

Unit 3: Water Treatment

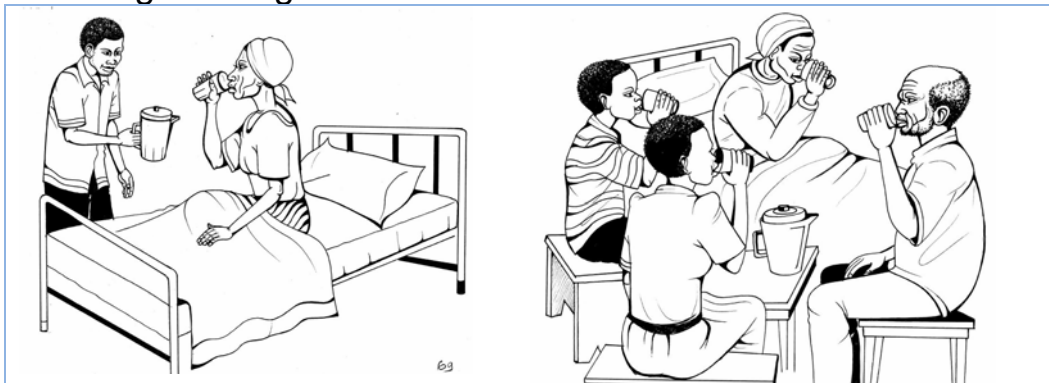
11. The Importance of Treating Your Water in the Home (at the Point of Use)

There are often germs in our household water that can cause us to become sick and get many illnesses, including diarrhoea. We cannot see the germs (small things in the water), but they are harmful to us if we drink them.

Water from ANY source, including water from “improved sources,” such as a piped/tap water, borehole, protected well, improved spring, etc., can be contaminated because of breaks in the system, poor upkeep/maintenance, flooding, or groundwater contamination. Water from rivers, ponds, open tanks, unimproved springs and wells can also be contaminated.

Even if the water is not contaminated at the source, it is often contaminated as it is being transported to the home or in the household due to poor handling (serving) and storage practises.

It is important to treat ALL of your drinking and cooking water in the home before consuming it. Everyone in the household should be drinking the treated water, including anyone who is ill, babies, children, adults and the elderly. In Uganda, water is treated in the home by using chemicals, such as chlorine (which is sold as products such as Waterguard, Aquasafe and PUR) or through boiling.



12. Which Household Water Do I Need to Treat?

We use water in the household for many purposes – drinking, mixing food or formula for babies, cooking, laundry, cleaning and other hygiene practises (such as hand washing and bathing, cleaning utensils and water vessels), caring for animals, and many other reasons.

However, it is not necessary or always possible to treat ALL of your household water. It is MOST important to treat all of the household water that is:

- Consumed by household members for drinking and cooking; and
- Used to mix in food, formula, juice or drink mixes, especially for babies, other young children and people living with illnesses, including HIV/AIDS.

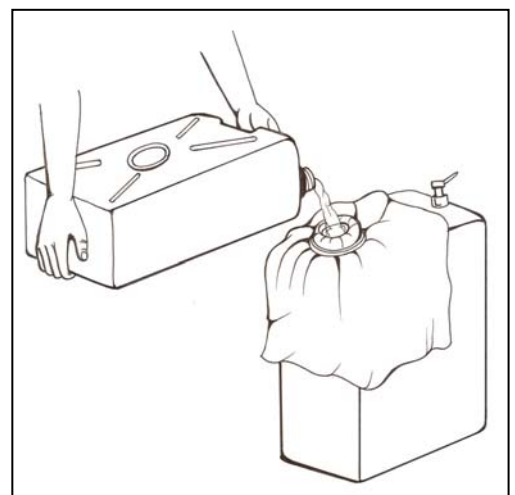
13. Getting the “Dirt” Out of Your Water Before You Treat It

If your water looks “dirty” (muddy, cloudy, not clear), most people prefer to get as much of the “dirt” out of your water before chlorinating it with Waterguard and Aquasafe products or boiling it. [Note: You do not need to worry about getting the “dirt” out before using PUR.] Getting the “dirt” out of the water helps Waterguard and Aquasafe kill the germs better and improves the way your boiled water tastes and looks.

