

Control of *Naegleria fowleri* in well water supplies in Arizona.

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Naegleria fowleri is a water based protozoan pathogen that is found in aquatic and soil habitats around the world. It is also the cause of a fatal brain infection known as Primary Amoebic Meningo-encephalitis (PAM) that leads to death with a 98% fatality rate. This disease can be contracted by carrying out water related recreational activities such as swimming in surface waters. The organism enters through the nose and then ascends the nerves to the brain, producing a toxin that liquefies brain tissue. The only cases associated with drinking water have occurred in Australia and Arizona. Our recent research has determined that 8% of all municipal drinking water wells in Arizona are contaminated by *N. fowleri*. Guidelines need to be established for treatment of water with various disinfectants. In the present study, the Ct values (concentration X exposure time) for chlorine inactivation of *N. fowleri* trophozoites and cysts (two distinct life stages) were determined using the Efficiency Hom Model kinetics (EHM). The Ct values for 99%, 99.9% and 99.99% inactivations of *N. fowleri* trophozoites were 6.2, 9.2 and 12.2 minutes, respectively. The Ct values to attain the same inactivations of cysts were 31.2, 42.5 and 52.9 minutes, respectively. These Ct values for *N. fowleri* cysts were comparable to published values for *Giardia* cysts and lower than those for *Cryptosporidium* oocysts. The ultraviolet light (UV) dosage required for the inactivation of the most resistant cyst stage of *N. fowleri* in water was 63mW.sec/cm². Such research will be useful in preventing *N. fowleri* infections caused by contaminated water.