



Large Scale Water Treatment - Teacher's Notes

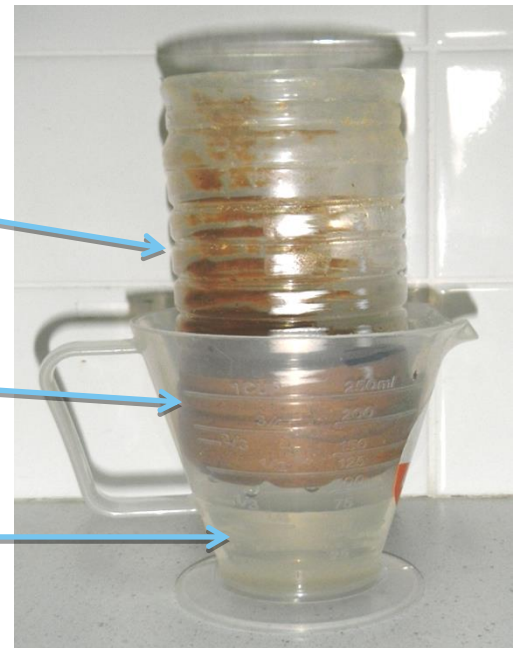
Where large volumes of water are needed for domestic and industrial use, it is first filtered to remove solids then treated to remove germs. If the water is stored in a reservoir, a measure of settling out of solids occurs.

Sand Filtering - Teacher Demonstration

Solids held back

Sand filter

Sand filtered clear water



Method

- Cut the bottom from an empty cool drink bottle
- Using a drawing pin make at least 6 holes in the bottom
- Fill one third of the bottle with washed sand
- Place this over a container
- Pour dirty water in the top container and collect the filtered water in the container below.

Water coming from large dams such as the Mundaring Dam which used to be Perth's major water supply is initially passed through a sand filter and then through other filters, before being treated further to make it safe to drink.



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Mundaring Weir near Perth

The first case of using sand as a water filter was in 1804 in Paisley in Scotland

Filtering Water - Student Activity

Materials per student or group. For schools without this equipment a substitute activity follows.

- 1 filter funnel
- 1 piece of filter paper
- 1 beaker
- 1 container of mixed water and soil

Method

1. Place the funnel above the beaker
2. Fold the filter paper to fit into the filter funnel
3. Slowly pour in the muddy water taking care not to overflow
4. Collect the clean water



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Substitute equipment

A plastic cool drink bottle can be cut in two to create:

a filter funnel
and
a beaker

Paper kitchen towel, "Chux" wipes
or cotton fabric can be used as
filter paper.



Students may be tempted to help push the water through the filter paper with their fingers or a pencil. This will cause holes in the filter paper and dirty water will flow through. Patiently adding the dirty water will prevent overflow.

Sand filters need to be regularly cleaned by "backflushing".

Disinfecting water

More complex membrane filters can be used to remove disease producing organisms such as giardia and cryptosporidium, however water is commonly disinfected by adding chlorine. Contaminated water is the greatest reason for childhood deaths in third world countries. Every 23 seconds a child dies from water born disease.

Fluorine can be added to help reduce tooth decay.

