

Compensation claims were filed. The total medical cost for twenty-four cases was \$35,230.00. Other economic indicators were indemnity payments from the WCB and OSHA fines. Seventy-one percent of those interviewed reported no prevention training was provided following their CO exposure.

Discussion: The data demonstrated that the benefits of the MDOL "SafetyWorks" outweigh training costs (time away from work) incurred by employers who send their employees to CO poisoning prevention training. The study also showed that research on the economic impact of work-related injuries could not be systematically collected under the current system.

PS.05 Integrating Injury Research With Industry Experience to Develop Measures for Preventing Worker Injuries From Vehicles and Equipment in Highway Work Zones—Fosbroke DE, Pratt SG, Burkhart JE, Marsh SM, Casini VJ, Moore PH, Smith GJ,

Highway workers are exposed to injury from moving construction vehicles and equipment within the work zone and from motor vehicle traffic passing through the work zone. Census of Fatal Occupational Injuries (CFOI) data indicate that of the 600 work-related fatalities in the U.S. highway construction industry between 1992 and 1996, 328 (55%) were vehicle or equipment-related incidents that occurred in a work zone. Historically, prevention has been based on the premise that worker injuries are minimized when work zone traffic collisions are minimized. However, only half of the vehicle-related fatalities among highway workers involve a motorist.

To better understand highway worker injury risks, NIOSH reviewed current highway safety literature, analyzed worker fatality data, investigated selected fatalities, and held a workshop with government, labor, industry, academia, and State transportation departments. Workshop participants were asked to discuss measures that would reduce or eliminate hazards to highway workers. By bringing together people with diverse interests in work zone safety, NIOSH hoped to improve our understanding of the hazards faced by highway workers, raise the industry's awareness of these hazards, and initiate discussion about hazard reduction measures. The resulting NIOSH document outlines specific measures that contractors, contracting agencies, policy makers, manufacturers, law enforcers, and researchers can take to reduce occupational injuries in highway work zones. Though the efficacy of this intervention has yet to be evaluated, the development process is a model of how to develop pragmatic recommendations by combining injury research with industry experience.

PS.06 Pilot Study of Transient Risk Factors for Sharps-Related Injuries in Health Care Workers—Fisman DN, Harris AD, Sorock GS, Gordon K, Brandt G, Mittleman MA

Healthcare workers in the USA sustain approximately 400,000 injuries annually, due to needles and other sharp devices. Such injuries are associated with the transmission of HIV and hepatitis C. Although some factors, such as the use of gloves, modify the risk of sharps-related injuries, little is known about the potentially modifiable circumstances leading to such injuries. This is largely due to the methodological limitations of traditional case-control and cohort studies in the assessment of risk associated with repeated, transient exposures. We therefore designed a case-crossover study to evaluate the risk of sharps-related injuries associated with brief, transient exposures, including rushing, fatigue, and the provision of emergency care. Case-crossover methodology, which uses each subject as his or her own control, was developed specifically to evaluate the effects of transient exposures on the immediate risk of injury or disease occurrence. The study involves two large teaching hospitals: University of Maryland Medical Systems, in Baltimore, and Beth Israel Deaconess Medical Center, in Boston. Recruitment of subjects has been facilitated through multi-disciplinary collaboration of injury epidemiologists with the hospital employee health services and infectious diseases services that oversee management of sharps-related injuries. Informed consent for interview is obtained at the time of management of the injury.

Consenting subjects participate in a telephone interview. Twenty subjects were recruited in the preliminary phase of the pilot study. Employees, trainees, and students have been enrolled, and it has been possible to contact 18 of twenty subjects within 3 days of injury reporting. The questionnaire used has permitted assessment of injuries sustained in surgical and non-surgical work environments. Participant response to the questionnaire has been favorable. Our preliminary experience with this multi-center pilot case-crossover study suggests that this methodology provides a feasible means of assessing brief, transient exposures as risk factors for sharps-related injuries in healthcare workers.

PS.07 Impact of a Changing U.S. Workforce on the Occupational Injury Experience, 1980-1994—Hartley DL, Biddle EA

The civilian labor force has increased considerably over the past quarter century—due in part to rapid population growth and an increasing retirement age. According to the Bureau of Labor Statistics projections, the number of older workers will increase by 48% between 1998 and 2008, from 17 million to 25 million workers.

Between 1980 and 1994, workers aged 65 years and older had the very highest workplace injury death rates—3 times the rate



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ABSTRACTS

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