



Occupational Fatalities in Alaska: Two Decades of Progress, 1990–1999 and 2000–2009

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ABSTRACT

Introduction: Alaska had the highest work-related fatality rate of any state during 1980–1989. The National Institute for Occupational Safety and Health established the Alaska Field Station (AFS) to address this problem. **Methods:** AFS established surveillance systems to provide scientific assessments of occupational hazards. Interventions were developed in collaboration with partners and evaluated. **Results:** During 2000–2009, Alaska experienced a 42.5% decline in work-related fatalities over the previous decade of 1990–1999. In 2009, the workplace fatality rate for Alaska was 5.6/100,000 workers. Commercial pilot deaths were reduced by 50% and Bering Sea crab fishing death rates were reduced by 60%. Building on this success, AFS established national programs to improve safety in the commercial fishing and oil and gas extraction industries. **Impact on Industry:** A focused, epidemiological approach to reducing fatalities in high-risk occupations is effective. Ongoing commitment to this type of approach will assist in continued success in Alaska and elsewhere.

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1. Introduction

During 1980–1989, Alaska had the highest work-related fatality rate of any state in the nation, with a rate of 34.8 deaths/100,000 workers/year compared to the average United States (U.S.) rate of 5/100,000/year (Bell et al., 1990; National Institute for Occupational Safety and Health [NIOSH], 1993). The high rate of work-related fatalities in Alaska may be explained in part by extreme physical and environmental conditions. Cold temperatures, vast mountain ranges, remote tundra, extensive coastline along with harsh and sometimes unpredictable weather and great distances to medical care contributed to the severity of traumatic injuries at worksites across the state. However, the rate of work-related fatalities in Alaska was much higher during the 1980s than in Nordic countries that shared similar industries and environmental risks (Conway et al., 1999), suggesting that the high fatality rate was not merely due to the remote northern locale.

To address the high rate of work-related fatalities in Alaska, the National Institute for Occupational Safety and Health (NIOSH)

Division of Safety Research, established the Alaska Field Station (AFS) in Anchorage, Alaska in 1991, at the invitation of the Alaska Department of Health and Social Services and the Alaska Area Native Health Service of the Indian Health Service. The mission of AFS was to combat the urgent problem of work-related fatalities in Alaska. AFS served as a “catalyst for change” by providing a scientific assessment of occupational safety hazards, such as identifying the state’s highest risk industries, the workers most at risk of fatality and the highest priority problems. Working with partners, interventions were developed, implemented and then evaluated to measure progress in reducing hazards.

The purpose of this article is to describe how continued prevention activities have resulted in a decline in the number and rate of fatalities among Alaska’s workers since 1990, and to explain how the AFS model for reducing workplace fatalities has expanded to address high-risk industries in other states. The timeline illustrates significant events that have occurred since the establishment of the AFS (Fig. 1).

2. 1990–1999

From 1990 to 1999, AFS staff used surveillance data and collaborative efforts with various partners to identify high-risk industries and assist in prevention efforts. AFS scientists developed the Alaska Occupational Injury Surveillance System (AOISS) to collect detailed information on all work-related traumatic fatalities in the state. Furthermore, the Interagency Working Group for the Prevention of Work-Related Fatalities was created as a non-regulatory response to

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developing occupational safety interventions in several industries including helicopter logging and commercial fishing. These efforts led to a 49% decline in work-related deaths including a significant decline in all workplace fatalities and a 67% decline in commercial fishing deaths specifically during 1990-1999 (NIOSH, 2002). However, occupational mortality due to crashes of fixed-wing aircraft and crab fishing vessels sinking in the Bering Sea continued to be persistent problems.

3. Aviation Safety Initiative

During the 1990s, aircraft crashes were the second leading cause of occupational death in Alaska, taking the lives of 192 workers (NIOSH, 2002). During that time, commercial pilots in Alaska had a fatality rate which was five times greater than the rate for all U.S. pilots and nearly 100 times greater than the rate for all U.S. workers (Bensyl, Moran, & Conway, 2001). Research found that the most deadly aviation crashes were due to controlled flight into terrain (CFIT), in which a pilot flew an airworthy aircraft into mountains, water or other terrain, usually in conditions of poor visibility (National Transportation Safety Board [NTSB], 1989). During 1991-1998, CFIT accounted for only 17% of all crashes of air taxi and commuter fixed-wing aircraft in Alaska, but accounted for 59% of all deaths and 55% of all pilot deaths (Thomas, Bensyl, Manwaring, & Conway, 2000).

