

#### MORTALITY OF CARPENTERS EMPLOYED IN U.S. CONSTRUCTION OR WOOD PRODUCTS INDUSTRIES, 1987-1990, Cynthia Robinson and Sue Palu

The study was conducted to evaluate the mortality of 27,362 members who died 1987-1990 of the U.S. Carpenters' Union for preventable causes associated with occupational exposures in the construction or wood products industries. Age-adjusted proportionate mortality ratios (PMRs) and proportionate cancer mortality ratios (PCMRs) were computed using the U.S. age, gender and race specific death rates for comparison. For carpenters who were last employed while in construction industry locals, raised mortality was restricted to lung cancer (PCMR=107, N=2327, CI=103,111), bone cancer (PCMR=181, N=18, CI=107,286), lymphatic cancer (PCMR=112, N=326, CI=101,125), emphysema (PMR=115, N=274, CI=102,130), transportation injuries (PMR=121, N=330, CI=109,135), and falls (PMR=122, N=158, CI=104,142). For carpenters who were last employed while in industrial wood products locals, significantly raised mortality was confined to stomach cancer (PCMR=187, N=44, CI=136,250), male breast cancer (PCMR=469, N=4, CI=128,720), and transportation injuries (PMR=136, N=65, CI=110,173). Excess breast cancer was associated with last employment in wood machining trades. Nasal cancer mortality was not elevated, due to its high survival rate. 24 pleural mesotheliomas were observed among carpenters last employed in construction locals. Multiple cause of death analyses revealed raised mortality for these and additional causes. 4594 of 27,362 (18%) death certificates mentioned pneumoconiosis as a contributing factor. Limitations prevent drawing firm conclusions, but raised mortality from lung and lymphatic cancer, mesothelioma, and injuries among U.S. construction carpenters confirm known hazards of construction. Elevated mortality for stomach, bone, and breast cancer, and injuries among U.S. industrial carpenters suggests further investigation.

#### MORTALITY AMONG A COHORT OF ELECTRIC UTILITY WORKERS, 1960-1991 Kelsch, MA Sahl, JD

Electric utility workers can be exposed to a wide range of chemical and physical agents. These exposures can include chemical solvents, pesticides and herbicides, heavy metals, and ionizing and nonionizing electromagnetic fields. Despite concerns about these exposures, there are few published studies that describe the overall mortality patterns of an electric utility worker cohort. Cause of death mortality patterns were examined among a cohort of 40,335 electric utility workers over a 32-year period, 1960-1991. A total of 3,588 deaths were included in these analyses, with 90% of the deaths were among male workers. Standardized mortality ratios (SMRs) and internal cohort analysis methods were used to evaluate mortality risk. For the entire cohort, the SMRs for all causes, all cancers, heart disease, and accidents were all below 1.0, ranging from 0.6 to 0.8 with upper confidence intervals below 1.0. The SMRs for specific cancers were all 1.0 or less, with upper confidence intervals of 1.3 or less. These patterns were consistent for specific occupational groups within the utility worker cohort. For internal cohort analyses, technical/administrative staff were selected as the referent category. Craft and field occupations had higher rate ratios for respiratory cancer, (rate ratios ranging from 2.2 to 2.5), accidents (rate ratios ranging from 2.9 to 3.5) and suicide (rate ratios ranging from 1.5 to 2.5). These results suggest a consistent healthy worker impact in this cohort for all causes of mortality, but differential mortality rates for occupational groups within the utility worker cohort that require further research to better quantify exposures and potential confounding factors.

#### MORTALITY AND WOOD DUST EXPOSURE AMONG CPS-II PARTICIPANTS Demers PA, Stellman SD

Wood dust has been classified as a human carcinogen by IARC because it is known to cause sino-nasal cancer. At this point it is only suspected of causing more common cancers of the respiratory, digestive, and lymphatic and hematopoietic systems. We conducted a cohort mortality analysis among the 509,000 men who participated in the American Cancer Society's Cancer Prevention Study-II. The cohort was followed prospectively for mortality from September, 1982 to August 1988. A total of 3,700 deaths occurred among the 46,138 men who reported exposure to wood dust or employment in a wood-related occupation. Using Poisson regression to adjust for age and smoking, their mortality was compared to male participants who reported that they had not been exposed to wood dust and had not worked in a wood-related occupation. A small excess of total cancer was observed (incidence density ratio (IDR)= 1.1, 95% confidence interval (CI)=1.0-1.2). Among the sites of *a priori* suspicion, excesses of lung (IDR=1.2, 95% CI=1.1-1.3), laryngeal (IDR=1.7, 95% CI=0.8-3.5), rectal (IDR=1.4, 95% CI=0.9-2.2), and gastric (IDR=1.3, 95% CI=0.9-1.8) cancer were observed. No excess of sino-nasal cancer was observed, albeit there was only one case during the six years of follow-up. There was no relationship between any cancer site and duration of wood dust exposure. Although limited by a short follow-up period and crude indicators of exposure, the strengths of this analysis were the ability to compare wood dust-exposed workers to a similar, healthy population and to adjust for the effects of smoking. The public health significance of a small excess of a common cancer may be much greater than a large excess of sino-nasal cancer. Our results are not conclusive and further studies with better indicators of exposure are needed so that the implications of exposure to wood dust can be assessed by regulators and exposed workers.

