

information obtained by questionnaire. To the extent possible, the on-site follow-back survey replicates the methodology used during the initial evaluation, including process and facility observation, employee interviews, and review of exposure and health records. By documenting what worked and what did not, NIOSH hopes to produce practical information for improving the HHE program and informing other interested parties. This information then becomes a valuable resource for others who play a role in preventing occupational diseases, including unions and the medical community.

To date, three on-site follow-back evaluations have been completed. Results from these evaluations indicate that NIOSH recommendations were implemented to various degrees. Examples of specific findings from the selected follow-back evaluations include expedited purchasing of new equipment at a metropolitan sewer district, improvement of engineering controls at a neon sign facility, and general increased exposure awareness at all facilities. The follow-back program will continue to evaluate HHE recommendations to validate questionnaire responses and monitor changes in workplace exposures.

358. NIOSH HISPANIC OUTREACH PROGRAM.

M. Rodriguez, M. Kawamoto, NIOSH, Cincinnati, OH.

Hispanics are now the largest minority population in the U.S. and it is expected that the Hispanic population will double by 2020. Hispanics are overrepresented in the most hazardous industries: construction, agriculture, food processing, and apparel manufacturing. These industries have numerous occupational hazards with associated chronic effects. The major obstacle faced by employers and occupational safety and health professionals is a language barrier since many of the Hispanic employees do not speak English.

NIOSH has begun various efforts to inform Hispanic workers about health hazards in the workplace. NIOSH has developed a toll-free information number with English and Spanish response options, a website with information and publications in Spanish and links to other Spanish language websites, and the Health Hazard Evaluation (HHE) Program's information pamphlet and request form have been made available in Spanish. NIOSH is exploring Hispanic outreach through radio and television by incorporating health-related plots into programs. The NIOSH Hazard Evaluation and Technical Assistance Branch has developed a pilot project on Hispanic outreach in Cincinnati, Ohio. The objective of this project is to increase awareness about the occupational safety and health issues and resources, particularly the NIOSH HHE program. The outreach strategy involves the participation of local and state government agencies and community-based organizations. Through a coordinated

effort, these groups will provide Hispanic workers in the Cincinnati area with information about how to get help on work-related issues.

Hispanic outreach efforts are receiving national attention. NIOSH, OSHA, EPA, and many state and city governments have implemented some form of Hispanic outreach activities. The task is complex, but providing information and access to occupational safety and health services is the first step toward reducing the number of work-related fatalities and preventing work-related illnesses among Hispanic workers.

Laboratory and Health Care Papers 359-364

359. HEALTH, SAFETY, AND ENVIRONMENTAL MANAGEMENT CHALLENGES IN START-UP OF LARGE MULTI-DISCIPLINARY RESEARCH BUILDINGS. R. Furr, L. Gibbs, Y. Kim, L. Teng, Stanford University, Stanford, CA.

At Stanford University, the recent construction and development of two large multi-disciplinary research buildings has provided EH&S the opportunity to address safety and compliance problems before they become entrenched. This presentation discusses the steps taken, challenges encountered, and lessons learned in ensuring the safe relocation and start-up of research laboratories in those buildings. Issues covered include the role of an institutional laboratory design guide, large scale chemical transportation and handling, effective managing of unwanted chemicals, tracking of chemical inventory migrations, ensuring good ergonomic setups, and post move follow-up. Differences in ensuring a safe laboratory operation in the traditional laboratory setting versus open, shared laboratory spaces are outlined and the challenges encountered, along with solutions provided, are discussed. Conclusions are drawn as to the importance of building governance in the open laboratory setting and the need for early programmatic planning and involvement by EH&S professionals.

360. PRODUCTIVITY AND ERGONOMICS IN A FORENSIC TOXICOLOGY DRUG TESTING LABORATORY. S. Chervak, U.S. Army CHPPM, Aberdeen Proving Ground, MD; A. Yeager, Tripler Army Medical Center, Tripler AMC, HI.

A disproportionately large number of workers at an Army toxicology laboratory were reporting symptoms of cumulative trauma disorders (CTDs). The purpose of the evaluation was to determine whether the current workstation designs could be improved to eliminate discomfort, promote efficiency, and prevent CTDs. After an analysis of the specimen processing procedures, it was determined that most of the laboratory workers' complaints were

associated with the preparation segment of the procedure.

The procedure associated with the preparation segment of the process involved the worker removing the lid of the specimen jar, pouring a small amount of the specimen into a test tube, replacing the specimen jar lid, and labeling both the specimen jar and the test tube. The task was very repetitive since the specimen laboratory processed up to 3500 specimens per day. The task was also very labor intensive because each specimen sample needs to be individually prepared. The toxicology laboratory had experimented with mechanized lid removal systems, but these systems were not feasible due to the decrease in productivity that resulted.

The authors developed a prototype lid removal device that uses a battery-operated screwdriver and fixture to remove the lid tops mechanically. The device eliminates the repetitive motion and force associated with removing and installing the specimen jar lid. A fixture was also developed that suspends the lid removal device above the workstation. The fixture eliminates the forces associated with holding the lid removal device as well as any awkward postures associated with reaching for the lid removal device. The implementation of the lid removal device was so effective in increasing productivity rates and reducing complaints of CTDs that four more devices have been built and are currently being implemented.

361. GENERATION OF TOXIC GASES FROM REACTION OF GUANIDINE ISOTHIOCYANATE-CONTAINING REAGENTS WITH BLEACH. S. Paik, X. Wu, Abbott Laboratories, North Chicago, IL; J. Park, Seoul National University, Seoul, Republic of Korea.

Guanidine isothiocyanate (GITC) is commonly used in nucleic acid testing (NAT) applications in clinical laboratories as an agent for denaturing proteins and lysing cells or microorganisms. Bleach, with 5% sodium hypochlorite (NaClO) in solution, is often used as a disinfectant and decontamination agent in such laboratories. During cleanup procedures for spilled GITC-containing reagents or treatment of GITC-containing wastes, if bleach is applied, workers in the vicinity of the area may potentially be exposed to toxic gases. This study examined several gases released from the reaction between NaClO and GITC and addressed concerns regarding the safe handling of GITC-containing reagents. A test chamber was constructed to collect the gases with selected adsorbent tubes, using OSHA- and NIOSH-validated methods. To sample the air as completely as possible, the glass chamber was sealed air-tight with three outlets on the top, one for adding bleach into the reagent solution, one for collecting the resultant gases, and the third one for introducing diluent air. By attaching a Tedlar bag at the tip of the

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