

First Aid Training Manual for De-sludging Workers

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**Dedicated to all the sanitation workers
across the world who keep our cities safe.**

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(Constituted under Act XV of 1920)

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Foreword

Warm Greetings from Indian Red Cross Society, Tiruchirappalli District Branch.

First aid aims at preserving life, preventing harm, and promoting recovery when specialized medical care is not readily available. However, for a non-professional to accurately administer emergency assistance, they must be proficient in first aid procedures. The Indian Red Cross Society recognises the importance of educating individuals and communities about first aid, especially the informal workers who are at risk.

According to the British Safety Council's 2017 estimates, with a workforce of over 465 million, India has nearly 48,000 workers dying from an occupational injury or disease annually. Though construction workers account for most of these fatalities, there are similar occupations and workforces which are vulnerable and prone to accidents. De-sludging operators are one such workforce who undertake physically demanding tasks in challenging work environments. However, their occupational safety and health are often overlooked. The Indian Institute for Human Settlements (IIHS), after a detailed assessment of de-sludging practices and working conditions of de-sludging operators, has developed this First Aid Module in a joint effort with the Indian Red Cross Society. The module comprises evidence-based first aid techniques to protect the health and safety of de-sludging operators in their day-to-day operations.

The module has been designed to cover every stage of de-sludging operations, including the work scenarios, challenges and risks, and injuries relevant to the workers' occupational safety and health. Simplified first aid procedures are provided for each step of de-sludging operations with illustrations and descriptions to facilitate practical and effective training sessions. The guidelines in the manual are aimed at strengthening the capacity of the de-sludging operators as first aiders, enabling them to respond better to medical emergencies at their workplace until professional medical assistance arrives.

This module is primarily intended for master trainers to educate, train and enhance de-sludging operators' skills in administering first aid. The module will also enable tutors, researchers, civil society organisations, and urban local bodies to learn and practice first aid in their areas of work.

I hope the First Aid Training Manual developed by IIHS, reviewed and co-authored by The Indian Red Cross Society, Tiruchirappalli District Branch will be effective and useful in imparting this crucial skill to de-sludging operators to safeguard their health and wellbeing, eventually promoting safe de-sludging practices and services.



CHAIRMAN

Indian Red Cross Society

Tiruchirappalli-620 008

THROUGH HUMANITY TO PEACE

Preface



“ As
professionals who
keep our cities and
towns liveable for
us, sanitation
workers deserve
safe working
conditions. ”

Sanitation has received much welcome attention in India and internationally in the recent decade. But even while sanitation (or lack of) came into focus, the key people behind it - sanitation workers - were often neglected. It is thus even more opportune that the well-being of sanitation workers is getting much-deserved attention - particularly during and after the pandemic. In this movement towards improving the well-being of sanitation workers, we at the Indian Institute for Human Settlements and Tamil Nadu Urban Sanitation Support Programme hope to contribute in a small way.

We work with sanitation workers in select Indian cities to improve their health and welfare, livelihoods, and safety. While much of our work has been with all kinds of sanitation workers - CT/PT cleaners, drain cleaners, solid waste collectors, among others, our work on occupational safety has focussed on de-sludging operators, primarily because it remains one of the more hazardous activities and also because of our focus on Fecal Sludge Management. De-sludging operators are individuals/entrepreneurs responsible for emptying, transporting, and disposing of fecal sludge from septic tank/pits to the appropriate disposal facilities. We have realised that occupational risks faced by workers differ according to their roles, and hence customised products/trainings will be required for different kind of workers.

Our work on safety began with a Needs Assessment Study (NAS) that was done by an interdisciplinary team and in extensive consultations with the workers themselves. The study identified several pertinent safety concerns and a range of measures across the entire Hierarchy of Controls that must be implemented. While the implementation of these will take time, it is of utmost importance that workers, in the meantime, learn to protect themselves in all eventualities. One of the study's recommendations was to develop a manual of safety protocols to help de-sludging operators respond to emergencies at their workplace until medical assistance arrives.

Responding to this, we are happy to present the First Aid Training Manual for De-sludging Workers. The manual is the result of a rigorous and collaborative process with a dedicated team of safety experts and pertinent institutions, including the Indian Red Cross Society. The St. John Ambulance, Trichy, was our partner in conducting these initial rounds of training, and we hope to partner with them and other similar institutions to take this training far and wide.

The First Aid Training Manual for De-sludging Operators is a specialised document developed through multiple rounds of simulation exercises to identify and respond to possible emergency scenarios throughout the de-sludging operation. Building on the NAS study, the document divides the de-sludging process into four zones and 55 steps and highlights more vulnerable stages where emergencies are likely to occur. The manual, split into 13 sessions, deals with these emergencies using an array of training methods. For trainers, the manual presents a list of references to strengthen the understanding and a flexible session plan to effectively train de-sludging operators.

As professionals who keep our cities and towns liveable for us, sanitation workers deserve safe working conditions. We hope this manual plays a small role in making them safer, and we aim to create similar manuals for other types of sanitation workers in the coming days.

I would like to acknowledge contributions from everyone (please do see the long list on our contribution page) who pulled this manual together. As always, thanks to the sanitation workers who gave us invaluable feedback and suggestions on this.

Lastly, this is an emerging area of work where much dedication, innovation, and collaboration are needed. Please do get in touch (details on the rear cover) if you are working on the safety of informal workers for mutual learning.



Kavita Wankhade

Head- Practice (Governance & Services)
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Introduction

First aid is the initial, immediate response performed by a layperson on a sick or injured person. Timely first aid reduces casualty if given by a trained individual prior to assistance from a medical expert. A qualified first aid provider responds to an emergency with logical comprehension of the scenarios and a thorough understanding of first aid. Unlike standard first aid measures, occupational first aid differs due to the varying nature of the occupations. A few jobs demand individuals to be capable of conducting first aid at the workplace. De-sludging operations, like many other occupations, are physically intense and involve challenging tasks along the sanitation cycle, from collecting fecal sludge to its safe disposal.

De-sludging operators (DSO) are prone to injuries even after following safety protocols because they work in challenging environments such as extreme weather conditions, bad roads, and tricky soil. They are

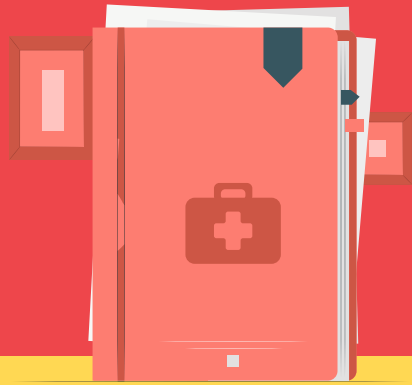




also at the risk of exposure to chemical or biological hazards by indirect contact with fecal sludge and inhaling harmful gases. They also face animal attacks at job sites sometimes. These injuries could prove fatal if not responded to with immediacy, and a lack of knowledge about first aid could endanger lives. Adequate safety measures and Personnel Protective Equipment (PPE) can moderate the chances of fatality. However, accessible first aid ensures recovery. Hence, educating and training DSOs on the importance of first aid is essential.

The Tamil Nadu Urban Sanitation Support Programme (TNUSSP) supports the

Government of Tamil Nadu (GoTN) in scaling urban sanitation, prioritising access to safe sanitation for all, including strengthening septage management as an economical and sustainable complement to network-based sewerage systems. As part of this mission, TNUSSP engages with different stakeholders in the sanitation chain to provide and improve safe, sustainable, and inclusive sanitation services. One of the priorities of TNUSSP is to ensure the health and safety of sanitation workers through capacity building of different stakeholders in the sanitation chain. This training manual has been prepared for trainers to disseminate knowledge of first aid to de-sludging workers.



About the Guide

De-sludging is the process of clearing the septic tanks of fecal sludge (FS), and de-sludging operators ensure the safe collection, transportation, and disposal of the FS (TNUSSP, 2017–2018). De-sludging is largely mechanised, with motorised emptying, transport, and disposal of fecal sludge using a truck fitted with a storage tank and a vacuum pump. However, de-sludging workers, at times, come in physical contact with fecal sludge or enter septic tanks to clear blockages.

De-sludging workers are prone to wounds, cuts, and bruises while cleaning the septic tank and skin ailments from contact with sludge. They are also exposed to harmful gases inside the septic tank. Hence it is vital for the stakeholders, including de-sludging operators and staff at the decanting station, to have at least a basic knowledge of first aid so that they can be of assistance during an emergency or critical situation until medical help arrives.

