



# Project Impacts

NSRC-FUNDED RESEARCH FINAL REPORT

## ***Ultraviolet Absorbance: An Inexpensive, Effective Way to Estimate Mercury in Forest Streams***

PROJECT AWARD YEAR AND TITLE:

**2005**

*Mercury and Methylmercury Export in Relation to DOC Quality in Upland Landscapes, Northeastern USA*

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Mercury contamination is widespread, originating from natural and human-related sources, including air transport from coal combustion, waste incineration, and mining. Mercury can adversely affect humans and wildlife through consumption of contaminated fish. During the last 20 years, scientists have increased their understanding of mercury in lakes, reservoirs, and wetlands; however, the mercury cycle in streams is less well understood.

NSRC researchers collected stream water samples over a range of stream flow and seasonal conditions at three forested watersheds in New York, Vermont, and New Hampshire. Samples were analyzed for total mercury and dissolved organic carbon concentration and composition across the three sites. Researchers found a strong positive correlation of dissolved total mercury to dissolved organic carbon, but progressively stronger correlations of total mercury with the acid fraction of dissolved organic carbon and with ultraviolet absorbance.

The strong relationship of ultraviolet absorbance and total mercury suggests that optical properties associated with dissolved organic matter may be excellent measures of total mercury concentration in these streams. Ease of sample collection and analysis, the potential application of optical sensors in the field, and the possibility for intensive monitoring over the annual stream flow make this an effective, inexpensive approach to estimate mercury *flux*, the total amount of mercury moving off the forested landscape in stream waters.