

University Of Delaware Technology Provides Safer Drinking Water

University of Delaware



Worldwide, about 1.2 billion people lack access to safe drinking water, and twice that many lack adequate sanitation. As a result, the World Health Organization estimates that 3.4 million people, mostly children, die every year from water-related diseases.

In a paradigm shift researchers Pei Chiu and Yan Jin of the University of Delaware have developed a new nonchlorine-based technology (funded by a National Science Foundation Small Business Innovation Research grant and a University of Delaware subaward, Corporate Environmental Solutions) that is able to purify water to remove 99.999 percent of bacteria and viruses.

Viruses have been extremely difficult to eliminate in drinking water since they are smaller than bacteria, highly mobile and resistant to chlorination and filtration. Chiu and Jin discovered that by using elemental iron in the filtration process, they could effectively remove viral agents from source water. The process causes the viruses to be chemically inactivated or irreversibly adsorbed to the iron.

The use of elemental or “zero-valent” iron in this technology is also much cheaper than current techniques because this material is a normal byproduct of iron and steel production, an important consideration in both the developed and developing world. The zero-valent technology has been licensed to the Center for Affordable Water and Sanitation

Technology (<http://www.cawst.org/>), a nongovernment organization, licensed for humanitarian purposes to provide pure water to impoverished areas of the world. The center is investigating its use in a portable water treatment unit.

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The research team envisions use of this technology to safeguard the water supply in other applications such as agriculture where, for example, it could be integrated into the wash system of a produce production facility. In such a setting it could make an important contribution to safeguarding fresh vegetable production. In addition it could help avoid water- and-food-borne illness outbreaks such as that experienced in the United States in September of 2006. That outbreak, according to the Centers for Disease Control, was responsible for sickening 276 people and killing three.

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