

Solar Distillation

Source Protection	Safe Transportation	Sedimentation	Filtration	Disinfection	Safe Storage
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What is it?

Solar distillation is an ancient method of using the sun's energy to treat drinking water. Distillation is the process of evaporating water into vapour, and then capturing and cooling the vapour so it condenses back into a liquid. Contaminants get left behind when the water evaporates. There are many different designs for solar distillation units (solar stills).



Performance

Microbiological Effectiveness:

Parameter	Effectiveness
Bacteria	Very Effective (>99%)
Viruses	No independent tests
Protozoa	Very Effective (>99%)
Helminths	Very Effective (>99%)

Other Parameters

Effective at removing turbidity, chemicals, and colour.

Source Water Requirements

No specific limits. Very turbid water should be settled or filtered first to reduce maintenance and cleaning required for the reservoir.

Capacity

Solar still sizes can vary from 0.5 m² for household use to 600 m² for community use. Volume treated depends on the type and size of solar still. Box stills produce: 4–8 L/m²; cone stills produce: 1–1.7 L/m².

Ease of Use & Acceptability

Operation & Maintenance

The user fills the solar still with water (for self-cleaning units, they add two to three times more water than will be produced). They wait, allowing the sun's rays to heat the water, and then they collect the treated water from the collection container. Some systems are self-cleaning and flush out contaminants. Others need regular cleaning with soap and water.

Repair & Replacement

Depending on the design, components may be fragile and may require regular replacement and repair.

User Considerations & Preferences

Requires a suitable climate and weather conditions. Requires airtight seals and smoothly stretched plastic during construction and operation. Users must handle the still with care to avoid breaking seals. About 0.5 m² of solar box still space is required per person to meet drinking water needs.

Feasibility

Availability

There are many worldwide producers. Simple designs are available for free online. The simplest designs can be made at home using a piece of plastic stretched over a container of water, with the centre weighted down so evaporated water condenses into another container.

Cost

Varies, depending on type and size.

Size & Weight

Varies, depending on type and size.

More Information

Details and references: www.hwts.info/products-technologies/6bfb8c81/solar-distillation

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