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Occupational fatalities in the fishing, logging and air transport industries in Alaska, 1991

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The National Institute for Occupational Safety and Health (NIOSH), Division of Safety Research, was directed in 1990 to develop a program to focus occupational fatality research and prevention efforts on the state with the highest rate of death caused by occupational injury, Alaska. A primary objective of the activity, opened in Anchorage in mid-1991, was to characterize occupationally related fatalities using surveillance and field investigation techniques.

With the use of Fatal Accident Circumstances and Epidemiology (FACE) program methodology, all Alaskan occupational fatalities identified during 1991 were investigated. This paper describes these fatalities and supports the conjecture that our active FACE-based surveillance yields findings which more accurately reflect the true number of work-related fatalities in Alaska.

Historical perspectives

Rates based on death certificate data included in the National Traumatic Occupational Fatalities (NTOF) surveillance system consistently rank Alaska highest among all states for work-related deaths (33.1/100 000 workers) and more than 4.5 times higher than the national rate of 7.2. For the nine-year period 1980 through 1988, the United States (US) averaged 6300 occupational deaths each year, and the corresponding figure for Alaska was 53. Although Alaska had the fewest workers, of all states, in the civilian labor force collectively over that time, the 479 work-related deaths in Alaska exceeded that of 15 other states with larger work forces (unpublished data from the NTOF surveillance system).

Twenty of the average 53 (38%) annual NTOF fatalities would be expected in the following three high-risk industries: fishing 13, air transport 4, and logging 3. Although, on the average, there were nearly twice as many fatalities in fishing than in logging and air transport combined, the logging industry experienced a nine-year fatality rate of 289/100 000 workers compared with 161/100 000 workers in the fishing and 41/100 000 workers in the air transport industries. The air transport industry accounted for approximately one-third of all work-related deaths caused by aircraft crashes in Alaska during the nine-year period (unpublished data from the NTOF surveillance system).

Materials and methods

Historically, the FACE program has been a passive surveillance system focused on selected cause-specific cases (1). In Alaska, all known work-related fatalities are actively investigated and require the completion of a "first report" which contains basic demographic information on the victim, employer, and incident. When additional information is available, such as US Coast Guard reports in the case of a fishing death, this information becomes part of the case data base. Industry-specific supplements are completed on fatalities to gain additional insight into the exact nature of the incident and serve as a foundation in the development of prevention strategies. These data are collected through an on-site visit or through personal contact with various jurisdictional agencies.

Results

During 1991, 69 "provisional" work-related incidents were ascertained by the staff of the Alaska Activity project. Nearly eight out of ten were first identified through daily review of Anchorage and regional newspapers with the remainder from various other sources, including the Alaska Office of Occupational Safety and Health, the US Coast Guard, and the National Transportation Safety Board. Fifty-seven of the incidents, which resulted in 83 fatalities, were verified to be work-related, and first reports were completed on each. Eighty-nine percent of the decedents were men, and, for the 81% of the victims whose age could be determined, the mean age at death was 35 years for fishermen, 40 years for pilots, and 43 years for loggers. Seventy-five percent of the incidents resulted in single fatalities, and 11% had three or more fatalities, one sunken fishing vessel and one aircraft crash had six deaths each.

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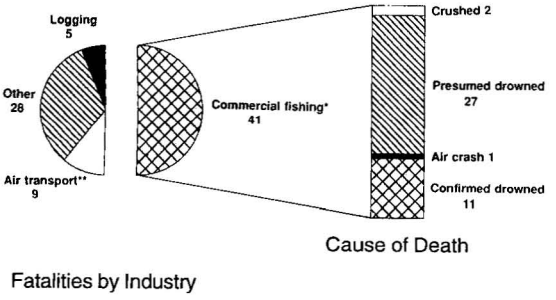

Figure 1. High-risk industries in Alaska in 1991. (* = includes three subsistence fishermen, ** = excludes 15 workers from other industries killed in aircraft crashes. Number of fatalities = 83)

