

Household water treatment and safe storage in emergencies

A field manual for Red Cross/Red Crescent personnel and volunteers

International Federation
of Red Cross and Red Crescent Societies

Indian Red Cross Society

© International Federation of Red Cross
and Red Crescent Societies

Any part of this handbook may be cited, copied, translated into other languages or adapted to meet local needs without prior permission from the International Federation of Red Cross and Red Crescent Societies, provided that the source is clearly stated.

Disclaimer
While this document is intended as a general manual on household water treatment and storage, it does occasionally identify specific brands of products commonly used in emergencies. Mention of specific products in this manual in no way constitutes an endorsement of that product by the International Federation of Red Cross and Red Crescent Societies.

Cover photo: Rob Few / IFRC

Indian Red Cross Society

National Headquarters
1, Red Cross Road, New Delhi - 110001
Phones: +91 11 23716441/2/3
Fax: +91 11 23717454
Web site: www.indianredcross.org

2008

International Federation of Red Cross and Red Crescent Societies

P.O. Box 372
CH-1211 Geneva 19
Switzerland
Telephone: +41 22 730 4222
Telefax: +41 22 733 0395
E-mail: secretariat@ifrc.org
Web site: www.ifrc.org

From the desk of the Secretary General



The Indian Red Cross Society (IRCS) is committed to supporting communities in times of disasters and emergencies and to improving the lives and well-being of vulnerable people across the country. With its extensive network of State, District and local branches and a dedicated volunteer base, IRCS is well positioned to support communities before, during and after emergencies.

The Indian Red Cross Society (IRCS) is committed to supporting communities in times of disasters and emergencies and to improving the lives and well-being of vulnerable people across the country. With its extensive network of State, District and local branches and a dedicated volunteer base, IRCS is well positioned to support communities before, during and after emergencies.

Access to safe drinking water, sanitation and hygiene is fundamental to public health, dignity and resilience. Disasters such as floods, cyclones, landslides and other emergencies can disrupt water and sanitation services, increase the risk of waterborne diseases and place vulnerable communities at particular risk. Strengthening preparedness and ensuring timely access to safe water and essential sanitation facilities are therefore an important part of humanitarian response and disaster risk reduction.

IRCS has a long-standing commitment to Water, Sanitation and Hygiene (WASH) as an integral component of its disaster management and community-based programmes. During emergencies, IRCS deploys and supports appropriate WASH interventions, including emergency water treatment and supply, sanitation facilities, hygiene promotion and distribution of essential WASH items. These efforts are complemented by community awareness and practical measures that enable families to protect their health and maintain safe hygiene practices.

Through its WASH initiatives, IRCS works closely with communities, government authorities, the International Federation of Red Cross and Red Crescent Societies (IFRC), the International Committee of the Red Cross (ICRC), Partner National Societies and other stakeholders. These partnerships strengthen the capacity of the Red Cross network to anticipate risks, respond effectively to emergencies and promote healthier and more resilient communities.

I take this opportunity to acknowledge and appreciate the dedicated efforts of our State and District branches, staff and volunteers who continue to promote safe water, sanitation and hygiene practices and provide humanitarian assistance to communities affected by disasters and other emergencies. I also extend my sincere appreciation to our Movement partners and other supporting organizations for their continued cooperation and support to IRCS.

This manual on household water treatment methodologies is intended to provide practical, simple and useful information that can be applied at the household and community level. I encourage all staff and volunteers of IRCS branches to familiarize themselves with its contents and use the knowledge and messages provided to promote safe water practices and hygiene awareness among the communities we serve.

I am confident that this resource will contribute to strengthening community preparedness, reducing health risks associated with unsafe water and sanitation, and supporting the well-being and resilience of vulnerable communities across India.

Lalit Wadhwa,
Secretary General
Indian Red Cross Society

Contents

Water quality overview 2

Introduction to household water treatment and safe storage 4

Methods for household water treatment 6
Straining 6

Disinfection 7
Boiling 8
Solar 10
Chemical disinfection 12

Sedimentation 15
Three pot method 16
Chemical sedimentation 18

Filtration 20
Candle filters 20
Sand filters 21

Safe storage and handling 22

Promotion of household water treatment and safe storage at household level 24

Household water treatment and safe storage decision tree 27

Fact sheets 30
Three pot method 30
How to treat water with Water Guard (Sûr'Eau) 32
How to treat water with chlorine tablets 34
How to treat water with Watermaker 36
How to treat water with PUR sachet 38

Additional resources 40



> Water quality overview

> Why is water quality important?

Clean water is a key factor in keeping people healthy, especially in an emergency.

> How is water contaminated?

Water can be contaminated at the source, in the home, or during the journey in between.

A water source that is not protected, a dirty container, or unwashed hands can easily turn water, even water that looks and tastes clean, into something that makes people ill.

A water source can be contaminated through a number of routes including:

- Leaking septic tanks and latrines.
- Contaminated surface water run-off entering wells and springs.
- Collecting water with unwashed hands and/or dirty containers.
- Animals using the same source.
- Objects falling into the well.

However, the water at the source is only the first stage of the water chain. Even clean water collected from a source can be contaminated prior to use at critical points due to unsafe hygiene practices:

- Transporting water from the source to the house in dirty water containers.
- Storing water at home in open and/or dirty water containers.
- Handling water at home with dirty utensils or hands.



Every step in the chain presents an opportunity for water to be contaminated.

> What aspects of water quality are we interested in?

There may be several reasons to improve the quality of the water. The most important is the removal of organisms like germs and parasites that cause disease. We may also want to remove suspended particles like dirt which make the water look and taste bad and that might be carrying germs which make people ill.

> What aspects of water quality are not covered by this manual?

Water can be dangerous to health if it contains certain substances, like pesticides used in farming or naturally occurring arsenic. Or, as in the case of iron, it may be safe to drink but taste so bad that people seek out other sources of water that taste better but make them ill.

Information on these issues can be found from other sources (see Additional resources).

> How do I know if water is contaminated?

There are many ways to test water quality. All require equipment and/or chemicals. Water quality testing is not covered in this manual. More information can be found in the Additional resources section.

If water quality testing is not possible, the source and the behaviour of the users can be observed to identify risks to human health.

		Yes	No
1	Are people collecting water from a pump or standpipe?		
2	Is the pump or water system in good condition?		
3	Does the water look clean?		
4	Is the area around the pump clean?		
5	Are people practicing safe water storage and handling?		
6	Are people practicing good hygiene behaviours?		

If the answer to any of these questions is NO, there is a strong likelihood that there is a problem with water quality.

In an emergency, people will be more vulnerable to germs that cause disease. If there are sufficient resources, it may be best to play it safe and assist even those groups with clean water in order to reduce the risk of an outbreak.

> Introduction to household water treatment and safe storage

> What is household water treatment?

Household water treatment is any activity to improve water quality undertaken at the household level.

> What is safe water storage?

Safe water storage is the use of clean containers with covers AND good hygiene behaviours that prevent contamination during water collection, transport, and storage in the home.

> Why do we promote household water treatment and safe storage?



Indian Red Cross Society

It is always better to use water from a clean source that's stored in a safe way. However, this is not always possible, especially in an emergency. Something may have made the source unclean or unusable. Or a population may not have access to clean containers or practice good hygiene behaviour.

One approach to this problem is treating water at the household level. This is often a temporary measure undertaken until the water source can be improved. Household water treatment techniques can be carried out by any member of the family after a brief and basic technical training.

Efforts to improve household water quality can have a huge impact on health and can reach a large population in a short amount of time.

> How is household water treatment and safe storage done?

This manual outlines various methods of household water treatment and includes instructions in their use.

It is extremely important that people who receive items as part of an emergency response know how to use those items. There are different procedures for different household water treatment products and for products that come in various sizes. Be familiar with the treatment product before distribution starts. *Try it yourself.* And make sure that no one receives any item, whether it is a chemical or a jerry can, without also learning how to use it.

Coordination and close interaction with the distribution team is particularly important given the high costof many of these products and the risks associated with drinking contaminated water.

This manual also includes basic guidance about how to link the distribution of items in an emergency to hygiene promotion activities about safe water handling and storage at the household level.

> Is household water treatment safe?

Specific safety concerns are included in each section. Generally speaking, the methods and products outlined in this manual are safe. However, care should be taken whenever chemicals are in use, especially with children.

> How much water needs to be treated?

Only as much as necessary.

Clean water is often scarce in emergencies and all of the treatment methods mentioned in this manual involve a cost in terms of time, money, or both. The minimum amount of water that needs to be treated is the quantity needed for drinking and preparing uncooked foods. Usually around 5 litres per personper day is needed but this may vary depending on climate and population.