You can filter your water by using either of 2 following methods:

(1) **Separate out the “Dirt” with a Cloth (“Filtering”):**

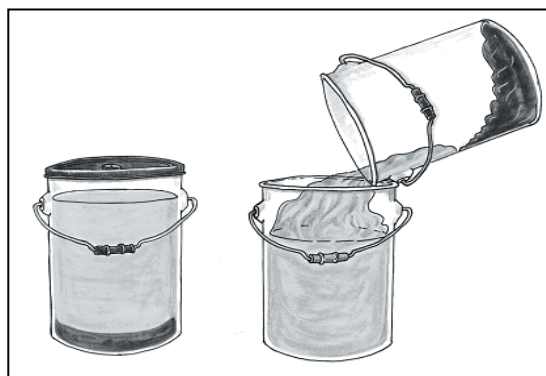
pour the water through a clean piece of cloth (tightly woven with no holes in it) that has been placed over the opening of another clean container. The cloth will collect the “dirt”. Take the “dirt” which collected on the cloth during the filtering and place it where children and animals cannot get to it, such as in a latrine or buried in a hole. After dumping the “dirt” wash the filter cloth and dry it in the sun.



OR

(2) **Let the “Dirt” Go to the Bottom and Pour Out the Clear Water (“Settling and Decanting”)**: let the untreated water sit untouched for 12 hours so that the dirt sinks to the bottom of the container while the clear water remains at the top of the container.

Then pour (or “decant”) the clear water from the top into a second container, leaving the “dirt” behind in the original container. Throw away the “dirt” or residue remaining in the first container by placing it where children and animals cannot get to it, such as in a latrine or buried in a hole.



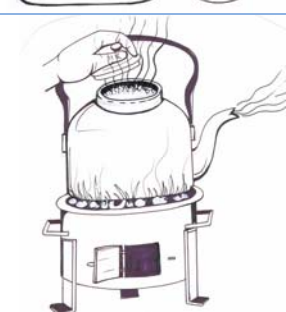
14. The Most Common Methods of Treating Water in the Home (at the point of use)

Chlorinating water:

(adding chemicals to water to make it safe to drink).



Boiling water to make it safe to drink.


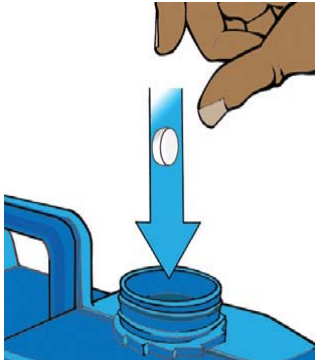



15. How Do I Use the Three Types of Chlorine Products to Treat My Drinking Water?

There are specific products that use a chemical called chlorine to treat your water. Before reviewing the products and how to use them, it is important to keep the following in mind:

- 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.
- Common household laundry bleach (or Jik), should NOT be used to treat water because of potential problems with using the correct amount.

Three types of chlorine products are available in Uganda which are used to chlorinate water:

(A) <u>WATERGUARD</u>	(B) <u>AQUASAFE</u> and <u>WATERGUARD TAB</u>	(C) <u>PUR</u>
<p>Chlorine Solution.</p> <p>This product comes in a liquid form.</p> 	<p>Chlorine Tablets.</p> <p>These products come in small pill/tablet form.</p> 	<p>Chlorine Sachet.</p> <p>This product comes in a powder form in a small envelope.</p> 

Detailed steps on how to use each of these four chlorine products are listed in this section under Part A, B, C, and D as follows.

15A. Using Waterguard Solution to Treat Your Drinking Water

STEP 1 **Filter water through cloth:**
Fill a 20-litre container with untreated water that is filtered through a clean cloth.

STEP 2 **Add Chlorine Solution:**
Remove the cap from the Waterguard bottle.

Dirty Water: Add 2 Capfuls of Waterguard Solution
If your water was “DIRTY” before you filtered it through a cloth (in step 1), then pour **TWO CAPFULS** of Waterguard liquid into the 20-litre jerrican full of untreated water.

OR

Clear Water: Add 1 Capful of Waterguard Solution
If your water was **CLEAR** before you filtered it through a cloth (in step 1), then pour **ONE CAPFUL** of Waterguard liquid into the 20-litre jerrican full of untreated water

STEP 3 **Shake:**
Cover the jerrican and shake thoroughly until the Waterguard is completely mixed with the water in the jerrican.

STEP 4 **Wait and Drink:**
Let the water sit for 30 minutes. After 30 minutes, the water is safe to drink.

