

IMMUNOLOGICAL EFFECTS OF EGG PROTEINS ON EGG-PROCESSING WORKERS. M. Massoudi,* R. Biagini, D. Bernstein, L. Pinkerton, D. Hull, A. Ruder, M. Brown, M. Boeniger, and E. Ward (Centers for Disease Control and Prevention (CDC), NIOSH, Cincinnati, OH 45226)

Both ingested and inhaled egg proteins are potent allergens and workers exposed to airborne egg proteins are at risk for developing occupational asthma. To investigate respiratory complaints among egg-processing workers, we conducted a cross-sectional study examining the role of immunological effects of egg proteins. Referents were selected from a local box springs factory. We evaluated a battery of immunological blood tests, nasal washing(s) for histamine levels and eosinophils, serial peak flow measurements, and skin prick testing results for allergic responses to egg proteins and aeroallergens. Medical and work histories were obtained using standardized questionnaires. Seventy-five workers (42 exposed and 33 referent) participated in the study. The rate of atopy (positive for 2 aeroallergens) to common aeroallergens (24%) did not vary significantly by exposure status. Thirty-six percent of egg-exposed workers were skin prick positive to at least one egg component compared to none in the unexposed workers ($p=.001$). There were no differences in the number of T-, B-, or natural killer cells, or in total IgE levels between the egg-exposed and unexposed groups. However, exposed workers allergic to eggs had significantly higher IgE levels compared to exposed workers not allergic to eggs ($p=.0003$) or to unexposed workers ($p=.02$). Exposed workers with both egg allergy and occupational asthma ($n=5$) had significantly higher IgE levels compared to exposed non-asthmatic ($n=37$) ($p=.003$) and unexposed workers ($n=33$) ($p=.01$). These results found a high prevalence of sensitization to egg proteins among egg-processing workers. One third of sensitized workers had occupational asthma. Similar problems have been documented in other egg-processing plants. These findings suggest that airborne exposures in some egg-processing facilities should be better controlled.

SMOKING AND THE PREVALENCE OF BACK PAIN: RESULTS FROM A RETROSPECTIVE COHORT STUDY. S.C. Scott,* M.S. Goldberg, N.E. Mayo, and S. Stock (McGill University, Montreal, Canada)

The possibility that smoking is causally associated with back pain is biologically plausible and, increasingly, is being recognized clinically. However, the epidemiological evidence for this association remains scant. The authors investigated this association using data from a follow-up study of adolescent idiopathic scoliosis (AIS; Spine 1994;19:1551-88). Adolescents identified with AIS between 1960 and 1979 were entered into the cohort and were followed until 1989. A population-based sample, selected in 1989, was used for comparison purposes. Subjects in both groups (1,476 AIS and 1,755 controls) completed a postal questionnaire that ascertained frequency, duration, location, intensity, and duration of back pain, and resultant disability and handicap. Information on lifetime cigarette consumption was used to create indices of smoking exposure. Logistic, ordinal and linear regression models were used to relate smoking to various back pain outcomes. These analyses were conducted separately for men and women and for the AIS cohort and the comparison group. A particular focus of these analyses was to adjust for current and past occupation. Additional adjustments were made for age, education, urban/rural residence, body mass index, alcohol use, marital status, recreational participation and number of children (women only). For current back pain in relation to current smoking status, the adjusted odds ratios and 95% confidence intervals were: AIS women, 1.48 (1.15-1.91); AIS men, 2.22 (0.96-5.11); comparison women, 1.29 (0.96-1.74); comparison men, 1.08 (0.70-1.67). Within the AIS cohort, women smokers had a significantly higher disability score (Oswestry Disability Index), than non-smokers. This difference was not seen within the comparison group. The results of this study suggest that smoking is an independent risk factor for back pain. As higher odds ratios were observed for the AIS cohort, smoking may enhance or exacerbate back pain in an already damaged spine. Longitudinal data are required to confirm and refine these associations.

COMPARING COMPANY-BASED AND SELF-REPORTED ESTIMATES OF DURATION AND INTENSITY OF OCCUPATIONAL FUMIGANT EXPOSURE. G. Calvert,* C. Mueller, V. O'Neill, J. Fajen, L. Fleming, and T. Briggie (CDC/NIOSH, Cincinnati, OH 45226)

