

EVALUATION OF CONTROLS PROTECTING LEAD EXPOSED WORKERS

Pepper L, Woskie S, Strunin L, Clapp D and Bennett P

Construction workers engaged in the repair, renovation, maintenance and demolition of lead painted bridges and similar structures are at risk of elevated blood lead levels and the attendant acute and chronic health effects. The project is a cross-sectional survey of bridge repair and maintenance workers at workites in Massachusetts. It is designed to determine why high blood levels continue to occur despite government regulations and industry recommendations. The study's evaluation methods, which include 1) the measurement of lead particle exposure in three particle size fractions, 2) the creation of ordinal index variables representing containment, ventilation, personal protection using observations of work practices, 3) the use of ethnographic techniques (observation, questionnaires and semi-structured interviews) to assess worker and management awareness of lead poisoning issues associated with bridge repair work practices and 4) the use of blood lead observations over a defined interval, will be presented. Preliminary blood lead and environmental monitoring data from the first construction cycle will be discussed. This study is one of the first evaluations of structural steel paint abatement activities following the extension of OSHA's Lead Standard to the construction industry. It will permit an early assessment of the impact of federal regulatory requirements and the barriers to optimal worker protection.

TRENDS IN OCCUPATIONALLY INDUCED LUNG CANCER

Joel B. Swartz, Ph.D.

Examination of trends in lung cancer indicates that the current increase in male lung cancer results primarily from factors other than smoking. This is shown from examining a mathematical model which predicts trends in smoking induced lung, the difference in lung cancer trends between blacks and whites, and the changing histology of lung cancer. Evidence is presented indicating that the more rapid rise in lung cancer among blacks, and the changing histology of lung cancer imply that part of the rise in lung cancer is due to occupational exposures. Suggestions for research in occupational lung cancer are presented.

PROPORTIONATE MORTALITY AMONG CONSTRUCTION LABORERS. FRANK STEIN, PAUL SCHUBER,

Marie Haring Sweney, Marilyn Fingerhut, Pamela Yossenas, Grey Burkhardt, Mary Frances Kornak. To obtain more information regarding the health and safety risks among workers in the construction industry, a systematic research approach was initiated to describe the mortality risks among each of the fifteen Building and Construction Trades Departments of the American Federation of Labor-Congress of Industrial Organizations. This paper presents the results of proportionate mortality ratio (PMR) analyses and proportionate cancer mortality ratio (PCMR) analyses among the 11,685 members of the Laborers' International Union of North America (LIUNA) who died between 1985-1988, using U.S. proportionate mortality rates as the comparison population. Statistically significant elevated mortality risks were observed for all malignant neoplasms (N=3285, PMR=1.13, CI=1.09-1.17), as well as for site-specific neoplasms of the lung (N=1288, PCMR=1.06, CI=1.00-1.12, stomach (N=170, PCMR=1.44, CI=1.23-1.68), and thyroid gland (N=10, PCMR=2.24, CI=1.07-4.12). The PCMRs for these malignant neoplasms were elevated among both white and non-white males, regardless of length of union membership. In most 10-year categories of age-at-death above 40 and for the three largest LIUNA regions examined. The study also observed a total of 20 mesothelioma deaths which indicated that some LIUNA members had been previously exposed to asbestos. Statistically significant elevated risks were also observed for deaths from transportation injuries (N=448, PMR=1.37, CI=1.25-1.51) falls (N=85, PMR=1.34, CI=1.07-1.66), and other types of injuries (N=245, PMR=1.61, CI=1.42-1.83). The deaths due to injuries were most often observed among those members who had the shortest amount of time within the union, were younger, and first entered the union after 1955. This is the first study examining the mortality experience limited to construction laborers (the BOC B69). Other studies which have included construction laborers as part of their cohort have observed findings similar to those of ours, with the exception of the excess risk of thyroid cancer.

SURVEILLANCE DATA ON US COAL MINERS' PNEUMOCOCONIOSIS, 1992

Karl J. Musgrave, DVM, MPH; Patricia S. Brower, MS; John E. Parker, MD; and Michael D. Attfield, PhD. NIOSH, MORGANTOWN, WV

As part of a lung disease prevention program mandated by the Federal Coal Mine Health and Safety Act of 1969, radiographic examinations of the chest are made available to underground coal miners every 5 years through the NIOSH administered Coal Workers' X-ray Surveillance Program (CWXSP). A variety of supplemental data, such as miner's age, mining work history, and mine location, is collected at the time of chest x-ray examination. In this paper, the results of chest x-ray readings are combined with this supplemental data for a variety of analyses.

During 1992, 4078 miners from 108 separate mines and 11 different states received chest x-rays through the CWXSP. Of the 4078 miners, 150 (3.7%) were classified as having ILO category 1/0 and greater small opacities on their x-rays. Twenty-four of the miners had category 2 or 3 small opacities, and seven had evidence of large opacities. The mining tenure for five of the large opacity cases was less than 20 years with one miner having worked for only 11 years. Three of the seven large opacity cases had worked mainly as roofbolters during their mining tenure. One mine in Pennsylvania contributed 118 (2.9%) of the miners participating in the program but was responsible for ten (6.7%) of the cases. High risk mines and mine occupations identified in this study are being targeted for prevention/intervention efforts.

