



Water

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The water treatment process

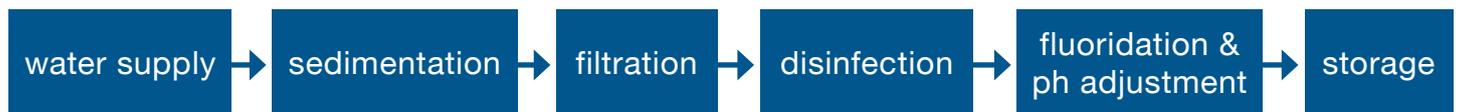
Not all water is safe to drink. Many things, such as dirt, bugs, chemicals and minerals can be in our water, and while most of these will not harm us, some can make us very sick. They can also make our water taste funny.

To make sure our water is safe to drink, it must go through a treatment process from the time it leaves its source, before it comes out of your tap.

Many remote communities have desalination plants, not conventional water treatment processes (such as 'Sedimentation' – see below) or no treatment at all.

Water supply

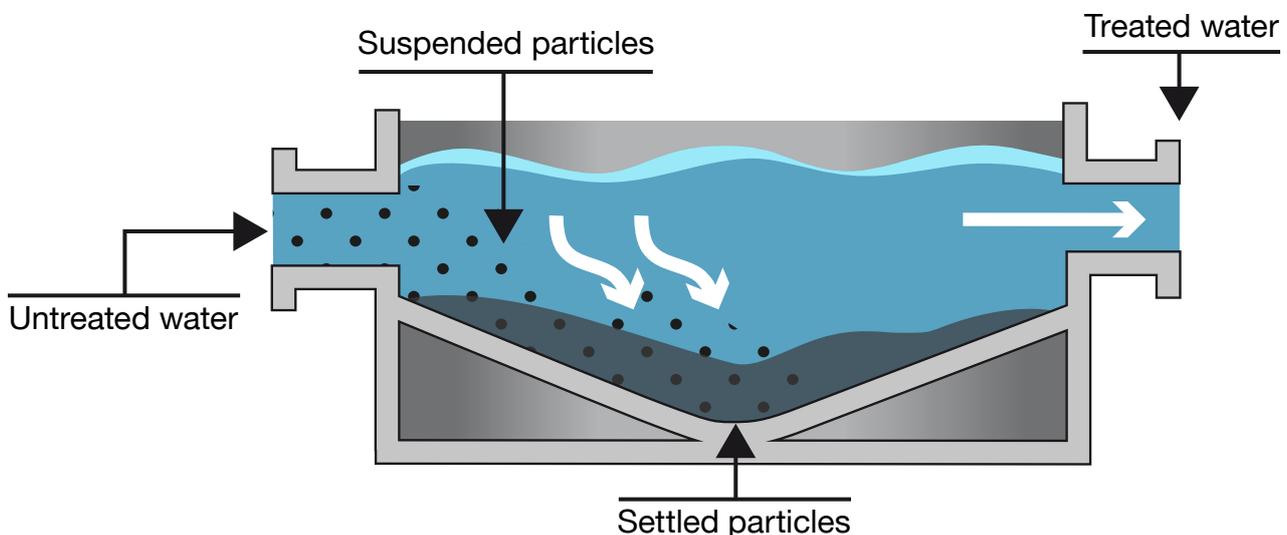
All of our water comes from a groundwater or surface water source (e.g. river, lake, dam, catchment, bore or well). The quality of water from these sources can vary depending on things like the soil composition, the season or how the water source is used. So, before we drink any water, it should go through a treatment process.



Sedimentation

Raw, untreated water is dirty. It contains particles that need to be removed to make it safe to drink. Sedimentation is the first process in removing the unwanted particles.

A chemical is added to the water and this reacts with the particles. It traps them and they collect together to form larger pieces (called 'flocs'). The water and flocs pass through a clarifier, where the heavier flocs settle to the bottom and the cleaner water passes through to the filtration process.





