



Public Health Assessment for

**EIELSON AIR FORCE BASE (EAFB)
FAIRBANKS NORTH STAR BOROUGH, ALASKA
EPA FACILITY ID: AK1570028646
JUNE 14, 2006**

**U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
PUBLIC HEALTH SERVICE**

Agency for Toxic Substances and Disease Registry

THE ATSDR PUBLIC HEALTH ASSESSMENT: A NOTE OF EXPLANATION

This Public Health Assessment was prepared by ATSDR pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund) section 104 (i)(6) (42 U.S.C. 9604 (i)(6)), and in accordance with our implementing regulations (42 C.F.R. Part 90). In preparing this document, ATSDR has collected relevant health data, environmental data, and community health concerns from the Environmental Protection Agency (EPA), state and local health and environmental agencies, the community, and potentially responsible parties, where appropriate.

In addition, this document has previously been provided to EPA and the affected states in an initial release, as required by CERCLA section 104 (i)(6)(H) for their information and review. The revised document was released for a 30-day public comment period. Subsequent to the public comment period, ATSDR addressed all public comments and revised or appended the document as appropriate. The public health assessment has now been reissued. This concludes the public health assessment process for this site, unless additional information is obtained by ATSDR which, in the agency's opinion, indicates a need to revise or append the conclusions previously issued.

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Prepared by:

Federal Facilities Assessment Branch
Division of Health Assessment and Consultation
Agency for Toxic Substances and Disease Registry

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Federal Facilities Assessment Branch
Division of Health Assessment and Consultation
Agency for Toxic Substances and Disease Registry

Foreword

The Agency for Toxic Substances and Disease Registry, ATSDR, is an agency of the U.S. Public Health Service. It was established by Congress in 1980 under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), also known as the Superfund law. This law set up a fund to identify and clean up our country's hazardous waste areas. The U.S. Environmental Protection Agency (EPA) and the individual states regulate the investigation and clean up of the areas.

Since 1986, ATSDR has been required by law to conduct a public health assessment at each of the areas on the EPA National Priorities List. The aim of these evaluations is to find out if people are being exposed to hazardous substances and, if so, whether that exposure is harmful and should be stopped or reduced. (The legal definition of a health assessment is included on the inside front cover.) If appropriate, ATSDR also conducts public health assessments when petitioned by concerned individuals. Public health assessments are carried out by environmental health scientists from ATSDR and from the states with which ATSDR has cooperative agreements.

Exposure: As the first step in the evaluation, ATSDR scientists review environmental data to see how much contamination is at an area, where it is, and how people might come into contact with it. Generally, ATSDR does not collect its own environmental sampling data. Instead, it reviews information provided by EPA, other government agencies, businesses, and the public. When there is not enough environmental information available, the report will indicate what further sampling data is needed.

Health Effects: If the review of the environmental data shows that people have or could come into contact with hazardous substances, ATSDR scientists then evaluate whether or not there will be any harmful effects from these exposures. The report focuses on public health, or the health impact on the community as a whole, rather than on individual risks. Again, ATSDR generally makes use of existing scientific information, which can include the results of medical, toxicologic, and epidemiologic studies and the data collected in disease registries. The science of environmental health is still developing, and occasionally scientific information on the health effects of certain substances is not available. When this is so, the report will suggest what further research studies are needed.

Conclusions: The report presents conclusions about the level of health threat, if any, posed by an area. In its public health action plan, the report recommends ways to stop or reduce exposure. ATSDR is primarily an advisory agency, so usually these reports identify what actions are appropriate to be undertaken by EPA, other responsible parties, or the research or education divisions of ATSDR. However, if there is an urgent health threat, ATSDR can issue a public health advisory to warn people of the danger. ATSDR can also authorize health education or

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pilot studies of health effects, full-scale epidemiology studies, disease registries, surveillance studies, or research on specific hazardous substances.

Interactive Process: The health assessment is an interactive process. ATSDR solicits and evaluates information from numerous city, state, and federal agencies, the companies responsible for cleaning up the area, and the community. ATSDR then shares its conclusions with them. Agencies are asked to respond to an early version of the report to make sure that the data they provide is accurate and current. When informed of ATSDR's conclusions and recommendations, the agencies sometimes will begin to act on them before the final release of the report.

