

Test taken at the “University of Arizona” in 7-22-1996
By Jaime Naranjo, B.S. Research Specialist

Test Performed	Our Water Purifier	USA EPA Standard
Bacteria Removal (Klebsiella Terrigeno)	Greater Than 99.9999%	99.9999%
Parasite Removal (Cryptosporidium)	Greater Than 99.9%	99.9%
Enteric Virus Removal (Polio)	Greater than 99.99%	99.99%

Large-Group Water Treatment System
By Brenda Land, Sanitary Engineer

Article found on Recreation Management Tech Tips Section of the United States Department of Agriculture Forest Service National Technology & Development Program.
August 2007 2300 0723 1307—SDTDC

Ultraviolet light (UV) has recently been approved by the EPA to disinfect water. Partner Steel Co., Inc.'s Aqua-Partner™ water treatment system uses UV disinfection. Partner Steel modified its motorized unit to work with a manual foot pump. The system uses a pre-filter to remove sediment, a 0.5 micron carbon-block cyst filter to remove protozoan cysts, and a battery-powered UV light to inactivate bacteria and viruses. Partner Steel provided a manual Aqua-Partner™ system to SDTDC for evaluation. SDTDC sent the system to the University of California, Riverside (UCR) Department of Environmental Sciences, Microbiology, to evaluate its ability to inactivate bacteria and viruses. The 0.5-micron carbon block cyst filter had already been independently evaluated for cyst removal and was not evaluated. UCR operated the system at 1 gallon per minute for 240 hours on clean water (turbidity less than 1 NTU [nephelometric turbidity unit]). UCR challenged the system with E. coli 11775 bacteria and bacteriophage phiX174 virus. The challenge tests were performed at 5 percent of filter life (12 hours), 50 percent of filter life (120 hours), and 95 percent of filter life (228 hours). The unit demonstrated 5-log removal/inactivation for both bacteria and viruses during the clean water tests. The system was operated on highly turbid (30 NTU) water for an additional 12 hours. Both bacteria and virus were non-detectable after treatment.

The battery was kept on a charger during the test. In the field, a solar package is required to keep the battery charged. If the battery is low, the UV light will not operate at full power and a chemical disinfectant must be added to the filtered water. An indicator light will warn the user when the battery is low. UCR did not use the manual foot pump to pump water through the system during the test. Water was supplied by pressure and regulated to 1 gallon per minute. Solitude River Trips, a Middle Fork of the Salmon River outfitter, evaluated the system in the field using the foot pump. They reported that it worked very well. They were pleased with the overall ease of use, portability, and operation of the manual Aqua-Partner™ water treatment system.