#### MORTALITY PATTERNS AMONG NURSES: A 28-STATE STUDY (1984-1990) L. Peipins, C. Burnett, T. Alterman, N. Lalich

Nurses face a myriad of biological, chemical, physical and psychosocial hazards which have been linked with cancers, injuries and infectious diseases. This study examined the mortality experience of 50,000 nurses for 1984-90 using data from the National Occupational Mortality Surveillance system. Proportionate mortality ratios (PMRs) adjusted by race and age were calculated for select causes of death among female nurses compared with (1) all workers and with (2) white-collar workers separately. Excess deaths among working-age nurses (< 65 years) were seen in both comparison groups for viral hepatitis (29 deaths, PMRs=175 and 171), cancer of the nasal cavities (9 deaths, PMRs=212 and 183), accidental falls (49 deaths, PMRs=145 and 150), suicide (398 deaths, PMRs=126 and 116) and drug-related deaths (257 deaths, PMRs=171 and 175). Among older nurses deaths due to chronic myeloid leukemia (44 deaths, PMRs=157 and 132), sarcoidosis (15 deaths, PMRs=363 and 236), and lymphosarcoma (68 deaths, PMRs=135 and 119) were in excess. For breast and colon cancers as well as for diabetes and heart disease, PMRs varied with respect to the occupational comparison group. These findings confirm results of previous studies in addition to identifying new associations. Redoubled efforts are called for in identifying and overcoming obstacles to reducing workplace hazards and in targeting preventive services for nurses.

#### THE SERVICE INDUSTRY AND YOUNG WORKERS.

Jeffrey Newman, National Child Labor Committee

In 1990, the National Child Labor Committee began a program to help businesses, particularly in the service industry, better understand how to work with young workers. The purpose of the program has been to reduce risks to young workers, including health and safety risks as well as risks to the psycho social and physical development of the teenage worker. Its focus has been on helping management better understand the problems young people face in the workplace, and then helping management to incorporate new approaches and concerns into training programs for direct line supervisors. NCLC has helped develop specific training methods, and materials such as a training video for line supervisors. Much of the program's work has been with the fast food industry, and success is already visible in the significantly reduced injury rates and child labor law violations for the companies involved.

#### THE SAFETEEEN WORK PROJECT: REDUCING CUTTING INJURIES AMONG YOUNG SUPERMARKET WORKERS

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A frequent cause of injury among employed adolescents are cutting lacerations suffered while opening boxes in grocery stores with a case cutter. An intervention program was conducted within a single chain of supermarkets situated in the Northeast United States. Stores were divided into 3 groups. In Group A stores, old cutters were replaced with new safety cutters which included a built in safety guard plus education on their use. In Group B stores, old cutters remained in use but employees received training on the new cutters. Group C control stores used old cutters without safety education. A cost benefit analysis for the two intervention strategies versus control was performed. Results: A total of 198 cutting injuries occurred over the four year study period. Length of employment ranged from 1 day to 25.4 years; 113 of the injuries (54%) occurred in workers who had been employed less than one year, and of those, 55 were employed 3 months or less. Age of injured workers ranged from 15 to 78 years, with an average of 25.8 years. One third were <20 years of age. Both Group A and B stores had equally reduced rates of injury when compared to Group C control stores. The differences in before and after intervention were greatest in Group A, less in Group B and least in Group C. Monetary savings for Type A stores (new cutter and education) are \$263/year and \$31,262 for the chain. Benefits for the type B stores (education only) are less dramatic. This project demonstrates that a reduction of cutting injuries is possible through either use of a safety cutter plus education or education alone.

