

## Making Water Safe to Drink



It is important to drink plenty of fluids during physical activity. But what if you run out of drinking and resupply of fresh water is just not possible? It is extremely important that you stay well hydrated to remain fit and effective but how is this possible if you cannot replenish your water supply? Well, I will explain.....

You might be thinking that finding a safe water source to drink here in the UK can't be too difficult. After all, we are an island nation that is surrounded by the sea with plenty of inland waterways, so all you have to do is dip your water bottle into any of these and you are sorted. Unfortunately though, this is not the case as drinking untreated water is a real gamble with your health – as for drinking sea water, just don't do it.

I know of one person who decided to drink untreated river water during a hot summers day. The result was forty eight hours with a stomach upset which led to them loosing more fluids and salts thus increasing their dehydration. Drinking untreated water is a gamble that you could get away with, but then again, you may not.

All sources of water should be treated as potentially contaminated with one exception – rain water. As long as a clean container has been used to collect the falling rain, there is no need for any further treatment.

### How to Collect Water



**Find the cleanest source of water possible**

The easiest way to replenish your water supply is to find a reasonably fast flowing river or stream containing water with a clean appearance. If there are fish present in the water, then this is a good indicator that the river is healthy. If however, you notice dead fish and animals in or around the water – including (unseasonal) dying vegetation, then find an alternative location. Another issue to bear in mind is that animals will be using the river to drink from as well as you. Animals will defaecate and urinate as they gather to drink at the waters edge, so it would be wise to collect your water from further up stream and away from these areas.

Step 1: Stay safe and don't take risks near water

Step 2: Identify a suitable location

Step 3: Find fast flowing (white) water – the cleanest source available

Step 4: Place the opening of your water bottle just under the surface of the water and fill.

When replenishing my water supplies from a river, I tend to use a strong transparent plastic bag to collect the untreated water. This keeps my water bottles clean and free from any nasty organisms that could be living in the water and the fact that the bag is clear means that I am able to inspect the water quality.

## Filtering Water



**The straw on the left will filter and chemically purify water.  
The blue device on the right is a micro filter which are becoming more popular**

Once the river water has been collected, there are two processes that need to be carried out before the water is safe enough to drink. The first process is to filter out any small bugs and particles of dirt from the water. This can be achieved by improvising a filter from a piece of very fine woven material such as a shemagh and pouring the water through it and into a clean container. The alternative is to use a commercially available water filter. These are small enough to fit inside a pouch or day sack and allow you to produce filtered drinking water without having too much trouble. Some of these filters have a built in chemical purifier making the water that has passed through one of these combi-filters safe enough to drink with out any further treatment. If using a purchased filter, it is very important to know whether the water is being filtered and purified by the device or just filtered. Water which has only been filtered will still need to be purified by using other means. Always follow the manufacturers instructions on how to use the filter. It is important to note that the filtration process will not remove any chemicals that have contaminated the water.



**An improvised water filter**

If for some reason the situation is dire, and you need to collect water but have no access to a water filter, one can be built from an empty plastic drinks bottle and a small piece of finely woven cloth. First cut the bottom off from the bottle and make two small holes through the plastic on either side near the edge of the cut. Thread some cordage through these holes so that the bottle can be suspended. Next remove the bottle lid and tie the piece of cloth around the opening of the bottle. Find some sand (usually located around the waterline on the bank of a river) and whilst holding the bottle upside down put in a handful. Make sure that

the sand is sitting level and then add a layer of crushed charcoal (if available) from an old camp fire. The next layer to go on top of the charcoal is some fine gravel. Keep adding layers of larger items until the bottle is full. The idea is that the bottle is hung from a stick with a container placed underneath to catch the filtered water. Unfiltered water is poured into the upside down bottle and the coarse layers catch the big objects such as flies and insects. As the water flows down through the increasingly fine layers, smaller foreign objects are filtered out. The final layer of the filter is the cloth. The water that has been collected in the container underneath is now ready for purifying.



**The layers of the water filter. From the bottom - cloth, sand, charcoal, small gravel, larger stones, moss**

**So what exactly is being filtered out from the water?**



**This little blighter is the reason why river water should be filtered and purified before drinking**

Apart from the dirt particles that are present in untreated water, there are also some organisms which, if ingested can make you very ill. These come under the categories of viruses, bacteria, protozoa and parasites. Some of these can be effectively filtered out, but certain contaminants such as viruses are not removed by filtration but can be neutralised by the second stage of water treatment – purification.

## **Purifying Water**



**A small gas camping stove can quickly get your water boiling to purify it**

There are two ways in which water can be purified - chemical and boiling. Chemical purification involves adding chlorine liquid / tablets to filtered water. It is important that the water is as clear as possible because dirt particles within the water can make the chemical less effective in killing off the viruses and bacteria. To use chlorine based water purification tablets, always follow the manufacturers instructions, but as a general

rule one tablet is placed into one litre of water and left for thirty minutes. The second way to purify water is by boiling. A camping stove or open fire can be used, but realistically, you are not going to be building an open fire during a skirmish. So, using a small stove such as a jet boil is more preferable, but you are going to have to wait for the water to cool down if you want cold drinking water. It is important that the water is brought to a vigorous rolling boil. This is to make sure that all of the micro organisms within the water are killed. Once there are big bubbles being produced, the water can be considered purified and then removed from the heat source and allowed to cool.



**When there are big bubbles present in the boiling water, it can be considered purified**