

Module 4

# **Water, Sanitation and Hygiene Promotion**

**Number of hours: 5 hours and 40 minutes**

**Number of Days: 01**



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## **Session 1 – Emergency Water Supply**

### **Objective of this session:**

1. Understand the objective of water supply in emergencies
2. Understand the basic principles of water treatment and supply.
3. Identify key water supply tools used by the RC/RC movement in emergencies

### **Session Plan**

Timing: 1.5 hours

Methods: presentation and discussions.

<b>Time</b>	<b>Topic</b>	<b>Methodology</b>
15 minutes	Introduction to WatSan in Red Cross and Red Crescent movement	<ul style="list-style-type: none"> <li>▪ Introduce RC/RC movement water and sanitation policy and India Red Cross Society's NDWRT (National Disaster WatSan Response Team).</li> </ul>
15 minutes	Introduction to water supply	<ul style="list-style-type: none"> <li>▪ Discuss the importance of water supply in emergencies.</li> <li>▪ Use Sphere to discuss the standards relating to access, water quantity and water quality.</li> </ul>
40 minutes	Water supply components	<ul style="list-style-type: none"> <li>▪ Ask participants the different options for water supplies, highlighting groundwater as being the safest source and why.</li> <li>▪ Explain the applicability of rainwater harvesting</li> <li>▪ Introduce principles of water treatment and water quality and ask what 'safe' water means.</li> <li>▪ Discuss the aspects of water storage and distribution and share experiences and challenges.</li> </ul>
20 minutes	WatSan emergency response tools	<ul style="list-style-type: none"> <li>▪ Introduce the emergency response tools available for water treatment.</li> <li>▪ Discuss the use of mass treatment and household treatment.</li> <li>▪ Emphasise that NDWRT should be involved to operate the mass water treatment units.</li> <li>▪ Discuss content of a Kit 2</li> </ul>

### **Tools and Resources required**

- Power point presentation; flipcharts; markers; tape and chart stands.
- Facilitator (Nominally someone experienced in facilitating NDWRT Training)

## Key Messages

1. All of the water supply components should be considered and designed with a holistic approach to ensure that we provide safe drinking water to the population.
2. The water treatment units should be operated and maintained by trained personnel.
3. Never ever distribute Kit 2 items (especially chemicals) without training people in their use.
4. Any implementation or distribution should be accompanied by hygiene promotion to reach the desired impact.

## List of Resources

- 1) Presentation: Module 4 S1\_Emergency Water Supply
- 2) Additional reference material: Module 4 S1\_IFRC Disaster Response Kit 2

## Content

### 1. Red Cross Red Crescent Movement WatSan Policy

Access to safe water and sanitation is a human right as declared by the United Nations.

In its efforts to alleviate human suffering, RC/RC movement provides water and sanitation services as part of the overall health and care interventions for vulnerable people both in ordinary times as well as in emergencies. The overall goal of the WatSan Policy is to *'improve health & restore dignity by provision of adequate safe water, sanitation and hygiene promotion'*.

Water and sanitation is a health initiative, clearly defined and seen as one of the most important aspects of preventive/public health. Therefore, community-based health care can not be considered without addressing the issue of water and sanitation coverage.

### 2. WatSan in Emergency Health

The range of health problems found in emergencies is often similar to that occurring in many developing communities around the world. Common problems include diarrhoea, nutritional deficiencies, pneumonia and other respiratory infections, malaria, worms, anaemia, tuberculosis, measles, eye and skin infections and genitor-urinary problems. Although epidemics occur relatively infrequently, outbreaks of diseases such as measles or cholera pose a serious threat.

Faecal-oral diseases such as diarrhoeas can be caused by drinking contaminated water, by poor personal hygiene (not washing hands at critical times) and by poor food hygiene (improper cooking, contamination by flies). These diseases can be particularly virulent in overcrowded unsanitary conditions and are frequently the major causes of illness and death in epidemics.

Water, sanitation and hygiene promotion activities during emergencies aim to prevent infection of the above mentioned diseases by interrupting the routes of disease transmission.

### 3. Introduction to Water Supply

People need safe water for drinking and cooking. Adequate amount of water is also required in maintaining personal hygiene and health. The minimum quantity of drinking water required for human survival will vary, depending upon the climate, the amount of food intake, and human activity. But how do we know how much water to cater for in an emergency?

#### **SPHERE**

The SPHERE standard was initiated in 1997 by the RC/RC movement in cooperation with other Non-Government Organisations. It identifies the minimum standard of necessities required by any human being during a disaster to maintain health and dignity. Many humanitarian organisations today refer to SPHERE as a guideline to improve the quality of their services during disaster response.

There are six chapters in the SPHERE standard that is in reference to water, sanitation and hygiene promotion. The SPHERE Standard stipulates that the minimum amount of safe water for drinking required by each individual during an emergency is 3L, and the total amount required per person per day is 15L.

The SPHERE Standard also stipulates that no one should have to walk for more than 500m to collect safe drinking water, and that the water supply should have sufficient pressure and flow to fill a 20L container within 3 minutes. There should be 0 Faecal Coliform / 100ml of water supply to protect the health of the people served. This can be achieved by different types of treatment that will be discussed further in this chapter. To ensure that the water is not re-contaminated upon collection, SPHERE also suggests dosing the treated water with chlorine that provides a free chlorine concentration of 0.5mg/L at the tap.