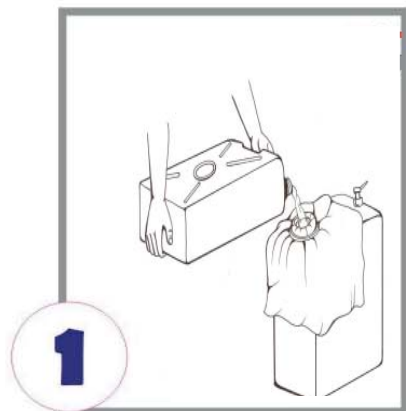
Water treated with WaterGuard Liquid that is stored in a narrow neck container with a tight fitting lid can be drunk for up to seven days. Treated water stored in a wide mouth container or without a tight fitting lid can be drunk for only 24 hours.

When it is time to treat more water, be sure to empty your container before treating the next batch!

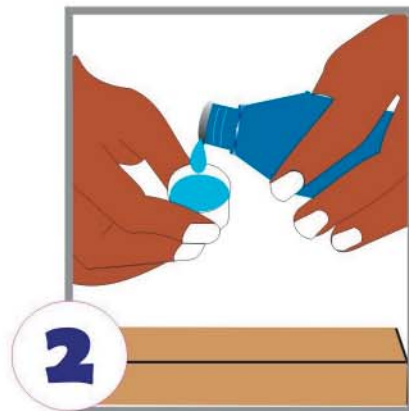
A bottle of WaterGuard Solution that has been opened can continue to be used until the expiry date, as long as the bottle is stored with the cap on.

WaterGuard™ LIQUID INSTRUCTIONS

Counselling Card



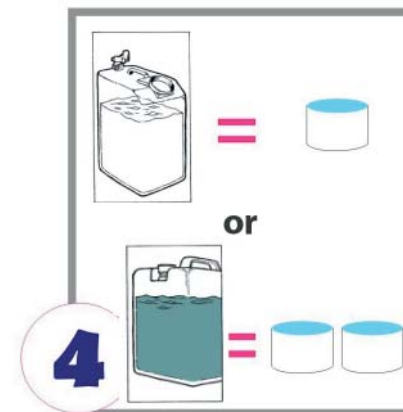
1 Fill a clean 20 litre jerrycan with water filtered through a clean cloth.



2 Fill the bottle cap with WaterGuard.



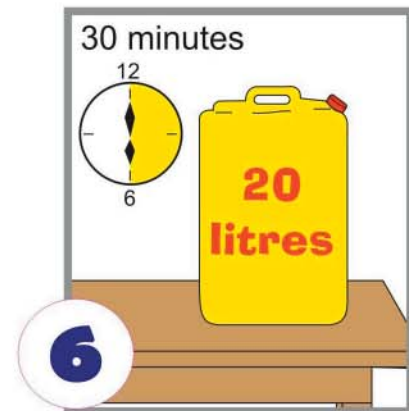
3 Pour the capful into the 20 litres of water.



4 For clear water use 1 capful. For dirty water use 2 caps full.



5 Close the jerrycan and shake.



6 Wait 30 minutes before using.



7 The water is now ready to drink.



8 Store it away from children and sunlight.

Remember: Do not swallow tablets and store them away from children and sunlight. Water treated with WaterGuard that is stored in a narrow neck container with a tight fitting lid can be drunk for up to seven days. Treated water in a wide mouth container or without a tight fitting lid can be drunk for only 24 hours.

15B[1]. Using Waterguard Tab to Treat Your Drinking Water

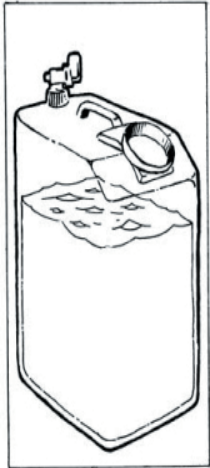
STEP 1	Filter water through cloth: Fill a 20-litre container with untreated water that is filtered through a clean cloth.
STEP 2	Add Chlorine Tablet(s): <u>Dirty Water: Add 2 WaterGuard Tab tablets</u> If your water was “ DIRTY ” before you filtered it through a cloth (in step 1), then open the Waterguard tablet package and put TWO chlorine tablets into the untreated water. Cover the container. There is no need to stir or shake the water. OR <u>Clear Water: Add 1 WaterGuard Tab tablet</u> If your water was CLEAR before you filtered it through a cloth (in step 1), then open the Waterguard tablet package and put one chlorine tablet into the untreated water. Cover the container. There is no need to stir or shake the water
STEP 3	Wait and Drink: Let the water sit for 30 minutes. After 30 minutes, the water is safe to drink.

