



Apr 17th, 1:15 PM - 2:30 PM

Detection of Pesticides in Midwestern Water Through High Performance Liquid Chromatography

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Poster Presentation P46

DETECTION OF PESTICIDES IN MIDWESTERN WATER THROUGH HIGH PERFORMANCE LIQUID CHROMATOGRAPHY

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Growing up in the Midwest, one cannot possibly go a day without realizing the high demand that this nation has on farming and agriculture. Although nearly everyone would agree that crop production is dependent on the use of pesticides, it is less likely that many would realize the degree to which these chemicals are used or the impact that they have on the environment. This study is designed to look at the impact that pesticide use may have on the environment, specifically in water systems. Many commonly used pesticides, both in farm and home use, have a tendency to remain present in the environment long after their initial application. The environmental effects of this buildup and accumulation, although unknown for all pesticides, are generally regarded as negative. Although initial application may require amounts as low as parts per billion, bio-accumulation may magnify the adverse effects of these toxins, making them a danger to aquatic life.

The purpose of this study was to develop a method for the detection and quantitation in natural surface water of a select list of commonly used pesticides, specifically atrazine, diazinon, tebuthiuron, and metolachlor. This list was generated based on pesticide families as well as likelihood of detection in Midwest water sources. A method was developed involving solid-phase extraction followed by reverse-phase liquid chromatography. Preliminary samples were then collected and analyzed from local rivers (Sugar Creek and the Mackinaw River). Results show that small traces of atrazine may be present in Sugar Creek, however there was no indication that any of our pesticides were present in the Mackinaw. This information may prove useful for determining whether or not new laws and regulations on pesticide usage need to be made to help protect the environment and native species.