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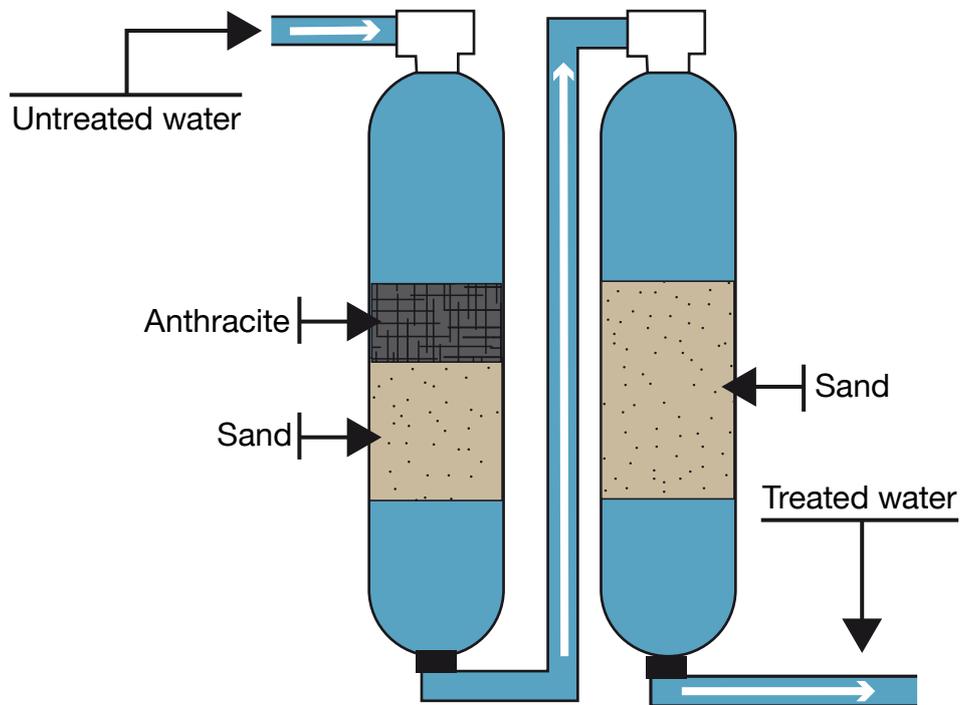
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Filtration

Even after the sedimentation process there are still small particles in the water and these need to be filtered out.

Sand filtration

The most common filters at the larger water treatment plants are deep beds of sand or a combination of sand and anthracite (a type of coal). In this process the water passes through layers of sand and this removes the finer particles and larger microorganisms, leaving clear water at the end.





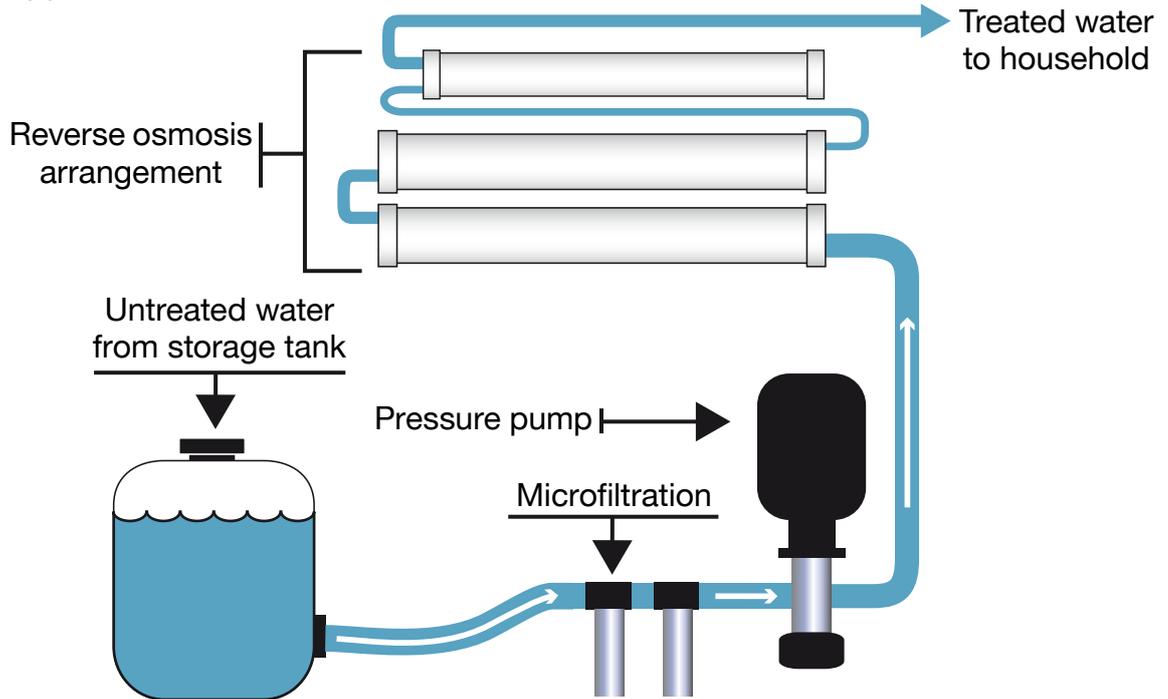
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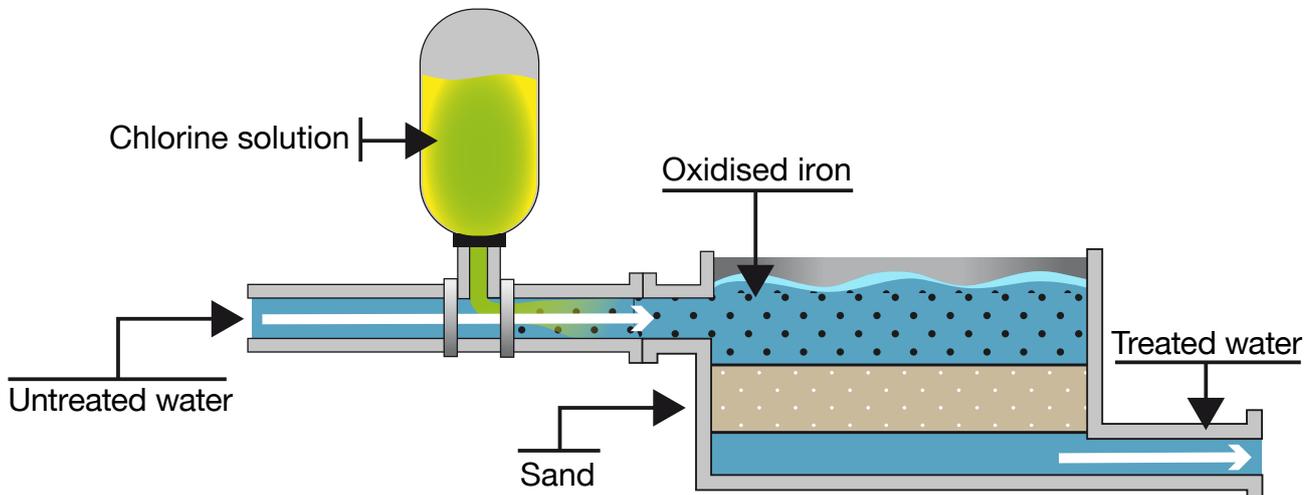
Reverse osmosis

