

Public health

Project FACE:

Wisconsin surveillance of fatal occupational injuries

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IN OCTOBER 1987, a 24-year-old plumber died when he fell 22 feet through a skylight opening to a concrete floor.¹ In the summer of 1988, a 19-year-old laborer was electrocuted when a metal work platform on which he was standing penetrated the covering of an overhead crane's 440-volt contact conductor and became energized.²

Also that summer, a 25-year-old electroplater died after entering a metal plating vat he was cleaning. Four co-workers also died when they entered the vat in rescue attempts.³

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These are classic examples of occupational fatalities that happen far too often in the United States. In each of the fatalities cited, state and federal investigators were able to discover and recommend effective countermeasures to prevent similar incidents.¹⁻³ Occupational fatalities are preventable.

Estimates of the number of work-related deaths occurring in the United States vary widely because there is a lack of national data suitable for studying occupational injury and fatalities.^{4,5} The Bureau of Labor Statistics estimated that 3,740 occupational fatalities occurred in 1984.⁶ In contrast, the National Safety Council estimated that 11,300 occupational fatalities occurred in the same year.⁶ The

National Traumatic Occupation Fatality database indicates nearly 7,000 work-related deaths occurred annually from 1980 through 1985.⁷ These fatality estimates differ because definitions and ascertainment methods used by each source may differ, and because of problems in case recognition and accurate reporting.^{4,5} For example, in a recent unpublished study of 1988 occupational fatalities in Wisconsin, 118 cases were recorded in the Wisconsin Workers Compensation Case History file, while 108 cases were recorded in the Wisconsin Death Certificate file. Only 44% (52 cases) were correctly logged into both systems.

For certain industries and work places,
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Wisconsin traumatic occupational fatalities, 1981-1987, by cause of death and gender.

E-code	External cause of death	Males		Females		Total	
		Deaths	%	Deaths	%	Deaths	%
810-819	motor vehicle traffic accidents	160	24	10	29	170	24
880-888	accidental falls	75	11	2	6	77	11
910-915	suffocations & asphyxiations	31	5	2	6	33	5
919.0	agricultural machines	113	17	7	21	120	17
916-918 &							
919.1-928	other accidents	194	29	5	15	199	28
	all other E-codes	93	14	8	24	101	14
	totals	666	100	34	100	700	100

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case reporting represents additional problems. For example, fatalities in offshore fishing, certain fatalities on the farm, and work-related deaths in one-person shops may not be captured by these reporting systems and recognized as an occupational fatality.

Background

We reviewed death certificates from 1981 through 1987 to determine the effect of traumatic occupational fatalities in Wisconsin. Cases were obtained by selecting deaths occurring from 1981 through 1987 for individuals aged 16 years or older, an external cause of death (E code series E 800 through E 999), and the death certificate designating that the place of occurrence was "at-work."

During the period, 700 deaths of this type occurred. Wisconsin annually has between 86 and 120 traumatic occupational fatalities. Working Wisconsin males have a fatality rate of 7.9 per 100,000 workers, while females have a rate of 0.5 per 100,000. Traumatic deaths from agricultural machines accounted for 17% of the deaths, while fatalities involving motor vehicles accounted for 24%. Falls represented 11% of the cases (Table).

Several high-risk industries were also identified for male workers, including logging (69/100,000), agriculture (29/100,000), trucking/warehousing (29/100,000), manufacturing not elsewhere classified (27/100,000), and construction (17/100,000) (Figure 1). That is, the logging industry had a relative risk (RR) or fatality rate that was 8.8 times greater than the all-industry average rate of 7.9/100,000. Similarly, the agricultural and trucking/warehousing industries both had relative risks of 3.7, manufacturing not elsewhere classified 3.5, saw mills 2.2, and construction 2.1.

When deaths were analyzed by occupation, a similar pattern of risk emerged (Figure 2). Forestry/fishing laborers had a fatality rate of 68/100,000 (RR: 8.6), farm operators and managers 39/100,000 (RR: 5.0), construction workers 36/100,000 (RR: 4.6), and motor vehicle operators 20/100,000 (RR: 2.6).

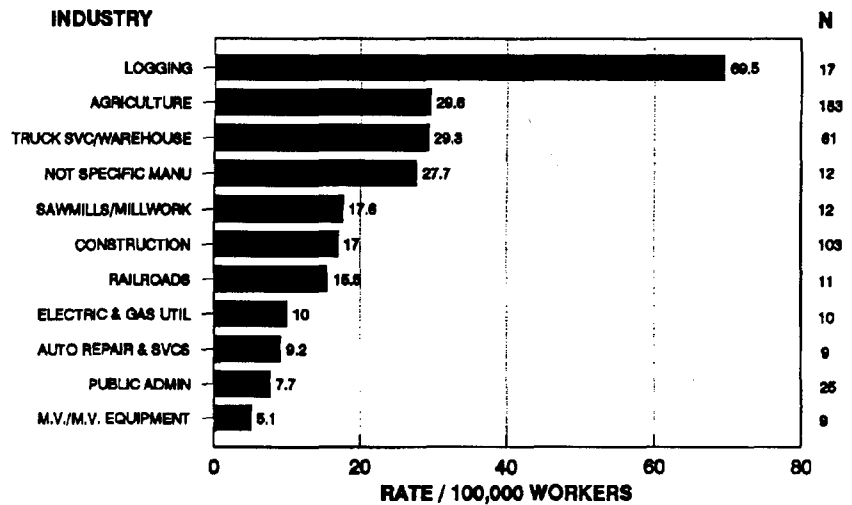


Fig 1.—Wisconsin traumatic occupational fatalities for males, 1981-1987; industry number of fatalities and incidence rate.