Water treated with WaterGuard Tab that is stored in a narrow neck container with a tight fitting lid can be drunk for up to seven days. Treated water stored in a wide mouth container or without a tight fitting lid can be drunk for only 24 hours.

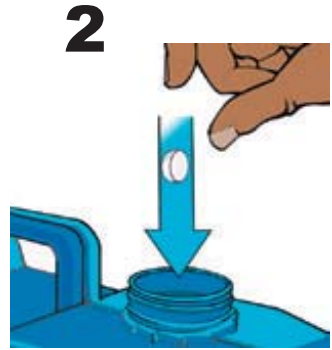
When it is time to treat more water, be sure to empty your container before treating the next batch!

Counselling Card

Does your water look clear?



Filter the water through a clean cotton cloth.



Add 1 tablet to 20 litres of filtered water.

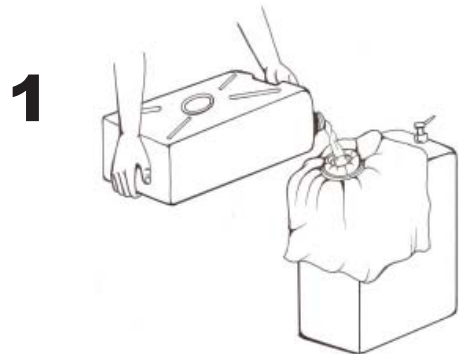
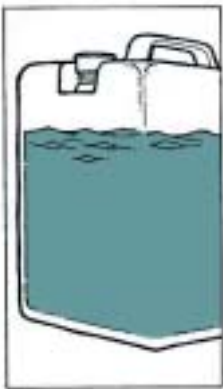


Wait 30 minutes.

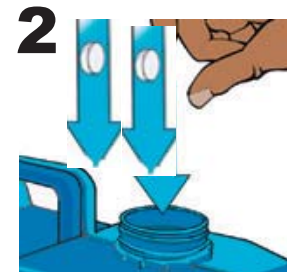


Water is now ready to drink.

Does your water look dirty?



Filter the water through a clean cotton cloth.



Add 2 tablets to 20 litres of filtered water.



Wait 30 minutes.



Water is now ready to drink.

Remember: Do not swallow tablets and store them away from children and sunlight. Water treated with WaterGuard that is stored in a narrow neck container with a tight fitting lid can be drunk for up to seven days. Treated water in a wide mouth container or without a tight fitting lid can be drunk for only 24 hours.

15B[2]. Using Aquasafe to Treat Your Drinking Water

STEP

1

Check for “dirt”:

Fill a 20-litre container with the untreated water that needs to be chlorinated. Determine if the water is clear or if it looks “dirty” (muddy, cloudy). If the water looks clear, skip the rest of this step and go directly to Step 3. If the water looks “dirty,” go to Step 2 to filter the “dirt” from the water.

STEP

2

Remove the “dirt”:

Remove the “dirt” from enough water to fill a 20-litre jerrican by either of the following 2 methods:

- **Remove the “Dirt” with a Cloth (“Filtering”):** pour the water through a clean piece of cloth (tightly woven with no holes in it) that is placed over the opening of a clean container. The “dirt” will get trapped by the cloth. After filtering your water, put the “dirt” which collected on the cloth where children and animals cannot get to it, such as in a latrine or buried in a hole. After dumping the “dirt,” wash the filter cloth and dry it in the sun.

OR

- **Let the “Dirt” Go to the Bottom and Pour Out the Clear Water (“Settling and Decanting”):** let the untreated water sit untouched for 12 hours so that the dirt settles to the bottom of the container while the clear water remains at the top of the container. Then pour (or “decant”) the clear water into a second container while leaving the “dirt” behind in the original container. Throw away the “dirt” or residue remaining in the first container by placing it where children and animals cannot get to it, such as in a latrine or buried in a hole.

