

Final Technical Report UV Waterworks Outreach Support

UV Waterworks uses ultraviolet (UV) light to inexpensively disinfect community drinking water supplies. Its novel features are: low cost (about US\$ 600), robust design, rapid disinfection (12 seconds), low electricity use (40 Watts), low maintenance (every 6 months), high flow rate (15 l/min) and ability to work with unpressurized (e.g., hand carried) water sources. The device could treat the drinking water demand of a community of 1000 persons at an annual total cost of nearly 10 cents US per person.

An extended field trial of UV Waterworks began in South Africa in February 1997 with lab testing at the municipal water utility's training center. A unit was installed at the first field site in August 1997 -- the Lily of the Valley AIDS hospice near Durban -- and was in continuous operation to August 1998. Deep borehole water from the Lily of the Valley AIDS hospice was found to be contaminated with fecal and total coliforms. The UVWw unit successfully treated this water for the first 4.5 months (early August - late December) and again after cleaning the outlet port and pipe. During these periods, the delivered drinking water met and meets WHO and USEPA bacterial standards. The results so far suggest that the unit continued to deliver good disinfection performance without any maintenance, however, attention must be paid to periodic (recommended every 2 months) cleaning of the outlet chamber and pipes to control biofilm growth.

NRDC worked with the Lawrence Berkeley National Lab project team to address the project objectives of outreach and coordination with nongovernmental and governmental organizations in South Africa and the U.S. Principal work products include co-authored papers presented at the NSF-sponsored First International Symposium on Safe Drinking Water in Small Systems in Washington, D.C. and at the annual Water, Engineering, and Development Centre conference in Durban, South Africa. NRDC also presented the project to the U.S./South Africa Binational Commission at its semiannual meeting in Capetown, South Africa.