TNUSSP's study to assess the occupational safety of de-sludging operators sought to understand the current de-sludging practices, the safety and health concerns of





de-sludging operators, and the reasons for the existing practices. The study also sought to understand the relevance and adequacy of the mandated PPE and the challenges in using them. One of the recommendations of the study was to develop emergency protocols in the event of accidents or medical emergencies and train de-sludging operators on how to respond to such unprecedented situations.

Simulation training with first aid experts, focusing on the de-sludging process and possible scenarios, helped develop this module. The two-part pilot training monitored the engagement and comprehension of DSOs and factored in their feedback on delivery. In addition, various first aid tools, kits, and procedures were tested to model a first aid kit exclusively for DSOs. The manual is

designed and developed based on the 56 steps of de-sludging and includes first aid procedures specific to the de-sludging process, as well as essential interventions such as administering CPR and checking the pulse. The objective of the training manual is to provide the trainers with a better understanding of the risks involved in the de-sludging process and detailed guidance on planning, preparing, and delivering the training programmes. It also offers guidelines to conduct the sessions and helps trainers use dummy models, first aid kits, illustrations, and interactive scenarios to demonstrate the types of injuries and the first aid procedures. It also lists the safety protocols to be followed by the DSOs at the worksite, along with the dos and don'ts for each step. The orientation programme is planned for 10 hours spread over two days.



Target Audience

The training aims to sensitise workers involved in mechanised de-sludging operations. The study on desludging operators highlighted that most workers do not use Personal Protective Equipment (PPE) and are prone to direct contact with fecal sludge, causing health disorders and infection (TNUSSP, 2018). Thus, the orientation needs to be provided in a simplified format stimulating behaviour change.

Further, as alcoholism is a major health concern among de-sludging workers, the first aid providers need to be provided with inputs regarding the same.

Caution

All the scenarios discussed here are based on situations where a de-sludging operator could sustain injuries. It is to be noted that this manual is limited to first aid procedures for injuries and other life-threatening situations that can happen during de-sludging and not for other occupations.

First aid is the assistance given to a casualty before a qualified paramedical or medical person arrives. First aid saves lives and minimises the complications of the injury. Participants should be duly advised that first aid is not a replacement for medical care, and they must avail due medical care after suffering an injury or facing a health problem.



Trainer's Checklist

As a certified first aid trainer, keep in mind the following points while imparting knowledge of first aid for de-sludging operators:

- Have a clear understanding of the possible scenarios and causes of injuries during de-sludging as the training sessions focus on first aid procedures for injuries sustained during de-sludging.
- Keep the communication engaging to retain the interest and focus of the participants.
- Hold each session within the prescribed time limit.
- Ensure that the same participants attend both days' sessions. The driver/supervisor may come with one

person on the first day and another on the next.

- Ensure that each participant understands and performs every activity and test during the training, including using the first aid kit. The workers may not communicate much in front of their owners or drivers, so they must be given due attention during training.
- The participants may get work-related phone calls and step out during the session. The participants should be requested to keep their mobile phones in silent mode. Ensure that no participant misses out on any part of the training.
- Ensure that participants are not under the influence of alcohol while attending the training.

Session Plan

Two days (180–220 Mins/day)

Sessions are to be designed keeping in mind the irregular working hours of De-sludging Operators (prior consultations on time and venue advised)

Participants: The ideal batch size must be limited to 20 participants

Mentors: 1 principal trainer, 3 assistant trainers

Sl. No.	Session	Duration (in mins)	Teaching Aids	Session Objective	Teaching methods
DAY 1					
1	Session 1: Opening and Welcome	20 Mins	1. Training Registration Format 2. A colorful ball	Icebreaker & establishing a learning environment	Game
2	Session 2: Introduction to First Aid	30 Mins	Video of first aid being administered	Definition of first aid and priorities of first aider	Interaction
3	Session 3: Need for first aid in de-sludging occupation	30 Mins	1. Picture card for de-sludging process 2. Chart paper and markers	Introduction to 56 steps of de-sludging process with injuries highlighted across steps. Human body showing different kinds of injuries	Group discussion
Tea Break (10 Mins)					
4	Session 4; Preparation before responding to emergency	30 Mins	1. Board 2. Board markers	Introduction to preparatory protocol leading to first aid administration	Explanation, mock exercise
5	Session 5: Responding to an emergency	30 Mins	1. A mannequin 2. CPR dummy	Introduction of first aid resuscitation methods	Lecture, demonstration, and mock exercise
6	Session 6: Items in a first aid kit	30 Mins	First aid kit with materials	Introduction of participants to various objects in the kit and its uses	Game

Sl. No.	Session	Duration (in mins)	Teaching Aids	Session Objective	Teaching methods
DAY 2					
7	Recap of the previous day	10 Mins		Recap of Day 1 learning	Discussion
8	Session 7: Navigating to the client's site or decanting Station	30 Mins	First aid materials: cotton, gauze pad and gauze roll	Introduction to first aid procedure for fractures	Lecture and demo session
9	Session 8: Visiting new areas or clearing the worksite	30 Mins	First aid box	Introduction to injuries from sharp objects and animal and/ or insect Bite	Lecture and demo session
10	Session 9: Mounting or bringing down hose pipe and equipment	30 Mins	First aid box	Introduction to management of bleeding, bruise, and sprain	Mock exercise
Tea Break (10 Mins)					
11	Session 10: Opening the septic tank	30 Mins	First aid box	Introduction to first aid intervention during suffocation, asphyxiation, and nausea	Demonstration
12	Session 11: Emptying septic tank	30 Mins	1. First aid box 2. Eye pad	Management of foreign object in eye	Game
13	Session 12: Transporting the injured	30 Mins	1. Blankets 2. Cervical Collar	Introduction to evacuation	Demonstration
14	Session 13: Feedback	20 Mins	1. Chart Papers 2. Markers	Views of the participants to improve training quality	Feedback collection

Session-1 : Opening and Welcome

Aim:

Getting to know each other and establishing a learning environment.

Materials Required:

1. Training registration format (Annexure-1)
2. A colorful ball

Methodology:

Game

Process:

Get the participants registered in the training registration format.

Depending on the familiarity between the participants, select an introductory game.

E.g., Make the participants stand in a circle. The trainer has a ball in his/her hand. Explain that the person who has the ball should introduce the person who throws it at them (or) request the person receiving it to self-introduce. Encourage the participants to throw the ball at each other and introduce themselves. Ask the participants to break the ice by sharing fun and memorable experiences from their childhood.

After the introduction, encourage them to lay out the ground rules for the training session. Ensure that the ground rules are prepared in a participatory manner, though you may

Figure 1: Participatory Ice Breaking Session



oversee certain decisions. The rules must be clear and displayed where the participants can see them. Ground rules can be as simple as having cellphones muted during training sessions, active participation, raising a hand to ask questions, respecting the opinion of co-participants, taking permission before stepping out and so on. Remind the participants of the ground rules during the training sessions if required.

Expected Outcome:

The participants will begin to establish a rapport, creating a conducive learning mindset.

Session-2 : Introduction to First Aid

Aim:

To ensure the participants clearly understand what first aid is and its importance.

The session will help participants understand who a first aid provider is and their priorities.

Materials Required:

1. A video of a person providing first aid.

Methodology:

Interaction

Process:

Start the discussion by asking participants to share their experiences of encountering injured people. Lead the discussion so participants understand the importance of first aid. (E.g., Ask probing questions: Have you heard of anyone bitten by a snake? What did they do first? What were the other things they did? What would have happened if first aid was not given before taking the affected person to a hospital? Could first aid alone replace medical care? etc.,)

Explain to the participants that first aid is the lifesaving effort taken to prevent worsening one's medical condition before the arrival of qualified paramedical or medical care and assist safe transportation of the casualty or a sick person to a medical facility.

The first-aider's service is voluntary unless it is part of their job description (e.g.) the office in charge in some academic institutions and business establishments has a duty of care. Inform the participants about their responsibilities as first aiders. Some of the critical actions before starting first aid could be (but are not limited to) are:

Figure 2: First Aid Being Provided



- Call emergency services and/or the police immediately.
- If the person in need of first aid is conscious, get their consent before providing first aid. If the injured person is below 18 years of age, obtain consent from parents.
- Ensure a safe place for providing first aid
- Maintain confidentiality.
- Be careful when administering first aid.