STEP 3	Add Chlorine Tablet(s): <u>Tap Water:</u> Add 1 Aquasafe tablet for water collected from a tap. <u>River, Well or Dam Water:</u> Add 2 Aquasafe tablets for water collected from a river, well or dam.
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STEP 4	Wait and Drink: Let the water sit for 30 minutes. After 30 minutes, the water is safe to drink.
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Water treated with Aquasafe that is stored in a narrow neck container with a tight fitting lid can be drunk for up to seven days. Treated water stored in a wide mouth container or without a tight fitting lid can be drunk for only 24 hours.

AQUASAFE™ INSTRUCTIONS

Counselling Card



FOR WATER COLLECTED FROM TAP



Add 1 tablet of Aquasafe to 20 litres of clear water



Wait for 30 minutes



Your water is now safe and ready to drink



FOR WATER COLLECTED FROM RIVER, WELL OR DAM

(Water collected from river, well or dam is more impure than tap water)



Add 2 tablets of Aquasafe to 20 litres of clear water



Wait for 30 minutes



Your water is now safe and ready to drink



IF THE WATER IS UNCLEAR OR MUDDY

First filter the water through a clean cloth, then add 2 tablets to 20 litres of water and wait for 30 minutes before you can drink

Remember: Water treated with Aquasafe that is stored in a narrow neck container with a tight fitting lid can be drunk for up to seven days. Treated water in a wide mouth container or without a tight fitting lid can be drunk for only 24 hours.

15C. Using a PUR Sachet to Treat Your Drinking Water

STEP 1	Add Chlorine: Fill a 10-litre container with untreated water that needs to be chlorinated. Open the PUR sachet and pour the powder into the water.
STEP 2	<ul style="list-style-type: none">• Stir:• Stir the water vigorously for 5 minutes.• <p>Stop stirring and let the water sit still for 5 minutes. At the end of the 5 minutes, the water should look clear and the particles or “dirt” should be at the bottom. Check and see if the water is clear. If the water is not clear, stir again until the “dirt” is separated from the water. The PUR powder causes the particles or “dirt” floating in the water to clump together and sink.</p>
STEP 3	Separate out the “Dirt” with a Cloth (“Filtering”): <p>Remove the “dirt” that has sunk to the bottom by filtering the water through a cloth. Pour the water through a clean piece of cloth (tightly woven with no holes in it) that has been placed over the opening of another clean container.</p> <p>Take the “dirt” which collected on the cloth during the filtering step and place it where children and animals cannot get to it, such as in a latrine or buried in a hole. After dumping the “dirt,” wash the filter cloth and dry it in the sun.</p>
STEP 4	Wait and Drink: Let the clear water sit for 20 minutes. After waiting for the water to sit for 20 minutes, the 10 litres of treated water is safe to drink.

Water treated with PUR that is stored in a narrow neck container with a tight fitting lid can be drunk for up to seven days. Treated water stored in a wide mouth container or without a tight fitting lid can be drunk for only 24 hours.

When it is time to treat more water, be sure to empty your container before treating the next batch

PUR™ INSTRUCTIONS

Counselling Card



1. MIX

10 liters

2. STIR

5 MINUTES 5 MINUTES

Stir well.

Let water stand.

10 liters

If water is not clear, stir again until the floc is separated.

3. FILTER

Use clean thick 100% cotton cloth without any holes.

Dispose of the filtered floc away from children and animals.

4. DRINK

Wait for 20 minutes

Prepared water

Do not drink if water is yellow in color.

Remember: Water treated with PUR that is stored in a narrow neck container with a tight fitting lid can be drunk for up to seven days. Treated water in a wide mouth container or without a tight fitting lid can be drunk for only 24 hours.



16. How to Treat Your Water by Boiling

Boiling your water is another way to treat your drinking water. Boiling water kills the germs and it can be used for very clear or very “dirty” (muddy, opaque or turbid) water. However, if you have very “dirty” water, you may want to remove as much of the “dirt” as possible before boiling to make the boiled water look and taste better. Steps to treat your water by boiling include:

