occupational illnesses and injuries conducted by the federal Bureau of Labor Statistics and the Occupational Safety and Health Administration (BLS Survey).

Methods: In cooperation with the Michigan Bureau of Workers' Disability Compensation, we ascertained the cohort of Michigan workers with a paid compensation claim for an occupational illness or injury that occurred in 1986. In Michigan, almost all compensation is paid only for missed work time. We converted compensation payments to missed work time estimates by a series of computer algorithms designed for the project, and the resulting estimates were aggregated through follow-up, including missed work time equivalents associated with final claim settlements.

Results: Statutory coverage by workers' compensation is pervasive, with less than 10% of Michigan workers potentially excluded by statutory or permitted exclusions. Estimates of missed work time were obtained for 92.7% of workers who received compensation payments. We found through follow-up that the 1986 injury cohort had 4.75 times as many missed work days as did the 1986 cohort, for which the BLS Survey reported 1,877,400 missed work days. When insurance reserves for the period beyond follow-up are considered, the ratio of missed work time found by the study to that found by the BLS Survey is 8.58.

Conclusions: The BLS/OSHA plans to continue collecting both incidence and lost work time data through the revised annual BLS Survey. The process should be changed so that cases are ascertained and followed through state workers' compensation systems. Since reporting to workers' compensation systems is mandatory, this would minimize burdens to the employer while providing the statistics needed for injury control.

Occupational Fatality Surveillance in Alaska

Manwaring JC, Kennedy RD, Lincoln, Klatt ML, Conway GA, National Institute for Occupational Safety and Health, United States

Objectives: To describe the occupational fatality surveillance system currently used in Alaska.

Methods: All known occupational fatalities occurring in Alaska or Alaskan waters are recorded by the Alaska Activity. Fatality detection is either by phone notification from one of the federal, state, or local jurisdictional agencies or from daily examination of newspapers. Fatal events that require a more in-depth investigation are followed up using guidelines under the FACE protocol. Occupation- and injury-specific data collection instruments are used, often in collaboration with investigators from other agencies.

Results: From August 1991 through July 1992, 49 traumatic occupational fatality events occurred in Alaska, resulting in 75 fatalities. Fatalities took place primarily in three high-risk industries: commercial fishing, air transport, and logging. A total of 10 on-site investigations were conducted over the 12-month period. Of these 10, 6 were unique to the high-risk industries: 3 logging, 2 air transport, and 1 commercial fishing. Photographs, witness statements, employer interviews, and close scrutiny of the fatality site were recorded, primarily by predetermined questionnaires. Medical and laboratory reports were usually obtained within 45 days. Narrative reports were written describing in detail the circumstances of the fatal event, followed by a list of recommendations. Seven such narrative reports have been finalized and

have been or will be disseminated to health promoters and educators, industry representatives, and safety and health specialists.

Conclusions: Effective occupational injury and fatality surveillance systems should contain not only mechanisms to obtain the most accurate facsimile of an event, but also a strategy to generate and disseminate recommendations on how to improve and ensure worker safety and safe industry conditions.

The Use of Sentinel Injury Deaths to Evaluate Reporting for Occupational Injuries
Smith GS, Jenkins EL, Goldstein M, Veazie MA, Smialek JF, Johns Hopkins University, United States

Objectives: To evaluate the validity of various sources of data on fatal occupational injuries, using a series of sentinel injuries as an alternative to the more expensive and time-consuming total census approach.

Methods: All deaths from three sentinel injuries (falls from elevations, machinery-related injuries, and electrocutions) were identified from vital statistics. The work-relatedness of these injuries and sensitivity of reporting were determined from a variety of different sources in Maryland from 1980-1986. These three injury groups account for 30% of all fatalities due to work-related injury nationally.

Results: A total of 527 deaths were identified for ages $\geq$16, of which 45% were work-related. The ability to identify these deaths varied by source: medical examiner (98%), death certificates (89%), NIOSH's National Traumatical Occupational Fatality System (NTOF) (68%), Maryland Occupational Safety and Health Administration (59%), and Worker's Compensation (44%). There was meaningful variation in reporting by age, cause of injury, year, occupation, and industry. Administrative errors in reporting of death certificate data to NTOF were also uncovered.

Conclusions: Estimates of work-related fatalities vary widely by source of data and methods used. This study demonstrates that sentinel injuries can be a useful and efficient means of evaluating existing data sources for reporting occupational injury. Similarly, such sentinel injuries could be used to improve injury surveillance investigation and to develop effective control programs at the state level.

The Fatal Accident Circumstances and Epidemiology (FACE) Experience in Colorado
McKenzie L, McCammon J, Hoffman R, Colorado Department of Health, United States

Objectives: To establish an investigation program aimed at reducing occupational fatalities in Colorado.

Methods: Cooperative agreements with the federal Occupational Safety and Health Administration (OSHA), Mine Safety and Health Administration (MSHA), and Colorado Workers Compensation system, linked with review of state death certificates and reporting by state and local law enforcement agencies and county coroners have enabled CDH to identify and investigate 127 work-related fatal injuries occurring from April 1989 to July 1992. We evaluated the response time and effectiveness of these notification methods. All investigations are conducted using the Fatal Accident Circumstances and Epidemiology (FACE) protocol developed by the Division of Safety Research (DSR), NIOSH. The determination of the primary, secondary, and basic causes of each injury and separation into the major

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