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WEIGHT CHANGE AND MORTALITY IN OLDER MEN. A. Spiro, III * and D.R. Miller (Normative Aging Study, Boston VA Outpatient Clinic, Boston MA 02114; Boston University School of Medicine, Boston, MA)

Several studies have reported an association between variability in body weight (i.e., weight cycling) and mortality. We tested this relation among men in the Boston VA Normative Aging Study. Our sample included 1,279 men aged 30 to 59 in 1965-69, who had 4 or more measures of body mass index (BMI) in the next 15 years. During subsequent follow-up through December 1994, 162 (13%) died. We fit a linear regression to each man's serial BMI data over the first 15 years to estimate the annual rate of change (slope) in BMI, as well as their average level (intercept) and their variability (root mean-square error, RMSE). The mean BMI level of the sample was 26.12 (SD=2.8, range = 16.3 to 38.7). The mean annual change was .043 (SD=.14), a typical man 1.75 m tall gained about 2 kg (range = -27 to 46 kg) over 15 years. The mean variability was 2.6 kg (SD=2.1, range = .12 to 23 kg). Using Cox proportional hazards regression, we predicted all-cause mortality using quartiles of rate of change and of variability in BMI, with quartile of baseline BMI and smoking status as covariates. Analyses were stratified by age group (30-44, 61%; 45-50, 39%). Men (n=54, 4%) who had died within 3 years were omitted, to control for possible subclinical disease. Among younger men, those with the most variability in BMI had marginally higher risk of subsequent mortality (OR=1.69, 95% CI=.97, 2.95), controlling for a lower BMI at baseline; smoking was unrelated. Among older men, those in the lowest quartile of BMI change (i.e., those whose BMI decreased over time) were at increased risk of mortality (OR=1.59, 95% CI=1.06, 2.38), controlling for current smoking; men in the highest quartile of BMI at baseline had a marginally higher mortality risk. These findings are consistent with others demonstrating the effects of weight loss on mortality, but provide little support for claims that variability in weight is related to mortality. The effects of age on weight loss require further study.

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NESTED CASE-CONTROL STUDY OF ESOPHAGEAL CANCER IN AUTOMOBILE MANUFACTURING WORKERS EXPOSED TO METALWORKING FLUIDS. P. Sullivan,* E. Eisen, S. Woskie, D. Kriebel, and D. Wegman (National Institute for Occupational Safety and Health, Morgantown WV 26505; University of Massachusetts Lowell, Lowell MA 01854)

Results are reported from a nested case-control study of 60 esophageal cancer deaths among 46,384 hourly employees who worked in automobile manufacturing. Workers were exposed to metalworking fluids (MWF) in machining and grinding operations. Using incidence-density sampling, controls were selected with a sampling ratio of 20:1 from among coworkers at risk at the age of death of the case, matched on year of birth, race, gender, and plant. Conditional logistic regression was used to evaluate the risk associated with cumulative exposure to each of three types of MWF (straight, soluble, and synthetic MWF), as well as with years of exposure to selected additives and components, including ethanolamine, sulfur, biocides, and a variety of metals. Esophageal cancer was found to be significantly associated with exposure to both soluble and synthetic MWF in grinding operations. These associations were observed for both cumulative exposure and duration of exposure, although linear trends were present only for duration. For years of exposure to grinding with solubles, the odds ratio (OR) reached 5.3 (95% CI: 1.6-17.1) in the category of subjects exposed more than 12 years. When cumulative exposure rather than duration was considered, the OR rose to 6.6 (95% CI: 2.4-18.1) in the middle category of exposure and then fell to 2.5. The number of workers grinding with synthetics permitted a dichotomous exposure variable. The OR for those with any cumulative exposure to grinding with synthetics was 3.8 (95% CI: 1.1-13.2). Elevated risk was also identified in association with two agents commonly added to both synthetic and soluble fluids, ethanolamines and biocides. For any exposure to ethanolamines, the OR was 4.7 (95% CI: 1.3-17.2); for biocides the OR was 3.7 (95% CI: 0.8-17.6). However, since the same subjects were exposed to grinding with synthetics, biocides, and ethanolamines, it was not possible to separate out the specific risks associated with these components. In the U.S. alone, an estimated 3.8 million workers are potentially exposed to metalworking fluids.

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CANCER RISK IN BIOLOGY RESEARCH LABORATORY WORKERS. T.A. van Barneveld,* T.M. Mooij, A.J. Sasco, and F.E. van Leeuwen (Netherlands Cancer Institute, Plesmanlaan 121, 1066 CX Amsterdam, the Netherlands; International Agency for Research on Cancer, Lyon, France)

