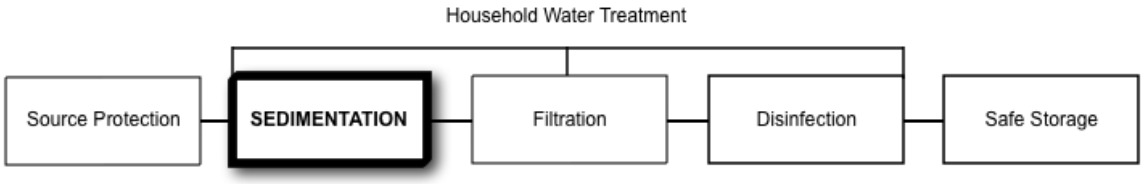
Centre for Affordable Water and Sanitation Technology

Household Water Treatment and Safe Storage Factsheet: Settling

The Treatment Process



Potential Treatment Capacity

Very Effective For:	Somewhat Effective For:	Not Effective For:
• Turbidity • Protozoa • Helminths	• Bacteria • Suspended particles (e.g. iron) • Taste, odour, colour	• Viruses • Dissolved chemicals

What is Settling?

Settling has been a traditional practice throughout history using small vessels or larger basins, cisterns and storage tanks.

Water quality can sometimes be improved by allowing it to stand undisturbed long enough for larger suspended particles to settle out by gravity, including those that cause turbidity (e.g. sand and silt) and certain pathogens (e.g. protozoa and helminths) Fine clay particles and other pathogens like bacteria and viruses are generally too small to settle by gravity.

How Does It Remove Contamination?

Although viruses, bacteria and smaller protozoa are too small to settle by gravity, some of these pathogens can attach themselves to larger suspended particles that can settle.

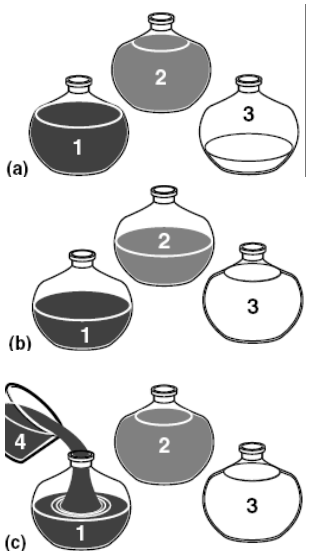
Storing water for at least one day will also promote the natural die-off of some bacteria.

Operation

At least two containers are needed: one to act as the settling container and another to put the clean water into after the settling period. Water can be settled for a few hours and up to days depending on its quality. The settled water is then carefully removed by decanting, ladling or other gentle methods that do not disturb the sedimented particles. It is important to clean the containers between each use.

The three pot settling method ensures water is settled for a minimum of 2 days to maximize settling and pathogen die-off. As shown in the following illustration:

(a) After 24 hours, slowly pour water from Pot 2 into a clean Pot 3. Clean Pot 2.
(b) Slowly pour water from Pot 1 into Pot 2.
(c) Pour source water (Bucket 4) into Pot 1.
Wait 24 hours before repeating step (a).



Household Water Treatment and Safe Storage
Factsheet: Settling Key Data

Inlet Water Quality

- No specific limits

Treatment Efficiency

	Bacteria	Viruses	Protozoa	Helminths	Turbidity
Laboratory	Up to 90%[1]	Up to 90%[1]	> 90%[1]	> 90%[1]	Varies[2]
Field	Not available	Not available	Not available	Not available	Varies[2]

[1] Sobsey. M. (2002), effective removal of protozoa and helminths may require longer storage times of 1-2 days
[2] Depends on the size of the suspended particles in the water - the larger the suspended particles, the more efficient.

- Efficiency varies from one water source to another
- Longer storage times of 1-2 days can improve efficiency

Operating Criteria

Flow Rate	Batch Volume	Daily Water Supply
Not applicable	Unlimited	Unlimited

Robustness

- Simple and easy to perform

Estimated Lifespan

- Containers may need to be replaced over time if they develop leaks

Manufacturing Requirements

Worldwide Producers:
- Not applicable

Local Production:
- Not applicable

Materials:
- Containers

Fabrication Facilities:
- Not applicable

Labour:
- Traditional practice done in the household

Maintenance

- Need to wash container after decanting the clear water

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Direct Cost

Capital Cost	Operating Cost	Replacement Cost
US$0	US$0	US$0

Note: Program, transportation and education costs are not included. Costs will vary depending on location.

References

Sobsey, M. (2002). Managing Water in the Home: Accelerated Health Gains from Improved Water Supply. Water, Sanitation and Health, Department of Protection of the Human Environment, World Health Organization, Geneva, Switzerland.