Ensure that the participants are aware that if they are not happy administering first aid in any given circumstance, they can perform several actions, including informing emergency services, monitoring the injured person and comforting them, and getting details of the injuries .

Expected Outcome:

The participants have understood what first aid, its importance, and the role of a first aider.

Session-3: Need for First Aid in De-sludging

Aim:

To help participants understand the different scenarios during the de-sludging process where first aid may be required.

Materials Required:

1. Picture card showing the de-sludging process.
2. Charts and marker pens.

Methodology:

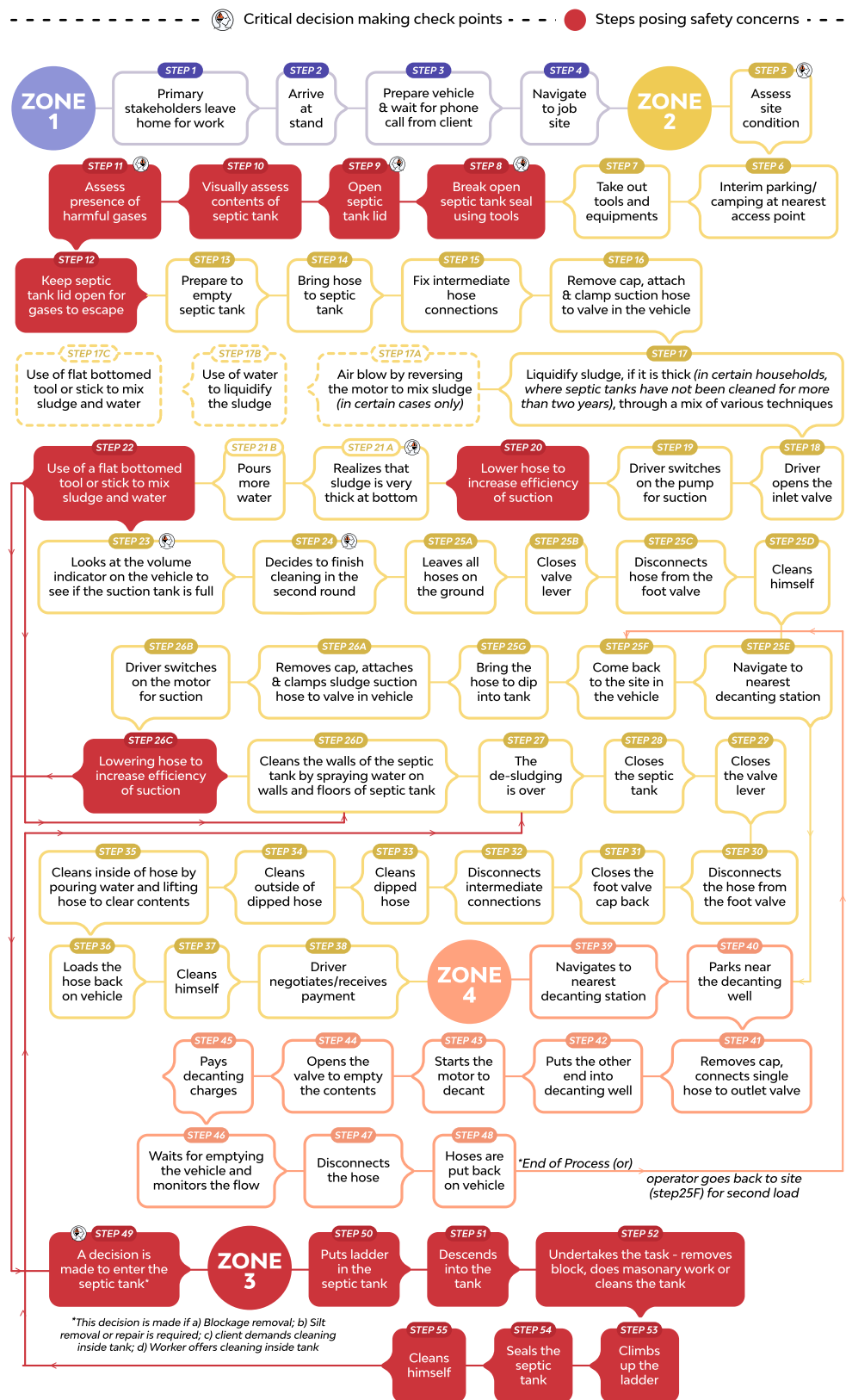
Group Discussion

Process:

Ask participants to share the different activities in the de-sludging process. Show them the chart with the 55 steps of de-sludging.

Divide the participants into subgroups. Give each group one or more situations from the list below. Ask each group to make a list of possible scenarios of injuries and accidents for each situation.

Figure 3: De-sludging Process



Source: IHS, 2020



1. During navigation - Going to the site or the decanting station.
2. Cleaning the worksite before de-sludging.
3. Mounting or bringing down the hose pipes.
4. Opening the septic/holding tank.
5. Emptying the septic/holding tank.

Motivate the groups to present their list to all the participants. Encourage other participants to add to the list, if required. Ensure that the injuries listed below are noted in each of the situations given.

Figure 4: DSO Under Navigation



During navigation - Going to the site or the decanting station

- Road accident or falling from the truck leading to
 - Unconsciousness
 - Fractures
 - Internal Injury
 - Spinal injury
- Electrocutation from live wires

Figure 5: Cleaning of Work Site



Visiting a new area or cleaning the worksite before de-sludging

- Pricked by shrubs or thorns
- Hurt by glass pieces and shreds
- Bitten by snake, scorpion, or insects
- Dog bite
- Foreign objects (dust, concrete, sharp objects) falling in eyes

Figure 6: Handling the Hose



Mounting or bringing down the hose pipes

- Falling from the ladder
 - Wounds
 - Sprains
- Hurt by tools or equipment
 - Nail detachment
 - Blood clotting
 - Bruises, cuts, and lacerations

Figure 7: Opening the Septic Tank



Opening the septic/holding tank

- Inhalation of harmful gases
 - Asphyxiation
 - Nausea
- Burns
- Sprain while lifting tank covers, pipes, etc.
- Slab falling on feet or fingers

Figure 8: Emptying Septic Tank



Emptying the septic/holding tank

- Falling into the septic tank leading to
 - Unconsciousness
 - Fractures
 - Profuse Bleeding
 - Vomiting
- Sludge spillage in eyes
- Hurt by tools or equipment

Expected Outcome:

The participants have understood the scenarios and the potential injuries that could occur at different stages of de-sludging and the importance of first aid.

Session-4: Preparation Before Responding to an Emergency

Aim:

This session will help participants understand some of the preparatory activities before providing first aid.

Materials Required:

1. Board
2. Board markers

Methodology:

- Explanation
- Mock exercise

Process:

Explain that the first aider must not panic and undertake the following steps with safety.

Figure 9: Stages of Preparation

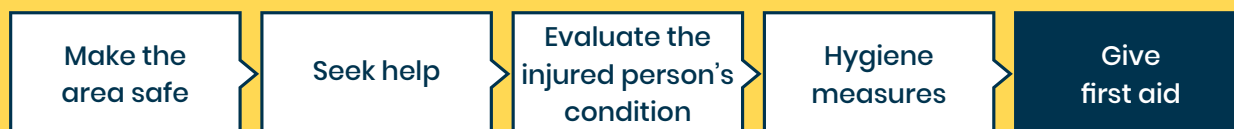


Figure 10: Place an Emergency Sign



Make the area safe

The first aiders should not put their life at risk. First, they must check if the area is safe from threats such as traffic, fire, electricity, insects, etc. If the area is not safe, they should immediately move the injured person to a safe area. If possible, place a warning sign.

In case of an electrical shock, switch off the power. Similarly, in case of an accident, switch off the vehicle's engine to avoid further mishaps.

Figure 11: Call for Help



Seek Help

It is usually not possible for a first aider to provide the support required independently. So, the first aider should call for medical support and the police. The helpline in Tamil Nadu for the ambulance service is 108, and the helpline for the police is 100.

Figure 12: Check for Pulse



Evaluate the condition of the injured person

The first aider should rush to the injured person, and

1. Check for any injury on the head, neck, and ears.
2. Ask for his name and see if the patient can respond.
3. Monitor the pulse rate at the neck and make a note of it.