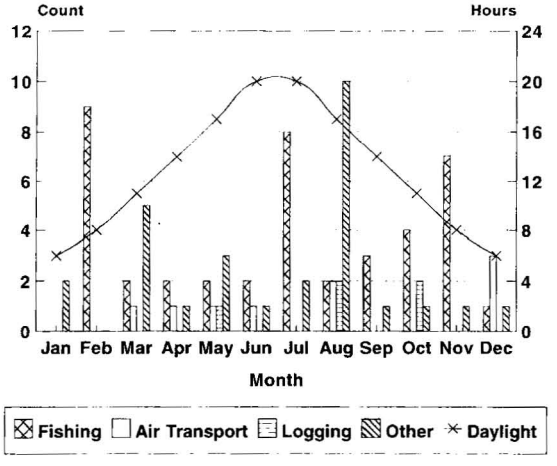

Figure 2. Alaska occupational fatalities by industry, month and daylight in 1991. (Number of fatalities = 83)

The three high-risk industries, as defined by the NTOF surveillance system, accounted for two-thirds of the fatalities, namely, commercial fishing (49%), air transport (11%), and logging (6%) (figure 1). Fifteen of the twenty-eight fatalities observed in other industries were caused by aircraft crashes, bringing the total killed in crashes to 24. The months of February, July, and November exhibited the highest numbers of fishing fatalities and were characterized by multiple fatality events (figure 2). Clustering of fatalities by day of the week or time of day was not apparent, although, for the most part, incidents occurred during daylight hours for all industries.

Figure 1 further details the causes of death for the persons involved in the fishing industry fatalities. Eleven (27%) were confirmed drowned, 27 (66%) were presumed drowned (body not recovered), one (2%) was killed in an air crash, and two (5%) were crushed between crab pots/launchers during fishing operations. Just over half of the fishing-related deaths occurred on vessels 40 feet or less in length, and all of these incidents involved two or fewer deaths. Only 1 of 11 confirmed drowning victims was observed to be using personal flotation devices. Data on the usage of personal flotation devices for the 27 presumed drownings was too sparse for comment.

The five logging fatalities were all single fatality incidents. Three of these involved tree felling; one from felling a tree with another tree lodged in it and two from dislodging unstable debris upslope. A log shifting on a slope during bucking operations and a helicopter crash accounted for the other two fatalities.

Discussion

The 83 occupational fatalities for 1991, exceeded, by over 57%, the average of 53 deaths that would have been expected based on NTOF death certificate data. For the period 1980—1985, Schnitzer showed that death certificates underenumerated work-related deaths in Alaska by 17% (2, 3). While the NTOF surveillance system indicated that nearly 40% of the deaths would be in the fishing, air transport, and logging industries, our data showed that 62% of the fatalities occurred in these industries. Each of the three high-risk industries were undercounted by the NTOF surveillance system as follows: air transport 4 versus 9, logging 3 versus 5, and fishing 13 versus 41.

Schnitzer et al used "presumptive" death certificates and mortality data of the US Coast Guard as supplemental sources to identify 60% more fishing-related deaths for the period 1980—1988 than by "standard" death certificate surveillance alone (4). It should be noted that Alaskan presumptive death certificates do not include an "injury at work" item — one of the criteria for inclusion in the NTOF data base. In addition, if a body has not been recovered after five years, then a permanent death certificate is issued.

The efficacy of the Alaska FACE program in enumerating work-related fatalities is based on the continued assistance and collaboration of federal and state agencies responsible for the legal reporting of deaths within their jurisdiction. Timely confirmation of "work-relatedness" with agencies such as the Alaska Office Occupational Safety and Health, the National Transportation Safety Board, and the US Coast Guard provides valuable information. Our study also confirmed the value of using multiple sources of notification in a timely fashion as an adjunct to the death certificate (2—4).

Our findings strongly suggest that combined analysis by industries, occupations, and circumstances of fatal events are crucial to a complete understanding of the magnitude of the occupational injury problem and the subsequent development of appropriate preventive strategies at both the national and regional level.

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