

## **Atmospheric Deposition of Current-Use and Historic-Use Pesticides in Snow at National Parks in the Western United States**

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The United States (U.S.) National Park Service has initiated research on the atmospheric deposition and fate of semi-volatile organic compounds in its alpine, sub- Arctic, and Arctic ecosystems in the Western U.S. Results for the analysis of pesticides in seasonal snowpack samples collected in spring 2003 from seven national parks are presented herein. From a target analyte list of 47 pesticides and degradation products, the most frequently detected current-use pesticides were dacthal, chlorpyrifos, endosulfan, and  $\gamma$ -hexachlorocyclohexane, whereas the most frequently detected historic-use pesticides were dieldrin, R-hexachlorocyclohexane, chlordane, and hexachlorobenzene. Correlation analysis with latitude, temperature, elevation, particulate matter, and two indicators of regional pesticide use reveal that regional current and historic agricultural practices are largely responsible for the distribution of pesticides in the national parks in this study. Pesticide deposition in the Alaskan parks is attributed to long-range transport because there are no significant regional pesticide sources. The percentage of total pesticide concentration due to regional transport (%RT) was calculated for the other parks. %RT was highest at parks with higher regional cropland intensity and for pesticides with lower vapor pressures and shorter half-lives in air.