### 4. Water Supply Components

There are five important components to any water supply system. These include:

- Water Source
- Water Quality/Treatment
- Water Transmission
- Water Storage
- Water Consumption

#### **4.1 Water Sources**

Water sources fall into three general categories:

**Rainwater** – Rainwater is one of the easiest water sources to harness and often require the least treatment to achieve drinking water standard. However, it is very weather dependent. Hence, it is generally not considered as a reliable source during complex emergencies (in terms of providing sufficient quantity over a fixed period) especially for a large displaced population.

**Surface water** – Surface water from lakes, ponds, streams, reservoirs and rivers have the advantage of being accessible (water easily collected) and are predictably reliable and

plentiful. They have the disadvantage of generally being microbiologically unsafe, and therefore, requiring treatment.

**Groundwater** – Deep (generally clear, found in wells, bores) and shallow (subject to seasonal variation). Groundwater from wells and springs tends to be of higher quality (having undergone natural soil filtration underground). However, it is relatively difficult to extract. More technology and energy is needed (compared with other water sources) to bring water from within the earth up to the surface. Some groundwater source may be high in metal content such as Arsenic and Iron, which needs to be addressed prior to supplying to mass.

The following factors are important when selecting the type of water sources for displaced population:

- the quality of the water source
- the reliability of available water sources
- the water needs in relation to population size
- the intended length of intervention
- the locally available skills and resources
- the capacity of the implementing agency
- ease of accessing and distributing the water from source to tap

#### **Water Source Protection**

It is crucial to protect the water sources from contamination (or further contamination) by faecal contamination through human or livestock defecation. In conflict areas, it is also important to protect the water source from poisoning. Here are some suggestions on how to protect the water sources:

- Fencing – Fencing the area around the water source to prevent livestock and people from coming into contact with the water source.
- Signage – Erect signage to inform public to keep out of the protected area.
- Sealing – If possible, seal the water source. This is generally applicable to wells and springs.
- Locate defecation areas far from water source
- Provide security by employing a watchman to protect the water source.

#### **4.2 Water Quality and Treatment**

Most countries have their own standards stipulating what the drinking water quality should be. In the event where Local Government Standards are not available, the following references could be used as guidelines:

- World Health Organisation (WHO) Water Quality Guidelines
- SPHERE standards
- Risk Management approach

**Turbidity** is a measure of how clear water is due to the presence of suspended particulates. The more total suspended solids in the water, the murkier it seems and the higher the turbidity. The less total suspended solids there are in the water, the clearer, the water is the lower the turbidity. Turbidity is considered as a good measure of the



quality of water. The turbidity of the water source must be low to ensure disinfection is effective.

Turbidity is measured in NTU (Nephelometric Turbidity Units). Turbidity of drinking water must not be more than **5 NTU**.

**Faecal Coliform** is an indicator of faecal contamination bacteria; more specifically of *E. coli* which is an indicator microorganism for other pathogens that may be present in faeces. Presence of faecal coliform in water may not be directly harmful to human beings, but in an emergency environment is used as an indication of presence of human or animal waste in water. The SPHERE Standards stipulates that there should be **NO** Faecal Coliform in drinking water.

**Disinfection** is the process that kills harmful organisms using either physical (heat or Ultra Violet light) or chemical (chlorine) disinfectants. The main difference between chlorination and other physical disinfection methods is the chlorination provides residual protection to continue to kill organisms.

The recommended residual chlorine in any water supply system during an emergency should be **0.2 – 0.5 mg/L** at the tap after 30mins contact time for effective disinfection. The residual chlorine can be measured using pool tester.

**“Contact time”** is the time that it takes to effectively kill the harmful organisms through contact with chlorine. The recommended contact time for all chlorination process is **30mins**.

**Why should we treat water?**

The aim of water treatment is to treat water to a desired quality to provide safe drinking water. But what is it that we want to treat?

**Bacteriological** – Bacteria are microscopic organisms found just about everywhere. Most bacteria are harmless, but certain types can cause disease, sickness or other health problems. Disinfectant using chlorination is the most common method to get rid of bacteria presence in water.

**Chemical** – Most chemicals, when present in drinking water at low levels, are harmless to human health. However, when they exceed the recommended levels, they can cause health problems. The WHO Guidelines for Drinking-Water Quality include facts sheets and comprehensive review documents for many individual chemicals with guideline levels. It is often difficult to remove chemicals in water during emergencies. Therefore, volunteers should avoid selecting water sources which are high in chemical content.

**Physical** – Most surface water sources are highly turbid due to the presence of dirt, mud, grit and suspended solids that are collected from the earth surface during heavy rainfall and subsequently washed into rivers and lakes. These solids can be easily removed from water through straining or filtration.

### **How do we treat water?**

The types of treatments available include:

- Sedimentation – using gravity to settle the unwanted particles in the water
- Physical – using methods such as straining and filtration to physically remove unwanted particles from the water.
- Chemical – using chemicals to help with the flocculation/coagulation process to assist in removing the suspended solids in the water
- Disinfection - kills bacteria through chlorination, boiling etc

### **4.3 Water Transmission**

There are many ways to deliver water body from one location to another. Below are some of the commonly used components to deliver treated water to the affected population:

- Gravity Fed Systems/Pumping Systems
- Pipes
- Pumps
- Fittings
- Jerry Cans/Buckets
- Trucks – Trucking water is one of the most problematic ways to deliver water during an emergency. The advantage of transporting water using a trucking system is that it allows reaching a bigger number and dispersed beneficiaries. However, the disadvantage in this method is that it is expensive and difficult to manage.

