

## Effects of Cigarette Butts on Coastal Waters

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Pollution and its effects on the environment have been studied increasingly over the past twenty years as public awareness and government mandates demand solutions to the problems created by human industries.<sup>1</sup> The anthropogenic release of metal contaminants into the environment is a persistent problem. One point source that people may not consider is cigarette litter. Cigarette litter, including butts and filters, is among the most common forms of litter discarded worldwide.<sup>2</sup> It is estimated that several trillions of cigarette butts and filters are improperly disposed of each year.<sup>3</sup> Previously, our research group has studied the contaminants that leach from cigarette butts, in both water<sup>4</sup> and soils. We have also researched the uptake of these contaminants in plants.

This summer, we will expand our study to collaborate with the Georgia Sea Grant College Program. This project will analyze seawater from Glynn County, GA, in the Satilla River Watershed. Glynn County has four Superfund sites. We are partnering with the University of Georgia Marine Extension Service on a pilot water quality survey along the beaches of St. Simons Island. First we will need to research the analysis of metals in seawater. We plan to use a precipitation method for concentrating and then re-dissolving the samples in acid. The samples will be analyzed by ICP-OES.

**Role of the Undergraduate Student:** As a researcher, I strongly feel that undergraduate research and exposure to the scientific method are crucial in preparing our students for successful and productive careers in science. The student who performs research with me will gain an extensive hands-on experience with analytical methods and instrumentation. The student will also have the opportunity to present the research at a regional meeting and/or national meeting. The student on this project must have completed Quantitative Analysis and Organic Chemistry I/II with at least a B. The student must speak with me about my research interests if they plan to work with me. The student will be expected to work 40 hours/week, May 4 – July 10, 2014. The project will culminate in a student presentation and paper at the end of the summer.

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<sup>1</sup> Alloway, B.J.; Ayres, D.C. *Chemical Principles of Environmental Pollution*. Oxford: Alden, 1993.

<sup>2</sup> Micevka, T, Warne, M., Pablo, F., Patra, R., *Arch, Environ. Contam. Toxicol.* **2006**, 50, 205-212.

<sup>3</sup> Novotny, T. E., Zhao, F. *Tobacco Control*, **1999**, 8, 75-80.

<sup>4</sup> Moerman, J.W., Potts, G. E. *Tobacco Control* **2011**, 20 (Suppl 1) i30-i35.