STEP 1	<p>Check for “DIRT”:</p> <p>Fill a container with the untreated water that needs to be boiled. Determine if the water is clear or if it looks like there is “dirt” in the water (e.g. it is muddy, opaque, turbid). If the water looks “dirty,” go to Step 2 to get the dirt out of the water. If the water looks clear, skip Step 2 and go directly to Step 3 to treat water without visible dirt.</p>
STEP 2	<p>Remove the “DIRT”:</p> <p>Remove the “dirt” from enough water to fill a 20-litre jerrican by either of the following 2 methods:</p> <ul style="list-style-type: none">• Remove the “Dirt” with a Cloth (“Filtering”): place a clean piece of cloth (tightly woven with no holes in it) over the opening of another clean container and pour the “dirty” water through the cloth to collect the “dirt” on the cloth. Take the clumps of “dirt” which collected on the cloth during the filtering step and place them where children and animals cannot get them, such as in a latrine or buried in a hole. After dumping the “dirt” wash the filter cloth and dry in the sun. <p>OR</p> <ul style="list-style-type: none">• Let the “Dirt” Go to the Bottom and Pour Out the Clear Water (“Settling and Decanting”): let the untreated water sit untouched for 12 hours so that the dirt settles to the bottom of the container while the clear water remains at the top of the container. Then pour (or “decant”) the clear water into a second container, leaving the “dirt” behind in the original container. Throw away the “dirt” or residue remaining in the first container and place it where children and animals cannot get to it, such as in a latrine or buried in a hole.

STEP
3

- Place the water over a heat source. Cover the pot of water with a tight fitting lid, if possible

STEP
4

Open the lid to check if the water has formed bubbles. Allow for water to heat until LARGE bubbles appear. And we mean BIG BUBBLES and not the little bubbles on the side of the pan!

Remember:

It is not necessary to keep boiling your water after large bubbles appear!

Boiled water stays safe to drink for **only 24 hours**. It should be dumped from the container before a new batch of water is boiled and stored.

HOW TO BOIL AND STORE WATER

Counselling Card

1

“Dirty” looking water:

Let it settle until it is clear and pour it into a new container, leaving the dirt behind.



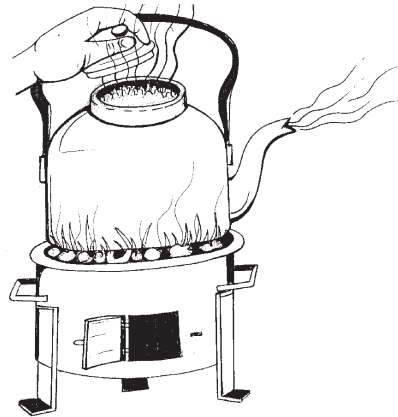
OR

Filter it through a cloth.



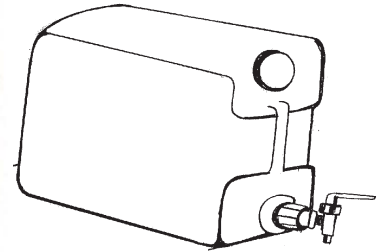
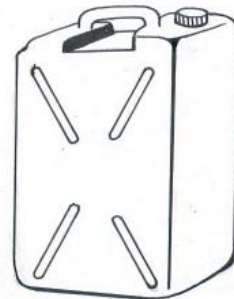
2

Boil the water until **LARGE BUBBLES** appear.



3

Let boiled water cool, then store in a safe container with a tight fitting lid and, if possible, a tap (spigot).



4

Do not drink boiled water stored for more than 24 hours.



17. How to Safely Transport, Handle and Store Drinking Water

How should I safely **Transport** water?

- You should transport it in a container with tight fitting lid that does not allow water to spill out or allow anything to fall in the water while it is transported.

How do I **Serve** (or take water out of the container) to drink it?

- If your container has a spigot (or tap, or spout), you should serve the water using the spigot (or tap).
- If you are using a container without a spigot (or tap), if possible, serve it by pouring the water from the container.
- If you cannot easily pour the water from the container, then take the water out by using a clean, long-handled dipper. Store the dipper by hanging it on the inside of the water storage vessel or on a nail on the wall. Do not store the dipper by lying it on the floor or a table because it can get dirty and contaminate your treated water.
- Never dip a bowl, cup or your hands into the container with your treated water because you can recontaminate it.

Where should I **Store** my treated water?

- You should keep chlorinated and boiled water in a narrow-neck container with a lid that fits tightly. Your container should also preferably have a spigot (or tap, spout or other serving device).

