

The Summer Undergraduate Research Fellowship (SURF) Symposium
4 August 2016
Purdue University, West Lafayette, Indiana, USA

PAH Analysis of Sediments from Pleasant Run Creek adjacent to a Former Manufactured Gas Plant

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ABSTRACT

Polycyclic aromatic hydrocarbons (PAHs) are known to be toxic and some are even carcinogenic. A prime source of PAHs is coal tar. Coal tar can be found in soils and sediments near former manufactured gas plants (MGPs) or coking facilities. This study involves characterizing the chemical composition and concentrations of PAHs within stream sediments at a former MGP site by Pleasant Run Creek in Indianapolis, Indiana. To characterize the stream sediments, sediment cores were removed from various locations along the stream and sampled with depth. Sample collection was conducted in partnership with the environmental engineering firm, August Mack Environmental. Samples were taken at 2 feet intervals from the surface (0.5 ft.) to a depth of 8 to 12 feet. Since the study is ongoing, samples continue to be processed in the lab to analyze concentrations of 17 PAHs by gas chromatography-mass spectrometry (GC/MS). A comparison between measured concentrations and published risk-based criteria will be performed to determine if observed concentrations pose an environmental risk. The results are expected to indicate significant PAH weathering (i.e., variable composition) in the sediment, due to the water volume and velocity of Pleasant Run Creek being affected by storm events. The results of this project will be used by August Mack Environmental to evaluate remediation strategies.

KEYWORDS

Coal Tar, Polycyclic Aromatic Hydrocarbons, Risk Assessment