### **4.4 Water Storage**

During an emergency, affected population can be supplied with different containers to store safe drinking water such as pots, jerry cans, buckets etc. They should also be encouraged to use their existing household containers (if available) to store safe drinking water.

The RCRC movement has a supply of big rigid and flexible tanks to store large capacity of treated water prior to distribution point. The most commonly used tanks is Oxfam tank T11 (capacity of 10,500L), onion tank and bladder tank.

### **Oxfam Tank**

The advantages of an Oxfam tank are:

- rigid (liner is protected by a corrugated sheet)
- large capacity of storage
- ideal for long term operation
- transportation is very easy (can be dismantled and packed into a custom made box)
- no need for tools

The disadvantages of an Oxfam tank are:

- requires tools during installation
- longer time of installation
- heavy and requires additional man power



Figure 1.1: Oxfam Tanks

### Flexible Tank

The advantages of flexible tank are:

- minimum space for storage
- very light
- transportation is very easy
- no need for tools

The disadvantages of flexible tank are:

- easily damaged
- requires a big clear and flat area



Figure 1.2: Onion Tank 5,000L Capacity



Figure 1.3: Bladder Tank 5,000L Capacity

## 5. WatSan Emergency Response Tools

The response tools available for the RC/RC movement during emergencies include:

- WatSan Kit 2 – for 2,000 people
- WatSan Kit 5 – for 5,000 people
- WatSan Kit 10 – for 10,000 people
- WatSan ERU Module 15 – for 15,000 people
- WatSan ERU Module 20 – for 20,000 people
- WatSan ERU Module 40 – for 40,000 people

**What is in each kit?**

Each kit contains different equipment and tools to cater for water treatment, water distribution, sanitation and hygiene promotion. The kits are fundamentally the same but differ in the type and size of equipment to cater for the population needs.

There are two categories of water treatment type: mass treatment and household treatment. Mass treatment can be found in the larger kits or modules, where as the household treatment is used for smaller population size.

**5.1 Mass Treatment**

The philosophy behind mass treatment is that water is taken from the best source possible (river, pond, borehole) then purified at treatment plant and distributed by pipe network or truck. Mass treatment is ideal for camp situations or high population densities (urban or peri urban).

It is important to note that most of the equipment are expensive and should only be deployed along with trained technical staff/volunteers to operate the treatment plant.



Figure 1.4: SETA water treatment plant



Figure 1.5: NOMAD treatment plant

**5.2 Household Treatment**

When responding to a smaller and more disperse population, household water treatment should be considered as the preferred intervention methodology to supply safe drinking water in the immediate and short term. In this method, the water is collected by the population, but is provided with means to treat water themselves.

It is important to note that prior to distributing any chemicals for household water treatment, training must be provided to the beneficiaries with adequate follow up to monitor adherence. An exit strategy should also be in place to plan and make arrangements for long term safe drinking water supplies.



**Resource materials for this session:**

1. PowerPoint presentation titled '1. Emergency Water Supply'

## **Session 2 – Household Water Treatment**

### **Objective of this session**

1. Participants to be familiar with the household water treatment options and application.
2. Participants to be able to demonstrate and train volunteers/beneficiaries on how to conduct household water treatment and safe storage.
3. Participants understand the need to monitor the implementation and report on perceived impact.

### **Session Plan**

Timing: 1.5 hours

Methods: presentation, group discussions, practical demonstration and group exercise

<b>Time</b>	<b>Topic</b>	<b>Methodology</b>
10 minutes	Why household water treatment and safe storage?	<ul style="list-style-type: none"> <li>• Ask the participants if household water treatment is safe? Also ask their views on when and why would one choose to use household water treatment?</li> <li>• Use the flipcharts to note the correct answers only</li> <li>• Discuss the applicability of household water treatment in emergencies</li> </ul>
40 minutes	Methods of Water Treatment	<ul style="list-style-type: none"> <li>• Distribute a copy of the household water treatment and safe storage manual to every participant and discuss and explain treatment methods.</li> <li>• Demonstrate treatment of a 10L bucket of water using Aquatab or Waterguard and then using PUR on a turbid water source.</li> <li>• Ask participants to drink the treated water to demonstrate the willingness to drink water that we ask beneficiaries to drink.</li> <li>• Discuss the confusion that can result without proper training on use of household water treatment products.</li> <li>• Discuss exit strategy.</li> </ul>
10 minutes	Safe Storage	<ul style="list-style-type: none"> <li>• Ask the group if treated water can be re-contaminated?</li> <li>• Ask them to share common practices in storing water.</li> <li>• Identify good and bad water storage practices and emphasise the importance in training beneficiaries on safe storage.</li> </ul>
30 minutes	Training and Follow up	<ul style="list-style-type: none"> <li>• Discuss the steps of an intervention</li> </ul>

Time	Topic	Methodology
	Training	involving Household Water Treatment (training, distribution, follow up training). <ul style="list-style-type: none"> <li>• Emphasise the importance of coupling training with distribution and follow up training.</li> <li>• Conclude and summarise the key messages of the session.</li> <li>• Divide the participants into groups and ask them to develop a plan to distribute water treatment materials, train the beneficiaries on how to use the materials, and monitor the usage of the materials. Groups to present plan and demonstrate the training session.</li> </ul>

