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UNIVERSITY OF WISCONSIN WATER RESOURCES INSTITUTE

Research to Safeguard the Quality and Supply of our Water

WISCONSIN HOLDS A WEALTH OF WATER. With nearly 1 million acres of lakes and more than 5 million acres of wetlands, Wisconsin ranks among the top in the nation for water resources. And that is just what's above the ground. Wisconsin has about 1.2 quadrillion gallons of water underground.

It's important to keep this water clean and to use it wisely. Seventy percent of Wisconsinites

get their drinking water from groundwater. The University of Wisconsin Water Resources Institute supports multidisciplinary research to safeguard Wisconsin's water resources and maintain their high quality. This highly efficient and cost-effective federal-state program draws from the best of Wisconsin's aquatic scientists.

Continued



BENJAMIN EARWICKER

RESEARCH IMPACTS

- A Water Resources Institute researcher designed a water-purifying system that destroys a variety of chemical and microbial contaminants. In addition to ensuring a clean water supply to benefit human health the world over, the system brings an economic benefit to Wisconsin. The private company formed to market the system has attracted more than \$5 million in venture capital and has stated it plans to employ up to 50 people.
- A Water Resources Institute hydrogeologist developed a computer model of the groundwater aquifer in Spring Green, Wis., the site of unusual groundwater flooding. The model predicted a short timeframe for future similar flooding, which led to 28 homeowners having their damaged houses purchased for \$5.37 million by the Federal Emergency Management Agency and Wisconsin Emergency Management. These sites have been taken out of development.
- The Nuclear Regulatory Commission and the Department of Energy are changing how they design covers and barrier systems for low-level radioactive waste disposal and uranium mine tailings sites across the country based on Water Resources Institute research findings. The project found that the closer a cover mimics conditions found in the natural environment, the longer it will last, which has caused a philosophical change in the engineering industry and is expected to save on long-term maintenance costs for these waste containment facilities.
- Water Resources Institute scientists have refined methods to pinpoint the sources of well water contamination. Private well contamination can make the water unsafe and jeopardize the health of families. Their efforts have led to a reduction in the number of contaminated private wells across Wisconsin.
- Wetlands play a vital role in removing nitrogen from the environment. A Water Resources Institute researcher determined that fertilizers add more nitrogen to the environment than natural processes can remove. Nitrogen removal is important because excess amounts in water can lead to harmful algae growth, fish kills, or contaminated drinking water. In Wisconsin, an estimated nine percent of private wells exceed the safe drinking water standard for nitrates. The scientist found that bacteria in deep sediment streambeds are most helpful for removing nitrogen, which could lead to improvements in water quality.
- Water Resources Institute researchers have found that the groundwater resources that serve the communities of Green Bay and Milwaukee arise from water formed in the Pleistocene era, not from modern recharge water. This information is helping water supply managers make long-term water management decisions for these communities.
- Elevated levels of strontium have been found in deep wells in Brown, Calumet, Oconto and Outagamie counties. The naturally occurring element, different than the one that is a byproduct of nuclear production, can cause rickets and damage teeth enamel. Thanks to Water Resources Institute research, this important public health matter was investigated and publicized.
- High mercury levels in water can cause serious human health problems, and affect the fish, plants and animals of the contaminated area. A Water Resources Institute researcher discovered that “new” mercury added to the environment affected fish a lot more quickly than mercury already in a system. The EPA used the findings, in part, to formulate rules for how much mercury power plants could emit.