

## **URP Proposal for Summer 2018**

### **False Positives: Organic Gunshot Residues at the Firing Range**

[Dr. Gretchen E. Potts](#)

Gun ranges have extensive air filtration systems to abide by NIOHS standards for air quality. Are these filtration systems sufficient enough to prevent a false positive for a person who has been inside, but not fired a gun? What implication does this have for criminal investigations? We would like to explore this in collaboration with Dr. Chris Dockery of Kennesaw State University. Dr. Dockery's previous research has focused on occupations that can result in a false positive on gunshot residue tests. These tests focus primarily on the elemental analyses of Ba, Pb, and Sb. We would like to expand this research to environmental monitoring at gun ranges for the analysis of organic gunshot residues. The research will require method development for control situation and will expand to real samples provided by Dr. Dockery. In addition to method development, students will also learn the theory and operation of the gas chromatography mass spectrometer (GCMS) and the high performance liquid chromatograph (HPLC).

**Role of the Undergraduate Student:** The application of theory and the critical thinking required of an undergraduate researcher are fundamental in preparing 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 UTC and at a regional meeting and/or national meeting. The student on this project should have completed CHEM 3210 and 3010/3020 with at least a B by the time of application. Proficiency in statistics is plus, knowledge of SPSS even more helpful. The student will be expected to work 40 hours/week, May 7 – July 20, 2017 and to give two presentations over the course of the summer. The project will culminate in a student-written paper.