### Tools and Resources required

- Chlorine tablets or solution (Aquatabs or Waterguards)
- PUR sachets
- Clear Buckets (at least 4 x 10L)
- White cotton clothe
- Spoon / stirrer
- Water source (clean water and turbid water)
- Household Water Treatment and Safe Storage Manuals for all participants
- Facilitator x 1 (Nominally someone experienced in facilitating NDWRT Training)
- Flipcharts
- Markers
- Power point

### Key Messages

1. Consider household water treatment in emergencies involving disperse population with issues of quality not quantity of water
2. Choose your product and dosage well
3. Never ever distribute chemicals or products without training people in their use
4. Safe water storage is equally important to prevent spread of water borne diseases

### List of Resources

- 1) Presentation: Module 4 S2\_Household Water Treatment and Safe Storage in Emergencies
- 2) Additional reference material: Household Water Treatment and Safe Storage in Emergencies Manual

## **Content**

### **1. Why Household Water Treatment and Safe Storage?**

Using water from a clean source which is stored in a safe manner is important for human's health. However, this may not always be available, especially during emergencies. Hence, it is crucial to provide the affected population an alternative means of accessing safe water.

Household water treatment enables the affected population to treat dirty water quickly and safely at a household level. The techniques used are simple and can be applied immediately after some basic training.

Household water treatment is often a temporary measure undertaken during emergencies (especially in a community where population is dispersed) until the long term water source can be improved.

### **2. Methods for Water Treatment**

There are three main types of household water treatment:

1. Disinfection – making sure that water is free from disease causing germs. This may be done by chemicals, heat, or even sunlight.
2. Sedimentation – allowing dirt to fall to the bottom of a water container over time.
3. Filtration – physically removing dirt by passing the water through a material such as ceramic or sand.

#### **2.1 Straining**

Straining involves pouring muddy or dirty water through a piece of fine, clean cloth (nominally cotton cloth which is not see through) to remove dirt, insect larvae and other suspended solids in the water.

Straining alone is unlikely to make water from a contaminated source completely safe to drink. But it is an important first step to improve the effectiveness of all household water treatment.

#### **2.2 Boiling**

Boiling is a traditional method of treating water which can be easily done by most population given that they have sufficient heating source. When performed correctly, boiling will kill all organisms that cause disease. However, it leaves the water tasting flat which some people may not be used to. This can be mitigated by aerating the water after adding a pinch of salt.

In order to effectively kill all the disease causing organisms, the water must be brought to a rolling boil for 1 minute in low elevations and 3 minutes in high elevations. Note that it takes 1 kilogram of firewood to boil 1 litre of water for one minute. Thus, this method should not be introduced in areas where heating source such as fire wood is scarce. Note also that boiling will not make water less cloudy or provide ongoing protection against re-contamination. Therefore, boiled water should be stored safely and used within a few days.

#### **2.3 Solar Disinfection**



Exposing water to sunlight will destroy most organisms that cause disease, but only if exposed long enough (at least 5 hours on a non-cloudy day centred around midday). Although this method is easy to use and does not require specialised equipment or material, the process takes a long time and is very weather dependent. Therefore, this method should not be introduced during rainy season. Similar to boiling, solar disinfection does not provide ongoing protection against re-contamination. Thus, treated water should be stored safely and used within a few days.

#### **2.4 Chemical Disinfection**

There are many chemicals (which differs in effectiveness and safety) capable of disinfecting water. The most commonly used chemicals for household water treatment are chlorine tablets and WaterGuard liquid. These products are easy to use and normally have instructions on the packaging. Be aware that the instructions may not be in a language that is widely used by the effected population or they may not be able to read. Hence, training would still be required.

Unlike boiling and solar disinfection, the chemicals may not be locally available. However, if the chemical treatment is conducted correctly, it will provide residual effect of disinfection, which gives some protection against contamination after treatment. Some people may be sensitive to the smell or taste of chlorine. This can be easily treated by airing the water container and exposing it to heat for a short period of time to release the extra chlorine.

#### **2.5 Sedimentation**

Sedimentation is effective in clearing muddy water by allowing the dirt to fall and settle at the bottom of the jars / pots. However, unless chemicals are used, it does not treat the water to a safe drinking standard. Thus, further disinfection is still required before consuming the water.

Muddy water can be made clear by using either the Three Pot Method or chemical sedimentation. Some of the limitations of these methods include:

- These products are more complicated to use and require more training and follow up.
- These products are many times more expensive per litre of water treated than chemical disinfection products and should only be used when water is muddy or no other product is available.
- People will need more than one container to properly use these chemicals.

#### **2.6 Candle Filters**

Candle filters are not normally used in emergencies, but they are very effective in treating water at a household level. The candle filters are made of ceramic which screens harmful material when water passes through the filter at slow rate. When the clean water flow becomes too slow, it is an indication that the candle is clogged. The candle should then be unclogged/maintained by brushing the candle with water and disinfected by putting in a pot of boiling water to kill all the germs.

Candle filter is easy to use, but is expensive and fragile. If the source water is very dirty, it may take a long time to treat and maintenance requirement may become very frequent. There is no residual effect on this treatment, so safe storage is required to avoid re-contaminating the treated water.

