

Determining risk of airborne contaminants to western national parks

By Tamara Blett

WHAT DOES INTEGRATED SCIENCE MEAN? In the National Park Service, it may mean an alphabet soup of “ists” and “ologists” who have come together for the Western Airborne Contaminants Assessment Project (WACAP). Biogeochemists, analytical chemists, toxicologists, limnologists, hydrologists, ecologists, plant physiologists, atmospheric scientists, fisheries pathologists, and fisheries endocrinologists are working as an integrated team to conduct environmental detective work on toxic compounds in eight western national parks. The Environmental Protection Agency, US Geological Survey, USDA Forest Service, Oregon State University, and University of Washington are working in partnership with the National Park Service (NPS) on this assessment.

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Specifically, this six-year project is designed to determine (1) if contaminants are present in western national parks, (2) where contaminants are accumulating (geographically and by elevation), (3) which contaminants pose a potential ecological threat, (4) which indicators appear to be the most useful to address contamination, and (5) the sources for contaminants measured at the national park sites. Very little information is available about the presence, distribution, and effects of contaminants in ecosystems in the western United States. Biomagnification, a process by which contaminants build up in ecosystems to a greater extent at higher levels of the food chain, is of particular concern in parks because of congressional mandates to protect parks unimpaired for future generations.

What are the challenges with integrating so many specialists into a cohesive project? Twice-yearly coordination meetings are held to keep everyone on track and to develop joint strategies for data sharing and collaborative analysis of results. A “science coordinator” for the project keeps the study on schedule and facilitates study design development, communication, reporting, and publication. A “logistics coordinator” deals with fieldwork planning for the team, database development, and quality assurance planning for all investigators in the group. A “project coordinator” provides program goals, communicates project milestones within the National Park Service, pulls together multi-source funding, and deals with budgets and interagency agreements. Funding for the project is also integrated across a variety of sources: 23% from partners, 22% from the NPS Air Resources Division, 22% via the NPS Natural Resource Challenge, 21% through the NPS competitive Servicewide Comprehensive Call, 6% from park Recreational Fee Demonstration Program sources, 4% from NPS Inventory and Monitoring, and 2% from the NPS Water Resources Division.



Researchers from Mount Rainier National Park and the USGS sample snow, one of six ecological components being analyzed for contaminants as part of WACAP. The program enhances scientific understanding of the global transport of airborne contaminants and their associated effects on sensitive ecosystems in eight western national parks.

The information gathered as a part of this multiagency partnership project is of great value to the National Park Service because it manages an abundance of arctic and alpine ecosystems. This information is particularly important in these cold ecosystems where many types of toxic contaminants are more likely to condense out of the atmosphere and deposit.

Early results of this integrated team project show that some currently used chemicals, as well as others that are now banned in the United States, are present in high-elevation areas of western national parks. This is especially true in parks near agricultural areas. Agricultural pesticides, industrial by-products (PCBs), and flame-retardant coatings for fabric (PDBEs) have been detected in snow, vegetation, and fish in several of the parks where analysis has been completed. Final results of the study will be published in 2007. ■

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