

## **Community driven research: Historical exposure assessment and results of media sampling along the Allegheny River associated with legacy contamination at the former Pittsburgh Plate Glass Industries, Inc. Cadogan waste disposal site.**

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The site was used for the disposal of waste materials associated with flat glass manufacturing from the Ford City Plant, Pittsburgh Plate Glass Inc. operated for over 100 years from 1889 to 1993. Community concern for site conditions were demonstrated through numerous environmental public health prioritization processes held as part of the Allegheny River Stewardship Project. Subsequent visual observation by community members and the research team revealed an extended cliff face with flowing effluent, covered in a whitish precipitate, on the right downstream descending bank of the Allegheny River directly cross-channel west from the mouth of the Crooked Creek. The cliffside is devoid of vegetation except for tree remnants that may indicate more recent biotic exposure, increased effluent flow rates and/or changes in hydrogeological streamlines. A Department of Environmental Protection (DEP) files review of the factory and disposal site was performed to construct a conceptual site model and assess historical environmental exposures in the area. Previous remediation investigations concluded that the primary contaminants of interest were arsenic and lead, although detectable concentrations of a panel of elements associated with glass manufacture were discovered. Concerns for human exposure and contaminant migration into the Allegheny River were stated, but formal risk assessment methodologies revealed minimal to no human or ecological health risks.

In our study we sought to compare current conditions of contaminated media to data found in the file review to determine the dynamic nature of the site; preliminarily assess contributions of elemental mass from the site to the river using a defined river control volume that includes both the factory and waste site; and measure indicators of water quality and contaminant elements associated with escaping effluent, runoff water, and groundwater on and near shore the cliff side where boating and fishing activities were observed. Water and sediment samples were taken and will be analyzed according to EPA accepted ICP-MS methods for As, Pb, Co, Cu, Cd, Cr, Hg, Mn, Se and Zn levels. Real time measurements using a Hanna Instrument 9128 multi-parameter water probe indicated the maximum pH of cliffside effluent, groundwater 6 inches above the constant head boundary of the river, and surface water flowing directly into the river to be 10.94, 9.91 and 9.80, respectively. Signs should be immediately posted warning boaters, anglers, swimmers and hikers to avoid this area and should be visible from both land and water side approaches. Fish cannot survive for prolonged periods of time in alkaline waters above a pH of 10.10.