### **2.7 Sand Filters**

Filtration through sand is a fast and simple pre-treatment option that reduces the amount of dirt in water and makes disinfection more effective. For longer term water treatment, a biosand filter can be used to filter water through sand and a biological layer that develops on the top of the filter. Both sand and biosand filters can be cleaned when it becomes clogged. Because the biological layer requires time to establish, the filter is normally not effective at the beginning of use or immediately after a clean.

Although filters are simple to use, they required hands on training when they are distributed to ensure that the filters are regularly maintained. Hence, filters are rarely used to respond to emergencies.

### **3. Safe Storage**

All efforts to make water clean are pointless if the water is improperly stored or handled. Narrow necked containers prevent contamination but are difficult to clean. Wide necked containers are easily contaminated but easily cleaned. In emergencies, people will use containers they already own or containers that they are provided with during the intervention. Or both. Work with what you have.

### **4. Training**

Chemicals should NEVER be distributed without training people in their use. Make a training plan before the distribution and work with people to find the right dose for their water and their container. If the people are unfamiliar with the products, they may not trust the methods. Demonstrate how to use the product and then drink the treated water in front of them to show your confidence in the methods. Allow them to practice using the products and methods in front of you and allow them to ask questions and raise concerns.

### **5. Follow Up Training**

One lesson on how to conduct household water treatment is not enough. Follow up training and monitoring should be carried out after the initial training. During this follow up training, you and your field team are looking for:

- People's satisfaction regarding the product selected
- Correct use of the products
- People's hygiene practices at household level in relation to water handling and storage.

It is recommended to include hygiene promotion with training of household water treatment and safe storage to encourage behavioural change of the people. Note that awareness and health messages may not be enough to change behaviour. Cultural and traditional beliefs should also be considered when implementing hygiene promotion.

#### **Resource materials for this session:**

2. PowerPoint presentation titled '2. Household Water Treatment and Safe Storage in Emergencies'

### **Session 3 – Emergency Sanitation**

#### **Objective of this session**

1. Participants understand the pathway of disease transmission and blockages.
2. Understand the key standards, indicators and guidelines for sanitation in SPHERE.
3. Understand the basic principles of excreta disposal in emergencies.
4. Identify key sanitation tools used by the RC/RC movement in emergencies.

#### **Session Plan**

Timing: 1 hour

Methods: presentation, group discussions, product demonstration and group exercise

<b>Time</b>	<b>Topic</b>	<b>Methodology</b>
45 minutes	Excreta Disposal	<ul style="list-style-type: none"> <li>• Ask the participants what are the main causes of death in emergencies? Discuss links of health to WatSan.</li> <li>• Use whiteboard or flipcharts to introduce the F-diagram, and demonstrate the pathways of disease transmission as well as the links to blocking the pathways through “WatSan hardware and software”.</li> <li>• Introduce different options for excreta disposal in emergencies. Comment on the applicability of each option.</li> <li>• Showcase the products available in Kit 2.</li> <li>• Divide the participants into groups and ask each group to discuss the importance of maintaining latrines and some of the challenges.</li> </ul>
5 minutes	Solid Waste Management	<ul style="list-style-type: none"> <li>• Discuss different options for Solid Waste Management in emergencies. Comment on the applicability of each option.</li> </ul>
5 minutes	Drainage	<ul style="list-style-type: none"> <li>• Discuss importance of providing drainage and link to health by minimising vector breeding ground.</li> </ul>
5 minutes	Vector Control	<ul style="list-style-type: none"> <li>• Discuss different options for Vector Control in emergencies. Stress the importance of training when distributing products. Share common mistakes/misuse of products.</li> </ul>

#### **Tools and Resources required**

- 1 set of disaster emergency sanitation response kit from Kit 2
- Facilitator x 1 (Nominally someone experienced in facilitating NDWRT Training)
- Flipcharts
- Markers
- Projector

## Key Messages

1. Providing proper sanitation is equally important as providing safe water supply in emergencies.
2. Remember to train the people on use and maintenance of facilities.
3. Always couple hygiene promotion to sanitation implementation

## List of Resources

- 1) Presentation: Module 4 S3\_Sanitation in Emergencies

## Content

### Sanitation in Emergency

It is generally accepted that excreta disposal is given less priority in emergencies than other humanitarian interventions such as health care, food and water supply. This is despite the fact that many of the most common diseases occurring in emergency situations are caused by inadequate sanitation facilities and poor hygiene practice. Many aid agencies are aware of these facts and are now giving a greater emphasis to sanitation, especially excreta disposal.

Sanitation in emergency encompasses excreta disposal, solid waste management, waste water management (drainage) and vector control.

### 1 Excreta disposal

Inadequate and unsafe disposal of human faeces can lead to the transmission of faecal-oral disease, can result in the contamination of the ground and water sources, and can provide breeding sites for flies and mosquitoes which may carry infection. In addition, faeces may attract domestic animals and vermin which spread the potential for disease. It can also create an unpleasant environment in terms of odour and sight.

While the provision of safe drinking water is also essential for the protection of public health, the importance of excreta disposal cannot be overestimated. Diarrhoeal diseases, transmitted via the faecal-oral route, account for 17% of all deaths of children under five worldwide (WHO, 2006) and the risk of occurrence increase significantly in most emergency situations.

Children under five years of age are most at risk from communicable diseases since their immune systems have not developed fully. Malnutrition resulting from food insecurity and chronic emergencies increases this risk further. Since young children are unaware of the health risks associated with contact with faeces, it is essential that faeces are safely contained.