If the untreated water looks reasonably clear, it will not ***usually*** need to be treated before being used for other domestic purposes such as bathing or laundry.

> What are the methods of treatment?

This manual will look at three types of water treatment:

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

> How do I choose a treatment method?

See the *Household water treatment and storage decision tree* contained in this manual for a step by step guide on selecting a treatment method.

The choice of method will depend on the location and nature of the emergency. There probably will not be one right answer or one perfect solution. Sometimes the only choice is what is available. Most importantly, the people using the method or product must want to use it.

> Methods for household water treatment

> Straining

Straining water is an important first step that, if done correctly, will improve the effectiveness of all the methods mentioned in this manual.

Pouring muddy or dirty looking water through a piece of fine, clean cotton cloth will often remove a certain amount of the suspended solids and insect larvae contained in the water.

A simple test to determine whether the cloth is adequate is to use it to filter the water. If the dirt does not pass through the cloth then it is working correctly. A cotton cloth works best and you should not be able to see through the cloth. On the other hand, the cloth should not be so thick that it takes a very long time to filter the water.

Washing the cloth between uses will make straining more effective.

Straining alone is unlikely to make water from a contaminated source completely safe to drink. But it makes household water treatment easier.

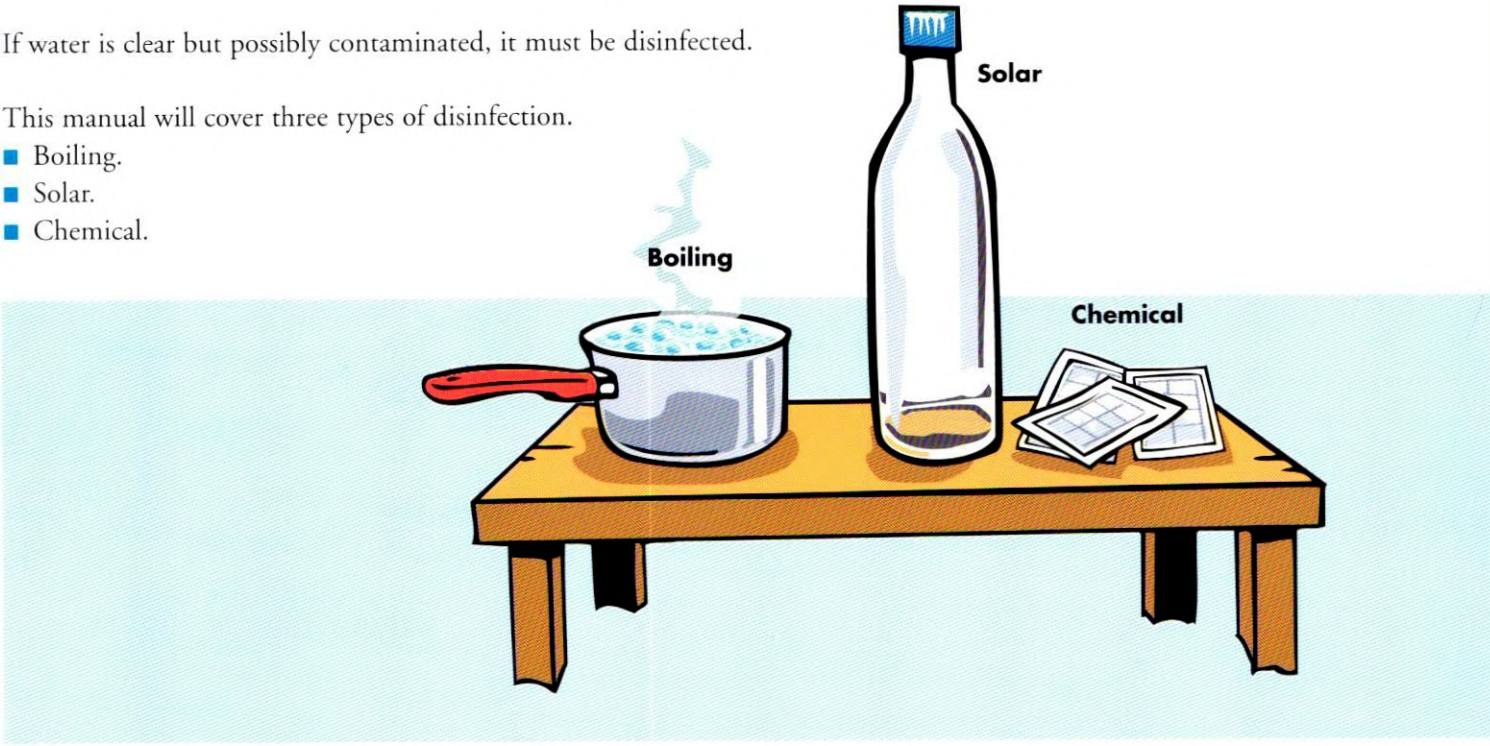


Disinfection

If water is clear but possibly contaminated, it must be disinfected.

This manual will cover three types of disinfection.

- Boiling.
- Solar.
- Chemical.



Disinfection can often affect the taste of water.

- Boiling will leave the water tasting flat.
- Solar will make the water hot.
- Chemicals can leave a bad taste.

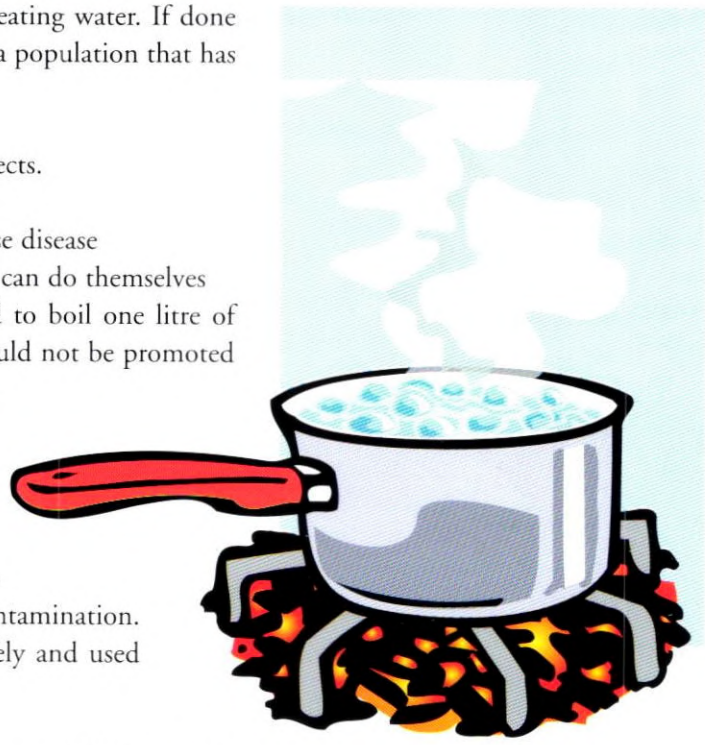
All of these problems can be overcome by simple methods. It is important to talk to people who are using these methods about this to make sure they do not abandon clean water for an unsafe source or stop treating the water they collect.

> Boiling

Boiling is a traditional method of treating water. If done properly it can provide safe water to a population that has no alternatives.

Boiling has positive and negative aspects.

- ▲ Boiling will kill all germs that cause disease
- ▲ Boiling water is something people can do themselves
- ● It takes one kilogram of firewood to boil one litre of water for one minute. Boiling should not be promoted in areas where wood is scarce and no other heating options are available.
- ● Boiling will not make water less cloudy.
- ● Boiling has no residual effect, so improper storage can lead to re-contamination. Boiled water should be stored safely and used within a few days.



Boiling is only effective if the temperature is high enough. Water that is simply steaming has not been boiled.



For boiling to work, ***water must be brought to a rolling, bubbling boil.***



> How long do I boil?

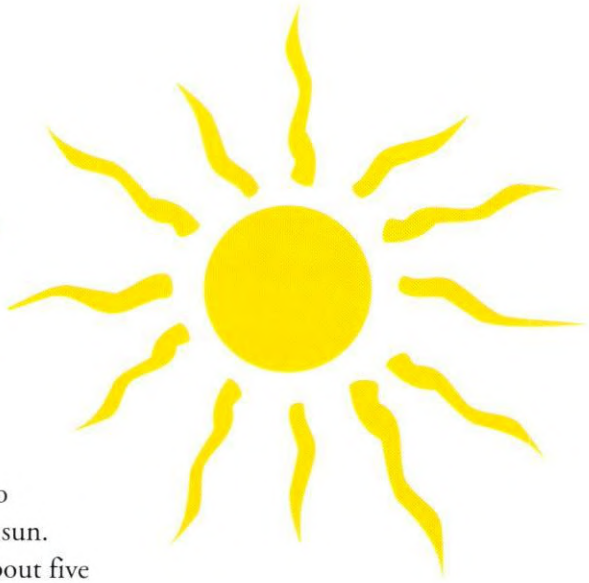
Low elevation ***one minute rolling, bubbling boil.***

High elevation ***three minutes rolling, bubbling boil.***



Tip **Boiling will make the water taste flat. However, this can be fixed by shaking the water in a bottle or adding a pinch of salt for each litre of water boiled.**

> Solar disinfection



Exposing water to sunlight will destroy most germs that cause disease. This is even more effective at higher temperature (although the temperature of the water does not need to rise much above 50°C).

