325

VALIDITY STUDY OF SELF-REPORTED PESTICIDE EXPOSURE AMONG ORCHARDISTS. LS Engel,* NS Seixas, MC Keifer, WT Longstreth, Jr., and H Checkoway (University of Washington, Seattle, WA 98195)

Background: Self-reported work histories are often the only means of estimating occupational exposures in epidemiologic research. The objective of this study was to examine the accuracy of recall of historical pesticide use among orchardists. Methods: All 185 orchardists in this study had previously participated in a cohort study of men occupationally exposed to pesticides. In that study, which took place from 1972 to 1976, subjects were interviewed annually and asked to list the pesticides which they had used since the previous interview. In 1997, subjects were re-contacted and asked to complete a questionnaire which elicited detailed information about their lifetime use of pesticides. Considering the 1972-76 data as the standard, sensitivity and specificity of recall were calculated for certain pesticides and pesticide categories. Results: Sensitivity of pesticide recall was good to excellent (0.6-0.9) for broad categories such as insecticides, herbicides, and fungicides, for heavily used chemical classes such as organophosphates and organochlorines, and for commonly used pesticides; it was lower and more variable (0.1-0.6) for other pesticide categories. Recall specificity was highest (0.7-0.9) for the least used pesticides and chemical classes, such as dithiocarbamates and manganese-containing pesticides, and was generally modest for the rest (0.5-0.6). Conclusion: Recall accuracy was good for commonly used pesticides and pesticide categories. This level of recall accuracy is probably adequate for epidemiologic analyses of broad categories of pesticides, but is a limitation for detecting more specific associations.

326

OCCUPATIONAL RADIOFREQUENCY EXPOSURE AND MORTALITY FROM CANCERS OF THE BRAIN AND LYMPHATIC/HEMATOPOIETIC SYSTEMS. M. Kelsh,* R. Morgan, K. Zhao, and A. Exuzides (Exponent Health Group, Menlo Park, CA 94025)

Background: The proliferation of wireless communication technologies has raised public concern regarding potential health effects of radiofrequency (RF) exposures. This is the first report of findings from a large-cohort mortality study among employees of Motorola, a manufacturer of wireless communication products. Methods: We examined all major causes of mortality, with brain cancers, lymphomas, and leukemias as *a priori* outcomes of interest. Using job titles, we classified workers into *high, moderate, low,* and *background* RF exposure groups. A total of 195,775 workers contributed 2.7 million person-years during the 1976-1996 period. Results: Using external comparisons, the standardized mortality ratios (SMRs) for RF-exposed workers were 0.53 (95% confidence interval [CI] 0.21-1.09) and 0.54 (95% CI 0.33-0.83) for central nervous system/brain cancers and all lymphomas/leukemias. Rate ratios calculated from Poisson regression models based on internal comparisons were near 1.0 for brain cancers and below 1.0 for all lymphomas and leukemias. These findings were consistent across cumulative, *peak,* and *usual* exposure classifications. We did not observe higher risk with increased exposure duration or latency. Discussion: Although this study is limited by the use of a qualitative exposure matrix and the relatively young age of the cohort, our findings do not support an association between occupational RF exposure and brain cancers or lymphoma/leukemia.

327

SLEEP DISTURBANCE AMONG FEMALE FLIGHT ATTENDANTS AND TEACHERS IN A REPRODUCTIVE BIOMONITORING STUDY. B. Grajewski,* E.A. Whelan, M.M. Nguyen, L.C. Kwan, and R. J. Cole (National Institute for Occupational Safety and Health, Cincinnati, OH 45226)

Many of the 82,000 US flight attendants (FAs) may experience circadian rhythm disruption due to travel through multiple time zones. This study investigated whether FAs are at higher risk for sleep disturbance compared to teachers, as measured by questionnaire and wrist activity monitors (actigraphs). Sleep/wake cycles of 45 female FAs and 26 teachers participating in a reproductive biomonitoring feasibility study were studied. For one menstrual cycle, participants wore an actigraph, from which sleep times were estimated with a validated sleep-scoring algorithm, and kept a daily diary. Sleep parameters included total sleep minutes in the main sleep period, total sleep minutes in 24 hours, wake minutes in the main sleep period, sleep efficiency (proportion of time spent sleeping in the main sleep period), and sleep consolidation (proportion of time spent sleeping from 10 PM to 8 AM home time). Both actigraph and diary data suggest that FAs sleep longer than teachers. However, three actigraph indices of sleep disturbance indicated that FAs incurred significant impairment of sleep compared to teachers. FAs were more likely to spend more minutes awake during their main sleep period (adjusted odds ratio (OR) = 1.2, 95% confidence interval (CI) 1.2 - 1.3); to have poor sleep efficiency (adjusted OR = 1.7, CI 1.0 - 2.9); and to have poor sleep consolidation (adjusted OR = 3.0, CI 1.1 - 8.6). In this study, actigraphy was a feasible field method for characterization of sleep disturbance in a mobile workforce. Our observations indicate that FAs experience increased sleep disturbance, which may be an indicator of circadian rhythm disruption.

328

A POPULATION-BASED STUDY OF OCCUPATIONAL EXPOSURE TO CRYSTALLINE SILICA AND SYSTEMIC LUPUS ERYTHEMATOSUS. C.G. Parks,* G.S. Cooper, L.A. Nylander-French, and D.A. Savitz (National Institute of Environmental Health Sciences, Durham, NC 27709)

Recent occupational studies suggest an association between very high-level exposure to crystalline silica and autoimmune diseases, including systemic lupus erythematosus (SLE). Silica is an abundant mineral found in rock, sand, and soil. Occupational exposure to silica is widespread in industries such as mining and construction, and other dusty trades industries. High-level exposure to respirable silica can cause pulmonary inflammation and fibrosis, and as silica may promote the development of autoimmune disease through a non-specific adjuvant effect on the immune system. We conducted a population-based case-control study of respirable silica exposure and SLE in central and eastern North and South Carolina. We collected a detailed occupational and farming history from 265 cases (90% women) and 355 controls frequency matched on age, sex, and state. Although exposure prevalence was low for most specific occupations, preliminary analyses suggest a positive association with work in certain industries, including pottery or ceramics manufacture (OR = 7.4; 95% CI 1.4-37.1) or working as a stone or brick mason (OR = 5.0; 95% CI 0.5-46.1). Farm work is a recently recognized source of potential silica exposure, and some soils in this study area contain high levels of respirable silica. Experience in farming is common in our study population, and an association was observed for men working on farms with tobacco (OR = 5.2; 95% CI 1.2-21.4) or field crops such as corn (OR = 4.3; 95% CI 1.0-20.9). Considering diverse sources of occupational exposure to silica, our results suggest that work in some jobs with silica exposure may play a role in the development of SLE.

ISSN 0002-9262
Printed in the U.S.A.

American Journal of EPIDEMIOLOGY

Volume 151
Number 11
June 1, 2000

Published for The Johns Hopkins University
School of Hygiene and Public Health
by Oxford University Press
Sponsored by the Society for Epidemiologic Research

SER SER SER
SER SER SER
SER SER SER

Society for Epidemiologic Research

ABSTRACTS OF THE 33RD ANNUAL MEETING SEATTLE, WASHINGTON, JUNE 15-17, 2000

Founded 1920 by W. H. Welch and W. H. Howell as the American Journal of Hygiene