Community: ATSDR also needs to learn what people in the area know about the area and what concerns they may have about its impact on their health. Consequently, throughout the evaluation process, ATSDR actively gathers information and comments from the people who live or work near an area, including residents of the area, civic leaders, health professionals, and community groups. To ensure that the report responds to the community's health concerns, an early version is also distributed to the public for comment. All the comments received from the public are responded to in the final version of the report.

Comments: If, after reading this report, you have questions or comments, we encourage you to send them to us.

Letters should be addressed as follows:

Attention: Chief, Program Evaluation, Records, and Information Services Branch, Agency for Toxic Substances and Disease Registry, 1600 Clifton Road, NE (MS E-32), Atlanta, GA 30333.

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List of Abbreviations

ADEC	Alaska Department of Environmental Conservation
AOC	area of concern
ATSDR	Agency for Toxic Substances and Disease Registry
BTEX	benzene, toluene, ethylbenzene, and xylene
CEL	cancer effect level
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CREG	ATSDR's cancer risk evaluation guide
CRP	community response plan
CV	comparison value
DCE	dichloroethylene
DRO	diesel range organics
EAFB	Eielson Air Force Base
EMEG	ATSDR's environmental media evaluation guide
EPA	U.S. Environmental Protection Agency
FUDS	Formerly-Used Defense Site
GS	Garrison Slough
IRP	installation restoration program
LOAEL	lowest-observed adverse effect level
MCL	EPA's maximum contaminant level
mg/kg/day	milligram per kilogram per day
MRL	ATSDR's minimum risk level
NOAEL	no-observed-adverse-effect level
NPL	EPA's National Priorities List
OSHA	Occupational Safety and Health Administration
PCBs	polychlorinated biphenyls
PCE	tetrachloroethylene
PHA	public health assessment
PHAP	Public Health Action Plan
ppb	parts per billion
ppm	parts per million
RAB	restoration advisory board
RBC	EPA Region III's risk-based concentration
RfD	EPA's reference dose
RI	remedial investigation
RMEG	ATSDR's reference dose media evaluation guide
ROD	record of decision
RRO	residual range organics
SWMP	sitewide monitoring program
TCE	trichloroethylene
USAF	U.S. Air Force
VOCs	volatile organic compounds

I. Summary

The Agency for Toxic Substances and Disease Registry (ATSDR) prepared this public health assessment (PHA) to evaluate potential health hazards from past, current, and future exposures to contaminants originating from Eielson Air Force Base (EAFB). EAFB is an active U.S. Air Force (USAF) base located about 24 miles southeast of the city of Fairbanks, in Alaska's North Star Borough. The base encompasses roughly 19,700 acres.

Over the years, materials used in industrial or general base support operations spilled or were released to the underlying groundwater because of accidents and/or accepted waste management practices for the time. These materials came primarily from aircraft and vehicle maintenance and repair activities, and included waste fuel, oils, solvents, pesticides, plating wastes, and paint. The primary contaminants of concern are polychlorinated biphenyls (PCBs), volatile organic compounds (VOCs), and fuel-related compounds. These contaminants have been detected mostly in soil, groundwater, and fish tissue samples. On November 21, 1989, because of environmental releases and the presence of contamination, the U.S. Environmental Protection Agency (EPA) placed EAFB on its National Priorities List of sites to be investigated. In coordination with the Alaska Department of Environmental Conservation (ADEC) and the EPA, the USAF has been investigating and remediating known sources of environmental contamination on the base.

To evaluate possible public health hazards associated with environmental contamination at EAFB, ATSDR conducted this PHA. ATSDR's PHA process identifies populations who may have been or are exposed to hazardous substances and determines the public health implications of those exposures. As part of the process, ATSDR conducted site visits and met with representatives from EAFB in 1991 and 2004. Using information gathered during the site visits and findings of site investigations conducted at EAFB, ATSDR examined the nature and extent of contamination associated with the site and evaluated the possibility of past, current, and future exposures. On the basis of this evaluation, ATSDR identified five potential exposure situations.

