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Profiles of Semi-Volatile Pollutants in North American Alpine Fish.

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ABSTRACT- A single method was developed for the determination of 100 semi-volatile pollutants in whole fish tissues from remote, alpine lakes at ppb to ppt levels (ww). These pollutants spanned a broad range of physical chemical properties with vapor pressures between 0.2 Pa and 2×10^{-9} Pa, log K_{ow}s from 3.8 to 8.3, and water solubilities between 8 mg/L and 8.7×10^{-4} mg/L. Using isotope dilution GC-MS quantitation with size exclusion chromatography to remove bio-molecular interferants, accurate concentration determinations were made of these current as well as historical use pesticides, degradation products, flame retardants, and industrial compounds. As part of a multi-agency, multi-year project to assess potential atmospheric deposition of pollutants in alpine ecosystems of US National Parks (NP), fish were collected from isolated lakes in Sequoia NP (California) and Rocky Mountain NP (Colorado). Age, gender, species, and percent lipid for each fish were determined and evaluated for correlation with pollutant loads. The pollutant profiles, their relationship to literature values, and their implications for potential sources and differences between sampling sites were evaluated.

Key words: fish, pollutant, alpine, atmosphere