In our newer and smaller water treatment plants, the filtration step is achieved by forcing the clearer water through synthetic membranes. These are special materials that have extremely small holes (smaller than human hair). The water is sucked through the material, but the tiny particles are trapped.



Iron removal

If the water is high in iron particles (as in the south-east of South Australia), it may require that chlorine is added before filtration. This causes the iron suspended in the water to oxidise, changing it into a form that naturally collects together into clumps called flocs. The flocs are then removed through a sand filtration process.





Disinfection and pH adjustment

When the water has been filtered, it is important to destroy any microorganisms that might still be in the water. If these stay in the water, they can make us sick. There are two common disinfection methods:

1. Chemicals
2. UV treatment

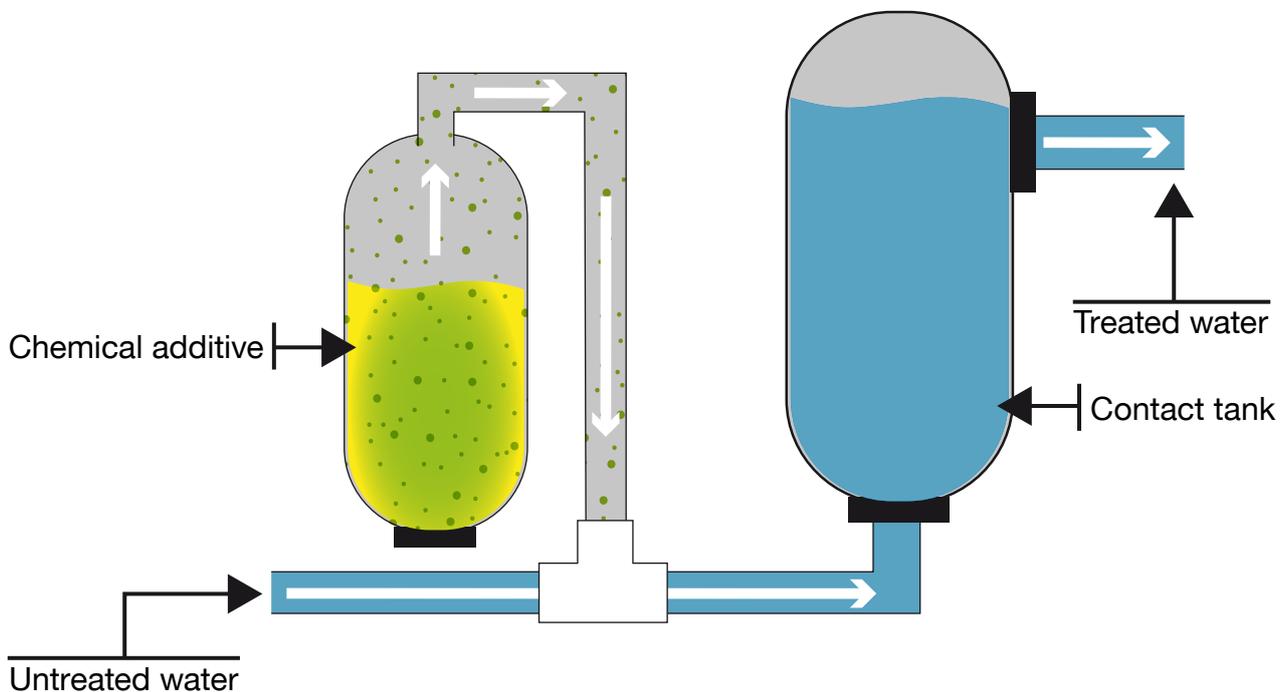
If water is very dirty, a combination of these methods might be used.

