and analysis and provides the results in a timely manner to inform residents and others. The goal of this study was to determine the practicality of using the portable XRF analyzer in the field for analysis of sieved soil for lead. Other objectives of the study included determining the effects of moisture on sieving relative to the analysis of lead in soil. When performing the field analysis, sieving was performed (<125 mm) and grinding was performed to reduce the particle size of the fraction (>=125). A moisture reading was also taken for use in determining the moisture level of the soil. Testing was preformed using the soil from yards of Cincinnati area housing built before 1978. 120 samples were collected and analyzed at 30 different locations. The mean lead level before drying the samples was 816 ppm with a range of 22.8 ppm to 9080 ppm. The percentage saturation ranged from 10% to 90%. At 65% saturation or higher soil did not pass through the sieve, therefore the field method with sieving is not practical when the soil is 65% saturated or higher.

110.

PORTABLE MONITORS FOR AIRBORNE LEAD AT MINING SITES. P. Drake, NIOSH, Spokane, WA; N. Lawryk, NIOSH, Morgantown, WV; A. Sussell, B. King, K. Ashley, NIOSH, Cincinnati, OH

Field portable instruments can be useful tools in protecting workers from excessive airborne lead exposures. At the present time, the most commonly used methods for measuring airborne lead involve collecting air samples on filters and sending them to an off-site laboratory, where a variety of analytical methods can be used. Two methods for measuring airborne lead using field portable instruments have been developed by NIOSH: method 7702 uses X-Ray Fluorescence (XRF), and method 7701 uses anodic stripping voltammetry (ASV). This study evaluated the two portable methods at mining sites. Air samples were collected throughout two mills that processed ore from nearby mines, where the primary constituent of the ore was lead sulfide. Air samples were collected on 37 mm mixed cellulose ester membrane filters. At the end of the work shift, the filter cassettes were collected and taken to a room off-site for analysis by the two portable methods. The samples were first analyzed by XRF, and then by ASV. Calibration was verified on both instruments according to standard procedures. The samples were then sent for confirmatory analysis via flame atomic absorption (FAA) according to NIOSH method 7082. Pair-wise comparisons between the methods using the paired t-test showed no statistically significant differences between ASV and FAA ($p>0.05$); however, the comparison between XRF and FAA was statistically significant ($p<0.05$). Lead concentrations measured by the portable instruments were found to be highly correlated with the laboratory method ($R^2 > 0.93$), indicating that these methods are well-suited as screening methods for airborne lead at mining sites.

111.

PERFORMANCE VERIFICATION TEST FOR FIELD-PORTABLE MEASUREMENTS FOR LEAD IN DUST. A. Dindal, R. Jenkins, C. Bayne, Oak Ridge National Laboratory, Oak Ridge, TN; E. Koglin, U.S. EPA, Las Vegas, NV

WITHDRAWN

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112.

OCCUPATIONAL EXPOSURES TO INFECTIOUS DISEASES DURING BODY PIERCING: AN EVALUATION OF TWO PIERCING SALONS. A. Weber, NIOSH, Atlanta, GA

In 1999, NIOSH responded to requests from two piercing studios in Florida to evaluate potential occupational exposures to infectious diseases during body piercing. Both requests were prompted by a Florida ruling requiring the Department of Health to regulate body piercing studios. The primary purpose of the ruling is to prevent infections in those receiving piercings, not in those performing piercings. The lack of infection control awareness in this young work force, and the absence of available safer needlestick devices were identified as unique challenges in dealing with this occupational group. A qualitative risk assessment consisted of observing piercing practices, disposal of sharps and infectious waste, disinfection of surfaces, sterilization of instruments, and use of personal protective clothing. While a multitude of articles have been published regarding infections at the site of piercings, there were no available articles addressing occupational risks to piercers. Observations indicated that needlesticks were the primary hazard noted during piercings and were more likely to occur when the unprotected needle was exiting the piercing site. Sharps injuries were also possible during the transfer of contaminated needles from the piercing area to sharps containers. Cross-contamination of instruments and surfaces was identified as a potential hazard, and while a variety of disinfectants were available in the studios, latex gloves were used while handling these chemicals. Findings from these evaluations suggest a great need for educating this work group on infection control practices and the benefits of receiving hepatitis B virus vaccinations. In addition, an exposure control program, as required by OSHA, should be prepared at these facilities including post-exposure follow-up. Since this industry has been largely overlooked, basic surveillance activities are needed to determine the number of licensed body piercers, rates of needlesticks/sharp injuries among them, and whether they are being occupational exposed to infectious diseases.

113.

