

# CONTINUED TOXICITY IN TRAIL CREEK SEDIMENTS ONE YEAR AFTER THE INDUSTRIAL FIRE

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**Abstract.** In July 2010 Trail Creek, an urban stream located in Athens, GA was contaminated with runoff from firefighting efforts that contributed nearly 700,000 gallons of water mixed with janitorial chemicals from a burning formulation facility. The effluent contained a dye that turned the creek a vivid blue and toxic chemicals that killed fish and invertebrates along a 9 km reach below the industrial site. Initial assessments of water revealed significant toxicity in Trail Creek that extended nearly 2 km from the spill site. Initial remediation efforts included in-situ filtration of creek water with activated charcoal and within 12 months the industrial site was excavated and contaminated soils were removed. By three months after the spill no toxicity was measured in the water column, yet whole sediment toxicity tests conducted in November 2010 revealed significant toxicity remaining in downstream sediments. At 5, 8 and 12 months following the fire we conducted elutriate tests on sediments collected from 4-10 locations downstream from the fire. Elutriates were prepared according to EPA protocol and toxicity of filtered elutriates to the aquatic microcrustacean, *Ceriodaphnia dubia*, was assessed in acute and chronic tests. Results confirmed significant toxicity in Trail Creek sediments through one year following the spill, with the highest toxicity measured at sites with the highest organic carbon content. All of the toxic sites were located in a wetland located approximately one km downstream of the original spill site. Wetland sediments are highly enriched in organic carbon, and could serve as a sink for the toxic components of the Trail Creek spill, preventing further downstream contamination. Additionally, wetlands also have tremendous biodegradation capabilities and could ultimately degrade the retained toxic chemicals. Further sampling is needed to follow the transport, toxicity and potential remediation of toxic chemicals in Trail Creek.