Chemicals

In South Australia, we use two chemical options for disinfecting our water: chlorine or chloramine (a combination of chlorine and ammonia).

If the system has a short pipeline and the water doesn't stay in the pipes for longer than one or two days, chlorine is used as the disinfectant.

If the system has a longer pipe line and the water will be in the pipes for more than two days, chloramine is used.





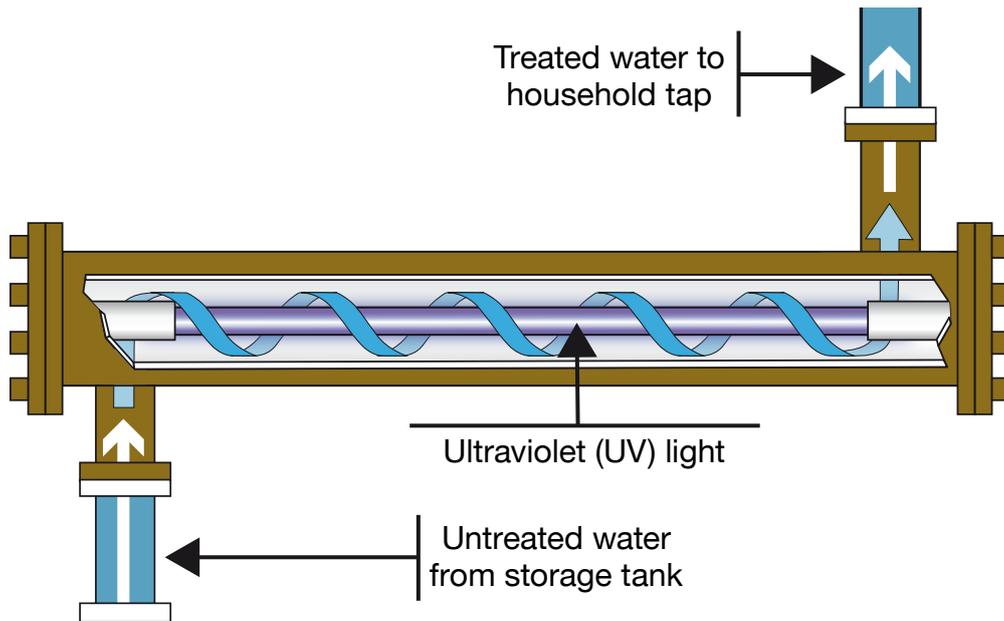
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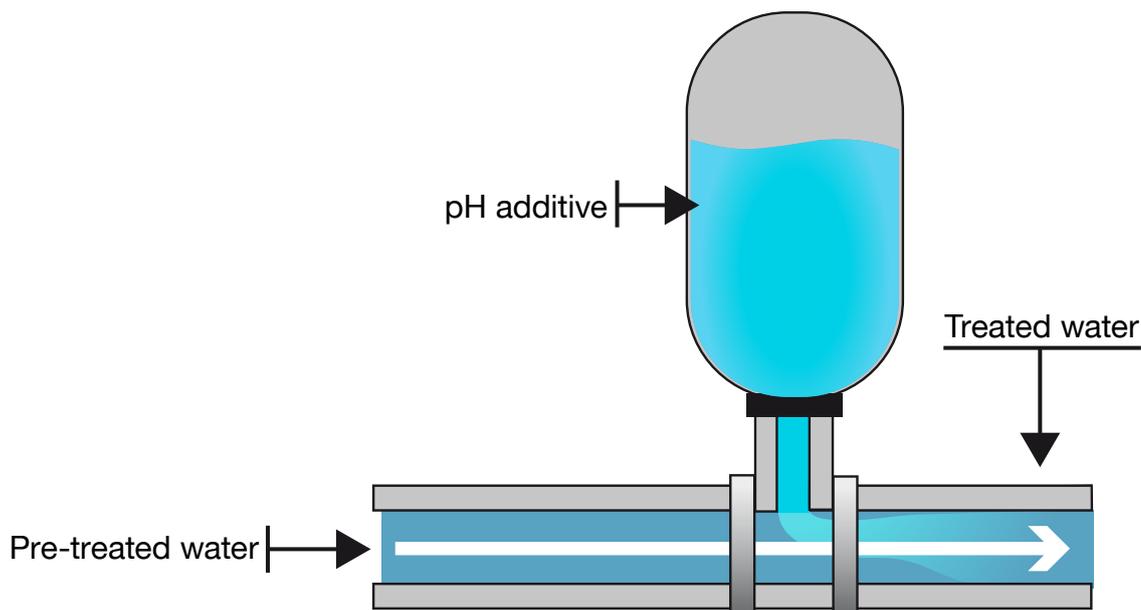
UV treatment