If he can answer and his vitals are normal (12 to 18 breaths per minute and 60 to 100 pulse beats per minute), check for other injuries.

Figure 13: Check for Breath



Show a demo of how to calculate pulse and heartbeat.

Teach the procedures in chronological order. Conduct a mock session and ask participants to practice on each other.

If the patient does not give any eye, voice, or motor response to voice or pain, it means they are unconscious.

Figure 14: Hand Washing
- Steps to be Followed

1 கைகளைத் தண்ணீரில் நன்றாக நனைக்கவும். 	2 கை முழுவதும் மணிக்கட்டு வரை சோப்பு போடவும். 	3 உள்ளங்கைகளை ஒன்றோடு ஒன்று நன்றாக தேய்க்கவும்.
4 கை இடுக்குகளை நன்றாக தேய்க்கவும். 	5 விரல்களின் பின்புறங்களை அழுத்தி தேய்க்கவும். 	6 மணிக்கட்டுகளிலும் சோப்பு போட்டு தேய்க்கவும்.
7 உள்ளங்கையில் விரல்களை கோர்த்து நன்றாக தேய்க்கவும். 	8 கட்டைவிரலை உள்ளங்கையில் வைத்து சுழற்றி தேய்க்கவும். 	9 கைவிரல்களை குவித்து உள்ளங்கையில் வைத்து சுழற்றி தேய்க்கவும்.
10 தண்ணீரால் சோப்பு நுரை போகும் வரை கழுவவும். 	11 நல்ல சுத்தமான துணியில் கைகளை துடைக்கவும். 	12 சுத்தமான கைகள் - ஆரோக்கியமான வாழ்வு.

Hygiene Measures

Advise the first aider not to touch the injured person's blood or body fluids.

Before starting first aid, the first aider must wash their hands with liquid soap and water by following proper steps. Alternatively, sanitiser can be used for 20 seconds.

Wear latex gloves from the first aid kit.

If the injured person is unconscious, check again for breathing.

Expected Outcome

The participants have understood the hygiene measures to be followed before providing first aid.

Session-5: Responding to an Emergency

Aim:

Training the participants on resuscitation methods.

Materials Required:

1. A mannequin – CPR dummy

Methodology:

Lecture, demonstrations, and mock exercises.

Process:

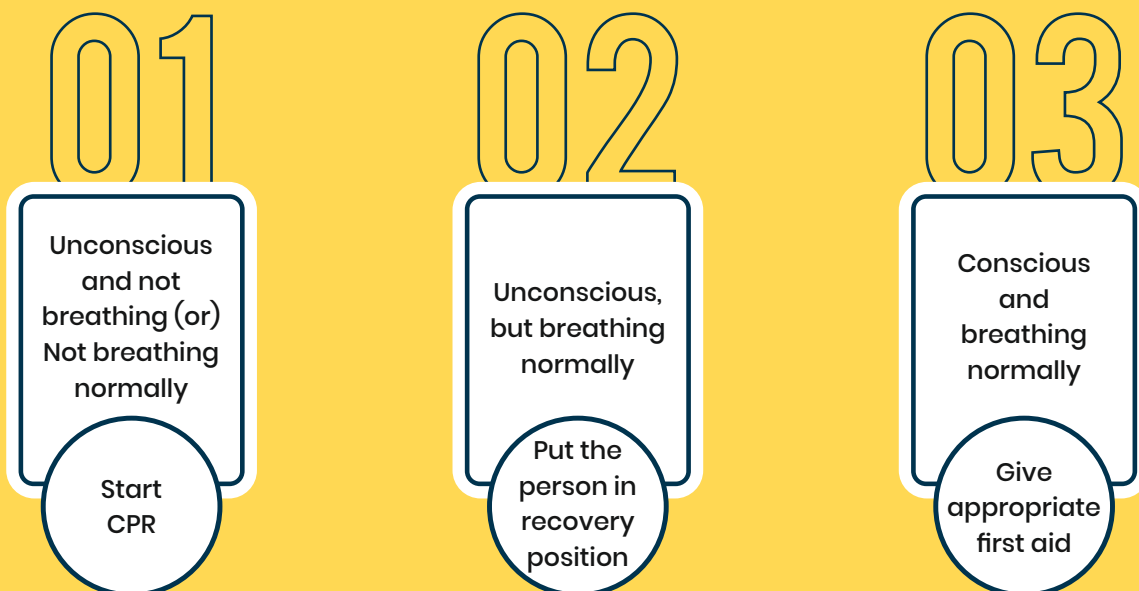
Teach the participants how to secure an open airway by making the injured person lay on his back, lifting the chin forward with the index and middle finger of one hand, and pressing the forehead backward with the palm of the other hand. This will bring the tongue forward and clear the airway. Then check for breathing.

After looking for chest/abdominal movement, listening to breathing, and feeling the air coming out of the nose or mouth, you may find yourself in one of the following situations:

Figure 15: Securing Open Airway



Figure 16: Resuscitation Protocol in Possible Scenario



Cardiopulmonary resuscitation (CPR)

Teach the participants the steps for performing CPR and conduct a mock session. Ensure they follow all the following steps.

1. Lay the injured person on a hard, flat surface in a supine position.
2. Kneel beside the upper arm of the injured person.

3. Provide **30 chest compressions** by

- Placing the heel of one hand in the middle of the injured person's chest.
- Lock fingers of both hands by placing the heel of the other hand on top of the first hand.
- Have the shoulders directly above the person's chest.
- Push five to six cm deep with outstretched arms.
- Provide compressions at the rate of 100 compressions per minute.
- Do not lean on the chest between compressions.
- Ensure equal duration of time between the compression and release.
- Allow the chest to rise fully again every time after pressing down.
- Do not shift hands from the breastbone.

4. Providing **2 ventilations** (rescue breaths) by

- Placing one hand on the forehead and tilting the head back.
- Lift the chin with the other hand.
- Pinch the nose with the hand on the forehead.
- Take a normal breath.
- Seal the injured person's mouth with lips.

Figure 17: CPR- locking of Hands

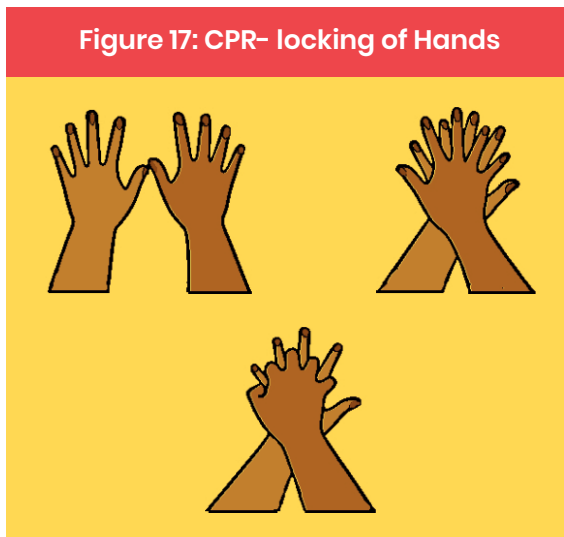


Figure 18A: CPR - Chest Compression

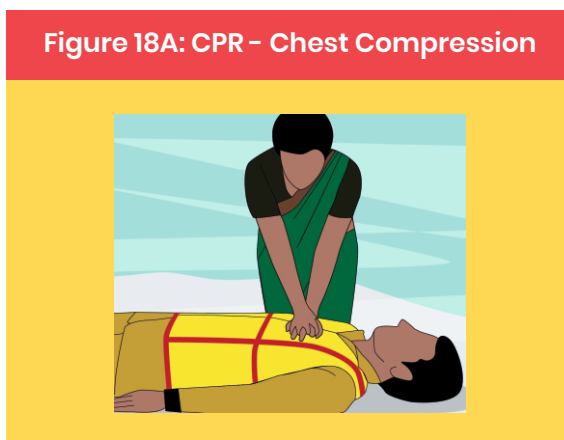
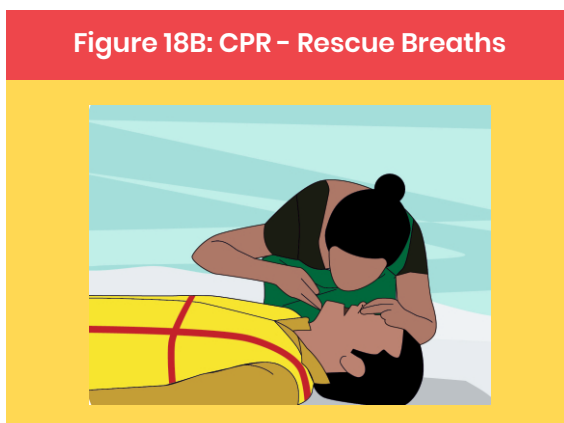


Figure 18B: CPR - Rescue Breaths



- Blow air into the injured person's mouth for one second.
- Check if the person's chest rises.
- Stop ventilations with two attempts.

