Podium Session 125: Occupational Health — Characterizing Exposures and Their Health Effects

Papers 185–191

185.

ASSESSMENT OF HEALTH EFFECTS OF LONG-TERM EXPOSURE TO LOW LEVELS OF CHLORINE. A. Mishriky, Suez Canal University, Ismailia, Egypt; A. Moussa, Cristal Company, Yanbu Industrial City, Saudi Arabia.

A descriptive cross-sectional design was used. A representative sample of the workers was included. Tools used for data collection were an interview questionnaire for personal and occupational history and hazards, ventilatory function tests, and urine analysis. Age ranged between 23 and 64 years, with the highest percentages Filipino and Indians, 33.3% were current smokers. Most workers were operators (66.1%). The mean duration of work was 7.2 years. Most workers were exposed to chlorine (74.4%) and heat (42.3%). The most common chronic diseases reported were hypertension (4.8%) and diabetes (3.6%), and 3.0% had family history of asthma. The most common symptoms were irritant cough (11.3 pecent), mouth irritation (6.5 pecent), and allergy (6.0 pecent). Most workers had dental problems (76.8 pecent), and 64.0 pecent had some kind of urine abnormality. About one third had decreased FVC (38.0 pecent), and decreased FEV1 (24.5 pecent), but 96.9 pecent had normal FEV1/FVC ratio. Clerical workers had statistically significantly higher prevalence of urinary abnormalities, a possible healthy worker effect. Exposed workers had significantly lower mean FEF25-85, but higher FEF.2-1.2 and PEF and FEF25. Multivariate analysis indicated that exposure to chlorine is a negative predictor of FEV1/FVC ratio, while exposure to titanium dioxide was associated with increased FEV1/FVC ratio. As for PIF, exposure to chlorine and job category were statistically significant negative predictors. Exposure to titanium dioxide is not associated with negative changes in pulmonary functions, whereas chronic low dose exposure to chlorine is associated with obstructive pulmonary function changes. It is recommended that exposure to chlorine be closely monitored through environmental assessment, with regular periodic assessment of pulmonary functions.

186.

WITHDRAWN

187.

NAIL SALONS: WORK ENVIRONMENT CHARACTERISTICS AND HEALTH EFFECTS. C. Roelofs, L. Azaroff, C. Holcroft, University of Massachusetts Lowell, Lowell, MA; H. Nguyen, T. Doan, Viet AID, Boston, MA.

Nail salons dot every Main Street and mall in the United States and are a common source of indoor air quality complaints, yet little is known about the nail salon work environment or nail salon work-related health effects. Nail salon products contain solvents, sensitizers, and other hazardous ingredients, but in low volumes. A project initiated by university-based researchers and a Boston-area Vietnamese community development corporation, was undertaken to better characterize this work environment and potential health effects. Seventy-one Vietnamese nail techs living in the Boston area were interviewed in a survey of their general and work-related health and work environment. Health questions concerned respiratory, dermal, musculoskeletal symptoms, and allergies. Work environment questions asked about exposures, ventilation, and personal protective equipment, and hazard knowledge. We will discuss results from these survey data as well as background on chemical hazard assessment in these small businesses.

188.

WORK-RELATED ASTHMA IN MASSACHUSETTS HEALTH CARE WORKERS. E. Pechter, P. Hunt, Massachusetts Department of Public Health, Boston, MA.

Workers in health services represent the largest group of workers with confirmed work-related asthma (WRA) in ten years of data in the Massachusetts Occupational Health Surveillance Program (132/437, 30%). The Massachusetts surveillance system relies primarily on physician reports (mandated by public health law), to identify individuals with diagnosed WRA. Other cases are identified through hospital records. Telephone interviews with the individuals confirm the association with work and obtain more information about industry, occupation, exposures, and other factors. Nurses (69, 16%) represent the largest occupational group among cases identified from 1993-2002. Workers in health services report a variety of triggers, including cleaning products, latex, indoor air pollution, glutaraldehyde, and miscellaneous chemicals. Exposures vary by occupation. Nurses and dental health care workers report exposures to latex; laboratory workers report glutaraldehyde and formaldehyde; while office workers report miscellaneous chemicals and building renovation-related triggers. This sentinel surveillance system is funded by NIOSH and is also conducted in three other states. Health care workers accounted for the greatest number of confirmed work-related asthma cases in two of the other three states. Sentinel surveillance allows identification of individual workplaces where conditions pose a risk for all workers. On-site inspections have focused on control of glutaraldehyde, selection of cleaning and disinfecting products, ventilation, and replacement of latex gloves. Identification of individuals with WRA allows workplace specific intervention as well as broad-based prevention activities. Work-related asthma is a serious obstructive lung disease that impacts the work life and home life of many health care workers. WRA causes lost work days, impaired work effectiveness and, in some cases, results in intractable disease and career-ending illness. Work-related asthma can be prevented in health care workers; surveillance provides information for effective prevention.

189.

EVIDENCE OF FECAL CONTAMINATION WITHIN A MACHINE AT A MANUFACTURING SITE. L. Ewers, L. Tapp, C. Achutan, NIOSH, Cincinnati, OH.

For over a year, workers at a manufacturing plant complained of gastrointestinal illness and malodors associated with a metal stamping and washing machine. In response for a request for assistance, NIOSH industrial hygienists from the Health Hazard Evaluation (HHE) Program collected bulk water and sludge samples from the suspect machine and two comparison machines, and a NIOSH medical officer interviewed workers. Two bulk samples from the water tank of the suspect machine contained enteric bacteria in concentrations up to 1.0×10^7 colony forming units/milliliter (CFU/ml). Enteric bacteria identified from bulk water and sludge from the suspected machine included *Citrobacter koseri* (5.0×10^6 CFU/ml), *Enterobacter agglomerans* type 1 (3.0×10^6 CFU/ml), *Enterobacter agglomerans* type 2 (3.0×10^6 CFU/ml), and *Citrobacter youngae* (2.9×10^6 CFU/ml). *Aeromonas hydrophila*, a bacterium common in freshwater and capable of causing gastroenteritis in healthy individuals, was also identified (5.7×10^6 CFU/ml). Two comparison machines contained no bacteria associated with fecal contamination. Among the 20 workers located near the machine, eight (40%) reported having gastrointestinal illness during the six months prior to the NIOSH visit. Stool samples were collected on three employees who reported active diarrhea. One stool sample grew *Aeromonas veronii biovar sobria*, which is associated with diarrhea; the other stool samples did not grow pathogenic bacteria. After cleaning with a 1/100 dilution of sodium hypochlorite/water, a water sample from the suspect machine remained contaminated with enteric bacteria (7.0×10^7 CFU/ml). Although plant management disconnected and capped a drainage pipe linking the machine and a sewer line, bulk sampling 1-1/2 months later still revealed bacteria associated with fecal contamination. Recommendations included education for improved hygiene and use of an experienced contractor for disinfection of the machine.

190.

CARBON/COKE FIBER STUDY AT EIGHT PLANTS PRODUCING PETROLEUM COKE. J. Galvin, ConocoPhillips, Bartlesville, OK; L. Maxim, R. Niebo, Everest Consulting Associates Inc., Cranbury, NJ; A. Segrave, Clayton-Bureau Veritas, Kinnesaw,

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