Despite the occurrence of several cancer clusters in research laboratories, cancer risk among research laboratory workers has been little studied. Most studies in this field were carried out among chemists and chemical engineers in industry, and results were reported for males only. At present, laboratories focusing on biological and biochemical research make up the majority of the research laboratories, and a rapidly increasing proportion of laboratory workers consists of females. Therefore, a historical cohort study of cancer risk in biology research laboratory workers was started in eight European countries. The study comprises 50,000 laboratory workers and is coordinated by the International Agency for Research on Cancer in Lyon. This report presents results of the Dutch part of the study. The cohort in the Dutch study comprises 10,199 laboratory workers, 42% of whom are females. The cohort was followed for mortality from January 1960 through December 1994 (median follow-up time, 15.5 years). Vital status was ascertained for 99.2% of the cohort. Mortality in the cohort was compared with rates in the general population and, to take account of the healthy worker effect, with rates in an internal reference group, consisting of unexposed research personnel, such as mathematicians, economists and epidemiologists. Data were analyzed by calculating standardized mortality ratios (SMR) and by using Cox regression. Results show that compared to the general population biology research laboratory workers have a lower mortality from all causes combined (SMR 0.75, 95% confidence interval (CI) 0.69-0.82). Compared to the internal reference population, this favorable mortality pattern disappears and laboratory workers actually seem to have an increased mortality from all causes combined (Hazard ratio 1.29, 95% CI 1.05-1.29). Analyses by gender show that the excess mortality may be confined to male laboratory workers only (Hazard ratio for males 1.42, 95% CI 1.11-1.81; Hazard ratio for females 0.96, 95% CI 0.63-1.45). Results with regard to cause-specific mortality and results of the analysis using work histories will be presented at the conference.

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MORTALITY AMONG LICENSED PESTICIDE APPLICATORS IN FLORIDA. L.E. Fleming,* J.A. Bean, M. Rudolph, and K. Hamilton (University of Miami School of Medicine, Miami, FL 33136)

From a cohort of 37,303 pesticide applicators licensed in Florida since 1970, Proportionate Mortality (PMR) and Mortality Odds Ratio (MOR) studies were performed. Based on Florida Vital Statistics data, age-time adjusted mortality of white male applicators was compared to the general white male Florida population and, in the case of the MOR, to atherosclerotic heart disease (AHD). As found in other agriculture workers, although all cancer mortality was not significantly increased (Observed/Expected=1.04, 95% confidence intervals=0.94-1.13), cancer of the eye (5.45, 1.09-16.00), bone (3.45, 0.69-10.13), testes (3.28, 0.33-11.80), central nervous system (1.69, 1.05-2.58), and prostate (1.35, 1.00-1.70) were elevated. There was an apparent exposure dose response relationship for some cancers, based on first licensure year. Hodgkins Disease was increased (1.29, 0.13-4.65) as described in other agricultural studies, but not soft tissue sarcoma; the herbicide exposure of this cohort is unknown. Tobacco-related cancers and other associated diseases (such as emphysema and AHD) were not increased. Of interest, the risks of death from senility (2.83, 1.86-4.11) and all diseases of the nervous system (1.24, 0.84-1.76) were elevated; associations have been found between certain pesticides, and parkinsons and alzheimers diseases. When farmers were compared to commercial pesticide applicators, the farmers had a greater risk of cancer of the eye (6.38, 1.28-18.72) and prostate (1.42, 1.05-1.79). The applicators had a significantly elevated risk of all cancers (1.30, 1.02-1.58), especially cancer of the testis (16.67, 1.67-93.33). The applicators were also at increased risk for infectious diseases (2.32, 1.28-3.40), especially AIDS (1.21, 1.06-1.36). Although not statistically significant, the risks of death from senility and all diseases of the nervous system were elevated in both subpopulations, suggesting a shared exposure etiology.

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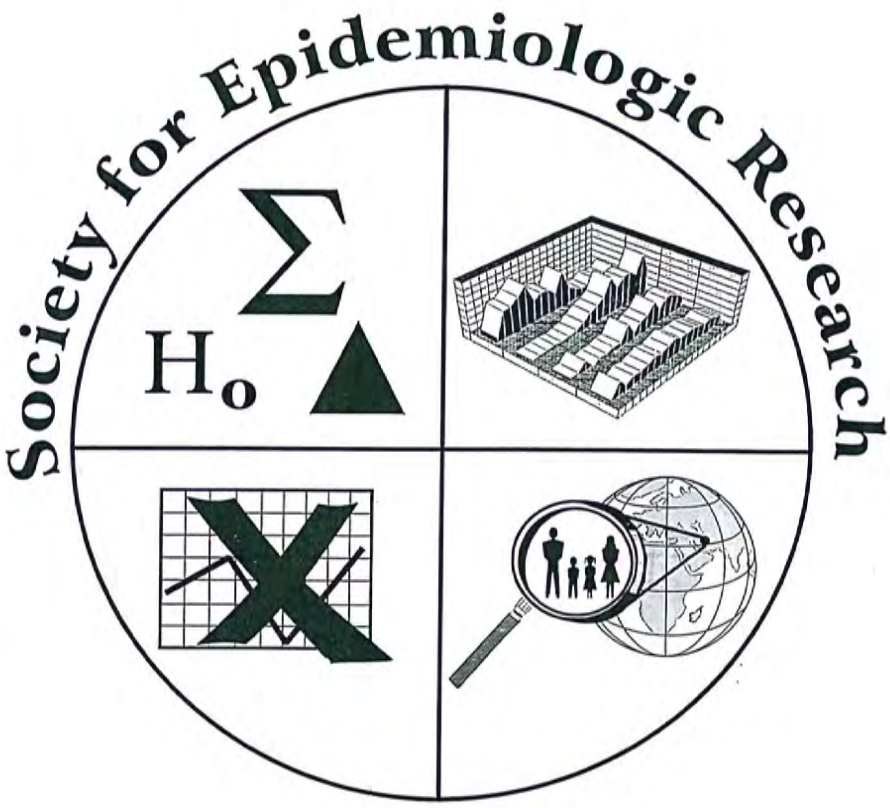

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