The duration of the compression and relaxation should be equal. Explain that the first aider should give 30 chest compressions followed by two ventilations and another set of 30 chest compressions and two ventilations. The resuscitation should continue till the injured person wakes up and breathes normally. Check pulse every two to three minutes during CPR.

If, for some reason, the first aider feels that they cannot give ventilation, they can continue giving chest compressions.

Recovery Position

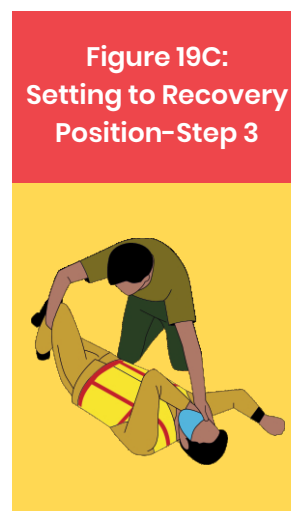
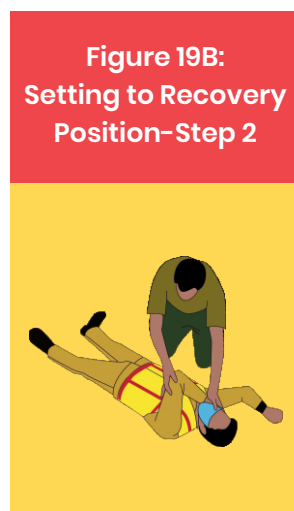
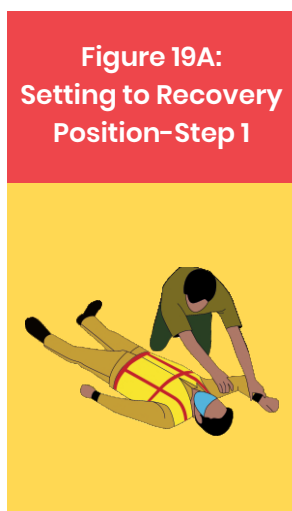
Educate the participants that if the injured person is unconscious, but breathing properly, they must be placed in a recovery position. A recovery position is a lateral prone position of the body to prevent the tongue from obstructing the airway. When a person is unconscious, their muscles relax, and as a result, the tongue may block their airway. The following steps must be performed to put the injured person in a recovery position.

1. Lay the injured person on a flat surface.
2. Outstretch both their legs.

3. Kneel near the injured person.
4. Bend the arm of the injured person at a right angle.
5. Bend the other arm with the forearm facing upward and the palm facing up.
6. Hold the hand against the injured person's cheeks with the arm crossing the chest.
7. Still holding the hand on the cheeks, grasp the leg under the knee.
8. Then raising raise and pull the leg, pull the leg, and roll the injured person to their side.
9. Ensure that the injured person's upper leg, hip, and knee are at a right angle.
10. Carefully tilt the head backward to ensure the airway is open.
11. The injured person's mouth should not face the ground to prevent them from vomiting or choking. Adjust the hand under the cheek if required.

Expected Outcome:

The participants have understood how to secure an open airway, perform CPR, and bring a person to recovery position.



Session-6: Items in a First Aid Kit

Aim:

Help the participants understand and identify the items available in a first aid kit.

Materials Required:

1. First aid box filled with materials

Methodology:

Game

Process:

Show the participants the contents of the first aid box and explain their name and purpose. Play a simple memory game to help the participants remember all the items.

E.g., Number the items in the first aid box and put them on display. Make chits and put them in a bag. Ask the participants to draw a chit

and identify the item with the number. Encourage everyone to participate, even though a few may have to draw the chit more than once, depending on the number of participants.

Figure 20: Image of a Memory Game



The first aid box placed in a de-sludging vehicle should contain, but not be restricted to, the following items:

Sl. No	Items	Sl. No	Items
1	Triangular bandage	12	Elastic bandage/ wraps
2	Splint	13	Ointment for sprains
3	Eye pads	14	Baking soda
4	Iodine solution bottle	15	Cold pack
5	Packets of sterilised cotton wool	16	Tweezers
6	Scissors	17	ORS sachets
7	Antiseptic and antibiotic treatment application	18	CPR mask
8	Sterilised dressing (gauze pads)	19	Semi-rigid cervical collar
9	Waterproof adhesive tape (various sizes)	20	Hand sanitiser
10	Waterproof plasters	21	Latex gloves
11	Box adhesive bandages (band-aids) (waterproof)	22	Three-layered masks

Expected Outcome:

The participants know the items available in a first aid box.

Session-7: Navigating to Client's Site or to Decanting Station

Aim:

To make participants aware of the first aid procedures for fractures.

Materials Required:

First aid materials – Cotton, gauze pad, and a gauze roll.

Methodology:

Lecture and demo sessions

Process:

A de-sludging operator can suffer injuries in a road accident while navigating to the client's site or the decanting station. Emphasise that it is illegal for a de-sludging worker to travel on the top or sides of a tanker as it might lead to a life-threatening fall or electrocution from a live wire.

In case of a road accident, the first aider must always follow traffic rules, and if possible, warn other drivers. Switch off the vehicle's engine and ensure no one smokes near the accident site.

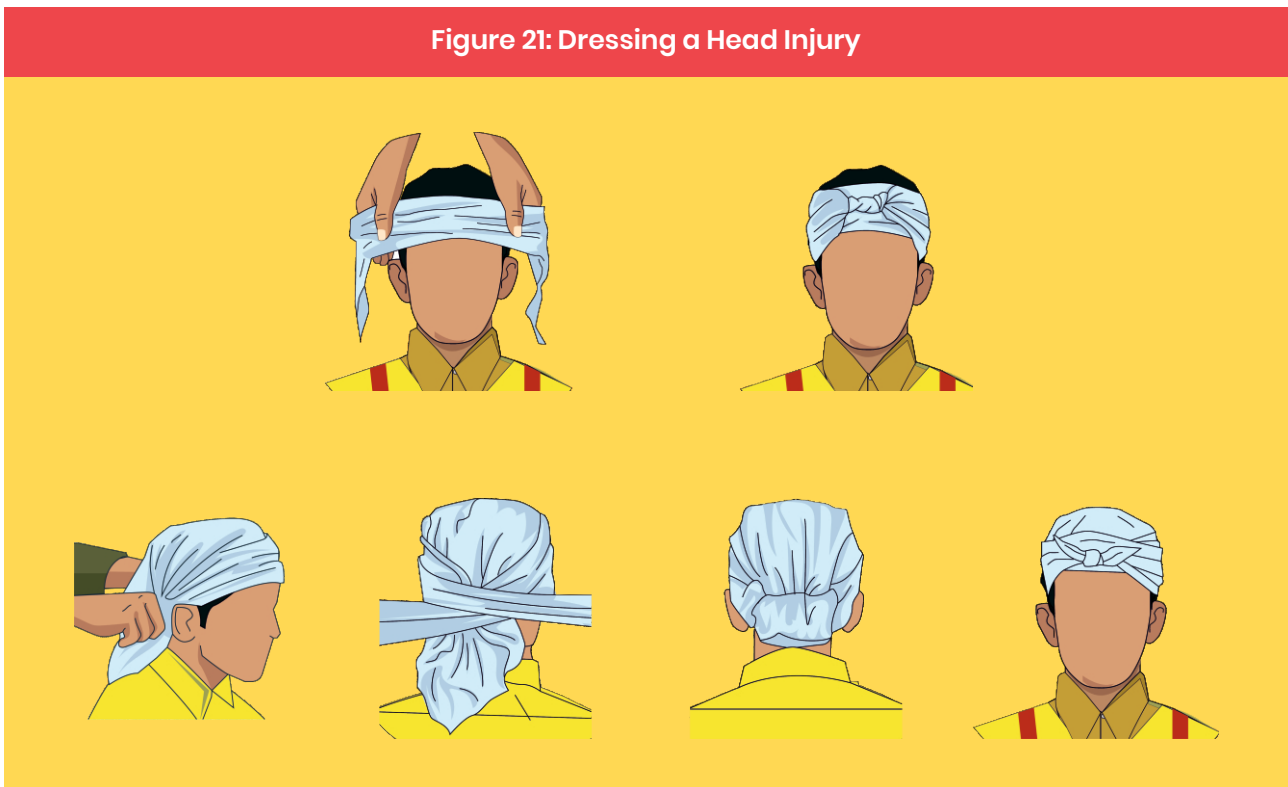
The first aider should ensure that the injured person is in a safe place. However, they must remember that any movement may worsen the injury on the head, neck, back, and leg or arm.

