for learners to improve and develop desired behaviors. Among the advantages of role playing are: the development of skills in negotiation and communication, expression of feelings, cooperation development, attitudes changing. However, its implementation depends on the mood and creativity of learners, and knowledge of group dynamics on behalf of the trainer. Role playing is implemented in the following stages: a) scenario creation from the instructor, b) preparation of the trainee group, c) selection of “actors”, d) preparation of “actors”, e) preparation of observers, f) role playing g) derolling, h) discussion and comments in plenary.
Annexure 1. Treatment Technologies
Address: 405/6, 4th Floor DLF City Court, Near Sikanderpur Metro Station,
Gurgaon - 122002, Haryana, India

Email:
Web:
Phone:
CIN No.