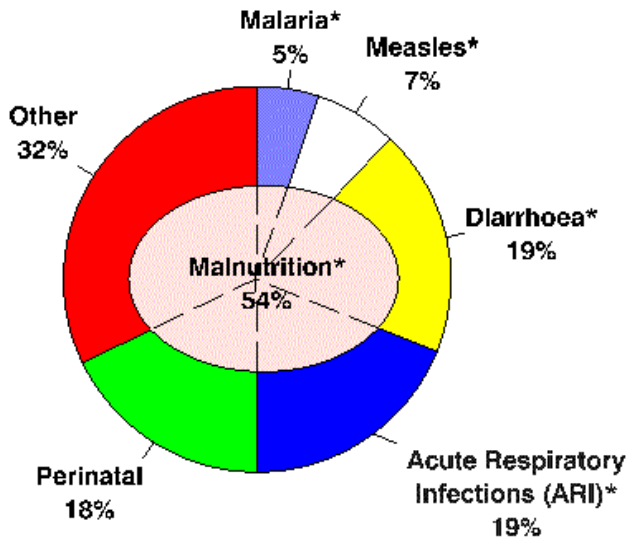


Figure 3.1: Causes of Death in Emergencies (Worldwide)

Figure 3.1 demonstrates the spiral relationship between malnutrition and infection; inadequate dietary intake leads to weight loss, lowered immunity and mucosal changes. This affects the incidence, duration and severity of many diseases, particularly diarrhoea or dysentery, which in turn may lead to appetite loss, nutrient loss and mal-absorption further exacerbating malnutrition. So, be aware, as communicable disease indicators have important interactions with indicators in

other sectors: such as nutrition, water and sanitation.

The introduction of safe excreta disposal can reduce the incidence of intestinal infections and helminth infestations. Excreta-related communicable diseases include cholera, typhoid, dysentery (including shigellosis), diarrhoea, hookworm, schistosomiasis and filariasis, as well as roundworms, poliomyelitis and hepatitis. The likelihood of all these diseases, and especially epidemics such as cholera, increases significantly when a population is displaced or affected by a disaster.

Transmission of excreta-related diseases is largely faecal-oral or through skin penetration. Figure 3.2 illustrates the potential transmission routes for pathogens found in excreta. The infectious agents that cause diarrhoea are usually spread by the faecal-oral route, which includes the ingestion of faecally contaminated water or food, person-to-person transmission, and direct contact with infected faeces.

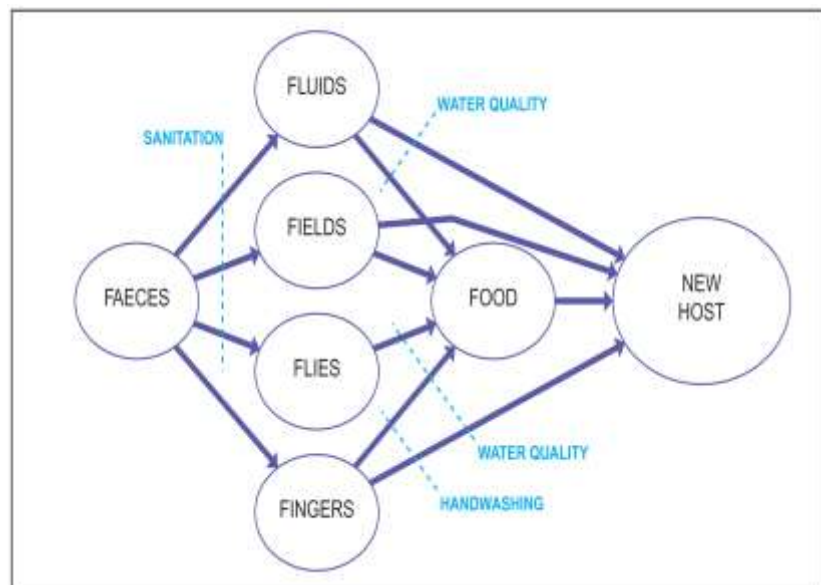


Figure 3.2: F-Diagram

Poor hygiene practice, particularly involving food and hands, are often a major cause of disease transmission, even where appropriate excreta disposal facilities are in place. For this reason it is difficult to obtain a direct correlation between the incidence of excreta-related disease and the provision of appropriate facilities.

### 1.1 Sphere Standards and Indicators

Sphere project is a humanitarian chapter which prescribes the minimum standards in humanitarian response. It was initiated in 1997 by non-government organisations (NGOs) and International Red Cross Red Crescent Movement. The aim of this initiation is to improve quality of humanitarian actions during disaster response and to be held accountable for them.

The minimum standards developed were based on two core beliefs:

- 1) Those effected by disaster or conflict have the right to life with dignity and thus right to assistance
- 2) All possible steps should be taken to alleviate human suffering arising out of disaster or conflict

For excreta disposal, the following two standards apply:

**Standard 1: Environment free from human faeces** – The living environment in general and specifically the habitat, food production areas, public centres and surroundings of drinking water sources are free from human faecal contamination.

One of the main indicators for this standard include all trenches and soak away pits are at least 30m away from groundwater source, and at least 1.5m above water table.

**Standard 2: Appropriate and adequate toilet facilities** – People have adequate, appropriate and acceptable toilet facilities, sufficiently close to their dwellings, to allow rapid, safe and secure access at all times, day and night.

