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## National Park Service News Release

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### **Airborne Contaminants Study Released Measurable Levels Detected in Twenty Western U.S. and Alaska National Parks**

**WASHINGTON, DC** – According to a study released by the Western Airborne Contaminants Assessment Project (WACAP), numerous airborne contaminants, including heavy metals and both current-use and North American historic-use pesticides, have been detected at measurable levels in ecosystems at twenty western U.S. and Alaska national parks from the Arctic to the Mexican border. The eight core national park areas studied were Glacier, Mount Rainier, Olympic, Rocky Mountain, Sequoia & Kings Canyon, Denali, Gates of the Arctic, and Noatak. The study was funded primarily by the National Park Service (NPS) to evaluate the potential threats to park ecosystems and likely sources of these contaminants.

While the extent of the effects on wildlife depending upon fish for survival is unknown, the risk to people is considered low and varies given location, frequency and type of fish consumption. How scientific data are used to make recommendations for people's diets varies between states, as health risks associated with exposure to contaminants in select fish may be outweighed by the benefits of continued consumption of traditional foods. Most people are not likely to eat enough of the contaminated fish to be at risk.

Key findings from the six-year, multi-agency study, which can be accessed at: [http://www.nature.nps.gov/air/Studies/air\\_toxics/wacap.cfm](http://www.nature.nps.gov/air/Studies/air_toxics/wacap.cfm) indicate that out of over 100 organic contaminants tested, 70 were found at detectable levels in snow, water, vegetation, lake sediment, and fish. While concentrations of most of these contaminants were below levels of concern, others appear to be accumulating in sensitive resources such as fish. For some contaminants, high concentrations in fish have exceeded fish-eating wildlife and/or human health consumption thresholds in many of the eight core parks studied.

Results from this project add considerably to the state of the science concerning contaminant transport and subsequent biological and ecological effects in remote ecosystems in the western U.S. "These well-documented and carefully analyzed data will provide a basis for evaluating future changes in the status of these ecosystems," said Dr. Dixon Landers of the U.S. Environmental Protection Agency (EPA) and the project's Science Lead.

The analysis of fish tissue provided a window into the contaminant situation in various parks, regardless of what fish species were sampled, said Landers. Given that the knowledge of contaminant concentrations in particular species may aid members of the public when making personal health decisions, the list of fish species sampled in lakes at the eight core parks follows: lake trout from Noatak, Gates of the Arctic, and Wonder Lake at Denali; burbot and whitefish

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from McLeod Lake at Denali; cutthroat trout from Glacier; brook trout from Olympic, Mount Rainier, Sequoia, and Lone Pine Lake at Rocky Mountain; and rainbow trout from Mills Lake at Rocky Mountain. Nevertheless, any one fish species, or lake, excluded from the above list is not necessarily exempt from contaminant concentrations of concern.

Evidence suggests that the contaminants found in this study are carried in air masses from sources as far away as Europe and Asia, and as near as the local county. According to Landers, the presence of contaminants in snow is well-correlated with the proximity of each park to agricultural areas, pointing to these areas as probable major sources of these contaminants. In Alaska parks, with little nearby agriculture in the region, there are very low concentrations of most current-use compounds. However, concentrations of historic-use chemicals in Alaska systems are similar to those in the other parks sampled, suggesting greater influence from global atmospheric transport.

The three contaminants of highest concern for human and wildlife health included: 1) Mercury – a heavy metal emitted through processes such as burning coal for electricity that causes neurological and reproductive impairment; 2) Dieldrin – an acutely toxic insecticide banned from use in the U.S. since 1987 that decreases the effectiveness of the immune system; and 3) DDT – an insecticide banned in the U.S. since 1972 that reduces reproductive success.

Average mercury concentrations in fish from Alaska's Noatak National Preserve were above the EPA human health threshold for consumption (i.e., adults eating 2.3 meals of these fish per month), while mercury concentrations in some fish exceeded the threshold at Gates of the Arctic, Olympic, Mount Rainier, and Sequoia & Kings Canyon National Parks. Dieldrin concentrations in fish from Rocky Mountain, Sequoia & Kings Canyon, and Glacier National Parks exceeded the health threshold for recreational fishermen (i.e., adults eating 2.3 meals of these fish per month). Dieldrin concentrations also exceeded health thresholds for subsistence fish consumption (i.e., adults eating 19 meals of these fish per month) at all national parks, except Olympic. Average DDT concentrations in fish exceeded the human risk threshold for subsistence fishers at Sequoia & Kings Canyon and in Oldman Lake at Glacier National Park.

Concentrations of contaminants in fish were also compared to health thresholds for fish-eating wildlife. Mercury concentrations in fish at all eight parks exceeded health thresholds suggested for birds, and were above mammal health thresholds at some parks. DDT concentrations in fish exceeded the fish-eating bird health threshold in Glacier and Sequoia & Kings Canyon National Parks.

In Rocky Mountain and Glacier National Parks, some individual trout were "intersex" (i.e., male and female reproductive structures in the same fish). This condition is commonly associated with exposure to certain contaminants (e.g., dieldrin and DDT) that mimic the hormone estrogen. Because the sample size was small, however, the extent of the problem and correlation between fish reproductive effects and contaminant concentrations has not been established for parks in the study.

Concentrations of current-use pesticides and other compounds, such as the commonly used flame-retardant, PBDE, were detected at Rocky Mountain and Mount Rainier National Parks, but concentrations in fish did not exceed human or wildlife health consumption thresholds. Exposure to PBDEs affects liver, thyroid and neurobehavioral development.

Other participating institutions included the U.S. Environmental Protection Agency, the U.S. Geological Survey, the U.S. Forest Service, Oregon State University and the University of Washington. National park resource managers worked with scientists from the collaborating agencies to plan and conduct the WACAP study.

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For additional information on WACAP findings and implications, contact Dr. Dixon Landers at 541-754-4427 or e-mail [Landers.Dixon@epamail.epa.gov](mailto:Landers.Dixon@epamail.epa.gov) (USEPA, National Health and Environmental Effects Research Laboratory, Western Ecology Division, Corvallis, OR).

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