

Session 33: Injury Risk Factors for Specific Worker Populations

Analysis of Fatal Injuries 1973-1997 in the Automotive and Other Industrial Sectors Represented by the UAW—Howe J

The UAW has compiled a database of occupational fatalities which occurred in workplaces covered by collective bargaining agreements from 1973 to the present. To date there have been 414 fatalities. Case counts have been made by job classification, industry type and selected agents. Approximate rates have been calculated by industry type. From information collected following the fatality, a summary paragraph has been composed which was the basis for then classifying cases on process risk factors and causal pathways. The most important findings have been the high risk for workers in skilled trades, those that use or work near powered material vehicles and those in production service. Other high risk activities included: demolition, handling heavy items such as steel coils or press dies, and troubleshooting machine failures. There has been a substantial decrease in industry sectors since the implementation of joint health and safety programs.

Effects of Mining Height and Mine Employment Size on Injury Rates in Underground Bituminous Coal Mines—Fotta B, Mallett L

While the effects of either mining height or mine employment size on injury rates in underground coal mines have been examined separately, the present study attempts to examine the joint contribution of these two variables to the risk of injury to an underground miner. Using the mine-level employment and injury data reported to the Mine Safety and Health Administration (MSHA), mines were stratified by average coal seam height (<43 inches, 43-60 inches, and >60 inches) and by the average number of employees working at the mine (<20 employees, 20-49 employees, 50-99 employees and 100+ employees). The employment data show that as the number of employees increases, the proportion of hours worked in low seams decreases substantially. Additionally, miners injured in small low seam mines are, on average, younger and less experienced than miners injured in large high seam mines. Nonfatal and fatal injury rates were computed within each category of employment size and seam height for the major types of accidents (ground falls, powered haulage equipment, machinery, handling materials, slips and falls, hand tools). To reduce the confounding effects of mining method on injury rates, mines using longwall mining methods were identified and excluded from analysis. Results suggest that, regardless of the employment size, as mining height increases, miners are at increasingly higher risk of injury from accidents involving shuttle cars and falls of ground. Conversely, as mining height decreases, miners are at higher risk of injury from accidents involving roofbolting machines, load-haul-dump types of powered haulage equipment, personnel carriers, and powered haulage conveyors. On the other hand, regardless of the height of the coal seam, miners working in large underground mines have higher rates of injuries resulting from accidents involving handling materials and nonpowered hand tools, but lower rates of injury from accidents involving continuous mining machines and from fatal accidents involving falls of supported mine roof. As expected, injury rates for accidents involving a slip or fall increase as the seam height increases. However, the rate of injuries due to slips or falls also increases as the employment size increases. Finally, miners work-

ing at small mines in low or medium seams are at higher risk of being fatally injured by a fall of unsupported mine roof. These results suggest the importance of considering the working height of the mine as the well as the employment size of the mining operation when developing intervention strategies to reduce injury risk to underground coal miners. Results also identify the need to further explore how mining height contributes to the frequency and severity of injuries.

Risk Factors for Injuries Among Veterinarians in Minnesota—Gabel CL, Gerberich SG, Maldonado G, Robinson RA

Occupational injuries are a major source of morbidity and mortality among all workers; among veterinarians, little is known of the extent of injuries sustained and the major causes of and risk factors for workplace trauma. Veterinarians face many hazards in their daily work including the potential for acute trauma from animal bites, other animal interactions, needle sticks with biologicals or pharmaceuticals, and lifting of heavy objects. Veterinarians share many exposures with agricultural workers, the group with one of the highest occupational injury rates. Based on available data, the injury rate for veterinarians is at least 10 per 100 veterinarians per year and may be as high as 20 per 100 based on a recent pilot study by the investigators.

There were two primary aims for this study: one, to identify the magnitude of the injury problem among veterinarians who practiced in Minnesota during 1996 and, two, to conduct both case-crossover and case-control studies to ascertain the specific risk factors involved. The research design employed an initial survey to ascertain and characterize the cohort, and a case-crossover study on selected risk factors, followed by a nested case-control study among this population.

A survey was sent to all 2,687 licensed veterinarians to ascertain whether they practiced in Minnesota during 1996. In addition, information was collected on type of veterinary work, demographic factors and the numbers and relevant circumstances of injuries, if any, sustained during 1996; eight questions were included to enable a case-crossover analysis of the relation of specific hypothesized risk factors to injury occurrence. The response rate to the initial mailing was 62%; a second mailing of the survey is underway which will be followed by a third mailing involving a brief questionnaire to identify minimum information on exposures and injury experience.

From the identified cohort of veterinarians who practiced in 1996, cases and controls will be selected for a nested case-control study. All injured persons will be selected as cases; controls will be selected from among the population at risk. A mailing to both cases and controls will include a comprehensive questionnaire designed to elicit specific information on potential risk factors that will enable comparison of the exposures between these groups and ascertain the major risk factors associated with injury. This mailing will be initiated in June, 1997. Preliminary results will be available at the time of the conference.

A validation substudy will be conducted among a random sample of 10% of the cases and controls, through a review of medical records.

This study design will allow us to calculate the rate ratios for the exposures of interest related to the risk of injury and evaluate po-