Head Injury

If the person is bleeding with a head injury,

- Apply direct pressure on the wound with gauze rolls. Place one hand at the back of the head for support and to sustain pressure.

Figure 21: Dressing a Head Injury



- Dress the injured area with cotton, a gauze pad, and a gauze roll. If gauze rolls are not available, use the triangular bandage from the first aid kit. If none of the above are available, dress the wound with a clean cotton cloth.
- Rush the injured person to the nearest hospital as they may be undergoing more severe injuries like internal bleeding / a skull or spine fracture / concussion or life - threatening complications like a stroke or fits, which are likely to be caused by a severe fall.

Fractures and Sprains

A de-sludging worker is prone to fractures and sprains at any step of the de-sludging process. A worker could fall from the truck/ladder or suffer a fracture while opening the septic tank slab or using de-sludging tools and equipment.

- Wrap SAM splint around the fractured area.

- Cover it with a conforming bandage from the first aid kit.
- If none of the above is available, wrap a triangular bandage or a clean cotton cloth in the same manner as the SAM splint.
- Help the person walk using either the single-person or two-person human crutch carry method. In case of a fractured tibia, follow either the two or four-man carry method and place him on the truck's passenger seat with his legs towards the driver.
- In case of an elbow fracture, improvise a sling using a shirt to support the arm.
- Rush the injured person to the nearest hospital.

If the person has suffered a fracture in shoulder / ribs / neck, do not attempt to provide first aid. Call an ambulance or rush him to the nearest hospital immediately.

Figure 22: Dressing a Bleeding Wound





Fracture with Bleeding

If the worker suffers a fracture to his arms or legs and has other bleeding injuries,

- Cover the wound with cotton and gauze and stop the bleeding by applying pressure to the wound.
- Do not apply pressure on the fractured area.
- Place a cotton or cloth padding around the injured area for support.
- Cover the wound using a conforming or triangular bandage.
- Rush the person to the hospital.

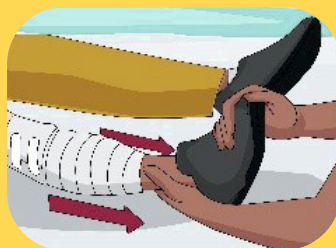
Fractured Finger or Toes

- Cut the SAM splint or gauze roll to the required size and wrap it around the worker's fingers and cover it with adhesive tape.
- Alternatively, pad the worker's fingers with gauze pad and tie them together with adhesive tape.
- For toe fractures, follow the above procedures using gauze roll or gauze pad. SAM splint cannot be used on toes. Rush the casualty to the nearest hospital.

Expected Outcome:

The participants have learnt how to provide first aid when a worker suffers a fracture.

Figure 23: First Aid for a Fracture



Session-8: Visiting New Areas or Cleaning the Worksite

Aim:

To help participants understand the first aid procedures for injuries that could occur while cleaning a work site.

Materials Required:

First aid box

Methodology:

Demonstrations

Process:

Injuries Caused by Sharp Objects

Workers often get injured by sharp objects such as broken glass, thorns or nails while cleaning the area around a septic tank. In such cases, educate the participants to perform the following steps:

- Examine the size of the pierced object and the direction of the prick using a torch.
- Sanitise the tweezers in the first aid kit.
- Under the torchlight, remove the foreign object gently from the worker's skin using the tweezers.
- If the pierced object is too small to be removed by tweezers, dress the wound as described for bleeding injuries and take the worker to the nearest hospital.
- Even if the object is fully removed, objects like blade, nail, etc., can cause trouble. Hence, de-sludging workers are advised to take TDAP (Tetanus, Diphtheria, Pertussis) vaccine in consultation with a healthcare expert.

Snake Bite

If the worker is bitten by a snake at the desludging site while assessing the area or clearing foliage around the septic tank,

- Treat every snake bite, whether venomous or non-venomous, as an emergency.
- Check the bite mark on the skin to determine if the worker was bitten by a venomous or non-venomous snake. A venomous snake bite will usually leave two clear puncture marks and a non-venomous bite tends to leave two rows of teeth marks.
- Move the worker to a safer area with someone's help. Carry the worker using the two-handed or four-handed carry method.

Figure 24: Snake Bite



- Lay the worker on the ground.
- Remove his safety gears and loosen his clothes.
- Remove any jewellery such as chains, rings, watch, bracelets, and anklets as they may be harmful in case of swelling.
- Keep talking to the worker and reassure him to keep his blood pressure under control.
- Apply hot water compress if available.
- Cover the bite with a triangular bandage or a gauze roll or a clean cloth.
- Note down the timing of the snake bite next to the wound with a pen or make a mental note of it.
- Do not raise the hand or leg of the worker or rub the wound.
- Do not attempt to suck the venom out.
- Do not give any traditional first aid treatment such as applying herbal medicines on the bite or any other painkiller. Do not give food or drink to the worker.
- Do not apply ice or immerse the wound in water.

Scorpion Sting

- Apply sodium bicarbonate on the wound to soothe redness, itching and stinging.
- Wrap instant cold compress in a clean cloth and apply it on the bite for 15 to 20 minutes.

- Take the worker to the nearest hospital.

Insect Bites

- In case the swarm of insects is still around, walk away calmly with the worker to a safer area (preferably inside the truck).
- Apply sodium bicarbonate on the wound to soothe redness, itching and stinging.
- Take the worker to a hospital.

Dog Bite

- Ensure the area is safe and there is no further threat from the animal.
- If the wound is only a bite mark without bleeding, wash the wound with liquid soap and water.
- Dry the wound in sunlight. Do not wipe it with cloth.
- In case of bleeding, clean the wound under running water. When the blood stops, cover the wound with cotton and a gauze roll.
- Get tetanus (TT) and rabies shot.
- Do not put herbs or unclean materials like oil, petrol in or on the wound.

Expected Outcome:

The participants have understood how to help a co-worker with injuries sustained while assessing the worksite.

Session-9: Mounting or Bringing Down Hose Pipes and Equipment

Aim:

To help participants understand the first aid to be given when a co-worker is injured while mounting or bringing down hose pipes or equipment.

Materials Required:

First aid materials

Methodology:

Mock exercise

Process:

Falling from the ladder or dropping tools while mounting or demounting hose pipes and other tools onto the vehicle is common during de-sludging operations. Such incidents can cause bleeding in blood vessels (arteries, veins, and capillaries). When a blood vessel is damaged, several mechanisms are activated to control blood loss.

Arteries carry blood from heart to different parts of the body. When an artery is damaged, it spurts blood in tandem with the heartbeat. If not treated immediately, blood circulation will reduce rapidly. When a vein that carries blood to the heart is damaged, the blood pools out with less pressure. Providing pressure in the damaged area with a clean, folded cloth or a bandage to reduce blood circulation will prevent blood loss.

Capillaries (under the skin) bleed from bruises which causes blood to ooze or drip slowly. Clean the wound with a non-toxic cleanser to avoid infection. Since the bleeding naturally stops within 2-3 minutes, give priority to severe wounds.

Figure 25: Mounting Hose on De-sludging Truck



Internal bleeding (bleeding within the skull, chest, and abdomen or inside the body), if not attended to immediately, might cause bleeding from nose or ears or the blood might be coughed out, vomited, defecated or urinated at a later stage. Rush the patient to the hospital for emergency medical care. Do not give any liquid to drink to the patient, even if requested.

