Study eyes fluoxetine in recreational waters

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Mercyhurst College's research of contaminants in the recreational waters at Presque Isle State Park got a $250,000 boost from the U.S. Environmental Protection Agency, it was announced today.

The funds, awarded to Mercyhurst in collaboration with the Regional Science Consortium and Penn State Behrend, will be used to identify and quantify chemicals in the water with important human and environmental health implications. Dr. Steven Mauro, assistant professor of biology, is directing the research at Mercyhurst.

One chemical that Mauro's team of biology students at Mercyhurst has targeted is fluoxetine, an anti-depressant. It has been identified in elevated concentrations at two locations along Elk Creek and Walnut Creek and at beaches 1, 2, 6 and 10.

"Our current data reveals the presence of fluoxetine at levels nonthreatening to animals or humans, but quite capable of killing microbes, like bacteria and viruses, that are important to the viability of any aquatic area," Mauro said. "What gives us reason for concern and why we want to focus more studies on fluoxetine is that it is more lethal to E. coli than other types of bacteria we have thus far tested."

E.coli has the potential to be pathogenic to humans, so the ability of fluoxetine to remove E.coli from these waters may be positive for human safety. However, since the safety of Presque Isle's recreational waters to the swimming public is typically gauged by E.coli levels, Mauro suggested the possibility that fluoxetine could be lowering the E.

coli numbers and giving a false impression that the waters are safer than they are.

He said continued studies of fluoxetine, including its interaction with other chemicals and its impact on bacteria like E. coli, are needed to draw relevant, actionable conclusions. While Mercyhurst will conduct much of the actual on-site research, Mauro said faculty from Penn State Behrend and the Regional Science Consortium will aid in the statistical analysis and interpretation of data.

Since 2006, Mauro and his team of student researchers have developed protocols to reduce bacterial sampling time, produced scientific evidence linking human waste from creeks to beach water contamination, established the first long-term human bacterial pathogen-specific study at Presque Isle and identified chemicals of concern in the water.

"We are hoping that our next round of research will allow us to begin a more in-depth analysis of fluoxetine and other chemicals, particularly their interaction, that will enable us to determine their impact on water quality and the health of beachgoers," Mauro said.

Provided by Mercyhurst College