As part of a cross-sectional medical study of structural fumigation workers, self-reported work history information was collected on both intensity and duration of exposure using an interviewer-administered questionnaire. All company records available on these workers were also collected. Although 81 different structural fumigation companies were identified by study participants as current or former employers, only 15 of these companies had records suitable for assessing the self-reported work histories. These 15 companies employed 32 of the 123 participating fumigation workers. The exposure information provided by the 32 workers was compared to information obtained from company records. For the time period consisting of the two weeks preceding the worker's examination, we found agreement between the self-reported and company work history information with respect to daily activities and fumigant usage, but not for estimates of total days worked over this time period. We also found agreement between the self-reports and company records for total years of employment in the fumigation industry. We were unsuccessful in our objective to use self-reported work history information to create a single exposure measure that unified both intensity and duration information. All such unifying measures required the use of the total days worked estimate, an estimate which we found to have poor agreement between self-reported and company data. In conclusion, our findings demonstrate the usefulness of comparing self-reported and company-based work history information to identify the appropriate exposure measures to be used in the analyses of the outcome data. However, our experience demonstrates the difficulty in undertaking these exposure comparisons in an industry consisting of many small, independent companies, especially when work history records are poorly maintained by those companies. Because other industries also consist of many small, independent companies (e.g dry cleaning), similar difficulties with assessing exposures may be experienced by investigators studying these industries.

CANCER MORTALITY IN US FIREFIGHTERS: 1984-1991. D. Lee,* M. Dosemeci, and L.E. Fleming (University of Miami School of Medicine, Miami, FL 33136)

Proportionate Mortality Ratio (PMR) and Mortality Odds Ratio (MOR) studies were performed on 5043 male firefighters by race using occupational data on death certificates from 24 states with over 4 million deaths. The age-time adjusted mortality experience of the firefighters was compared to all other occupations, and in the case of the MOR, all causes of death other than cancer. The overall cancer mortality ($n=1439$) was increased among both white (Observed/Expected=1.2, 95% confidence intervals=1.1-1.2) and black (1.3, 0.9-1.8) firefighters. Only prostate cancer risk was elevated in both groups: whites (1.2, 1.0-1.4) and blacks (2.2, 1.2-3.9); this risk has been seen in other firefighter studies. Tobacco-related cancer risks were not significantly increased in either group. Among white firefighters, elevated cause-specific mortality risks were found for the following cancers: kidney and renal pelvis (1.5, 1.1-2.1), melanoma (1.5, 1.0-2.2), multiple myeloma (1.5, 1.0-2.1), and stomach (1.4, 1.1-1.8). In prior firefighter studies, elevations of all these cancers have been reported. Several previous studies have reported elevations of brain cancer in firefighters. However, in this study, only black firefighters had an elevated risk of brain and central nervous system cancers (9.9, 4.2-23.2); there was no increased risk among white firefighters (1.0, 0.7-1.4). Black firefighters also had an increased cause-specific mortality risk for colon cancer (2.7, 1.4-5.3). Future studies need to identify factors responsible for differential cancer mortality risk among race subpopulations within the firefighting profession.

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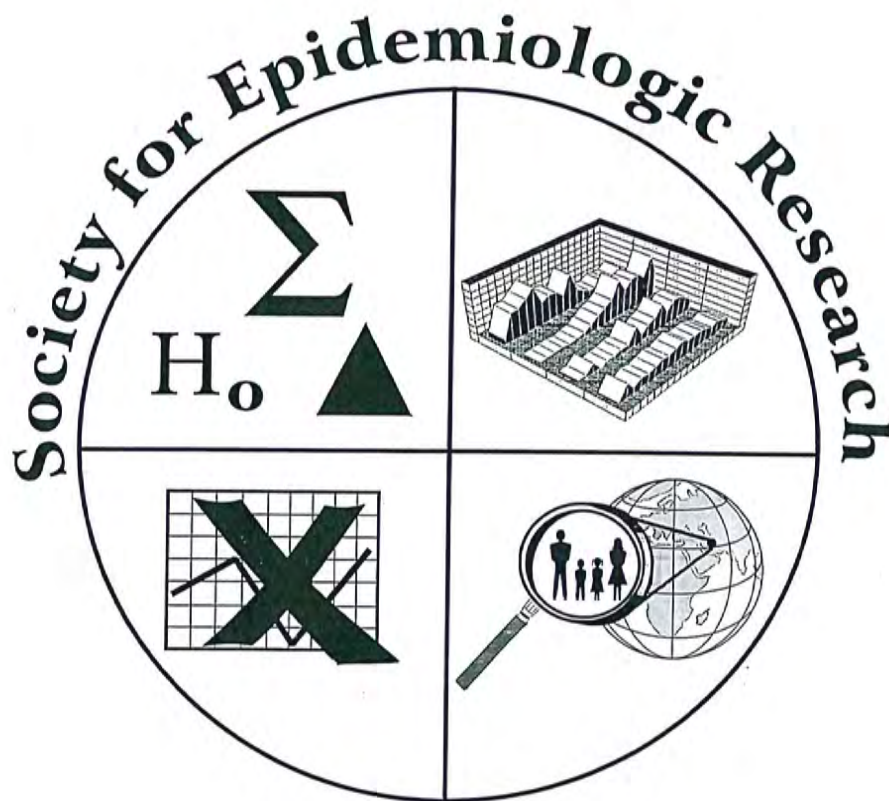
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