

EXTERNAL RADIATION AND MORTALITY AMONG MOUND WORKERS. *Ajani UA, Bae S, Wilkinson G. (Department of Epidemiology, University of North Texas School of Public Health, Fort Worth, TX).

Data contained in the Department of Energy's Comprehensive Epidemiologic Data Resource were used to assess mortality and cumulative exposures to external ionizing radiation among workers at the Mound nuclear weapons facility. Records were evaluated for 3,924 employees with a radiation record, who were followed from 1947 to 1990. 627 deaths were identified based on National Death Index and Social Security Administration records. Cumulative doses were estimated from health physics records. Proportional hazards models were used to estimate the relative risk (RR) and 95% confidence intervals (CI) for mortality from all causes and from specific causes of death while adjusting for age at death, calendar year, length of follow-up, race and gender. Among employees with cumulative doses of 10 milli-Sievert (mSv), RR estimates at 10 years of induction time were: 1.18 (CI 0.95-1.46) for all causes, 1.09 (0.73-1.65) for all cancers; 1.66 (0.80-3.45) for digestive cancers combined; 1.74 (0.12-4.86) for blood and lymph cancers; 1.20 (0.60-2.41) for lung cancer and 1.01 (0.12-8.72) for all leukemias. Relative risk estimates for cumulative doses of at least 50 mSv were similar for most causes of death. However, a RR for mortality from lymphopoietic and hematopoietic cancers of 4.27 (CI 1.39-13.10) was observed. These results suggest an increased risk of mortality from lymphopoietic and hematopoietic cancers combined associated with cumulative doses to external ionizing radiation.

EXCESS URINARY TRACT CANCER AND RESPIRATORY DISEASE MORTALITY AMONG STYRENE WORKERS IN HIGH-EXPOSURE DEPARTMENTS. *A.M. Ruder, E.M. Ward, M. Dong, A.H. Okun, K. Davis-King (National Institute for Occupational Safety and Health, Cincinnati, OH 45226)

Mortality was updated through 1998 for a cohort of 5,205 Washington State workers exposed to styrene between 1959 and 1978 at two reinforced plastic boat building plants. The a priori hypothesis was that excesses in leukemia and lymphoma would be found. Standardized mortality ratios (SMR) and 95% confidence intervals (CI) used U. S. and Washington State rates. Overall, 860 deaths were observed (SMR=0.97, CI 0.91-1.04). Statistically significant excess mortality was observed for esophageal cancer (n=12, SMR=2.19, CI 1.13-3.82), prostate cancer (n=24, SMR=1.77, CI 1.13-2.63) and accidents (n=99, SMR=1.28, CI 1.04-1.56). Among 2,662 highly exposed workers who ever worked in high-exposure departments, urinary tract cancer (n=6, SMR=3.10, CI 1.13-6.75) and pneumoconioses and other respiratory diseases (n=12, SMR=2.56, CI 1.32-4.47) were significantly elevated. All 12 deaths were from "other respiratory diseases", not pneumoconioses. Urinary tract and prostate cancer had statistically significant trends toward increasing SMR with increasing duration of employment in high-exposure departments; the exposure-response relationship for "other respiratory diseases" showed no clear trend. Among 3,143 workers in the low-exposure subcohort, esophageal and prostate cancer and cirrhosis of the liver mortality were significantly elevated. No excess for leukemia or lymphoma was found. With Washington State rates the total cohort had excesses for all deaths; all cancers; cancer of the esophagus, prostate, and other and unspecified sites; cirrhosis; and accidents. Findings are comparable with those of other cohort studies of styrene-exposed workers. Although we found no evidence for excess in mortality from leukemia and lymphoma, statistical power is limited, especially for the high-exposure subcohort. Kidney cancer and respiratory disease mortality may be associated with exposure to higher levels of styrene.

U.S. POPULATION PREVALENCE, ODDS RATIO AND ATTRIBUTABLE FRACTION FOR AIRFLOW OBSTRUCTION AND EMPLOYMENT BY INDUSTRY - A STUDY OF NHANES III DATA. *E. Hnizdo, P. A. Sullivan, K. M. Bang, G. Wagner (National Institute for Occupational Safety and Health, Division of Respiratory Disease Studies, Morgantown, WV 26505)

Occupational exposure is a known risk for chronic obstructive lung disease (COPD). The contribution of employment in industries to COPD was established for the U.S. population using the third National Health and Nutrition Examination Survey (NHANES III) data. Race/ethnic- and sex-specific weighted prevalence, prevalence odds ratios and attributable fractions were estimated using 9,823 subjects age 30-75. Office workers served as a reference. In never smokers, odds ratios adjusted for age, body mass index, education, and socio-economic status were increased for these industries: rubber, plastics, and leather manufacturing (OR=3.5, 95% CI 1.02-12); the military (OR=4.0, 95% CI 1.5-10.4); and transportation equipment manufacturing (OR=3.5, 95% CI 1.1-9). In addition, African-Americans had increased odds ratio among utilities (OR=4.8, 95% CI 1.4-16), repair services and gas station (OR=3.4, 95% CI 1.2-10), transportation and trucking (OR=2.2, 95% CI 1.1-4), food manufacturing (OR=2.8, 95% CI 1.1-71), office building services (OR=4.5, 95% CI 1.3-16), and agriculture (OR=2.1, 95% CI 1.0-4) workers. Mexican-Americans had increased odds ratio among textile mill (OR=8.1, 95% CI 1.4-47); agriculture (OR=3.5, 95% CI 1.7-7), construction (OR=4.0, 95% CI 1.0-16), personal services (OR=4.6, 95% CI 2.0-10), and health care workers (OR=3.2, 95% CI 1.1-10). The fraction of airflow obstruction attributable to industry was estimated as 13% among Caucasians, 31% among African-Americans, 56% among Mexican-Americans, and 22% among nonsmoker.

TRUCK DRIVERS AND HEART DISEASE IN THE UNITED STATES, 1979-1990. *CF Robinson and Burnett CA. (National Institute for Occupational Safety and Health (NIOSH), Cincinnati, OH 45226)

Studies of truck drivers and cardiovascular disease (CVD) are limited, although studies of other professional drivers reported increased risk for CVD and its risk factors. Mortality due to cardiovascular disease among truck drivers was evaluated using data from the National Occupational Mortality Study, consisting of all deaths occurring in 28 states between 1979 and 1990. A single industry and occupation, recorded on the death certificate, coded by trained coders in state health departments was used in the study. Annual, gender-, race-, and age-specific mortality data from 1979-1990 were used to calculate proportional mortality ratios (PMRs) for short haul truck drivers (less than 3 tons, light city driving) and long haul truck drivers (more than 3 tons, heavy driving) age 15-90 using the NIOSH life-table program. Analysis was performed for black (998 short haul and 13,241 long haul) truck drivers and white (4,929 short and 74,315 long haul) truck drivers separately. Significantly elevated heart disease mortality was found for white, long haul truck drivers age 15-54: ischemic heart disease (IHD): PMR=109, 95% CI (106-112) and acute myocardial infarction (AMI): PMR=112, 95% CI (108-116). For black, long haul drivers age 15-54, significantly elevated mortality was observed for IHD: PMR=110 (101-121); AMI : PMR=114, 95% CI (101-128); and other heart disease PMR=123, 95% CI (111-136). Mortality was not significantly elevated for short haul truck drivers of either race or sex, nor for any truck drivers who died after age 65. We recommend that further studies of potentially cardio-toxic occupational exposures and their prevention be pursued for long haul truck drivers.