

Environmental pharmaceutical contamination removed by Octolig

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An article in the current issue of *TECHNOLOGY & INNOVATION* reports on the removal of certain dyes and the antibiotic amoxicillin from water samples using Octolig, a commercially available material.

"Because of their properties and the magnitude of their production and use, pharmaceuticals can represent a serious disposal problem," said corresponding author Dean F. Martin, PhD, of the University of South Florida's Institute for Environmental Studies and a member of the National Academy of Inventors. "Failure to attain proper management can lead to environmental contamination."

Prior work with Octolig resulted in the successful removal of a number of substances, including nitrates, phosphates and several varieties of dyes. In a recent study reported upon in this article, the researchers successfully removed amoxicillin - one of the top five drugs prescribed in the U.S. - from water samples.

"The ability to remove amoxicillin from water samples using chromatography (a laboratory technique for separating mixtures) and Octolig has implications for examples of point-source pollution such as hospitals, which represent a major point-source of environmental contamination," said Dr. Martin. "The problem can originate with improper disposal as well as incomplete metabolism of a given [pharmaceutical](#)."

The same process could be used to remove tetracycline, an antibiotic

used to treat dairy cattle. The cattle secrete the active drug and it can be carried into the environment by cooling mists used in farms air conditioned facilities. He added that U.S. residents use over 52 percent of the world's pharmaceuticals. Besides widespread human use of pharmaceuticals, pharmaceuticals are also widely used in veterinary medicine, aquaculture, livestock production, agriculture and bee keeping. Because the disposal of many of these drugs is not managed properly, they enter the environment and pose contamination risks.

"Two problems are especially important - antibiotic resistant bacteria and endocrine disruptors," concluded Dr. Martin, who added that a 2002 national study found pharmaceuticals, hormones and other organic pollutants were present in more than 80 percent of surface water streams tested.

Provided by University of South Florida

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