One easy method of treating the water is to expose plastic or glass bottles of water to the sun. In tropical regions, a safe exposure period is about five hours, centred around midday.

The amount of time the bottle is exposed to the sun will need to be doubled (two days instead of one) when the water is cloudy. The exposure time should also be increased if there is not sunny weather (rainy season).

> How do I use solar disinfection?

This method, also known as the SODIS system, uses clear **plastic** or **glass** bottles to increase the temperature of the water by placing it direct sunlight.

For greater effectiveness place the bottle on a corrugated-iron roof.

The water can also be held in a clean and clear plastic bag if a bottle is not available.



Tip

To speed the process, fill the bottle three-quarters full and vigorously shake it. Then fill the bottle and expose it to sunlight. Further sporadic shaking during exposure will also help.



Tip

People are unlikely to want to drink the warm, treated water. Encourage them to let it cool.

Solar disinfection has positive and negative aspects.

- ▲ Solar disinfection will kill most germs that cause disease if exposed to the sun long enough.
- ▲ Solar disinfection is something people can do themselves with widely available materials (clear bottles or clear plastic bags).
- ● Solar disinfection has no residual effect, so improper storage can lead to re-contamination. Water treated by this method should be stored safely and used within a few days.
- ● Solar disinfection takes more time than other methods and requires sunny weather.

> Chemical disinfection

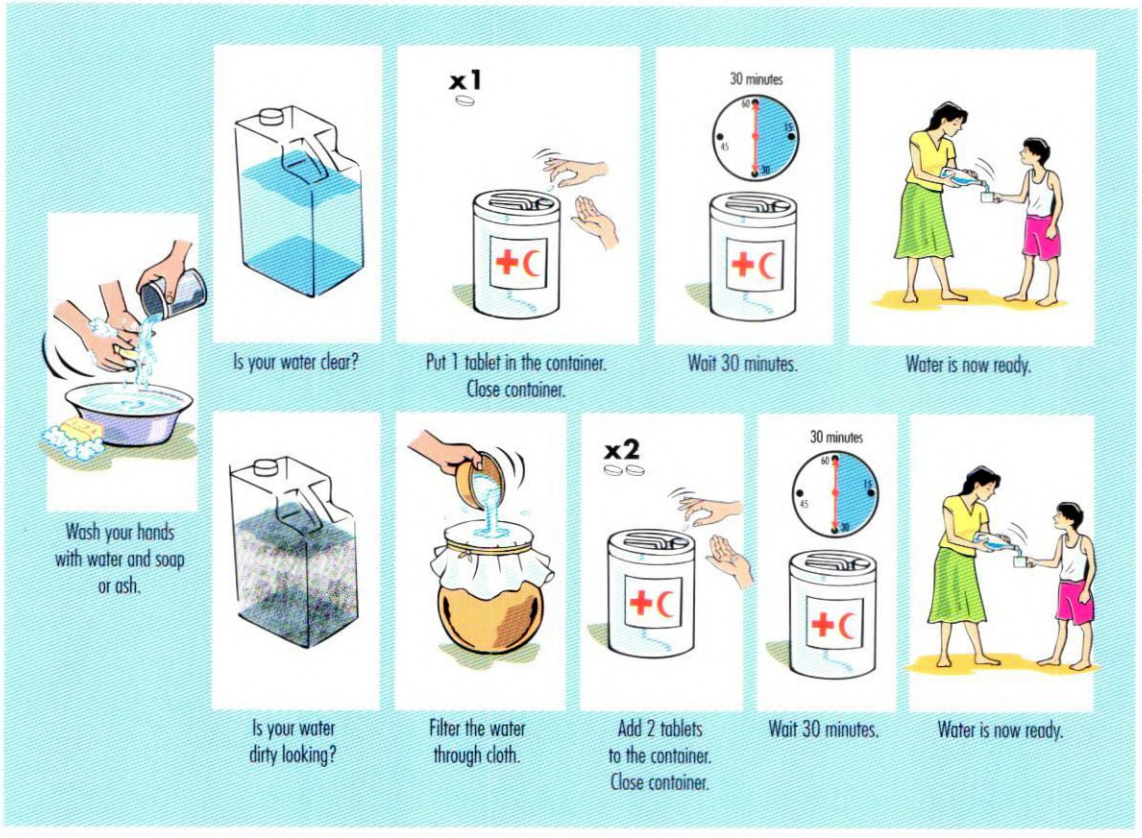


There are many chemicals capable of disinfecting water. These chemicals often vary in their effectiveness and safety.

The International Federation most commonly uses chlorine tablets for household water disinfection in emergencies.

> How do I use chemical disinfection?

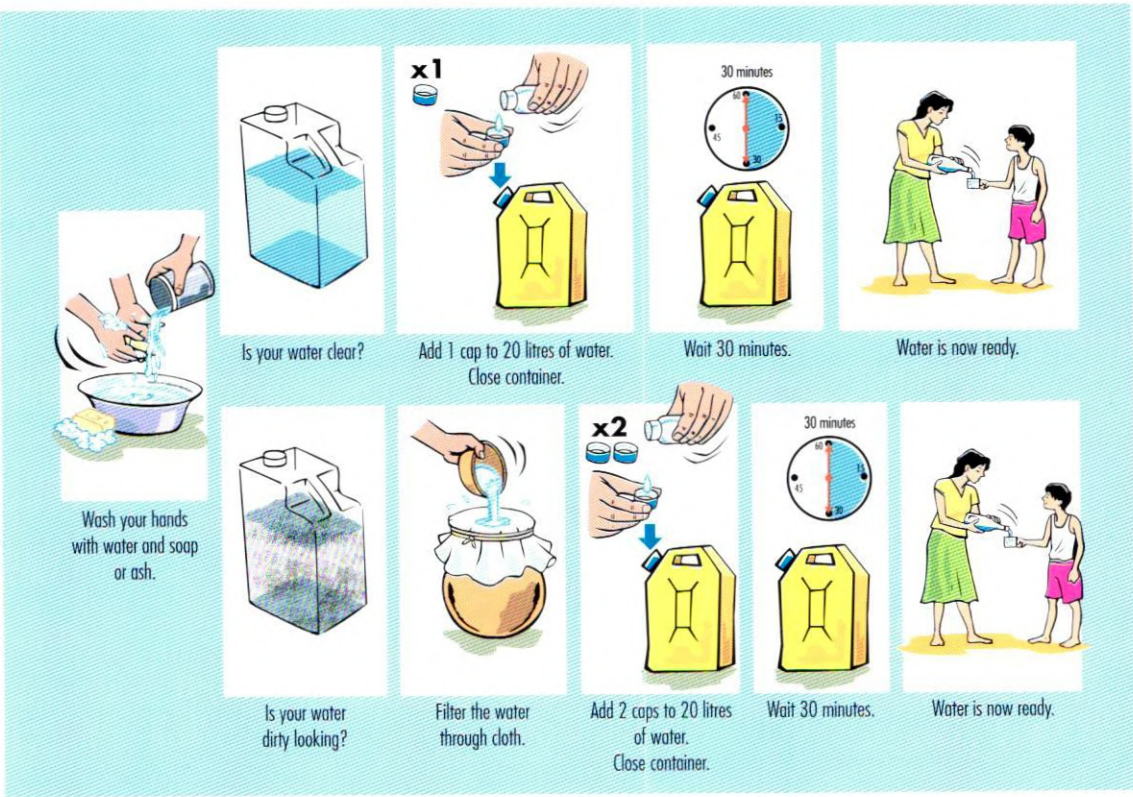
How to treat water with chlorine tablets



WaterGuard liquid

WaterGuard (also known as Sûr'Eau) is liquid chlorine. It has the same effect as the tablet.

How to treat water with WaterGuard (SûrEau) liquid



Care should always be taken when working with chemicals. Do not allow the chemicals to come into contact with the eyes. Chemicals should be stored out of reach from children in a dry place out of direct sunlight.

These products have instructions on the packaging. However, the instructions might not be in the language the people speak or they may not be able to read.