Tell the participants that after ensuring safety and personal hygiene, the first task should be to stop the bleeding by asking the injured worker to,

- Sit or lie down or put him in a comfortable position.
- Comfort the person.
- Press on the wound with both hands using a clean cloth or bandage.

- Cover the wound with a piece of cotton. If you have no bandages, improvise with other available material.
- Wrap a bandage around the wound to slow down the bleeding but continue to apply pressure until the bleeding stops.
- If the part of the body below the bandage changes colour or is swelling, or the injured person says there is no sensation in that area, loosen the bandage a little but do not remove it. If the blood flow to a limb is stopped, the injured person can lose his limb.
- Do not apply a tourniquet or fix a bandage above the wound, except in special situations.
- If a tourniquet is applied on a bleeding limb:
 - a. Apply it above the wound,
 - b. Note down the time when the tourniquet is applied,
 - c. Maximally, have a tourniquet applied for two hours.

d. Transfer the injured person as quickly as possible to a healthcare facility for further treatment.

- If the bandage is soaked in blood, do not remove it, but add another bandage on top of it and continue to apply pressure.
- Take off jewellery or any other accessories around the injured area which may cut off blood flow because of swelling. (Keep the jewellery and belongings with the owner or in a safe place).
- Do not give the injured person anything to eat or drink.
- Arrange transport to the nearest healthcare facility.

Sprains

- Get the instant cold compress from the first aid kit, wrap it in a clean cloth and apply on the affected area for 15 to 20 minutes.

Figure 26: First Aid for a Bleeding Wound

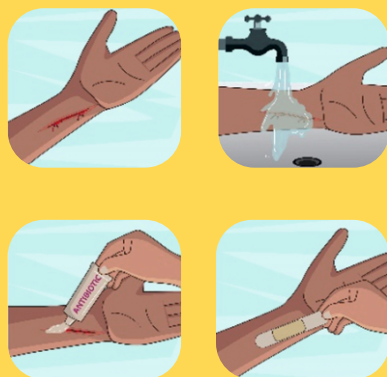


Figure 27: First Aid for Sprain





- Apply pain relief spray.
- Tie a conforming / triangular bandage or a clean cloth.
- Elevate the worker's leg. Check for swelling.
- Advise the worker to keep his legs elevated above the level of his heart while lying down, for the next two to three days.
- If the worker has sprained his lower back, seat him straight and follow steps 2 and 3.
- Advise the worker to not perform any strenuous activities for the next few days.
- If the casualty has sprained his neck, follow procedures mentioned in step 2 and 3, and advise him to massage the affected area and apply heat pack after 48 hours.
- Do not massage the affected area with herbs or oils. If you notice swelling or any of the injured area looks dislocated, follow the first aid procedures for fractures. Call an ambulance or rush him to the nearest hospital. Do not attempt to

provide first aid if the fracture is in his shoulder / ribs / neck.

Lacerations, Bruises and Clotting

- Falling from the truck may also result in lacerations, bruises, and clotting. In such situations ask the participant to follow the steps listed below
- Stop the bleeding by applying pressure on the wounded area with a gauze pad or cloth.
- Clean the wound. Run cold water over the wound to remove any dirt.
- Wipe with cotton or a gauze pad or a clean cloth.
- Apply antiseptic cream.
- Dress the wound with a gauze roll and cover it with an adhesive tape.
- Advise the worker to clean the wound with soap and water and apply a fresh
- Band-Aid and consult a doctor in case of an infection.

Expected Outcome:

The participants have understood the first aid procedures for sprains, cuts, and bruises.

Session-10: Opening the Septic Tank

Aim:

To educate participants how to treat a worker who has inhaled harmful gases or suffers asphyxiation or nausea.

Materials Required:

First aid materials

Methodology:

Demonstration

Process:

Suffocation by Smoke or Gases

When opening a septic tank, inhalation of toxic gases in the tank may cause suffocation to the worker. Exposure to toxic gases can reduce oxygen at the cellular level (e.g., carbon monoxide) or damage the respiratory system (e.g., Hydrogen Sulfide (H₂S)) or cause burns (e.g., Methane). Even smaller quantities of these gases can be deadly.

Carbon monoxide (CO) is a colourless, odourless, and tasteless but highly toxic gas which takes the space in haemoglobin that

normally carries oxygen, thus making it ineffective in delivering oxygen to body tissues. Carbon monoxide is produced when there is not enough oxygen to produce carbon dioxide (CO₂), such as in an enclosed space. Carbon monoxide is lighter than air and can be found in high concentrations in wells, sewerages and mines and will cause suffocation.

H₂S gas is a silent threat, often invisible to the body's senses. Inhalation is the primary route of exposure to hydrogen sulfide. Though it may be easily inhaled by some people at small concentrations, continuous exposure to even low levels of H₂S quickly deadens the sense of smell (olfactory desensitisation). Exposure to high levels of the gas can deaden the sense of smell instantly. Although the scent of H₂S is a characteristic, smell is not a dependable indicator of H₂S gas presence.

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Figure 28: Right Posture to Open a Septic Tank



may be easily smelled by some people at small concentrations, continuous exposure to even low levels of H₂S quickly deadens the sense of smell (olfactory desensitization). Exposure to high levels of the gas can deaden the sense of smell instantly. Although the scent of H₂S is a characteristic, smell is not a dependable indicator of H₂S gas presence.

H₂S irritates the mucous membranes of the body and the respiratory tract, among other things and will cause headache, nausea, convulsions, and eye and skin irritation. Injury to the central nervous system can be immediate and serious after exposure. Only a few breaths are needed to induce unconsciousness, coma, respiratory paralysis, seizures, and even death. (Seaman, 2017)

When a worker suffers from suffocation,

1. Shout or call for help if you are alone but do not leave the injured person.
2. Call the fire rescue department (Phone No: 101) for help. The fire rescue department has specialised teams and equipment to safely handle these situations.
3. Ensure there is no danger for them and do not take any steps that would put the worker at risk of suffocation.
4. Protect yourself with a towel or a cloth (preferably wet) over the mouth and nose.
5. If the worker slips and falls into the septic tank, avoid entering the tank. Use a rope with a hook to pull the worker out.
6. If you must go close to the septic tank, take two or three deep breaths and hold your breath to avoid inhaling gas. Encourage using a gas mask if

available.

7. Crawl on the floor and stay as low as possible.
8. Move the injured worker away from the area as quickly as possible.
9. Loosen the worker's clothes.
10. Give the worker space to breathe and expose him to fresh air.
11. If the worker has stopped breathing, call for help and start CPR.
12. Rush the worker to the nearest healthcare facility.
13. Always wash your hands after administering. Use soap and water to wash your hands. If no soap is available, use alcohol - based sanitisers to wash your hands. (Calgary First Aid, 2012)

Nail Injuries

Workers often suffer nail injuries when the drop the lid of the septic tank. In such cases, do the following:

- Remove all jewellery from the worker's fingers.
- If the nail is torn, cut the torn nail off using scissors. Stop the bleeding, if any, by applying pressure on the wound.
- Wash the wound with soap and water.
- Apply antiseptic and cover the wound with a gauze roll.
- In case of avulsions or a larger bruise or fracture, rush the worker to the nearest hospital.

Expected Outcome:

The participants have understood how to provide first aid in case of inhalation of toxic gases.

Session-11 : Emptying the Septic Tank

Aim:

To make participants aware of the first aid to be given when a foreign particle falls into eyes.

Materials Required:

First Aid materials- Eye pad

Methodology:

Game

Process:

If sludge or a foreign object such as dust, cement particles or other sharp objects fall into the worker's eyes,

- First, ask the worker to wash his eyes.
- If the object is still lodged in the eye,
 - Try to remove it with a twisted corner of a triangular bandage or a clean cloth.
- If the foreign object is not visible,
 - Ask the worker to grasp his upper

lashes and pull the upper eyelid over the lower lid. The lower lashes may brush the particle off from under the upper eye lid.

- If the object is sticking to or embedded in the eye,
 - Do not try to remove it from the eyeball or pupil, but bandage both eyes lightly and take the worker to the nearest hospital.

Falling into the Septic Tank

If the worker accidentally falls into the septic tank, try calling out to him. If there is no response, follow the steps given under suffocation by smoke or gases. If the worker responds,

- Call other colleagues or the client for help and call an ambulance.
- Understand the nature and thickness of the sludge and find the most efficient and shortest way possible to enter the tank.
- Remove your PPE and wear a cartridge mask.

