

Arizona Daily Star®

www.dailystar.com® www.azstarnet.com®

Published: 10.05.2007

Brain-eating amoeba found in 12 Tucson Water wells

But chlorinated water supply keeps city safe from killer bug

By Josh Brodesky

ARIZONA DAILY STAR

Brain-eating amoebas have taken up residence in Tucson's water supply as recent tests have shown their presence in 12 wells.

While the discovery of the killer amoeba, known as *Naegleria fowleri*, is surprising to at least one UA researcher, the microscopic bug's presence in the Old Pueblo's water supply doesn't pose any health risks.

Tucson Water chlorinates its well water before distribution, killing the amoeba before the water hits taps. But the amoeba's presence in our underground water source — probably as a result of biodegradable oil used in pumps — is a surprise. The amoeba is usually found in surface water such as rivers and lakes.

"The organism is everywhere," said Charles Gerba, a microbiology professor with the University of Arizona's Department of Soil, Water and Environmental Science. "It feeds on bacteria."

Naegleria fowleri made headlines recently when it killed a 14-year-old boy who had gone swimming in Lake Havasu last month.

Essentially, the amoebas enter the body through the nose and travel to the brain, where they feed until the person dies. The only way to get infected is to snort water. A person can drink water that has *Naegleria fowleri* and never be infected.

While the amoeba sounds like something out of a horror film, people come into contact with it all the time, although infection is rare. It lives in soil and is often present in warm bodies of water, particularly hot springs and lakes. Pools, if not chlorinated properly, can become homes to the microbes

Tucson Water joined Maricopa County cities in a study of well water in 2005 to determine the amoeba's presence in drinking water and develop treatment to eliminate any potential health risks. The study, which is being led by Gerba, was sparked, in part, by the deaths of two Peoria boys in 2002 from the organism.

"There are no requirements for specific disinfection of this organism," said Bruce Johnson, deputy director of Tucson Water.

Gerba and others sampled 35 Tucson Water wells and initially found some presence of the bug in 12 of the wells. Those 12 wells were re-sampled and five were confirmed to have the bug. A year passed, and the 12 wells were sampled again. Eleven came out clean, and one well needs to be resampled because of an error, Gerba said.

The inconsistency in testing is common with *Naegleria*, Gerba said.

"Sometimes we find them, and then (after retesting) we haven't found them again," he said.

While Tucson Water chlorinates its groundwater before distribution, Gerba said he was concerned about private wells that aren't necessarily chlorinated. There were roughly 250 private wells in the greater Tucson area in 2004, state records show.

"We are in the process of issuing a work-practice notice to our staff. We want to tell our staff that it's not suggested to put the water near your nose where you could snort the water up your nostrils."

Bruce Johnson

deputy director, Tucson Water

So, researchers also sampled 20 private wells, but they found no presence of Naegleria.

The discrepancy has led Gerba to think Naegleria fowleri is showing up in the Tucson Water wells because of biodegradable oil that's used as a lubricant for pumps. Pumping capacity in private wells is much smaller, and, as such, the pumps don't rely on engines, he said.

Essentially the amoebas are entering the Tucson Water wells to feed on the bacteria.

"I think it's just the circumstance of they switched to biodegradable oils for lubrication," he said. "It may have always been there, but people are more aware of Naegleria now."

Naegleria was discovered in the 1960s and the federal Centers for Disease Control and Prevention have tracked only several hundred cases worldwide. Between 1995 and 2004, 23 people in the United States were infected by Naegleria fowleri, the CDC says.

But this year there have been six Naegleria cases: three in Florida, two in Texas and one in Arizona.

Because the microscopic organism thrives in warm water, Gerba said he expects to see the trend of more and more cases continue as the Earth's climate becomes warmer.

"I think we are going to see more problems with more microbes in water with the warming trend," he said. "It seems to be a trend, and I think it will continue."

Johnson, of Tucson Water, said the tentative recommendations coming out of Gerba's study call for the following: sampling every three years of all groundwater wells that have temperatures of at least 77 degrees, chlorinating any wells coming online that have not been used for at least six months, and chlorinating any wells that test positive for Naegleria.

There is also concern, Johnson said, for workers handling the water before it's been chlorinated.

"We are in the process of issuing a work-practice notice to our staff," he said. "We want to tell our staff that it's not suggested to put the water near your nose where you could snort the water up your nostrils."

"We are in the process of issuing a work-practice notice to our staff. We want to tell our staff that it's not suggested to put the water near your nose where you could snort the water up your nostrils."

Bruce Johnson

deputy director, Tucson Water

? Contact reporter Josh Brodesky at 807-7789 or jbrodesky@azstarnet.com

All content copyright © 1999-2007 AzStarNet, Arizona Daily Star and its wire services and suppliers and may not be republished without permission. All rights reserved. Any copying, redistribution, or retransmission of any of the contents of this service without the expressed written consent of Arizona Daily Star or AzStarNet is prohibited.