HOW TO TAKE CARE OF DRINKING AND COOKING WATER

Counselling Card

TRANSPORT



Carry your water home in a container with a lid



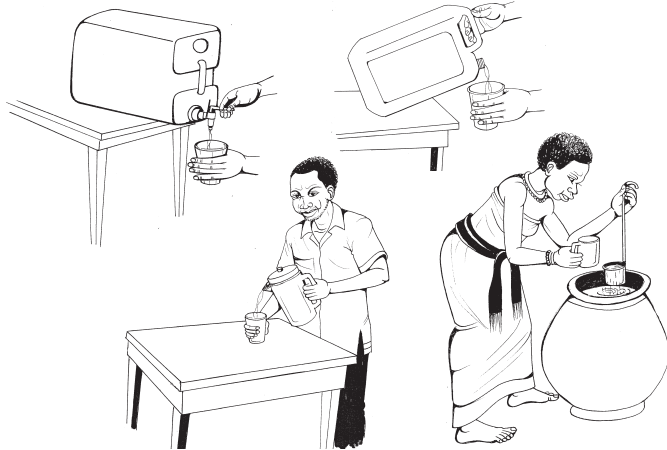
Do NOT transport it in a container without a lid



SERVING



Serve the water without letting anything dirty (such as your hands or a cup) touch it



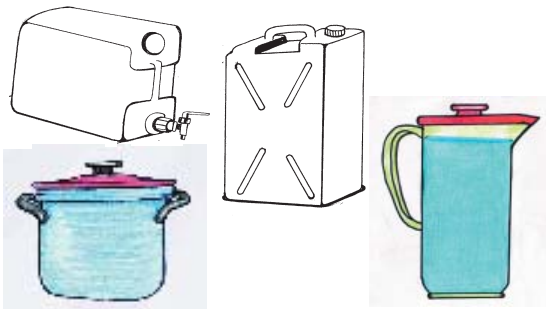
Do NOT scoop the water out with a cup or a bowl



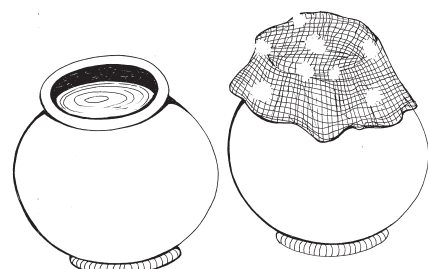
STORAGE



Store water in a container with a tight fitting lid



Do NOT store water in a container without a lid or with a lid that does not fit tightly



18. Cleaning Drinking Water Storage Containers

It is very important for every household to ensure that ALL containers and other equipment used to handle or serve their household drinking water are kept clean. Storing your water in a dirty container or using dirty utensils can easily cause new germs to get into your treated water which can make you sick with illnesses such as diarrhoea.

Cleaning Inside the Container:

STEP 1 **Wash outside of container with soap and water** - Clean the outside of the container with soap and water to remove visible dirt.

STEP 2 **Rise out visible dirt inside** – Put a small amount of water inside the container and swish it and shake it around and dump the water. Repeat this step as many times as needed until you no longer see visible dirt on the bottom of the container.

STEP 3 **Use bleach (Jik) [Preferred method:] or soap** – If **Jik is available**, pour one spoon full of Jik and nine spoonfuls of water into the water container. Swish and shake the liquid around in the container, making sure that all sides of the container are coated with the Jik and water mix. Let the Jik and water sit in the container for 20 minutes. After 20 minutes, dump out the mixture of Jik and water. Add plain water to the container and swish and shake the water around in the container, making sure that all sides of the container have been rinsed. Dump the rinse water. The container is now ready to store more treated drinking water.

*If **NO Jik is available**, dissolve a small piece of bar soap in water and/or create a soapy lather with a bar of soap and pour the soapy substance inside the container. Swish and shake the soapy liquid around in the container, making sure that all sides of the container are coated with the soapy solution. Let the soap sit in the container for 20 minutes. After 20 minutes, rinse the inside of the container by adding water and swishing and shaking the water around in the container, making sure that all sides of the container have been rinsed. Dump the rinse water and rinse again with plain water until no soap bubbles form. The container is now ready to store more treated drinking water.*

NOTE: You may wipe the inside of a container with a clean cloth before the JIK or soapy water is added, but it is very important that you DO NOT clean the inside of your container with rough, scratchy material or tools (like wire brushes, sand, gravel)! Using rough, scratchy tools makes the inside of your container rough, which makes it easier for germs to grow in your container.