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SURVEILLANCE OF OCCUPATIONAL ASTHMA - CALIFORNIA SENSOR

F. Reinisch, R. Harrison, AM Osorio

The prevalence of asthma in the U.S. is between 3.0 and 3.1 per 100 persons. Occupational asthma accounts for 2-7% of all asthma cases. The Occupational Health Branch, in cooperation with NIOSH, conducts surveillance for occupational asthma based on the Sentinel Event Notification System for Occupational Risks (SENSOR) model. The surveillance program links multiple case reporting sources (Doctor's First Reports of Occupational Injury or Illness (DFR), pulmonary physicians, and HMOs) to targeted worksite investigations. Summary data from the first year of DFR surveillance (approximately 400 asthma cases) and six months of follow-up case interview data will be presented. Based on six months of data, the industry groups with the largest number of cases were services, public administration, and manufacturing. Chemical products and smoke from fires were the agents most frequently associated with asthma cases; environmental exposures, work-aggravated asthma, and direct use of an agent were the exposure processes most frequently associated with asthma cases. Chemical irritant exposures account for the majority or reported asthma cases. DFRs are comprehensive in geographic coverage, timely, cost effective, and a sustainable source for case ascertainment for occupational asthma surveillance in California.

A MODEL HELPING TO DETERMINE INCREASED ASTHMA BRONCHIALE IN A FOAM MANUFACTURING PLANT DUE TO CHEMICALS

Winters, T.H., MD, Carney COPC; Dirican, F.A., MD, MPH, Carney COPC; MacMillan, R., MD, Ocean State Occupational Health Resources; Talbot, D., RN, Health Resources; Cuffe, S., RN, Health Resources

A complete medical surveillance program was introduced to a foam manufacturing work force. The initial clinical impression was pointing out a higher prevalence rate of abnormal lung function tests among workers in this plant as compared to the workers in other plants of a similar kind. An attempt was made to determine whether exposure to Toluene Diisocyanate (TDI) or other chemicals including solvents, fumes, asbestos, ammonia, dyes, etc. as well as smoking status, medical history of allergy of employees contributed to the decrement in lung function. A statistical model was created to determine and evaluate these factors. The ultimate goal of this model is to improve the work environment.

OCCUPATIONAL ASTHMA: MAGNITUDE OF THE PROBLEM IN CONNECTICUT, COMPARING DIFFERENT DATA SOURCES

Tim F. Morse, Ph.D.

Utilizing the National Health Interview Survey, there are projected to be about 6,000 active occupational asthma cases in Connecticut, or about 7% of all types of asthma. There were only 23 cases reported through the new physician-reported state surveillance system, which was about 20% of all reported lung diseases. There were only about 300 lung diseases of all types reported through the Workers' Compensation Commission. This dramatic difference between reported and projected cases is likely due to several factors: lack of information on causes of asthma, lack of training of physicians on occupational disease, lack of certainty on the part of the physician, and lack of awareness of and disincentives to report cases. Lack of reported cases results in a misallocation of preventive efforts. An education effort for the public and health professionals is outlined.

IMPLEMENTATION OF AN OCCUPATIONAL RESPIRATORY DISEASE NOTIFICATION SYSTEM: PROPULSE

S. Provencher, L. DeGulre, F. Labrèche, J.L. Malo, D. Laliberté, F. Aubry, J. Bourbeau.

PROPULSE is a pilot study to evaluate the feasibility of establishing a reporting system for occupational respiratory diseases (ORD) in Québec, Canada. Inspired by project SWORD (Br J Ind Med 1991;48:292), this 1-year pilot study asked all practising Québec respirologists and allergists to report new cases of ORD on a monthly basis. The following non nominal data were collected from physicians: age, gender, city of residence, smoking, occupation, type of industry, suspected agent, insurance with Québec Workers Compensation Board (QWCB), and an assessment of the likelihood that the disease was work-related. Over a one year period, 453 cases were reported. One hundred and one (63%) of the targeted physicians participated in the study; 17% of the physicians reported 66% of the cases. The most frequent diagnoses were: occupational asthma (63.4%); silicosis (5.5%); benign pleural disease (5.5%); asbestosis (4.2%); mesothelioma (4.2%); and inhalation accidents (RADS) (3.1%). We compared our results to data from the QWCB and found that the PROPULSE system had a higher proportion of reported cases of asthma. The former result may be partly explained by a higher response rate among asthma specialists and inclusion of workers not insured with the QWCB (and thus excluded from their files). Further analyses have to be done to evaluate the magnitude of this effect. Nevertheless our results suggest that PROPULSE, together with QWCB data, may improve ORD surveillance, particularly for diseases with short latency periods. PROPULSE may also assist workers through early intervention in the workplace. An other benefit from such a reporting system may be a heightened awareness of ORD among physicians.



ABSTRACTS

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