

# Hyperspectral Imaging of Hybrid Poplar Leaves for the Detection of Trichloroethylene Contamination

Sarah K. Caltabiano and Lee Newman

Trichloroethylene (TCE) has been used by industry and the government as an industrial solvent and degreaser. Because of its widespread use and indiscriminate disposal, it is a ubiquitous groundwater pollutant found underneath Superfund sites, dry cleaning establishments, and automotive shops. TCE has recently been listed as a carcinogen, and has long been known to be a nephrotoxin, and a hepatoin. Determining the presence of TCE in ground water is critical for mitigating this harmful pollutant. However, traditional methods of detection are time consuming, destructive and expensive. Hyperspectral imaging has been previously used to characterize and identify plant stress in agricultural settings where the technology has been used to identify small changes in the wavelength of leaf reflectance under different environmental conditions. This project aims to refine the characterization of leaf reflectance of hybrid *Populus* trees exposed to different concentrations of TCE under low fertilizer, acute drought, and chronic drought treatments, to ensure the ability to accurately identify and locate TCE in the environment.

Sarah K. Caltabiano, SUNY College Of Environmental Science and Forestry, 1 Forestry Drive, Syracuse, New York, 13210, United States, [skcaltab@syr.edu](mailto:skcaltab@syr.edu)

Lee Newman, SUNY - College of Environmental Science and Forestry, Dept. Environmental and Forest Biology, Syracuse, NY, 13210, United States, Tel: 315-470-4937, [lanewman@esf.edu](mailto:lanewman@esf.edu)

Presenting Author: Sarah K. Caltabiano