In this process, the water is treated with a strong light. It travels along a tube with a very strong Ultra-Violet (UV) light. UV light is like the light from the sun. This light is strong enough to kill the tiny germs in the water.



pH correction

Adding certain chemicals to the water during the treatment process can change the pH levels of the water, making it more acidic. To make the water safe to use, lime or other alkaline chemicals such as soda ash or sodium hydroxide are added at this stage.





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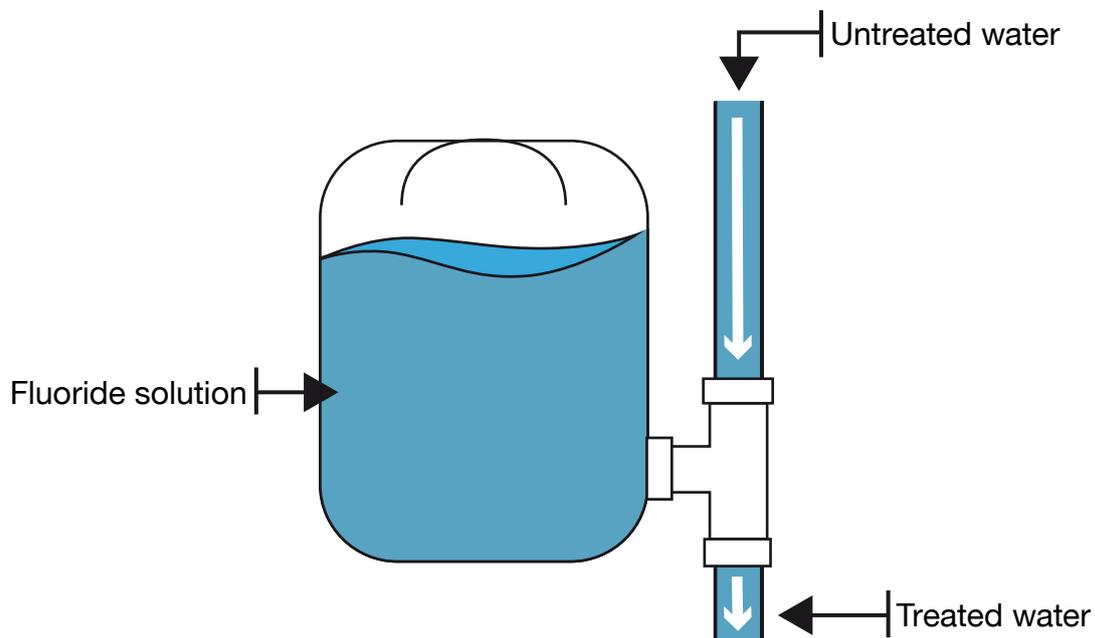
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Fluoridation

Fluoride is added to our water (following guidelines from the SA Department of Health and Ageing) in order to provide a significant public health benefit. Fluoride does not affect the appearance, taste or odour of drinking water, but it is good for our teeth and helps to stop us from getting cavities.

Only communities connected to SA Water drinking supplies have fluoride added. The rest do not require fluoride to be added as their bore supplies actually have higher levels of fluoride.



Store

Now that the water is clean, it can be stored in tanks. These are located all over the state so that water can be delivered when communities need it.

More information

For more information about your community's water supply follow the 'What's in your drinking Water' link on the [SA Water homepage](#).