Figure 29: First Aid for Eye



Figure 30: Falling into a Septic Tank





- Tie a rope around your waist and let someone else hold it from the outside.
- Descend slowly into the tank using a ladder.
- Get the worker out of the septic tank using the rear rescue approach. You must not stay inside the septic tank for more than 5 to 7 minutes.
- Use the fireman's carry method to bring the worker to a safe area.
- Clean the worker's body, especially his face and mouth with a wet cloth.
- Wash or sanitise your hands.
- Wear gloves and check for injuries.
- If he is unconscious, check pulse and breathing.
- If he is breathing, put him in recovery position.
- If the casualty is not breathing, perform CPR.
- If he sustains fractures in the fall, administer first aid.
- Rush him to the nearest hospital.

Expected Outcome:

The participants have understood how to administer first aid when a foreign object falls inside a worker's eyes and if a worker falls into a septic tank.

Session-12: Transporting the Injured

Aim:

To help participants learn the different transport and fast evacuation methods.

Materials Required:

1. Blankets
2. Cervical collar

Methodology:

Demonstration

Process:

Teach by demonstrating the fast evacuation techniques.

The first aider should attempt to rescue an injured worker only if the scene is safe for them. There are different ways to evacuate the injured person from the location. The first aider needs to decide on the method depending on the situation on the.

Single Rescuer

If the worker accidentally falls into the septic tank, try calling out to him. If there is no response, follow the steps given under suffocation by smoke or gases. If the worker responds,

1. Shoulder Pull

Figure 31: Shoulder Pull – Transportation of Injured



- Grasp the injured worker by the clothing under the shoulders.
- Keep arms on both sides of his head and support the head.
- Try to pull the worker in a straight line, if possible.

2. The Cradle Technique

This technique is to be used only if the accident involves children or in case of mild injuries. Lift the injured person by placing one arm beneath the knees and the other round his back. (Indian First Aid Manual, 2016 (7th edition)).

Figure 32: Cradle Technique – Transportation of Injured



3. The Human Crutch Technique

- Stand by the injured person's side except when the injury is in the upper limb.
- Put one arm around the worker's waist and place his arm around your neck and hold his hand with your other hand.
- If only one hand is injured and the other hand is free, the injured may seek additional help from a staff or use a walking stick. If both legs are injured,

another first-aider can support the other side in a similar manner. (Indian First Aid Manual, 2016 (7th edition))

Figure 33: The human Crutch Technique – Transportation of Injured



4. The Pick-a-Back Technique

If the injured worker is conscious and able to walk with support, he may be carried in the “pick-a-back” manner. (Indian First Aid Manual, 2016 (7th edition))

Figure 34: The Pick-a-back Technique – Transportation of Injured



5. The fire man's lift and carry technique

- Help the injured person to your shoulders.
- Grasp his right wrist with your left hand.
- Bend down with your head under his extended right arm so that your right shoulder is level with the lower part of his

abdomen. Place your right arm between or around his legs.

- Taking his weight on your right shoulder, come to an erect position.
- Pull the injured person across both shoulders and transfer his right wrist to your right hand and leave your left hand free. This allows the first aider to move up or down a ladder whilst carrying the casualty. (Indian First Aid Manual, 2016 (7th edition)).

Figure 35: The Fire Man's Lift and Carry Technique – Transportation of Injured



Multiple Helper Transport

1. Human Crutch Technique

Two helpers assist the injured person by wrapping their arms around his waist,

Figure 36: Human Crutch Technique – Transportation of Injured



clutching his garments, and placing each arm on their side around his neck, holding his hand with their free hand, while standing on either side. (Indian First Aid Manual, 2016 (7th edition))

2. Hand-Seat Technique (Four-Handed Seat Technique)

Two carriers face each other behind the injured, their right hands grasping their left

Figure 37: Hand Seat Technique – Transportation of Injured



wrists and their left hands grasping each other's right wrists. The injured person is advised to wrap one arm over each carrier's neck so that he may lift himself to sit on their hands and be steady during travel. The carriers rise together and move off. The bearers do a cross-over step rather than side steps. (Indian First Aid Manual, 2016 (7th edition))

3. The Hammock Carry Technique

This technique is useful to carry an injured person who is unable to assist the carriers using her/his arms. The hammock carry method moves a patient with three or more rescuers positioned on both sides of the

victim. (Usually with the strongest on the side with fewer rescuers). The rescuers reach under the injured and grasp one wrist of the opposite rescuer. The rescuers on the ends will only be able to grasp one wrist on the opposite rescuer. The rescuers with only one wrist grasped will use their free hands to support the victim's head and feet/legs. (Indian First Aid Manual, 2016 (7th edition))

Figure 38: Hammock Technique – Transportation of Injured





4. Chair Carry Technique

Figure 39: Chair Carry Technique – Transportation of Injured



Carry the patient on a chair. Use this method if the victim is not heavy and the distance is small. This technique enables easy navigation of stairs while carrying an injured person. (Indian First Aid Manual, 2016 (7th edition)).

5. Blanket Lift Technique

To put the injured person on a blanket:

- a. Lay the blanket or rug on the floor in line with the injured person and roll it up halfway lengthways.
- b. Bring the roller part of the blanket or carpet close to the injured person's back

and gently roll him over the roller until he lies on the other side. If the head, neck, or spine is injured or fractured, take all precautions to prevent the fractured bone from moving.

- c. When lifting with the blanket, the edges should be rolled up on the sides close to the wounded person and lifted by two or three people on both sides. (Indian First Aid Manual, 2016 (7th edition))

Figure 40: Blanket Lift Technique – Transportation of Injured



Expected Outcome:

The participants have understood the different methods of transporting a person who needs first aid.



Session-13: Feedback

Aim:

To understand the view of the participants to help improve training delivery.

Materials Required:

Charts, Marker pens

Process:

Collect feedback from the participants.



References

- Indian Red Cross Society, (2016). Indian First Aid Manual, (7th edition), 318-326. Retrieved from <https://www.indianredcross.org/publications/FA-manual.pdf>
- TNUSSP, (2018). Desludging Operators in Periyanaicken-palayam and Narasimhanaicken-palayam – An Overview. Retrieved from <https://tnussp.co.in/wp-content/uploads/2020/10/Desludging-Operators-in-PNP-NNP.pdf>
- M. Gautam et al. 2021 Framework for addressing occupational safety of de-sludging operators: A study in two Indian cities, J. Environ. Manag. <https://doi.org/10.1016/j.jenvman.2021.112243>
- Ministry of Road Transport and Highways (2015, May 12), Samaritan Guidelines. Retrieved from https://tnsta.gov.in/pdf/Samaritan_guidelines.pdf
- Cardiopulmonary resuscitation (CPR): First aid.. Retrieved from <https://www.mayoclinic.org/first-aid/first-aid-cpr/basics/art-20056600>
- Dr. Gupta, A. K., Pritanshu. Darkening Air: The Invisible Threat, 123. Retrieved from <https://books.google.co.in/books?id=v-CfDwAAQBAJ>
- Calgary First Aid (2012). Treatment and Management of H2S Poisoning. Retrieved from <https://firstaidcalgary.ca/h2s-alive-course/treatment-and-management-of-h2s-poisoning/>.
- Seaman, Jaime. H2S Gas - What you need to know about hydrogen sulfide. Retrieved from <https://www.blacklinesafety.com/blog/h2s-gas-need-know>



About the Organisation



IIHS: The Indian Institute for Human Settlements (IIHS), established in 2008, is a national education, practice and research institution committed to the equitable, sustainable and efficient transformation of Indian urban settlements. IIHS work spans across urban sectors including housing, land, water and sanitation, economic development and climate change. IIHS has significant portfolios of research, practice and executive education, based out of Bengaluru, Mumbai, Chennai, Delhi and Tiruchirapalli.



TNUSSP: The Government of Tamil Nadu (GoTN) has been a pioneer in urban sanitation. Tamil Nadu Urban Sanitation Support Programme (TNUSSP), led by the Indian Institute for Human Settlements (IIHS) and supported by the Bill and Melinda Gates Foundation (BMGF), functions as the technical support unit (TSU) within the GoTN's Municipal Administration and Water Supply (MAWS) department. The programme supports the GoTN in its total sanitation mission particularly in Fecal Sludge Management (FSM).

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