NORTHUMBRIAN WATER *living water*

WATER TREATMENT

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

The germs that can be found in uncleaned water could cause diseases like typhoid, cholera and diarrhoea. These diseases cause nearly 6000 children to die everyday in the developing world. Even at the begining 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.

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.the bottom of the tank.

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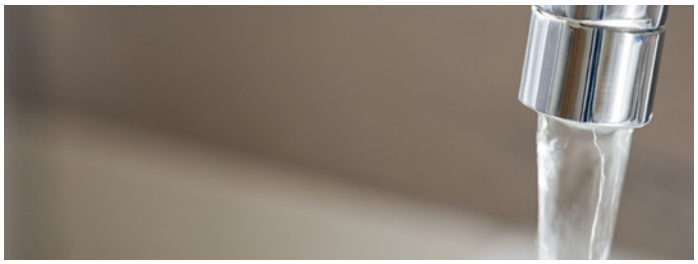
At all points along the way the water is continuously tested and monitored to ensure the right amount of chemicals are being added and that the water is flowing smoothly.

3. FILTRATION

The water flows into rapid gravity filters, these are made up of fine sand and a hard type of coal called 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.

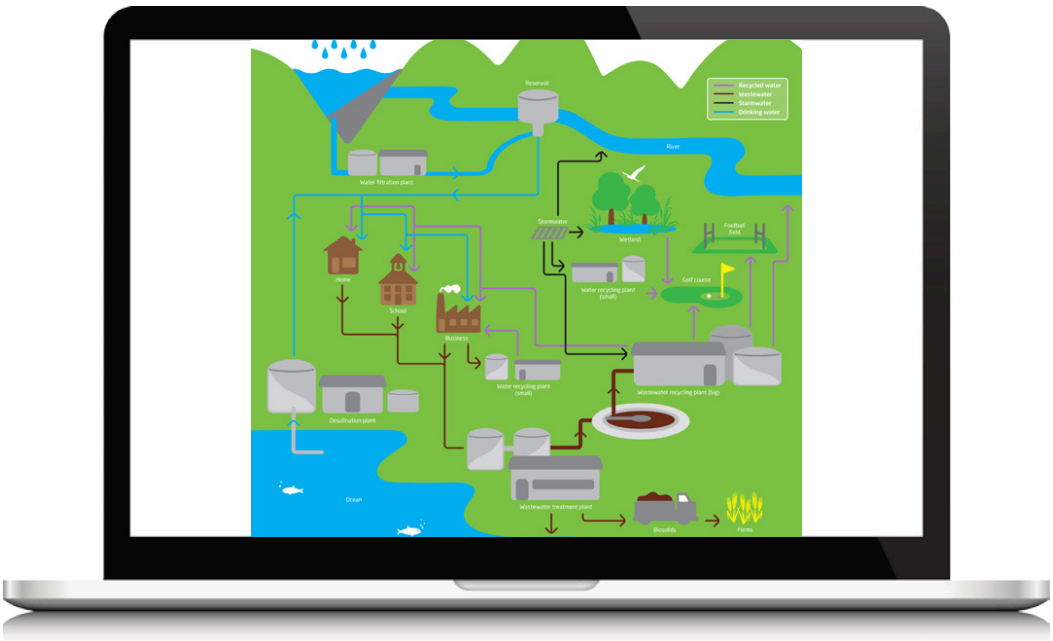


4. DISINFECTION

Although the water looks very clean at this point, 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 it can be sent down the pipes to our homes, businesses, schools, shops and anywhere else that has running water.



Contact Northumbrian Water at **partnerships@nwl.co.uk** for more educational resources.