

Disease-causing organisms in water and milk are killed by exposure to heat in a process known as pasteurization. Boiling is often recommended to achieve pasteurization. However, contaminated water and milk can be pasteurized at temperatures well below boiling, saving time and fuel. Water heated to 149F (65 °C) for a short period of time is free from microbes, including E. coli, Rotaviruses, Giardia and the Hepatitis A virus. At 160°F (71°C), milk and foods are pasteurized.

Solar Cookers International's reusable Water Pasteurization Indicator (WAPI) is a simple, low-cost device containing a special soy wax that helps users determine when water has reached pasteurization temperatures.

## The importance of pasteurization

Water-related diseases are responsible for 80% of all illnesses and deaths in the developing world. Children are especially susceptible. An estimated 1.5 billion cases of diarrhea occur each year, resulting in the death of nearly 2 million children. Worldwide, about 1.3 billion people do not have access to safe drinking water, including nearly half the population of sub-Saharan Africa.

## Solar pasteurization

The WAPI can be used for pasteurizing over most fuel sources — including wood, charcoal and gas — but it works particularly well in conjunction with a solar cooker.

With good sun, simple solar cookers like SCI's "CookKit" and common solar box cookers can pasteurize water for a family at a rate of about one liter per hour.

**Safety Notice:** Pasteurization does not remove dangerous chemicals, like arsenic. Pasteurization is not the same as sterilization, a process whereby everything, including heat-resistant spores, is killed. The heat-resistant spores that survive pasteurization are harmless to drink. Where sterilized liquids are needed — in hospitals and in certain food canning processes, for example — high temperatures are achieved using special pressure cookers.



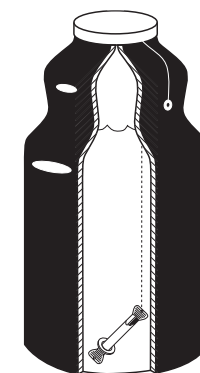
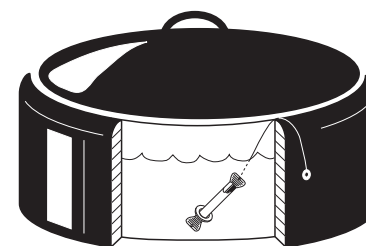
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## SOLAR PASTEURIZATION INSTRUCTIONS

1. **Pour water into a black pot or jar.** Thin metal pots are ideal. If necessary, pots and lids may be painted black on the outside with flat, nontoxic latex paint. Glass jars, painted black on the outside, also work well. Lids should have a small hole in them or be loosely screwed on to release steam pressure. Tip: place a vertical strip of tape on the jar before painting, then remove the tape, leaving a space through which to view the WAPI.

2. **Place a WAPI, washer down and wax up, in the water with the end of the string outside the pot or jar.** The washer end of the WAPI should rest on the bottom of the pot or jar and the wax end should be higher. Replace the lid.



3. **Orient the solar cooker as you would for cooking.** In general, face your cooker easterly in the morning and westerly in the afternoon.
4. **Set the pot or jar in the cooker.** If using a panel-type solar cooker, such as the CookKit, you can speed pasteurization by placing the pot or jar inside a clear, heat-resistant plastic bag. Though a plastic bag is required for cooking in this type of cooker, it is often not necessary for pasteurizing.
5. **Leave the cooker in a sunny place** for a number of hours, reorienting if necessary. Allow at least one hour per liter of water.
6. **When the WAPI wax melts and falls to the bottom of the WAPI, the water has been pasteurized.** Even if the water has cooled by the time you check it, as long as the wax is at the bottom of the WAPI then pasteurization has occurred.
7. **Allow the water to cool before drinking.**

Keep water covered until use to prevent recontamination. Don't let fingers or unclean objects touch clean water. If you aren't sure, re-pasteurize water.

