

COMMUNITY FOUNDATION QUINNIPIAC RIVER FUND

FINAL REPORT

June 7, 2014

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Project Name:

Surveying the Quinnipiac River, a study of bis-2-ethylhexyl phthalate and other plasticizers in an effort to characterize contamination from industrial sources.

Grant Number: 20130076

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Summary

This project was funded in part by The Community Foundation for Greater New Haven's Quinnipiac River Fund in order to study the presence of diethylhexyl phthalate (DEHP) and other plasticizers in water and sediment from the Quinnipiac River as it flows through Wallingford, North Haven, and the tidal marsh on its way into New Haven harbor. The project period for this investigation was March 21, 2013 to March 20, 2014, with an extension to May 30, 2014.

Project Objectives

- Collect and analyze water and in the Quinnipiac River, in predetermined locations in Wallingford and North Haven for the presence of the target analytes.
- Measure water quality and climatic parameters at sample sites during collection.
- Disseminate research results on the analysis of chemical contaminants in the Quinnipiac River and its watershed.

Background

Phthalate esters are plasticizers commonly used to soften polyvinyl chloride products such as electrical conduit and sewage piping. As a result phthalate plasticizers are quite often found in

samples which are collected for environmental monitoring programs. Plastic materials represent a portion of wastes released from landfills, trash transfer stations, industrial wastewater treatment plants, and municipal incinerators. Several of these plasticizers, specifically DEHP, are manufactured in Wallingford. A known manufacturer of these chemicals has a discharge permit allowing outflow into the Quinnipiac River.

Although phthalate esters are practically insoluble in water, samples gathered from the Quinnipiac River this past summer, from June to August 2013, showed traces of phthalate esters confirmed in the water at several locations. We sampled the River at points in Quinnipiac River State Park in Wallingford, North Haven, and Hamden. Most of these places are areas where local residents either enter the Quinnipiac River to go fishing, or fish directly off the banks of the River. Funding this proposal will help us continue our efforts to characterize pollutants in the Quinnipiac River and add to the data on the quality and health of the river system.

Samples were collected at eight locations. Going from north to south along the River they are: 1) Hall Avenue, below the bridge in Wallingford, just below Community Lake; 2) Quinnipiac River State Park just below the Wallingford town line at Toelles Road; 3) Quinnipiac River State Park behind the service station on the Wilbur Cross Parkway in North Haven; 4) Valley Service Road in North Haven where the Quinnipiac River meets town-owned land; 5) State Street in North Haven, behind the River Street Tavern across from Agway; 6) Sackett Point Road, on the north side of the bridge over the River; 7) The Department of Environmental Protection's boat ramp behind the Tilcon paving plant in North Haven; 8) State Street just south of the tire pond in Hamden/North Haven.

Laboratory Analysis and Sampling

We collected and analyzed water and sediments of the Quinnipiac River at locations noted above. These field tests included temperature, flow, and depth. All of the sampling and determination was performed by the Principal Investigator, Dr. Harry Pylypiw and a Quinnipiac University undergraduate student, Jessica Frick part of their chemistry program research degree requirements. Analysis of water samples were performed at Quinnipiac University.

The technique and detection method we chose for analysis was first an extraction of water by solid phase micro-extraction followed by detection and determination via gas chromatography with a mass selective detector. The advantage of using this type of technique is that the analytical method separates, detects, and identifies chemical compounds in a simple simultaneous procedure. We also ran a mixed standard of eight phthalate esters to check the integrity of our sampling, extraction and detection method.

Results and Discussion

The presence of DEHP in water from the Quinnipiac River is an important marker of a point-source-polluter since this phthalate ester would not be commonly found in runoff from landfills, incinerators, or wastewater treatment plants. We found DEHP in water samples from the following locations; Quinnipiac River State Park just below the Wallingford town line at Toelles Road; Quinnipiac River State Park behind the service station on the Wilbur Cross Parkway in North Haven; and Valley Service Road in North Haven where the Quinnipiac River

meets town-owned land. Of note, samples at Hall Avenue, below the bridge in Wallingford, just below Community Lake also contain traces of DEHP. Further studies are needed to assess the exact point of entry of DEHP into the Quinnipiac River, along with assessment of the concentrations of the pollutants.

Disseminate of Research - Community Outreach

Our findings were presented at seminars held at Quinnipiac University and an environmental workshop in Florida in the form of a poster presented at the North American Chemical Residue Workshop, July 21-24, 2013 a conference which addresses emerging contaminants and residues in the environment (<http://nacrw.org/>).

Final Budget Statement

\$6000 was requested and \$7000 was allotted by the Foundation for this project. \$4420 was spent for student stipends, \$277 on supplies, and \$2303 on Meetings, Travel and Conferences.