



Monitoring Contaminants

Pristine, but for Long?

Monitoring contaminants in Alaska's 55 million acres of national park land is a common thread among all four Inventory and Monitoring Networks in the region. Parks in Alaska are considered pristine overall, but impacts are happening and are expected to increase in severity and frequency as natural and human-caused shifts occur. Because of the remote and vast nature of Alaska, monitoring all contaminants frequently can be hugely expensive. The four networks focus on intensive, less frequent monitoring and maximize partnerships wherever possible. While the capacity and contributions of the four networks is significant and growing, there remains a need for greater understanding of historic and current contaminant levels as well as the impacts of contaminants. Many Alaskans depend on subsistence hunting to feed their families, and a primary reason for monitoring contaminants in Alaska is the concern for food quality and the need to understand contaminant levels as well as potential impacts of contaminants on wildlife and humans.

Air Contaminants

Sources of air contaminants in Alaska's national parks include point sources, regional sources, trans-pacific, and trans-polar global pollution sources. The National Park Service (NPS) measures progress toward improving park air quality by examining trends for key air quality indicators, including visibility, ozone, and atmospheric deposition. There are currently five stations monitoring visibility, five stations monitoring atmospheric deposition, and at least one station monitoring ozone in Alaska. Only one station is currently measuring atmospheric deposition in national parks within the Arctic. Sensitive plant communities are also monitored for pollution-related declines. In addition, NPS is currently working to establish critical load levels of absolute deposition in moss tissues.



Photo: NPS/Josh Foreman

Only one air quality monitoring station is currently operating in national parks within the Arctic.



Photo: AP

Ship grounding is one of the less frequent but more severe incidences of acute marine contamination.

Fresh Water Contaminants

Components of fresh water contaminant monitoring programs differ throughout Alaska's national parks depending on local natural features and management concerns. Direct measurements as well as indirect indicators of water quality and water contaminants in streams, deep and shallow lakes, and lagoons are taken in representative bodies of water. Levels of heavy metals and persistent organic pollutants are measured using fish tissue samples as well as lake sediment samples. Significant differences have been noted between lakes with returning salmon and lakes without salmon.

Marine Contaminants

The primary concerns for marine contaminants are acute impacts and the risk factors associated with impacts. Less frequent, but more severe incidences of ocean contamination include large oil spills, ship grounding, and illegal dumping while more frequent and less severe incidences include chronic events, such as small spills and creosote leaching from wood into nearshore waters. As with fresh water, heavy metals (i.e. mercury) and persistent organic pollutants (i.e. pesticides), which bioaccumulate and can cause negative health effects in humans and wildlife, are monitored on an infrequent yet intensive scale. In addition, polycyclic aromatic hydrocarbons, a by-product of fuel burning, are monitored to determine levels and sources. Alaska parks also participate in NOAA's Mussel Watch program, which analyzes sediment and bivalve tissue on 300 selected coastal sites throughout the nation.