

Fact sheet

April 2006

We clean the water to take the colour and the dirt out of it and also to remove any germs.

Why we clean water

If the water that came out of our taps looked like the water we get from a river then we wouldn't want to drink it. It is dirty and has lots of things living or floating in it.

We clean the water to take the colour and the dirt out of it and to remove any germs. The germs that can be found in uncleaned water could cause diseases like typhoid, cholera and diarrhoea. It is these diseases that cause nearly 6000 children to die everyday in the developing world. Even at the beginning of the 20th century these diseases were killing people in this country.

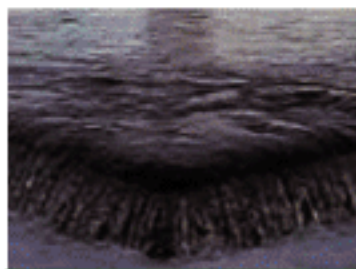
The process

There are four main stages in water treatment:

- **Abstraction** - taking water out of a river or other water source.
- **Clarification** - making the water clearer.
- **Filtration** - filtering the water to trap anything floating in it.
- **Disinfection** - killing any germs.

1. Abstraction

Water from a river, reservoir or from underground is pumped into the treatment works. If it is from a river or reservoir it may contain leaves, branches, rubbish or dead insects, fish or even animals. The first job is to remove these things from the water. We use screens made from metal with holes in that allow the water through but not the rest. The water then goes into large storage tanks.



Final settlement tanks

2. Clarification

The water still contains dirt, brown colour and germs that have to be removed. There may also be things we need to do at this stage to make sure the water isn't too acid or alkaline.

We add chemicals to the water that make the dirt and colour particles stick to them. The water and chemicals go into a big tank called a flash mixer to make sure they are well mixed. This water then flows into large concrete tanks.

The dirt and colour particles begin to stick to the chemical particles. At first the chemical particles float, but as they attract more dirt and colour they become heavy and sink to the bottom of the tank. At the bottom of the tank the particles form a thick sludge, that looks a bit like dark brown cotton wool.



Water treatment

At all points along the way the water is continuously tested and monitored to ensure the right amount of chemicals are being added and that the water is flowing smoothly.



97 tests to guarantee quality

We drain this sludge out of the bottom of the tank. We take as much water as we can out of the sludge and the dry sludge is either recycled or buried at special disposal sites. We take the clean water out of the top of the tank. But it's not clean enough to drink yet.



Flash mixer



Clarification tank

3. Filtration

The water flows into rapid gravity filters made up of fine sand and anthracite. The clarified water flows downwards through the filter. There are very small gaps between the bits of anthracite and tiny gaps between the grains of sand. As the water squeezes through these gaps, any bits of dirt or particles of chemical become trapped and the water becomes very clean.

The filters are washed regularly to remove the trapped particles. This is carried out by draining down the filters to a low level and using air blowers to stir up the sand and loosen the particles of dirt.

Clean water is then washed through the filter from underneath to remove the dirt particles. The dirty water goes to the wash water tanks to separate the solids and the water. This water is then pumped back to the beginning of the works to start treatment again.

Once the water has passed through the rapid gravity sand filters we don't see it again until it appears in our taps. But it still needs one more treatment.



Rapid gravity sand filter

4. Disinfection

Although the water looks very clean it still contains germs, which are the most important things we need to get rid of as they can make us very poorly. We use a chemical called chlorine to kill the germs.

Now the water is clean and safe to drink and can be sent down the water pipes to our homes, businesses, leisure centres, etc.



Clean water to your home