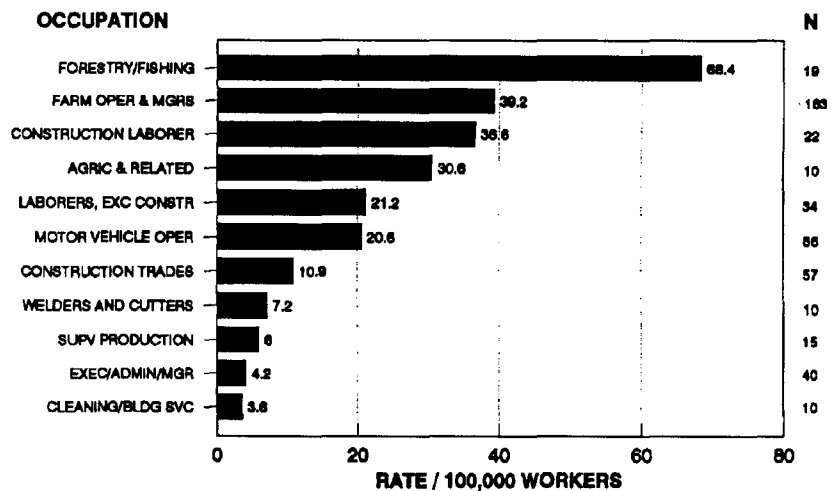


Fig 2.—Wisconsin traumatic occupational fatalities for males, 1981-1987; occupational number of fatalities and incidence rate.

The project

In October 1991, the Centers for Disease Control National Institute for Occupational Safety and Health (CDC-NIOSH) granted the Wisconsin Department of Health and Social Services a 5-year cooperative agreement grant to fund a traumatic occupational fatality surveillance and intervention program. The program, called the Fatal Accident Circumstances and Epidemiology (FACE) Project was initially established by CDC-NIOSH in 1982 to provide technical assistance and to develop information on additional causal factors for occupational fatalities.⁵

Currently there are 9 state-based projects. The goal of these surveillance, research and intervention programs is to "prevent fatal work injuries in the future by studying the working environment, the worker, the task the worker was performing, the tools the worker was using, the energy exchange resulting in fatal injury, and the role of management in controlling how these factors interact."^{2,3}

The Wisconsin cooperative agreement has as its primary goal to effect a measurable reduction in traumatic occupational fatalities. This will be accomplished by strengthening the occupational public health infrastructure of Wisconsin. The resources of occupational safety and health epidemiologic research and public health prevention programs will be integrated at state and local levels. The objectives for the cooperative agreement include:

- developing a timely, comprehensive, multiple (inter-agency) source state-level surveillance system for identifying and recording basic epidemiologic data on all traumatic occupational fatalities occurring within the state;
- conducting investigations of selected traumatic occupational fatalities using the NIOSH FACE investigative model;
- identifying potential risk factors for selected types of traumatic occupational fatalities that will be useful for putting research efforts into priority and for

targeting intervention strategies;

- developing intervention demonstration projects to reduce traumatic occupational injuries and fatalities; and
- developing and disseminating preventive recommendations to reduce the risk of fatal traumatic injuries within the state.

The CDC-NIOSH FACE Project currently has detailed epidemiologic investigation protocols for falls, electrocutions, and asphyxiation deaths caused by entry into confined spaces. Wisconsin FACE investigations will occur when these types of occupational fatalities happen. Additional epidemiologic investigation protocols will be developed jointly in the future with CDC-NIOSH.

Comment

Wisconsin has under its current Sentinel Event Notification System for Occupational Risks (SENSOR) Program an active inter-agency working group that addresses

state occupational health problems.⁸ Members of this prevention center include the Department of Health and Social Services, the Department of Industry, Labor, and Human Relations, the Occupational Safety and Health Administration, the University of Wisconsin (Department of Preventive Medicine, Department of Industrial Engineering, and UW Extension School for Workers), and the National Farm Medicine Center (Marshfield Medical Research Foundation).

The prevention center has established an inter-agency network of those who are collectively committed to occupational health problem solving. The primary focus of the center has been the surveillance and prevention of occupational diseases. Funding from this CDC-NIOSH FACE cooperative agreement will now help to focus some of these resources into the prevention of traumatic occupational fatalities.

The success of the Wisconsin FACE
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surveillance program is dependent upon the timely receipt of thorough fatality reports. Medical examiners, and coroners can play a vital part in this effort when completing death certificates by: carefully listing the underlying and all contributing external causes of death; noting the occupation and industry of the deceased; and indicating that the fatality occurred "at work."

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