Make sure all people who receive chemicals are trained how to use them. See the section on Promotion of Household Water Treatment and Safe Water Handling and Storage for more details. Because of quality control concerns and the wide range of concentrations, common household chemicals such as laundry bleach should not be utilised as a chemical disinfectant unless no other options are available and careful training and monitoring is carried out.







Tip **Chemical disinfection is not as efficient when used with dirty or cloudy water. If the water looks dirty or cloudy, use a double dose of chemical.**

Tip

Chemical disinfection, especially a double dose, can leave a taste that people do not like. This could cause them to stop treating water. The problem of chemical taste can be removed by using the correct amount of chemical and by shaking the water in a bottle to increase the air content.

Tip

Talk to people about the product. Is it easy to use? How is the taste? A different product may be needed (see next section).

Tip

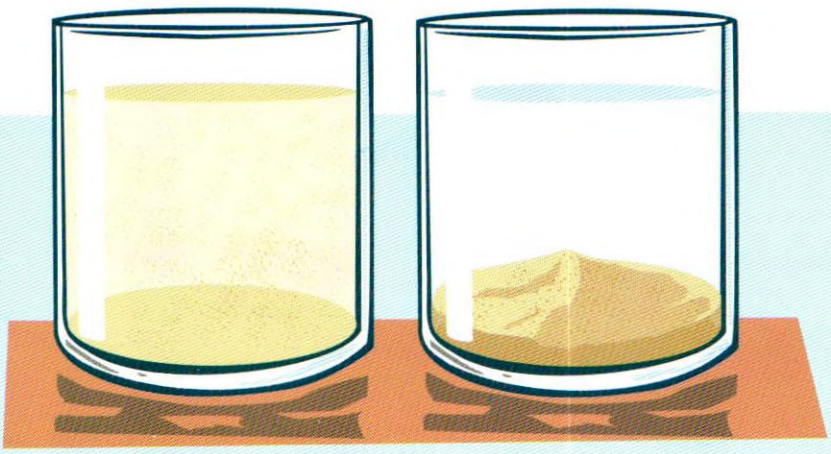
Leaving a container open and exposing it to heat (direct sunlight for example) will reduce the ability of the chemical to protect against contamination. Encourage people to keep water covered and out of direct sunlight whenever possible.

Chemical disinfection has positive and negative aspects.

- ▲ These products are easy and safe to use.
- ▲ There is a residual effect of disinfection, which gives some protection against contamination after treatment.
- ● These products must be brought from outside the community; it is not something they can do with local resources.
- ● Chemical disinfection will not get rid of all germs that cause disease. Water should be strained prior to use of chemical disinfection in order to ensure all risks are eliminated.

> Sedimentation

If water is muddy, giving it time to settle or adding chemicals can cause the dirt to fall to the bottom of the container and make the water clear. Straining the water through a cloth can make this process more efficient.



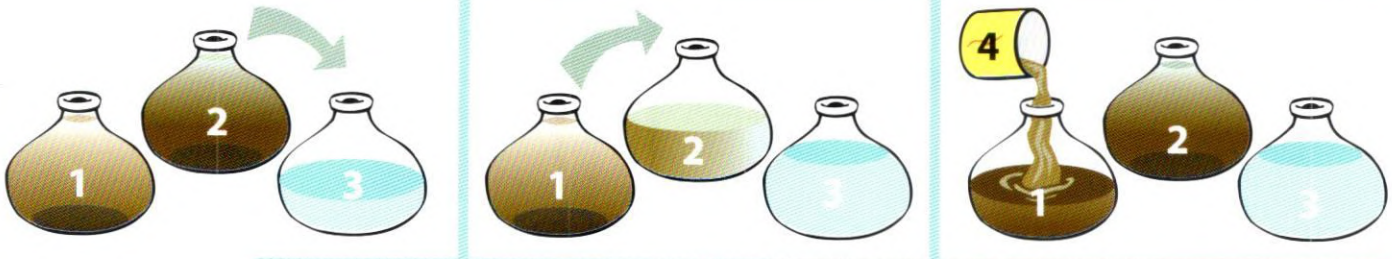
Note: Water that has been made ***clear*** by sedimentation is not ***clean***. It still needs disinfection to remove germs that cause disease. But making dirty water clear will make disinfection more effective.

> Three pot method

The three pot method reduces dirt and germs that cause disease by storing water in containers, allowing dirt to settle, and moving cleaner water to different containers over time.

> How do I use the three pot method?

The three pot method



Each day when new water is brought to the house:

- **A** Drink water from pot 3.
- **B** Slowly pour water stored in pot 2 into pot 3.
- **C** Wash out pot 2.
- **D** Slowly pour water stored in pot 1 into pot 2.
- **E** Wash out pot 1.
- **F** Pour water collected from the source (bucket 4) into pot 1. Strain through a cloth if possible.

Allow the water to settle for a day and then repeat the process.

Only drink water from Pot 3. This water has been stored for at least 2 days, and the quality has improved. Periodically this pot will be washed out and may be sterilized by scalding with boiling water.

Using a flexible tube to siphon water from one pot to another disturbs the water less than pouring.



Tip

This method can be improved by using a straining cloth when pouring into the pots.

Tip

The three pot method is a good interim measure that can be adopted in an emergency until mass distribution of other methods is possible or the quality of the source is improved.

Tip

In an emergency, people may not have three containers. Although it is likely to be less effective than the method described above, two containers can be utilized instead of three. More time should be allowed for dirt to settle and germs that cause disease to die.

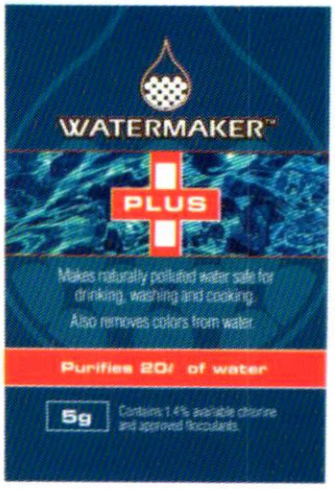
The three pot method has positive and negative aspects.

- ▲ The three pot system greatly reduces dirt and disease causing germs in water.
- ▲ This method is low cost, easy to use, and is something people can do themselves with local resources.
- ● This method reduces, but does not totally remove, disease causing germs. Boiling, chemical, or solar disinfection is still needed to completely remove all risk of disease.

> Chemical sedimentation

Chemical sedimentation is the use of chemicals to speed up the removal of dirt from water.

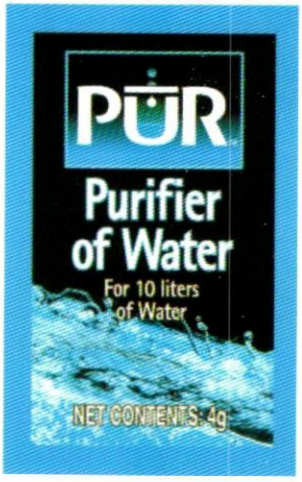
The two most common chemical sedimentation products used by the International Federation of Red Cross and Red Crescent Societies in emergencies are PUR and Watermaker.



5g for 20 litres



2.5g for 10 litres



4g for 10 litres

These chemicals are useful, especially in floods, because they remove dirt from water AND disinfect. Both are suitable for household water treatment in emergencies and International Federation of Red Cross and Red Crescent Societies does not endorse either product over the other.

> How does it work?

These products contain two chemicals. One chemical acts like a glue and makes small particles stick together. This creates bigger particles, called floc, that fall to the bottom of the container faster.



Then another chemical disinfects the clear water, similar to the chemical disinfection described earlier in this manual.

> If they do twice as much, why don't we always use these products?

These products are more expensive and difficult to use than other methods. If water is 1) clear or only slightly cloudy and 2) chemical disinfection is available, then do not use chemical sedimentation.

> How do I use chemical sedimentation?



Source water



Floc formation after chemical addition



Floc formation after complete stirring



Decanting the water through a clean cotton filter



Clean water ready for storage and use

Tip **Using clear buckets for demonstrations allows groups to see the product working. But keep groups small so everyone learns!**

Tip **This method can be improved by using a straining cloth when pouring into the containers.**

One sachet of PUR treats 10 litres of water. Watermaker is available in different sized packets which treat different amounts of water. Check the instructions on the package before teaching people how to use it.

Chemical sedimentation has positive and negative aspects.

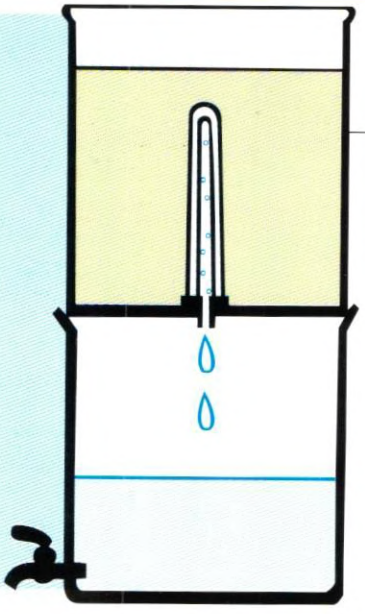
- ▲ These products can make muddy water safe to drink.
- ▲ There is a residual effect of disinfection, which gives protection against contamination after treatment.
- ● These products are more complicated to use and require more training and follow up.
- ● These products are significantly more expensive 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.