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- ***Past ingestion of VOCs and/or arsenic in EAFB drinking water.*** Former operations and waste disposal practices at EAFB contaminated the groundwater beneath the base with VOCs. These contaminants impacted on-base drinking water sources that were used in the past at outlying areas of the base. Former drinking water wells at the EAFB Ravenwood Ski Lodge and Engineer Hill were closed in 1987 and 1991 respectively, after VOCs were detected above EPA's maximum contaminant levels (MCLs). Naturally occurring arsenic has also impacted groundwater at some locations beneath EAFB. Prior to 1997, arsenic was detected above EPA's maximum contaminant level (MCL) in an active drinking water supply well at the EAFB Birch Lake Resort. However, people who consumed drinking water at Ravenwood Ski Lodge, Engineer Hill, or Birch Lake Resort in the past were not exposed to VOCs or arsenic at levels known to cause adverse health effects.
- ***Ingestion of VOCs in off-base drinking water sources near Salcha.*** VOCs were detected in the groundwater at a former artillery barracks, less than one mile from private drinking water wells near Eielson Farm Road near Salcha. The site was initially investigated by the Air Force as AOC 8. However, the Air Force transferred and decommissioned the property, subsequent remedial actions are being governed by the Army Corps of Engineers under the Formerly Used Defense Sites (FUDS) program. Monitoring data from 2000 indicated that VOCs were not impacting private drinking water wells at that time. The Army Corps of Engineers plans additional environmental investigations to define the potential for off-site contaminant migration.
- ***Ingestion of VOCs in off-base drinking water sources in Moose Creek Village.*** Drinking water wells in Moose Creek Village are north of EAFB and downgradient of some base-related contaminant sources. Sampling from five sentinel wells located along the northern base boundary, indicates the groundwater quality meets the EPA's federal drinking water standards for base-related contaminants. EAFB will continue to monitor groundwater along the north boundary of the base to ensure the safety of drinking water in Moose Creek Village.

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- ***Vapor intrusion to indoor air.*** VOC-contaminated groundwater has migrated near certain on-base buildings. Occupants of these buildings were most likely not exposed to indoor air vapors at high enough levels for long enough periods to develop long-term health effects. Indoor air concerns for base buildings are investigated by the base Bioenvironmental Engineering (BEE) organization. The IRP office will coordinate with the BEE organization during indoor air investigations for buildings that are in close proximity to contaminated sites to ensure indoor air quality is within OSHA standards.
- ***Fish contamination at Garrison Slough.*** Anglers who infrequently consume fish (six 8-oz meals per year) from the off-base section of Garrison Slough are not expected to be exposed to harmful levels of pesticides or PCBs. Anglers who consume fish from the on-base section of Garrison Slough could be exposed to PCBs at levels above ATSDR's CVs. The base currently informs anglers, as they acquire their on-base fishing permit, to not eat fish from the slough. The base also added 22 signs along access points to the slough delineating the fish advisory. People who follow the base advisory will not be exposed to these contaminants. As a prudent public health action, ATSDR recommends that people follow the established base policy and avoid eating fish from Garrison Slough.

II. Background

II.A. Site Description and Operational History

Eielson Air Force Base (EAFB) is an active base in Alaska's Fairbanks North Star Borough, 24 miles southeast of Fairbanks, Alaska, and 10 miles southeast of North Pole, Alaska. The base occupies 19,700 acres along the Richardson Highway, including 3,650 acres of developed land and 16,050 acres of forest and wetlands including lakes, ponds, and streams (Batelle-PNL 1995 and Eielson AFB 2002a). U.S. Army Fort Wainwright surrounds EAFB to the south and to the east. Elsewhere, the base adjoins private and public lands that are zoned for general use (Eielson AFB 2001). See Figure 1 for a map of the area.

EAFB was established during World War II as an offshoot of Ladd Air Field (Ladd), presently known as Fort Wainwright. Ladd was a strategic hub for the transfer of aircraft and supplies to the Soviet Union and to American bases throughout the Pacific during World War II. Poor winter flying conditions at Ladd during the first years of World War II prompted the military to construct a new airfield adjacent to Ladd, initially dubbed "26-Mile-Strip." Two parallel runways and a hanger were completed in 1944. On February 4, 1948, "26-Mile-Strip" became EAFB, shortly after the US Air Force became an independent agency of the military. In the years since 1948, EAFB has supported a variety of combat aircraft as well as weather reconnaissance aircraft, tactical units from Alaskan Air Command, and aerial tankers (Eielson AFB 2004a).

II.B. Remedial and Regulatory History

As a result of past operational practices and spills, hazardous wastes have been released into the environment at many on-base locations. In the past there were numerous leaks and spills from storage tanks, pipelines, and other components of the base's industrial infrastructure. Industrial wastes were buried in landfills, discharged into surface water bodies and drainage systems, and