THE NEEDLESTICK SAFETY AND PREVENTION ACT AND REVISIONS TO THE OSHA BLOODBORNE PATHOGENS STANDARD AND COMPLIANCE DIRECTIVE. M. Sands, U.S. DOL/OSHA, Washington, DC

OSHA has revised its Bloodborne Pathogens Standard (29 CFR 1910.1030), as directed by Congress' passing of the Needlestick Safety and Prevention Act, which became enforceable July 2001. OSHA's Revised Compliance Instruction, CPL 2-2.44E, provides guidance and direction to OSHA Compliance Officers as well as the regulated community on the engineering control, needlestick log and employee involvement requirements of the newly revised OSHA rule. This presentation provides an overview of the direction and guidance given in the new CPL, as well as an overview of OSHA enforcement statistics in affected industries to date.

114.

COMPARISON OF WASTE ANESTHETIC GAS EXPOSURES TO OPERATING ROOM STAFF DURING CASES USING LARYNGEAL MASK AIRWAY (LMA'S) AND ENDOTRACHEAL TUBES (EET'S). M. Tortora, Hartford Hospital, Hartford, CT

Three specific anesthetic agents (isoflurane, desflurane and sevoflurane) are used throughout the health care industry. Personal exposure monitoring was conducted on operating room staff and PACU nurses, to determine their exposures to waste anesthetic gases. The Occupational Safety and Health Administration has set a recommended exposure level of 2 parts per million for an eight-hour time weighted average. Staff exposure can be attributed to leakage of the anesthesia equipment, technique of the administration of anesthetics to the patients and the method of patient intubation. This study compares the levels of waste anesthetic gases present in the breathing zone of the intubated patient during anesthesia and their correlation with employee exposures. Hospitals in the United States generally use two types of anesthetizing tubes. The Laryngeal Mask Airway or LMA, reaches to the larynx and is an alternative to the face mask. The endotracheal tube, or ETT, is longer and reaches well into the trachea, resulting in deeper anesthesia and less leakage of anesthetic agents. Ambient levels of anesthetic gases were measured in the breathing zones of intubated patients. Levels were found to be higher in the breathing zones of patients intubated with LMA's as compared to ETT's. This results in the conclusion that higher personal exposures to anesthetic gases could indeed be attributed to the type of tube used on a case by case basis.

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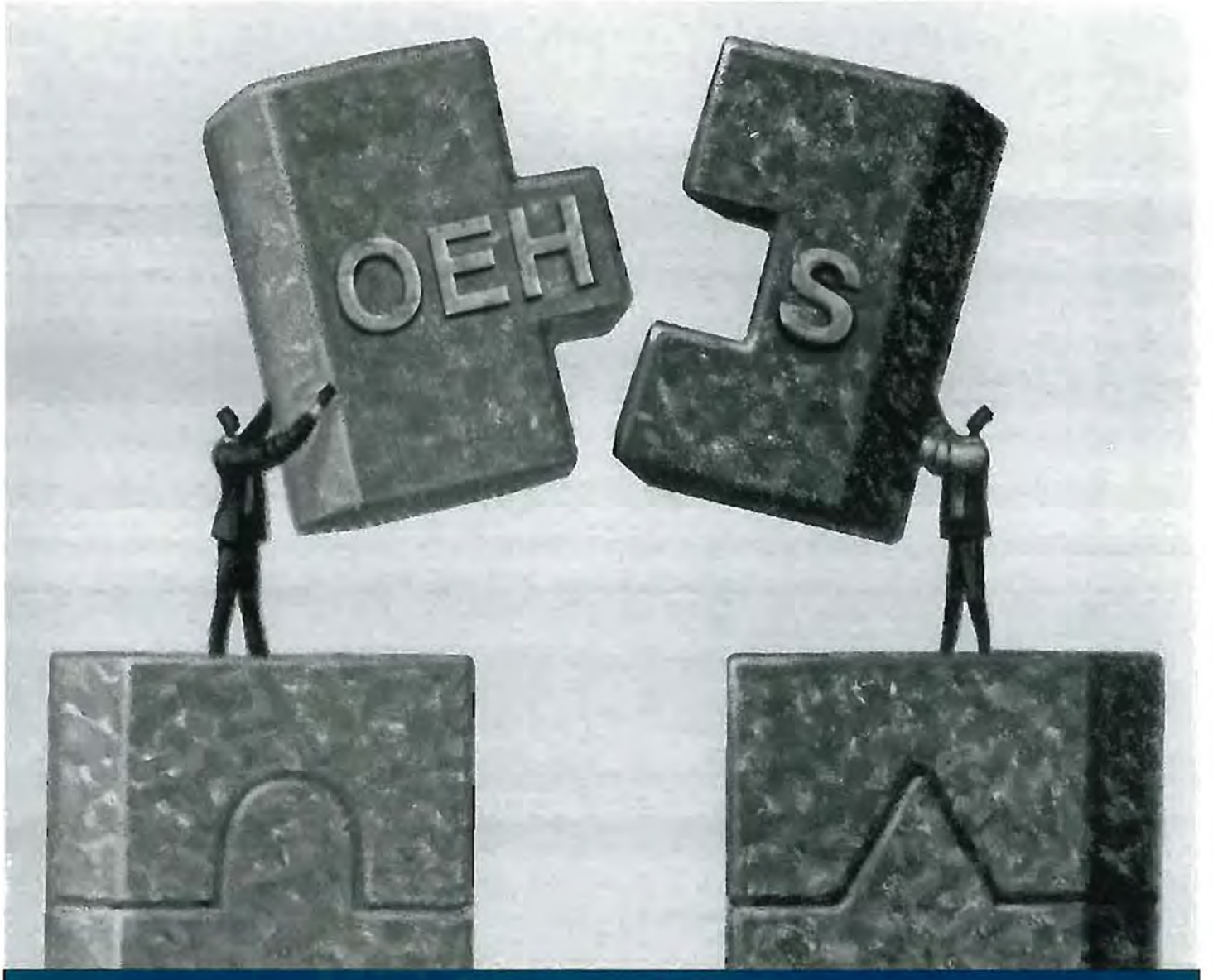