>Filtration

Filters remove dirt from water by physically blocking them while letting water flow through. Water passes through a material such as sand or ceramic and harmful material is caught in the filter.

Filters are not commonly used in emergencies. They will only be introduced and briefly described here. More detailed information on filters is available from other sources (see Additional resources).

> Candle filters



Candle filters are made of ceramic. Water is poured into one container and slowly passes through the ceramic into another container.

The filter is scrubbed clean with a brush whenever it begins to be clogged and the flow rate between the containers becomes slow.



If possible, the filter should also be boiled to kill germs that cause disease that are caught in the filter.



The more dirty the water is the more frequently the filter will need to be cleaned. Eventually the candle will be worn away from scrubbing and must be replaced.

Candle filters have positive and negative aspects.

- ▲ These products are easy and safe to use.
- ▲ If properly maintained, this product can be used to produce clean water for a long time
- ● These products are expensive and often fragile.
- ● It can take a great deal of time to treat water, especially when the water is very dirty.
- ● There is no residual effect of disinfection, the clean water container must be covered to protect against contamination.
- ● These products need regular maintenance and require more training and follow up.

> Sand filters

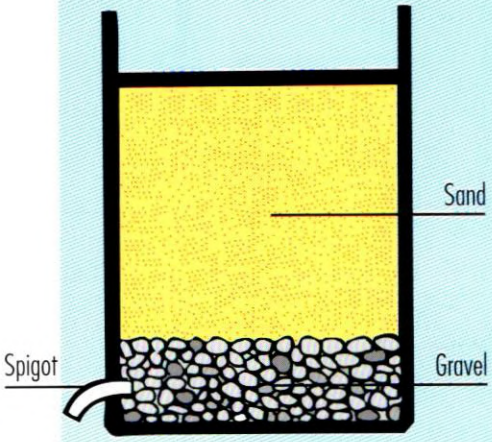
> Pre-treatment

Filtration through sand is a fast and simple pre-treatment option that reduces the amount of dirt in water and makes disinfection more effective.

Users pour water from one container through a container of sand with gravel and an opening or spigot at the bottom. The water then flows into a storage container.

Pre-treatment through sand has positive and negative aspects.

- ▲ This method is simple and fast to use.
- ▲ It is effective at removing dirt and some germs that cause disease. This can make the other methods of treating water work better.
- ▲ It is inexpensive if the sand and containers are available locally
- ● It requires three containers and a spigot.



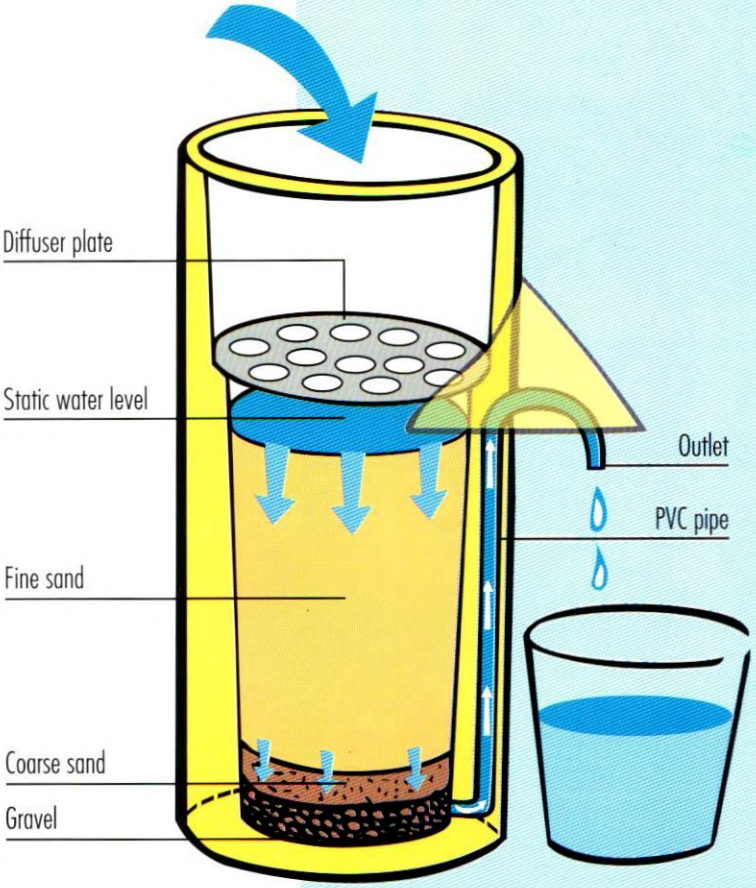
> Biosand filters

Although not commonly used in emergencies, biosand filters are an effective and long lasting method of household water treatment. Biosand filters filter water through the sand AND the biological material that grows on the top of the filter. The filter is cleaned when it becomes clogged.

Because the biological layer needs time to grow, the filter will not treat water properly when it is first put into use and after cleanings.

Although these filtersar e simple to use, they require hands on training when they are distributed. Details on construction and maintenance of these filters can be found in Additional resources.

- ▲ If properly maintained, this filter can treat water for a long time
- ● It can take a great deal of time to treat water, especially when the water is very dirty.
- ● There is no residual effect of disinfection, the clean water container must be covered to protect against contamination.
- ● These filters need regular maintenance and require more training and follow up.



> Safe storage and handling



All efforts to make water clean are pointless if the water is improperly stored or handled.

But there's a problem

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.

Encourage people to keep containers clean, covered, and out of reach from children. It is best if people use a different container for collecting water and storing water.



For narrow necked containers, encourage people to clean them regularly with a soap solution, chemical disinfectant (if available), or pebbles.



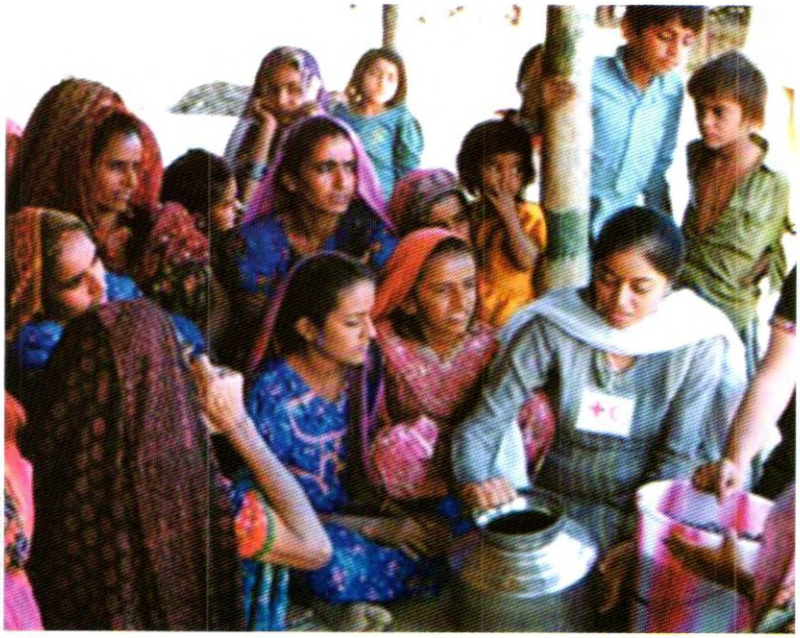
For wide necked containers, encourage people to keep them covered and design a system for removing water that avoids hands coming into contact with the water. This could be a long handled ladle that allows them to collect the water without touching it or a spigot at the bottom of the container. They should also be encouraged to regularly clean their container.

Even after the quality of the source has been improved, a campaign to improve the storage and handling of water will benefit the health of a population.



Encouragepeople to ALWAYS wash their hands prior to handling drinking water. Distributions of household water treatment chemicals present a perfect opportunity to distribute soap and give hygiene messages.

> Promotion of household water treatment and safe storage at household level



International Federation

> Training

Chemicals should NEVER be distributed without training people in their use. Prior to the distribution, make a plan for how training will be done. It is recommended that technical training be combined with some of the hygiene promotion activities mentioned below.

Instructions for treatment chemicals tend to be for standard sizes, like 20 litres jerry cans or 10 litres buckets (see Fact Sheets). People may be using different sized traditional containers. For example, a 14 litres clay pot. Work with them to find an adjustment that they understand and can continue themselves.

