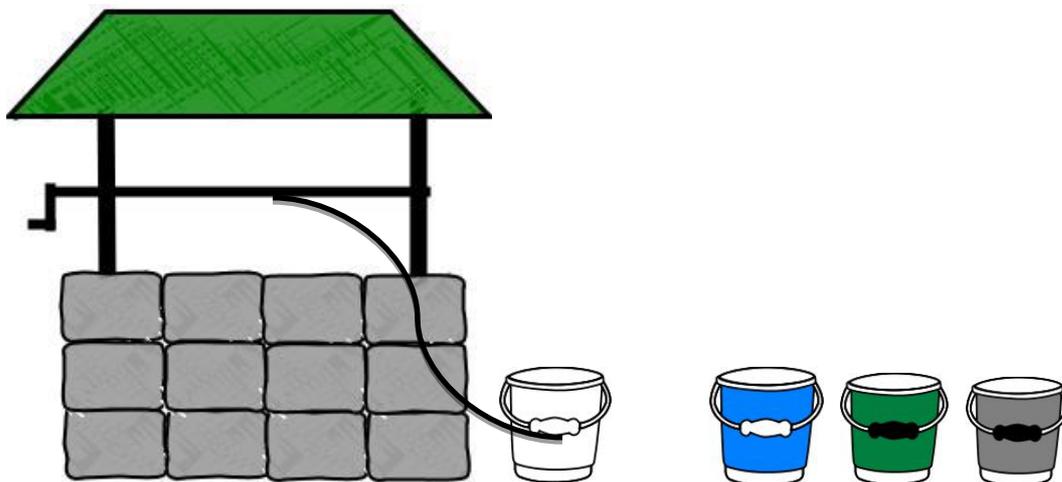




Small Scale Water Treatment - Teacher's Notes

Springs, Wells, Dams and Bores - Discussion

Hippocrates the Ancient Greek identified the significance of good water quality for good health. He is famous for stating "It is preferable to use water from a good source than treat water from an inferior source". Early settlers collected water by making dams that collected runoff and by "sinking" wells into trapped groundwater and bucketing the water back to the surface. To stop water being lost, dams were lined with impermeable clay. To stop wells collapsing, settlers lined them with rock and wood but left spaces where groundwater could seep into the well. Wells for human use were often situated slightly uphill from settlements, farms and animals to reduce contamination from sewage.



To obtain clear water for washing and drinking, water often had to be left to settle to the bottom of the bucket as dropping it into a well or dam will disturb the fine sediment and result in collecting muddy water. After settling, upper clearer water was then *decanted*, or poured, from the top of the bucket. The clearest water was used for drinking, cloudy water was used for washing people and clothes (sometimes first one then the other) and the "lees" or leavings were used for animals and the garden. As a child





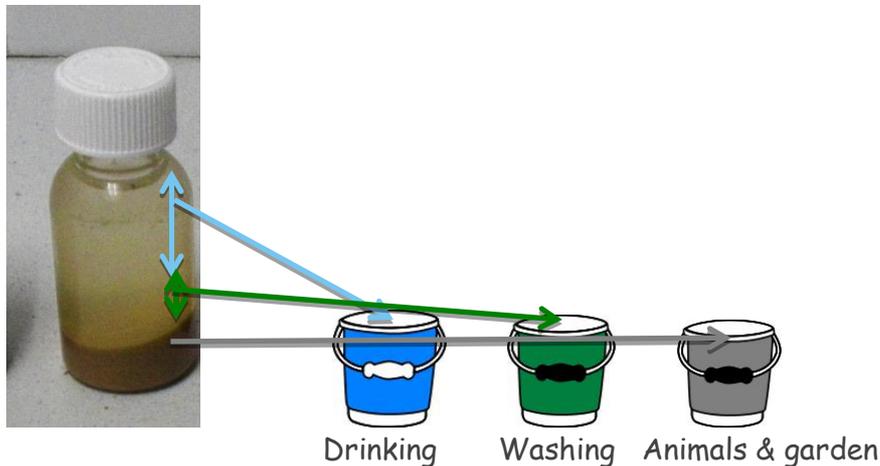
Small Scale Water Treatment - Teacher's Notes

I remember pouring the clearest water into a blue enamel bucket which went into the kitchen, the slightly cloudy water into a green bucket which went into the washroom/laundry and the lees (leftovers) were poured into a grey galvanised bucket for chickens, pigs, dogs and the garden. Even today not everyone is connected to mains water supplies.

Settling and Decanting Water - Teacher Demonstration or Student Activity

If this is to be a teacher demonstration, mix the sand and water in a transparent container in front of the class before and leave it to settle while you discuss the need for clear water. When decanting, it is important to slowly angle the bottle, pour and stop as soon as the dirty layer reaches the rim of the container. If you only have red pindan soil it can take two or three days before the colloidal red mud settles out.

For this water sample, which part of the water should be decanted (poured) into each bucket? [Answer given below.](#)





Small Scale Water Treatment - Teacher's Notes

Materials per group

- A screw top bottle or jar. Empty cool drink bottles are fine.
- A beaker or container for the clear decanted water. A white cup provides good contrast.
- A teaspoon.
- Water
- Old newspaper to protect desks.

Method

1. Cover desks with newspaper.
2. Place 2 teaspoons full of soil into each bottle.
3. Add water until half full.
4. Screw on lid firmly.
5. Shake until completely mixed (about 1 minute).
6. Leave for about 5 minutes to settle.
7. Decant clear water at top into another container.
8. Compare the samples of decanted water.
9. The winner is the student who has the largest and clearest water sample.

And the winner was? _____

**Please note that this water is clear.
It may not be clean enough to drink.**

For human consumption this water needs to be boiled, disinfected or treated with UV light to kill off microbes and their toxins.





Small Scale Water Treatment - Teacher's Notes

Aboriginal people used to cover their "gnamma" holes with rocks or brush to stop animals disturbing their water making it murky or fouling it. They did not drink murky water because they said the snake which made the waterhole was still swimming in it. They would let it settle and then stoop down beside it and scoop up water from the top. IT may be clear but it will not be sterile and can carry germs.

Testing Water from Different Sources - Extension

Ask students to collect samples of water from local natural water sources e.g. ponds, rivers and dams. Compare the settlement rates and water quality from these sources.



Water samples from four wells



Water samples after being allowed to settle for 5 minutes