#### INTEGRATING OCCUPATIONAL HEALTH AND SAFETY EDUCATION INTO THE HIGH SCHOOL CURRICULUM: PROBLEMS AND POSSIBILITIES.

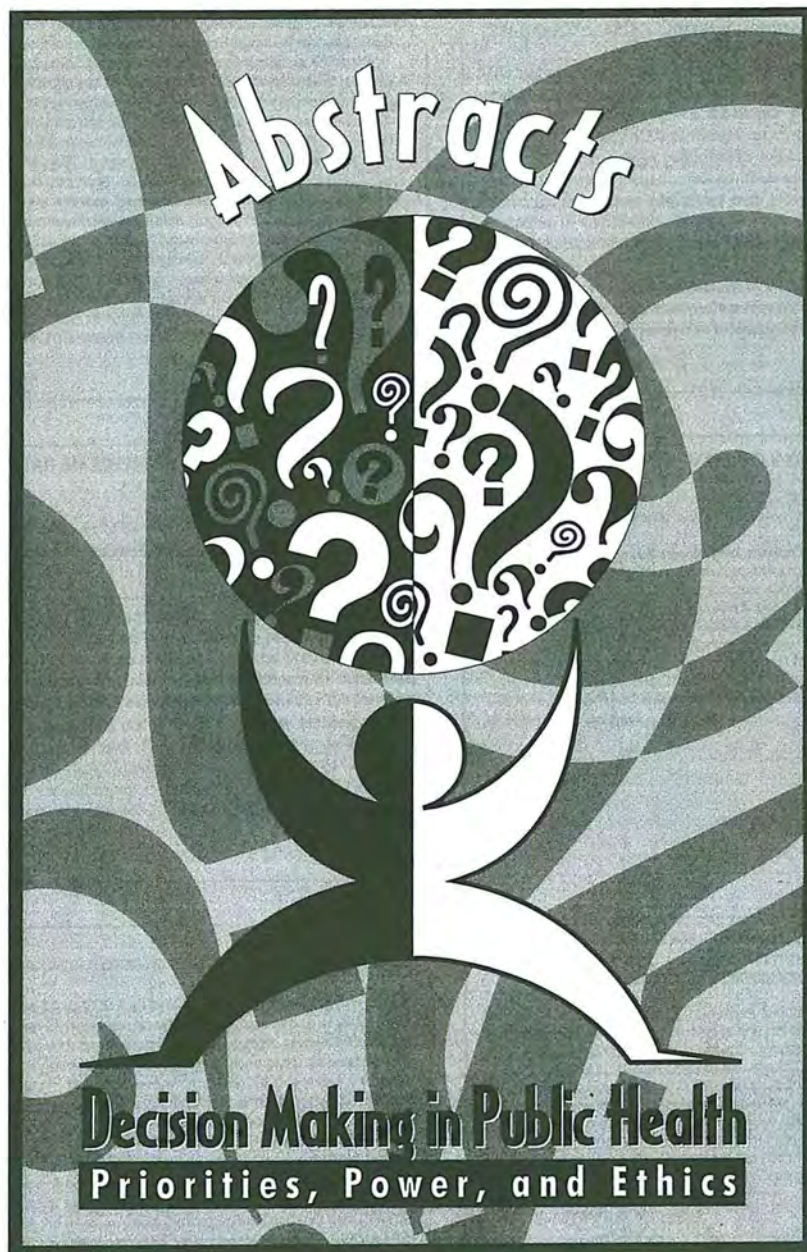
Michael C. Ross, MA, University of Illinois at Chicago, College of Medicine

Efforts to encourage the adoption of the American Lung Association's Future Workers' Education Project in Chicago area high schools and professional schools are summarized. The Future Workers' Education Project (FWEP), consists of four, content specific occupational health curricula designed to be integrated into vocational training programs in welding, auto body repair, cosmetology, and health professions. These highly evaluated curricula are flexible and easy to use, even by teachers with minimal knowledge of occupational health hazards. Several strategies have been employed in the past two years to promote and encourage adoption of the curricula, but with limited success. Each of these strategies are outlined and evaluated. From this experience, conclusions are presented regarding the barriers faced by schools and teachers in adopting occupational health training materials for youth. Suggestions are made for interventions to overcome these barriers.

#### EDUCATING YOUNG WORKERS ABOUT HEALTH AND SAFETY: WHAT TEENAGERS, TEACHERS AND EMPLOYERS THINK IS NEEDED.

Diane Bush, MPH and Robin Baker, MPH

Young workers (age 16-24) have higher workplace injury rates than any other age group. Almost half of these injuries occur during the first year of work. In order to help prevent these injuries, teenagers need a basic understanding of how to identify and protect themselves from hazards on the job. To explore how best to get this information to teenagers, the Labor Occupational Health Program of U.C. Berkeley spoke to over 60 high school teachers, 180 high school students and 90 business representatives. In addition, over 90 government representatives, health and safety professionals, education professionals and child labor activists were interviewed, to identify existing intervention models. Information from students was collected using participatory exercises to find out how much students knew about job hazards and strategies for dealing with them. Students demonstrated a very limited understanding of the range of potential hazards in the workplace, and had no knowledge of enforcement agencies, or of where to turn if faced with a workplace health or safety problem. Most students suggested that a multi-faceted approach would be most effective in reaching their peers, including outside speakers in their classrooms, peer education programs, and schoolwide awareness campaigns. In teacher focus groups, participants agreed that the information must be presented to students in many different ways. Teachers were particularly enthusiastic about integrating workplace rights and health and safety information into social studies, science, language arts and other general education classes. In response to a written survey, almost all employers felt that young workers come to the job without even a basic foundation of knowledge about safety, and felt that this basic preparation should occur at the high school level.



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