If people are unfamiliar with the products, especially chemicals, issues of trust can arise. One simple way to alleviate this problem is to try out the product yourself in full view of the population.

When giving a training, try to demonstrate the use of the products first so that there is time for the chlorine to have sufficient contact time or the filter to purify enough water for you to drink it in front of your audience.

> Hygiene promotion activities

Merely distributing chemicals to people will not improve their health. Getting people to carry out household water treatment and safe storage is a form of behaviour change.

Contrary to popular belief, changes in practices or behaviour do not always take a long time to occur and even short-term changes can be important where the health risks are high. If people feel themselves to be at risk then they are also more likely to change their behaviour quickly.

Therefore, if that willingness to change is enabled it can happen very quickly. For example, if water containers are provided to make it easier for the families to properly store water at home. The emphasis must be on enabling and mobilising women, men, and children to **take action** to reduce health risks. This means getting people to practice safe hygiene practices rather than simply raising awareness about the causes of ill health.



Indian Red Cross Society

In an emergency, an important driving force for change may be the perception of health benefit. But this is not always necessarily the case. It is important to identify cultural/traditional norms in the community that might be additional motivations for behavioural change. For example, a mother may adopt a certain water treatment method at home after noticing her neighbour using it.

The provision of hygiene items can also act as an incentive for people to become involved in hygiene promotion activities.

Numerous tools are available that can be utilized to promote the adherence to safe hygiene behaviour in an emergency. Please see Additional resources.

Distributions of household water treatment chemicals present a perfect opportunity to distribute soap and other water and sanitation-related non-food items (NFI) and to disseminate key hygiene messages related to safe water handling and storage. An important opportunity to enable better health and hygiene may be lost if people are not given sufficient information about the health benefits of the items distributed.

Four basic steps to conduct a hygiene promotion campaigns in an emergency:

1 Conduct assessment that focuses on water, sanitation, and hygiene

Water					Sanitation	Hygiene
Water source	Water collection and transport	Water storage	Water treatment	Water use	Latrine use	Hand washing
1 Water sources should be used with care and maintained in good condition. **2** There should be no risk of contamination from nearby latrines, wastewater drainage, animals, or objects falling into the well.	**3** Drinking water should be collected in clean vessels, without coming into contact with hands. **4** Water should be transported in covered containers.	**5** Water should be stored in clean vessels which are covered and regularly cleaned. **6** Drinking water should bestored in a separate container from other domestic water, wherever possible.	**7** Water treatment procedures should be carried out at household level if the source is not clean and water is not stored properly.	**8** Drinking water should be taken from the storage vessel with a dipper or ladle so that hands, cups or other objects can not contaminate water.	**9** Latrines should be used instead of open defecation. **10** Latrines should be locatedaway from water sources and be kept clean. **11** Pits need to be emptied or replaced regularly.	**12** Homes should have soap or ash and water for washing hands. **13** People should be washing their hands at critical times.

2 Select target groups

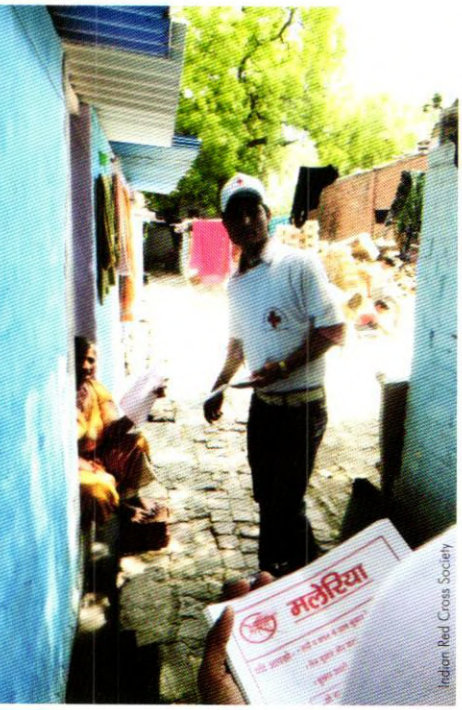
In the initial stages of the emergency we often conduct massive campaigns with no specific target groups. It is recommended instead that we identify specific audience so we direct the messages at groups responsible for carrying out the activity that is referred to.

For example, when children are those in charge of collecting water, they need to be the ones targeted by the messages related to collection and transport behaviour.

3 Develop hygiene messages

- **A** Messages should focus on a few key practices: the less the better! Overloading people with information may have the opposite effect.
- **B** Present messages in a positive light and make use of humour wherever possible.
- **C** Hygiene promotion messages should use simple words in the local language.

If possible pre-test the messages with a group of similar age, educational level and culture to those the message is trying to reach.



Indian Red Cross Society

4 Select communication methods

The choice of communication method depends on the nature of the audience and the resources available. In an emergency, mass media is the most commonly used method for the rapid spread of messages to the widest audience at the lowest cost.

People spend a great deal of the time at distributions waiting. This is a perfect opportunity for delivering messages that can be delivered quickly to a large number of people.

Use distribution points to conduct different activities using **popular media** like drama, songs, puppets, and story-telling, etc (they combine entertainment with practical advice) or **mass media** delivering through loudspeakers, posters, leaflets, notice boards, stickers, t-shirts, etc

Messages delivered through mass media can be reinforced by **face-to-face** activities. These activities, like house to house visits might be conducted in parallel with the NFI distribution activities.

House to house visits offer an opportunity for the hygiene promoters to assess the domestic environment and tailor hygiene messages to the specific needs of the family.

Some tips to consider when conducting home visits:

- Visits need to be handled with sensitivity. Even in an emergency situation, certain etiquette need to be respected.
- On average 1 volunteer can visit 5-6 households in one working day (4 hours).
- Visuals aids in the form of flipcharts, posters, or picture cards are very useful to promote discussion.
- Timing of the visits needs to be carefully planned and villagers need to be informed ahead of time if possible. In an emergency people will be busy securing the basic essentials for survival.

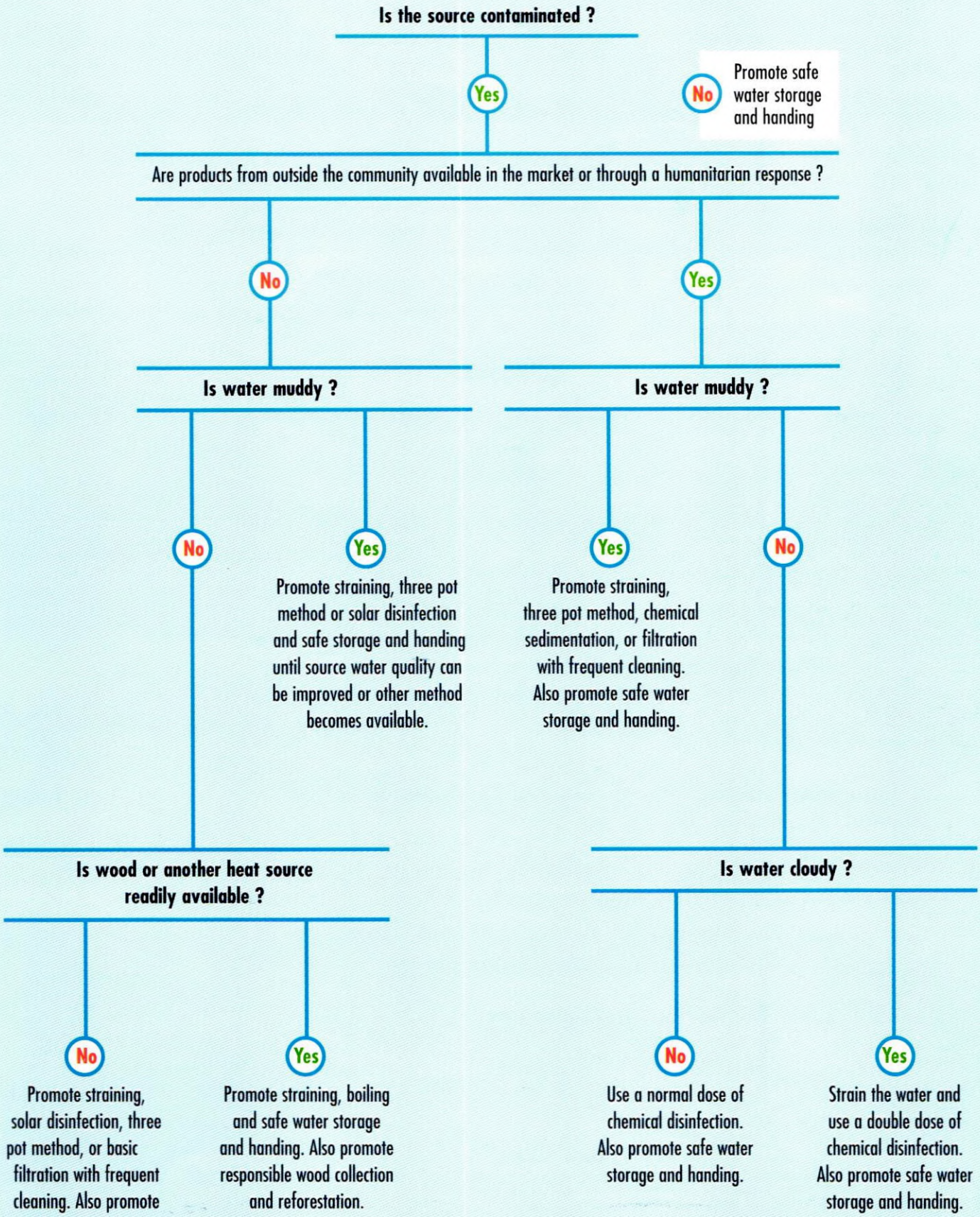
> Monitoring

One lesson on how to use these methods **is not enough**. Follow up training and monitoring should be carried out after the initial training.