AFS and partners began a multifaceted public health approach to aviation safety during the late 1990s. Much of this work was encompassed in the Alaska Interagency Aviation Safety Initiative (AIASI) which focused on improving safety for air taxi and commuter airlines operations in Alaska. These partners included the National Transportation Safety Board Alaska Regional Office, the Federal Aviation Administration (FAA), the National Oceanic and Atmospheric Administration's National

Weather Service, and the Alaska Air Carriers Association. The interventions that were developed included improved technology, education and voluntary changes in aviation safety culture (Table 1).

Marked improvements to aviation safety were observed after implementation of the interventions. During 1990-1999 there had been an average of 10 commercial pilot deaths in aviation crashes in Alaska per year. This declined by 50% to an average of 5 deaths per year during 2000-2009 (Mode, O'Connor, Conway, & Hill, 2012). An average of 35 air taxi and commuter crashes occurred each year during 1990-1999, declining to 21 per year during 2000-2009. The average number of CFIT crashes decreased from 7 per year during the 1990s to an average of 3 per year during 2000-2009 (Fig. 2) (Mode et al., 2012).

In addition to improving safety among air taxi and commuter operations in Alaska, the interventions may have contributed to a reduction of crashes in other areas of aviation, such as non-commercial aviation, as many of the interventions could be used by all pilots in Alaska. For example, the Capstone project increased situational awareness for pilots by providing avionics with information on terrain, weather and location of other aircraft. This technology paved the way for the new air traffic control system which will be deployed nationwide to transform air traffic control in the U.S. from the current ground-based system of radars to a satellite-based system (FAA, 2007).

The formal Aviation Safety Initiative ended in 2009. With CFIT crashes subsiding since 2000, other types of crashes contribute the most to pilot fatalities. In recent years (2000-2010), 39% of work-related fatal aircraft crashes were associated with intended takeoffs or landings at sites that were not FAA registered landing sites (CDC, 2011). These include gravel bars, snowfields, remote lakes, and temporary airstrips which are in place during hunting or fishing seasons.

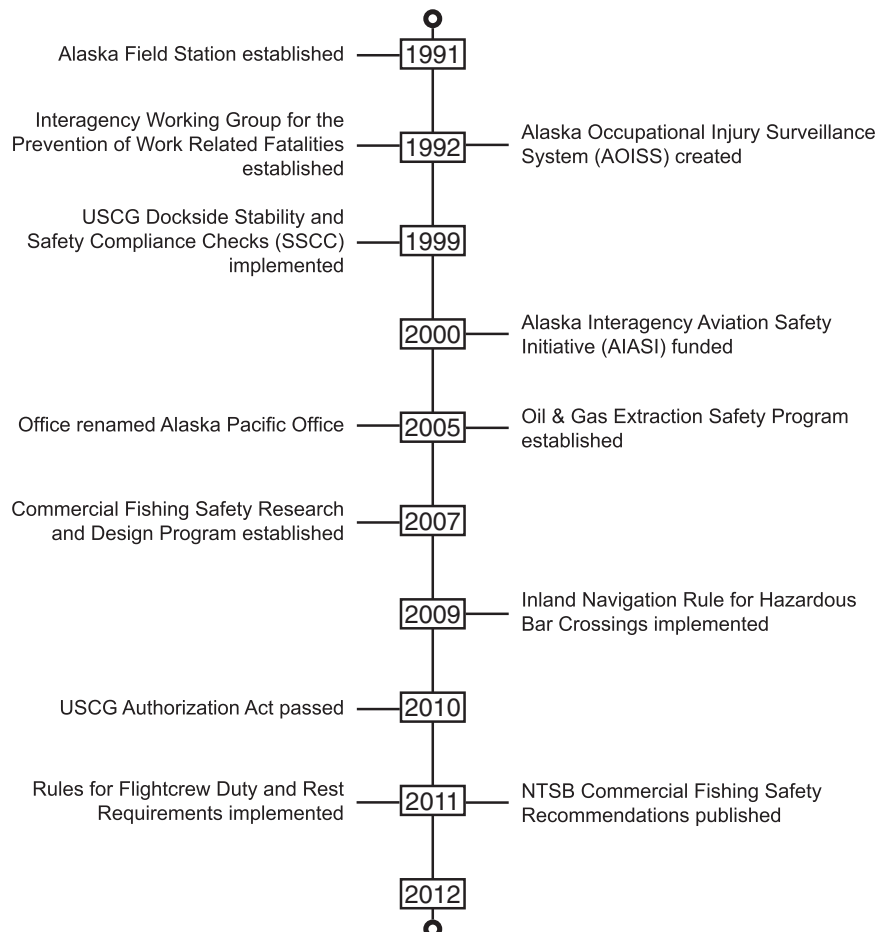


Fig. 1. Caption: Timeline illustrating significant events that have occurred since the establishment of the AFS.

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