

five minute warm-up that allowed each subjects' heart rate to reach a plateau. Oxygen uptake data obtained during the last five minutes of each test are used to measure the energy expenditure. The data collected is being analyzed in graphical form.

The risk of impending heat stress increases not only with the ambient temperature, but also with a work load. Results of this study will be useful in determining the workers' average energy expenditure when they perform a given task, and thus to assist with decision-making whether an appropriate micro cooling system is required.

### *Category: Surveillance*

#### ***National Estimates of Occupational Injury from the National Health Interview Survey***—Geidenberger CA, Jackson LL

The 1988 National Health Interview Survey Occupational Health Supplement is part of a continuing effort by the National Institute for Occupational Safety and Health to improve surveillance of occupational injury and disease. Data from this survey were used to generate national estimates of work-related injury incidence among civilian workers. Eye injuries were a particular focus of the analysis since, in general, such injuries may easily be prevented in the work place at relatively low cost. The overall incidence of occupational injury was 8.6 episodes per 100 workers or 7.2 injured persons per 100 workers. Incidence of injury episode varied by occupation and industry of employment, with injuries occurring most frequently among operator/fabricator/laborer occupations and those employed in the construction industry. Incidence also varied according to body part injured and nature of the injury, with back injury episodes and fractures/dislocations/sprains, respectively, the most common. Risk of injury declined with age for both sexes and was higher for males in every age category. Eye injuries occurred most frequently among those employed in the construction industry and in production/craft/repair occupations. Risk of eye injury was lower than risk of injury to the extremities or back within every occupation and injury category. In addition, those with eye injuries reported fewer days of missed work than did workers with trunk, extremity, or back injuries. Nevertheless, the estimated number of work-related eye injury episodes during the study period (625,745) was substantial, representing 5.9 percent of the estimated total. These results are generally consistent with findings of other injury surveillance systems, and provide further guidance for future intervention efforts.

#### ***Traumatic Occupational Fatalities Due to Falls From Elevations—Cause and Prevention***—Braddee R, Pratt S

**Purpose.** To identify and describe trends in traumatic occupational fatalities due to falls from elevations, review recommended prevention strategies, and describe the approach of the National Institute for Occupational Safety and Health (NIOSH) to traumatic occupational fatality investigation and prevention.

**Method.** This study uses data from the National Traumatic Occupational Fatalities (NTOF), and Fatality Assessment and Control Evaluation (FACE) databases to describe trends and rates of fatalities of workers due to falls from elevations, over a 12-year period. The FACE program, which utilizes the traditional epidemiologic

agent-host-environment model to accurately describe the pre-event, event, and post-event phases of fatal occupational injuries, is conducted in the areas of falls from elevations, logging, and machinery-related fatalities. Through surveillance and epidemiologic investigations, potential risk factors are identified and injury prevention strategies developed.

**Results.** During the period 1980 through 1991, approximately 72,500 U.S. civilian workers died from traumatic injuries suffered in the workplace according to data from NTOF. Over this 12-year period, an estimated 6,721 of these deaths occurred due to falls from elevations. Although the trend of falls from elevations declined from .68 per 100,000 workers in 1980 to .38 in 1991, falls from elevations remain the 4th leading cause of death Nationwide. Between October 1982 and present, the NIOSH FACE program has investigated 79 fatal incidents that involved workers who died as a result of falling from an elevation. Recommended injury-prevention strategies include working in compliance with national safety standards, establishing and implementing written safe work procedures, using proper personal protective equipment and providing appropriate worker training.

**Conclusion.** Approximately 560 workers die each year from falls from elevations in the course of everyday work situations, and falls remain the 4th leading cause of occupational injury fatalities Nationwide. In order to reduce these numbers, surveillance, dissemination of prevention strategies, and additional research need to be continued. The FACE model has been demonstrated as an effective tool for identifying and describing fatal occupational injuries and developing prevention strategies. The FACE data has been used to produce targeted dissemination of prevention strategies, and to provide input into the promulgation of national safety standards.

#### ***Worker Deaths by Electrocutation - A Summary of NIOSH Surveillance and Investigative Findings***—Casini VJ, Kisner S

**Purpose.** To identify and describe trends in traumatic occupational fatalities due to contact with electrical energy, review recommended prevention strategies, and describe the approach of the National Institute for Occupational Safety and Health (NIOSH) to traumatic occupational fatality investigation and prevention.

**Research Hypothesis.** Through surveillance and on-site fatality investigations of occupational electrocutions, risk factors can be identified and intervention strategies developed, disseminated, and implemented to reduce fatal occupational injuries.

**Research Data.** Data from the National Traumatic Occupational Fatalities (NTOF) surveillance system, which is based on death certificates from all 50 States and the District of Columbia meeting the following criteria: age 16 years and older; external injury cause of death; and the certifier noted that the injury occurred at work was used. Data are also included from the Fatality Assessment and Control evaluation (FACE) program gathered during field investigations using the traditional epidemiologic model.

**Method.** This study uses data from the NTOF surveillance system and the FACE database to describe trends and rates of fatalities of workers during to electrocution over a 12-year period. Through surveillance and epidemiologic investigations, potential risk fac-