Hygiene promoters should be able to track changes in the community in relation to:

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

> Household water treatment and safe storage decision tree





Indian Red Cross Society

Teaching the important of hand-washing under the IRCS IPCD programme in Tamil Nadu in collaboration with the Canadian Red Cross

- The Indian Red Cross Society in its programmes promotes safe Hygiene Practices through programmes implemented by various branches.
- It is estimated that washing hands with soap and water could reduce diarrheal disease associated deaths by up to 50%.

  A large percentage of food borne disease outbreak are spread by contaminated hands. Appropriate hand washing practices can reduce the risk of food borne illness and other infections.
- Hand-washing can reduce the risk of respiratory infections by 16%.



Indian Red Cross Society

The Indian Red Cross Society has met the need for clean drinking water during many disasters. It routinely undertake the activities like Water purification and distribution, Hygiene promotion and Construction of Latrines. It also promotes Environmental Sanitation activities like application of Bleaching Powder during emergencies.

> Fact sheets

The following fact sheets are designed for mass reproduction and distribution to all of those involved in education and distribution of the different methods detailed in this manual.

Three pot method

Drinking-water: always take from pot 3. This water has been stored for at least two days, and the quality has improved. Periodically this pot will be washed out and may be sterilized by scalding with boiling water.

Each day when new water is brought to the house.

a



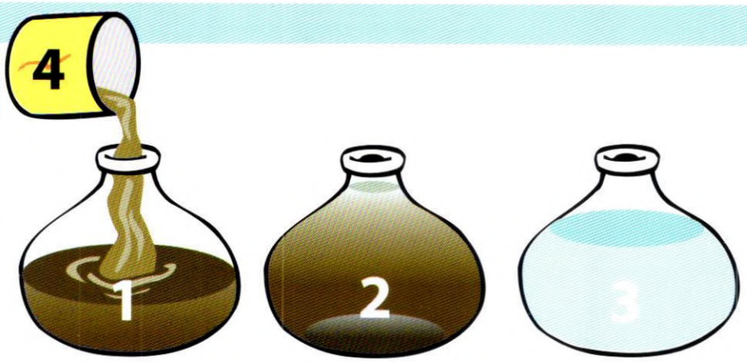
Slowly pour water stored in pot 2 into pot 3, wash out pot 2.

b



Slowly pour water stored in pot 1 into pot 2, wash out pot 1.

c



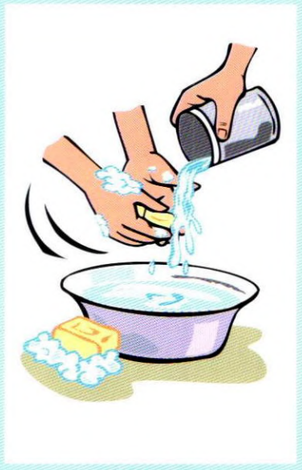
Pour water collected from the source (bucket 4) into pot 1. You may wish to strain it through a clean cloth.



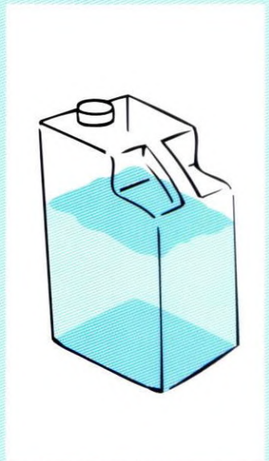
Tip: This method can be improved by using a straining cloth when pouring into the pots.

Using a flexible pipe to siphon water from one pot to another disturbs the sediments less than pouring.

How to treat water with WaterGuard (Sûr'Eau)



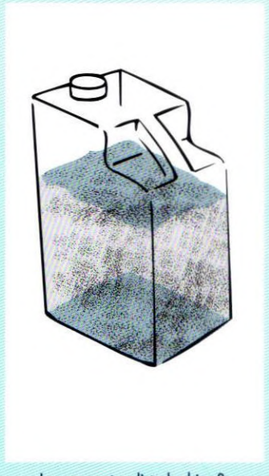
Wash your hands
with water and soap or ash.



Is your water clear?



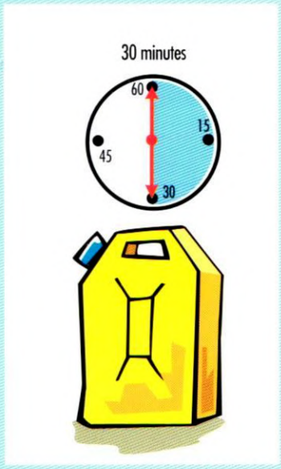
Add 1 cap to 20 litres of water.
Close container.



Is your water dirty looking?



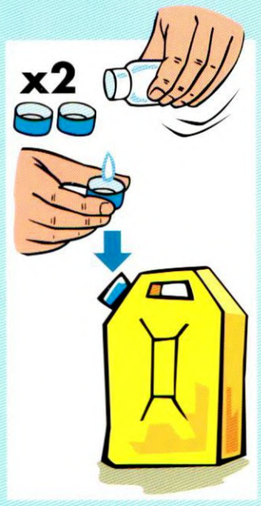
Filter the water through cloth.



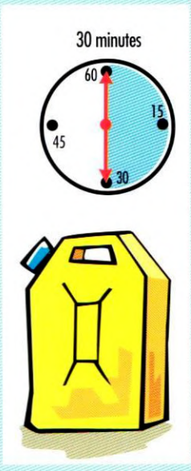
Wait 30 minutes.



Water is now ready.



Add 2 caps to 20 litres of water.
Close container.

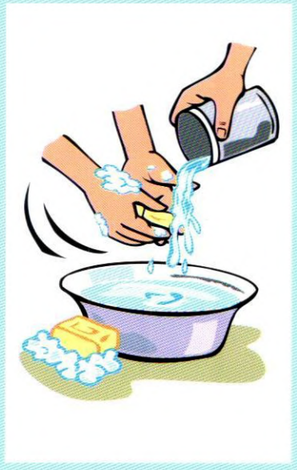


Wait 30 minutes.

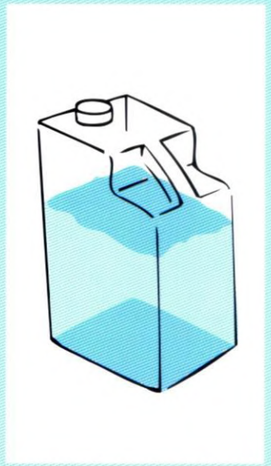


Water is now ready.

How to treat water with chlorine tablet



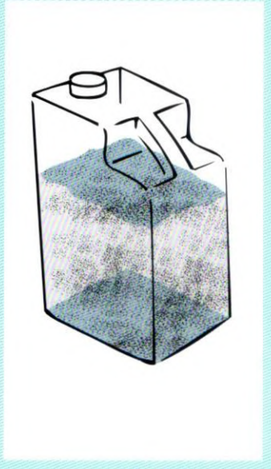
Wash your hands with water and soap or ash.



Is your water clear?



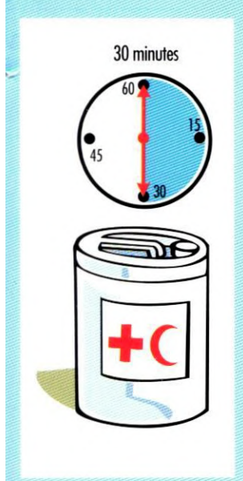
Put 1 tablet in the container. Close container.



Is your water dirty looking?



Filter the water through cloth.



