



SAFE WATER SYSTEMS

"The Simple Choice for Safe Water"

WHAT IS SOLAR WATER PASTEURIZATION?

PASTEURIZATION DEFINED

- Pasteurization is the process of disinfecting food or liquids by heat or radiation. Disinfection means the destruction of disease-causing microorganisms.
- The word "Pasteurization" was named after the French doctor Louis Pasteur, the father of modern medicine.
- In 1864, Pasteur demonstrated that diseases are caused by microorganisms that can be killed by heating to 55°C/131°F for several minutes. Applied to wine, beer and milk, this process, called "pasteurization", soon came into use throughout the world.
- Pasteur's research proved that sufficiently heating a substance destroys all disease-causing germs. Pasteurization has been accepted as completely safe for more than 134 years!
- Today, throughout the world, beverages such as milk, fruit juice, beer and wine are disinfected through pasteurization. Consumers are familiar with and trust the process of pasteurization.
- Pasteurization is a function of time and temperature. If heat is applied for a long period of time, disinfection will occur at a lower temperature. At higher temperatures, disinfection occurs in a shorter period of time.

SOLAR WATER PASTEURIZATION BY SAFE WATER SYSTEMS

- SAFE WATER SYSTEMS uses the time-honored technique of pasteurization to disinfect water that is microbiologically contaminated.
- Laboratory testing of SWS solar water pasteurizers confirms an effectiveness of 99.999% in disinfecting water that contains disease-causing micro-organisms, including bacteria, viruses, worms and protozoa.
- The effectiveness of SWS pasteurizers is superior to chlorine, slow sand filtration, ceramic filters, roughing filters, and UV radiation.***
- The **SunRay 30**, after heating the water for 1½ to 2 hours, achieves effective pasteurization at 68°C/143°F.
- The **SunRay 1000** is our *flow-through solar water pasteurizer*. Since the water spends only a short time in the system, the thermal control valve is designed to open at a higher temperature of 80°C/175°F before the water is released from the solar collector.

DISADVANTAGES OF BOILING WATER

- In many countries, firewood, charcoal and other fuels are used to boil water. The burning of fossil fuels has been linked to air pollution, ozone damage, deforestation, soil erosion, and flooding.
- Families in developing nations spend up to 25-30% of income on firewood or water purchases.
- Many families gather wood or other fossil fuels because they cannot afford to purchase them. It can take 6-8 hours or more for women or children to gather enough fuel to cook the daily meal and boil the water.

ADVANTAGES OF SOLAR WATER PASTEURIZATION

- 99.999% effective in destroying water-borne pathogens.
- Destroys disease-causing bacteria, viruses, protozoa and worms.
- Uses only the heat of the sun; does not use electricity, chemicals or fossil fuels.
- Prevents air pollution, ozone damage, deforestation, and soil erosion.
- Excellent for use during emergencies and natural disasters; guarantee that your family will always have safe drinking water.
- Superior alternative to chlorine treatment, which is rated “poor” at destroying worms & protozoa, may be bad for one’s health, and gives water a bad taste.***
- Low maintenance and no replacement parts costs.
- Large unit (SunRay-1000 model) can become a new business in developing countries: the owner can be a “water seller” in his/her community.

LIMITATIONS OF SOLAR WATER PASTEURIZATION

- Requires sunny weather.
- Cannot operate in freezing conditions.
- Does not remove chemical pollutants from water.
- Does not remove minerals or salt from water (does not desalinate water)

***These statements are taken from a report by the National Renewable Energy Laboratory, a national laboratory of the US Dept. of Energy, entitled “*An Overview of Water Disinfection in Developing Countries and the Potential for Solar Thermal Water Pasteurization*,” Jay Burch & Karen E. Thomas, January 1998, Appendix J., pp. J-1, J-2.