ABSTRACTS

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2002 Abstract Index by Session Topic

PF 101 Agricultural Health and Safety

Papers 1–6

1.

RELATIONSHIPS BETWEEN WORK EXPOSURE AND RESPIRATORY OUTCOMES IN POULTRY WORKERS.

S. Kirychuk, J. Dosman, P. Willson, L. Dwernychuk, University of Saskatchewan, Saskatoon, SK, Canada; J. Feddes, A. Senthilselvan, C. Ouellette, University of Alberta, Edmonton, AB, Canada

A pilot study was conducted on 74 poultry barn workers in Western Canada during the winters of 1998–2000. General respiratory health, current, chronic and work related respiratory symptoms; general work duties, and work-site factors were ascertained, pre-exposure, by questionnaire. Personal airborne exposure levels and changes in symptoms and lung function were measured across the work-shift for all workers. Workers were classified according to the type of poultry operation (floor based, n=53; cage based, n=13) in which they worked. There was no significant difference in daily hours spent in the barn between those who worked with caged poultry (5.41±2.35 hours) and those who worked with floor-based poultry (4.42±2.48 hours). Age of birds was 47.10±58.36 days for floor based versus 155.91±63.01 days for cage based facilities. There were no significant differences in personal environmental measurements between cage-based and floor-based facilities (ammonia 13.22±13.70 ppm, 17.34±16.35 ppm; total dust 5.74±4.85mg/m^3, 10.01 ±8.84 mg/m^3; endotoxin 6046±6089 EU/m^3, 5457±5934 EU/m^3 respectively). There were no significant differences in across work-shift change in pulmonary function indices between workers from cage and floor-based operations. For the entire sample total dust dose (work hours/day x total dust) significantly correlated with across-shift change in FEV_1, whereas endotoxin dose and ammonia dose did not. Stocking density was significantly correlated with average ammonia (ppm, p=0.002) and ammonia dose (ppm x work hours/day; p=0.004) in floor based operations and with total dust (particles/ml, p=0.002) in cage based populations. Stocking density was also significantly correlated with chronic cough (p=0.003) and across work-shift cough (p=0.05) and chest tightness (p=0.06) for workers from floor based operations; and with phlegm when working (p=0.018) and chest tightness across the work-shift (p=0.004) for workers from cage based operations. Type of poultry production operation and therefore type of work exposures appear to significantly impact symptoms experienced by workers exposed to these atmospheres.

2.

DUST GENERATION SYSTEM FOR AGRICULTURAL SOIL DUST.

K. Lee, R. Domingo-Neumann, R. Southard, UC Davis, Davis, CA

Agricultural workers are prone to exposure to mixed dust of inorganic and organic compounds. Diverse working conditions and operations in agriculture make direct measurements of the mixed dust exposure difficult. This study was conducted to develop a new dust generation system to determine possible exposure potency indicators of soil samples. The dust generator consists of a blower, a rotating chamber and a settling chamber. The rotating chamber has inner baffles to provide sufficient agitation of the samples while the chamber is rotating. A blower provides air into the rotating chamber, and the suspended dust is moved to the settling chamber through a perforated pipe. A small fan inside the settling chamber helps maintain suspension of the dust. Various size fractions of dust are sampled on filters suspended in the chamber via outlet ports and attached pumps. Air pressure is released through a filter plate mounted on the wall of the settling chamber. Various operating conditions were evaluated: air intake from blower, speed of rotation, soil mass and sampling time. To evaluate the characteristics of dust from the system, we collected dust samples from agricultural fields while the soil was prepared for