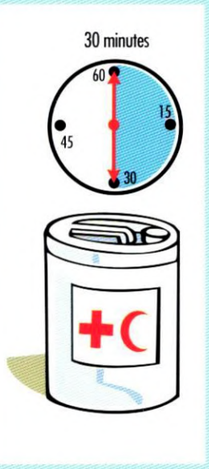
Wait 30 minutes.



Water is now ready.



Add 2 tablets to the container. Close container.

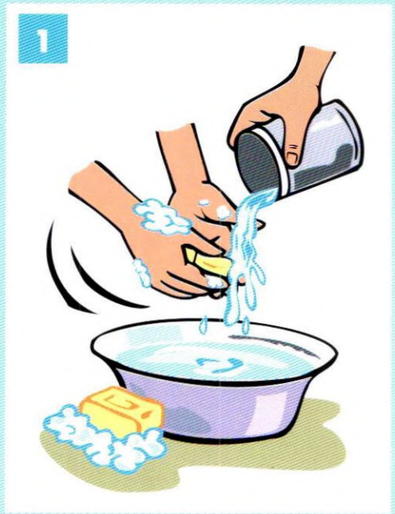


Wait 30 minutes.

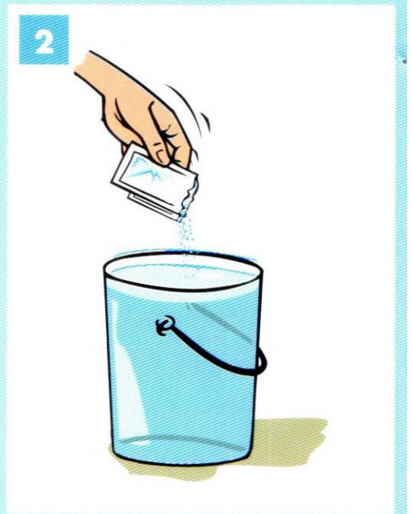


Water is now ready.

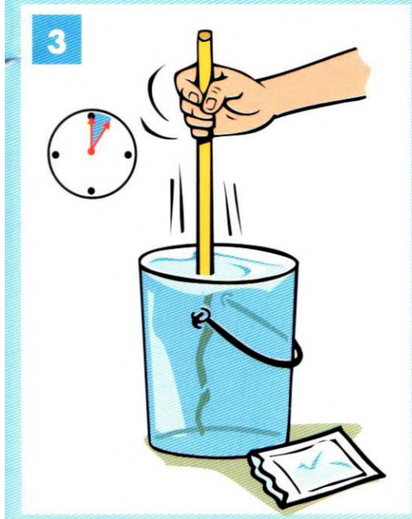
How to treat water with Watermaker



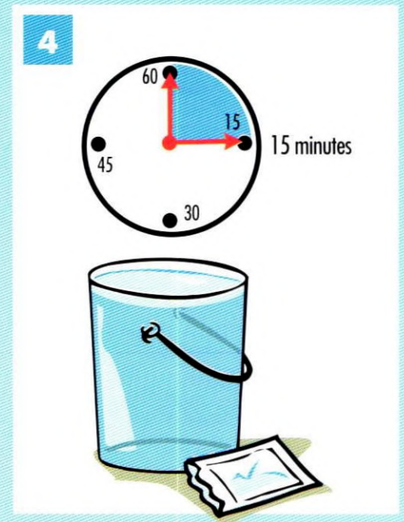
Wash hands with water and soap or ash.



Pour contents of the of the Watermaker sachet into the bucket.



Stir the mixture for 5 minutes.



Wait for 15 minutes.



Pour the treated water into a container through a clean cloth filter.



Your water is ready to drink.



Do not drink if water is yellow in colour.



Store your water in a closed container.

How to treat water with PUR sachet



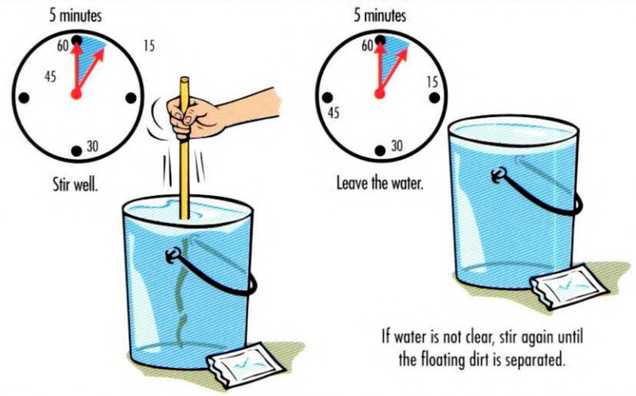
Wash your hands with water and soap or ash.

1. Mix



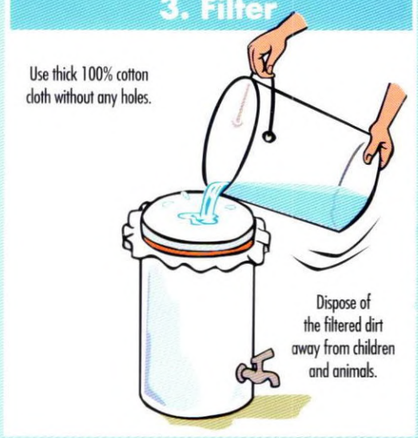
Pour contents of the PUR sachet into 10 litres bucket.

2. Stir

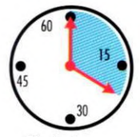


Stir the mixture for 5 minutes. Wait 5 minutes.

3. Filter



Pour the treated water into a container through a clean cloth filter.



Wait for 20 minutes.

4. Drink



Your water is ready to drink.
Do not drink if your water is yellow.

Today Red Cross Red Crescent marks **12 million people** reached with **Safe Water** and **Sanitation** since 2005



Globally, **768 million** people still **Lack Access to Safe Water**

> Notes

> Notes

The Fundamental Principles of the International Red Cross and Red Crescent Movement

Humanity
The International Red Cross and Red Crescent Movement, born of a desire to bring assistance without discrimination to the wounded on the battlefield, endeavours, in its international and national capacity, to prevent and alleviate human suffering wherever it may be found. Its purpose is to protect life and health and to ensure respect for the human being. It promotes mutual understanding, friendship, cooperation and lasting peace amongst all peoples.

Impartiality
It makes no discrimination as to nationality, race, religious beliefs, class or political opinions. It endeavours to relieve the suffering of individuals, being guided solely by their needs, and to give priority to the most urgent cases of distress.

Neutrality
In order to enjoy the confidence of all, the Movement may not take sides in hostilities or engage at any time in controversies of a political, racial, religious or ideological nature.

Independence
The Movement is independent. The National Societies, while auxiliaries in the humanitarian services of their governments and subject to the laws of their respective countries, must always maintain their autonomy so that they may be able at all times to act in accordance with the principles of the Movement.

Voluntary service
It is a voluntary relief movement not prompted in any manner by desire for gain.

Unity
There can be only one Red Cross or Red Crescent Society in any one country. It must be open to all. It must carry on its humanitarian work throughout its territory.

Universality
The International Red Cross and Red Crescent Movement, in which all societies have equal status and share equal responsibilities and duties in helping each other, is worldwide.

Household water treatment and storage

This booklet is aimed at Red Cross/Red Crescent field personnel and volunteers responding to emergencies involving problems with water. This manual presents the various options available to improve household water quality.

Contents include:

- An overview of water quality
- How to clean water at the household level through various means
- How to handle household water
- How to choose the right method of improving water quality
- How to promote the use of household water treatment and storage

After an intervention has been chosen, beneficiaries will require training in the use of specific treatment method. This manual contains short fact sheets that can be distributed for use by volunteers in carrying out this training.

For more information, contact

Indian Red Cross Society

National Headquarters
1, Red Cross Road, New Delhi - 110001
Phones: +91 11 23716441/2/3
Fax: +91 11 23717454
Web site: www.indianredcross.org

International Federation of Red Cross and Red Crescent Societies

Regional Delegation for South Asia
B-55 A, Paschimi Marg, Vasant Vihar,
New Delhi - 110 057, INDIA
Telephone: +91 11 2615 4021-24
Telefax: +91 11 2615 4025

Water and sanitation unit,
Health and care department
International Federation of Red Cross and Red Crescent Societies

P.O. Box 372, CH-1211 Geneva 19, Switzerland
Telephone: +41 22 730 4222
Telefax: +41 22 733 0395
E-mail: secretariat@ifrc.org

For further information, please visit the International Federation web site: **www.ifrc.org**

142100

The International Federation of Red Cross and Red Crescent Societies promotes the humanitarian activities of National Societies among vulnerable people.

By coordinating international disaster relief and encouraging development support it seeks to prevent and alleviate human suffering.

The International Federation, the National Societies and the International Committee of the Red Cross together constitute the International Red Cross and Red Crescent Movement.