Some of the main indicators for this standard include:

- ✓ Max. 20 people per toilet.
- ✓ Toilets are less than 50m away from dwellings.
- ✓ People wash their hands after using latrines and eating or preparing food.

### 1.3 Sanitation Tools

#### **Open defecation field**

In the initial stages of an emergency, areas where people can defecate, rather than where they cannot, should be provided immediately. If there is insufficient time to construct appropriate facilities this may mean, in extreme circumstance, the setting up of open defecation areas. These should be located where excreta cannot contaminate the food chains.

**Advantages:** Rapid to implement; minimal resources required; minimises indiscriminate open defecation.

**Constraints:** Lack of privacy for users; considerable space required; difficult to manage; considerable potential for cross-contamination of users; better suited to hot and dry climate.

#### **Trench Latrines**

A simple improvement on open defecation fields is to provide trenches in which people can defecate. This allows users to cover faeces and improves the overall hygiene and

convenience of an open defecation system. Shovels may be provided to allow each user to cover their excreta with soil.

*Advantages:* Rapid to implement; faeces can be covered.

*Constraints:* Limited privacy; short life span; considerable space required.



Figure 3.3: Trench Latrine

### ***Pit Latrines***

Simple pit latrines are by far the most common technology choice adopted in emergency situations. This is because they are simple, quick to construct and generally inexpensive.

*Advantages:* Cheap; quick to construct; no water needed for operation; easily understood.

*Constraints:* Unsuitable where water-table is high, soil is too unstable to dig or ground is very rocky; often odour problems.



Figure 3.4: Pit Latrine

### ***Emergency Response Units (ERU) Mass Sanitation Module (MSM) for 20,000 Beneficiaries***

The International Federation of Red Cross and Red Crescent Societies preposition Mass Sanitation Modules (MSM) to enable timely response during emergencies.

Module MSM20 is part of the complete Water and Sanitation ERU which is composed of 3 modules (M15, M40, MSM20). This module provides to up to 20,000 beneficiaries an integrated response to hygiene and sanitation based on public health needs assessment, community mobilisation, and the use of rapid and effective sanitation technology and hygiene promotion.



Figure 3.5: ERU Mass Sanitation Module



Figure 3.6: WatSan Disaster Response Kit





Figure 3.7: SanPlat Box



Figure 3.8: Rapid Latrine

### 1.6 Communal or Family?

**Family facilities:** Usually designed and built by the users (with or without designs, tools and materials provided by others). They may be used by several families. The latrine belongs to the family/ies.

**Communal facilities:** Managed by the community as a shared resource (market, school, etc.). The facility belongs to the community.

### 1.7 Handwashing Facilities

Whenever latrine facilities are implemented, handwashing facilities should also be provided as to encourage positive hygiene behaviour. Providing handwashing facilities is not always straight forward especially in a large area due to lack of water supply during emergencies.

Work with your team to chose the right technology (jug, tippy tap, etc) and establish a system of keeping water available. Always remember to include hygiene promotion with any latrine construction.

### 1.8 Operation and Maintenance

When implementing sanitation, training should be provided to ensure that the users are using the toilets appropriately and cleaning the toilets appropriately. But how do we encourage people to maintain their toilets?

It is often a challenge to encourage people to maintain their toilets during emergencies, especially for communal toilets because no one likes to clean other people's faeces. One of the many ways to address this issue is to employ someone specifically to clean the toilets. However, the beneficiaries should first be given the opportunity to organise maintenance amongst themselves or at least contribute towards the payment of the toilet cleaner/s.

Another factor that would bestow a sense of ownership to the people, which in turn would encourage maintenance, is to involve the people in design, sitting and construction of the toilets. Cleaning material as such disinfectants, mops, rags, buckets and gloves can also be supplemented to assist with the maintenance process.

## 2. Solid waste management

Solid waste during emergencies can be managed using the following methods:

- Disposal pit – easy to construct and manage, but requires large area.
- Land-filling – normally not available during emergencies, but otherwise presents the best solution for solid waste management.
- Burning – easy to manage although not environmentally friendly, weather dependent and may cause health issues over long term.

## 3. Waste water management (drainage)

Where ever there is a risk of water or wastewater ponding, drainage should be installed to allow water to flow. This will avoid creating breeding ground mosquitoes. This will also prevent developing odour issues.

## 4. Vector control

If eliminating breeding ground is not an option or is not sufficient to control vector problem, the following two options can be considered to protect the affected population during emergencies:

1. Personal protection – mosquito nets, incense and insect repellent
2. Insecticide spraying



Figure 3.9: Vector Control

### Resource materials for this session:

3. PowerPoint presentation titled '3. Sanitation in Emergencies'

## **Session 4 – Hygiene Promotion in Emergency**

### **Objective of this session**

1. Understand the basic principles of hygiene promotion.
2. Identify ways of conducting hygiene promotion in an emergency.
3. Identify key hygiene tools used by the RC/RC movement in emergencies.

### **Session Plan**

Timing: 1 hour 40mins

Methods: presentation, group discussions, practical demonstration and role playing

<b>Time</b>	<b>Topic</b>	<b>Methodology</b>
15 minutes	Why do we need hygiene promotion?	<ul style="list-style-type: none"> <li>• Ask the participants what they know about hygiene promotion? Discuss some of the methods used and the effectiveness.</li> <li>• Explain the principles of hygiene promotion in an emergency.</li> </ul>
10 minutes	Selection and distribution of hygiene kits	<ul style="list-style-type: none"> <li>• Discuss the hygiene kits available for distribution during emergencies.</li> <li>• Introduce soap and jerry cans as the only hygiene items provided to household in emergencies without an assessment to determine what hygiene items are more appropriate for that culture.</li> </ul>
15 minutes	How do we promote hygiene in emergencies?	<ul style="list-style-type: none"> <li>• Introduce the different avenues which hygiene promotion can be conducted in emergencies.</li> <li>• Discuss the attitude and the qualities of a hygiene promoter.</li> <li>• Demonstrate hand washing technique and discuss key times</li> </ul>
60 minutes	Hygiene promotion box	<ul style="list-style-type: none"> <li>• Demonstrate the hygiene promotion box. Remove the picture cards and explain the 4 activities that can be conducted using these cards.</li> <li>• Explain the advantages and constraints of these activities as a participatory tool to assess, involve and build trust with groups to identify hygiene behaviours and knowledge.</li> <li>• Divide the group into 4. Hand out: Pocket Chart, 3 pile sorting, Chain of contamination, Take 2 children (stress from PHAST method). Groups to read</li> </ul>

Time	Topic	Methodology
		instructions and create a role play. 30mins to prepare, 30mins to present.

### Tools and Resources required

- Hygiene promotion box x 1
- Facilitator x 1 (Nominally someone experienced in facilitating NDWRT Training)
- Flipcharts
- Markers
- Projector

### Key Messages

1. The success of hygiene promotion depends on behaviour change.
2. Health messages itself is not a strong motivator for behaviour change. Hence, hygiene promoters need to listen and be sensitive towards the beneficiaries' main concerns before introducing the appropriate tools to encourage behaviour change.
3. Behaviour change is possible as long as we focus on action!

### List of Resources

- 1) Presentation: Module 4 S4\_Hygiene Promotion in Emergencies
- 2) Additional reference material: IFRC HP Box Information Sheet

### Content

#### 1 Why do we need hygiene promotion?

There are four main reasons why we should promote hygiene in emergencies:

- 1.1 Encourage safe hygiene practices** – It is important to educate the beneficiaries on safe water chain in an emergency to prevent spread of diseases in an emergency.
- 1.2 Ensure optimal use of facilities** – Due to lack of training and encouragement, many beneficiaries have in the past misuse the facilities for example using the latrines as a storage area. Hygiene promoters also have the role in training beneficiaries on how to maintain the facilities to ensure sustainable use which is intended to reduce the risk of disease spread.
- 1.3 Enable beneficiaries' participation and accountability** – The hygiene promoters will usually have the most contact with affected communities. Their remit is to listen to the communities' viewpoint – whilst this should focus on hygiene – very often they will need to be sensitive to other community needs and priorities and respond where possible. Where they are not able to respond they are in a good position to advocate on behalf of women, men and children or to request the support of another agency. They can help identify vulnerable groups and support them. They will also be responsible for monitoring community satisfaction with facilities and/or hygiene kits and responding to this where possible. It is important to involve the beneficiaries.
- 1.4 Monitor acceptability and impact on health** – This is part of encouraging participation and greater accountability. Active monitoring should lead to decisions being made to try and improve or change the situation. At the very least the links that hygiene promoters create and build with the affected population can ensure better communication with those responsible for the overall response. Collective actions/practices/behaviours. Health itself is not measured but the individual or of

those affected that can serve as a substitute for impact on health. Links with local clinics/health personnel can ensure that a timely response is made to an outbreak of disease or that consistent information is given on the use of ORS or medicines where required.

## **2. Selection and distribution of Hygiene kits**

Discussions with affected men and women should form the basis of the selection of hygiene items and while it may not be possible to consult extensively in an acute emergency, there is always some space for dialogue with the affected population. As Sphere suggests:

*'Existing cultural practices and familiar products should be assessed in specifying the items supplied. **Care should be taken to avoid specifying products that would not be used – due to lack of familiarity – or that could be misused (e.g. being mistaken for foodstuffs).***

Activities (examples)

- Decide on content and acceptability of items for hygiene kits
- Ensure the optimal use of hygiene items (including insecticide-treated bed nets where used)
- Water treatment tablets (Aquatabs) should not be taken as a medication

## **3. How do we do hygiene promotion in emergency?**

Hygiene promotion in emergency can be carried out through the following:

- Campaigns
- House to house visits
- PHAST
- Social marketing

It is important to note however that hygiene promotion in emergency is not just about message dissemination, but also ACTION (behaviour change) and DIALOGUE!!

Interactive methods are time consuming but are often more effective than using the mass media. (NB. Trade off between reach and effectiveness). They are a good way to understand the community perspective and can be used as assessment techniques as well as mobilisation techniques. However, the participatory approach does not always come naturally to those who are not familiar with these methods and outreach workers will often need to be trained to use them and then be well supported.

## **4 Hygiene promotion box**

The intended purposes of the box:

- Improve quality of our HP interventions in emergency
- Speeding up HP activities in the first phase of the emergency (first 12 weeks)
- Using 2 approaches- directive approach focusing on mass communication and interactive approach focusing on community action

### **Resource materials for this session:**

4. PowerPoint Presentation titled '4. Hygiene Promotion in Emergencies'