

Regulatory, licensure and policy requirements have been loaded into a database that is maintained on the hospital's server. Safety, Quality and Infection Control staff uses this database to identify various departments and locations within the hospital that are scheduled for an assessment. The required assessments are then downloaded to a handheld computer and the assessment is performed. Dropdown (standardized) observations and recommendations are used to record the findings. Completed assessments are uploaded into the database, where reports and follow-up actions are created directly from the data that is uploaded from the handheld.

Use of the handheld computers and coordination of the various assessment protocols has resulted in a reduction of 25% to 50% in the length of time required to perform an assessment and to generate an assessment report. The quality of each assessment has improved as the result of the standardization of our assessment processes and the use of the predefined assessment observations and recommendations.

Attendees will leave this presentation with:

1. A better understanding of the types of assessments that hospital based health and safety professional may be involved.
2. A design for an interdisciplinary approach to conducting EHS assessments in a hospital setting.
3. A better understanding of how hand-held technology that can be used to improve the assessment process.

## **274.** **CURRENT METHODS AND FUTURE TRENDS IN VIDEO EXPOSURE MONITORING.** M. Gressel, R. Kovein, NIOSH, Cincinnati, OH

Video Exposure Monitoring is a technique that allows the identification of specific tasks which contribute most to a worker's occupational exposure to hazardous agents. This technique, developed over the past 15 years, has undergone many changes. This presentation will discuss the current state-of-the-art methods and possible future directions for development of Video Exposure Monitoring.

Video Exposure Monitoring uses direct reading instruments and video recordings to tie worker exposures to job activities, identifying activities that impact a worker's overall exposure. Changes in direct reading instrumentation over the years have made Video Exposure Monitoring easier, by providing more reliable monitors with many useful features, such as integrated data loggers. Video equipment has also dramatically improved, becoming smaller and easier to use, while improving image quality. A final product of this technique is a video recording combining the graphical representation of the worker's exposure with the job activities being performed. These video recordings can be used in training, demonstrating how activities can affect the worker's exposure. The hardware needed to overlay the exposure data is relatively inexpensive and

simple to use. The software generating the graphical representation of the exposures was written specifically for this application. In addition, data collected through this technique can help predict the impact of a particular control, allowing safety and health professionals to prioritize control efforts to make the best use of scarce control resources.

As technology changes, many aspects of Video Exposure Monitoring may be impacted. Direct reading instruments are continually improving, with smaller, more specific instruments becoming available. The move to digital video offers opportunities for improvements, allowing many of the video overlay functions to be carried out on a personal computer. As these changes progress, Video Exposure Monitoring should gain acceptance and be used by more occupational safety and health professionals practicing in non-research roles.

## **275.** **DEVELOPMENT OF A COMPUTERIZED STRATEGY PLANNING AND DATA MANAGEMENT SYSTEM FOR EXPOSURE ASSESSMENT BASED ON P-D-C-A CYCLE.** S. Lin, Y. Hwang, B. Chu, Industrial Technology Research Institute, Hsinchu, Taiwan Republic of China

The purposes of conducting workplace exposure assessments are various including risk assessment and management, compliance determinations, evaluation of engineering controls, selection of PPE, epidemiological studies, etc. Each purpose requires slightly different approaches. The Labor Safety and Health Act of Taiwan's Government dictated that the employers be responsible for performing exposure assessments regularly to identify and evaluate possible hazards in the workplace.

However, due to the lack or incomplete sampling strategy of exposure assessments utilized by industries, the effort may be fruitless. To improve the technical omission, the Council of Labor Affairs begins to amend the regulation that developing an adequate sampling strategy is the essential part before accomplishing exposure assessments. Because of the complication of assessment strategy, development of computer software that incorporates all the needs of assessment should be necessary for assistance.

A computerized strategy planning and data management system has been developed based on P-D-C-A cycle. The information system runs on common PCs and facilitates not only on the communication of substance hazards, but also planning, recording, modeling, and pattern analysis of historical exposure data for epidemiological studies. Through various trends, similar exposure group, dose-response relationship analysis, occupational disease prone employees and high-risk working groups can be identified. These results can provide administrative staff with systematic information for the design and implementation of preventative measures.

## **276.** **DEVELOPMENT AND USE OF AN COMPLIANCE AUDIT AND MANAGEMENT DATABASE.** R. Moore, URS Corporation, Sacramento, CA

Regulatory compliance is a primary issue for government and private sector organizations. To address this, the National Park Service (NPS) developed an audit tool. The tool, Environmental Compliance Audit Tool (ECAT), functions as an audit database to facilitate audits, data management, and reporting. It supports the management, collection and presentation of findings and corrective actions. The ECAT can be used by auditors or administrative personnel to enter or examine findings and corrective actions. The ECAT improves audit thoroughness, project efficiencies, cost effectiveness, and report quality. This complex and powerful database is an Access™ 97 platform, capable of searching TEAM Guides, NPS EnviroCheck Sheets, historical findings and corrective actions.

The ECAT includes electronic protocols with key word search, data look-up and entry forms, management and statistic reports. The ECAT is based on a three-tier drill-down key word search functionality. After drilling-down to a limited set of matches, the auditor reviews the regulatory requirements to confirm applicability of the match to their needs. ECAT analysis and reporting features are useful in assisting exit briefs, management allocation of resources to address financial, staffing, environmental risk mitigation and control needs. The ECAT generates draft and final reports that can be printed or exported as Adobe Acrobat files. Reports can include hundreds of digital images that are downloaded via a digital camera to the database.

The ECAT leverages knowledge retained in the database to identify conditions and create corrective actions for findings similar to those identified by previous auditors. This enables the auditor to utilize the observations collected during earlier audits. It creates findings correlated to citation, and generates statistic or standard reports with digital images of specific conditions associated with findings. The ECAT assists data collection, recording, and management to ensure success by controlling consistency and minimizing costs.

## **277.** **EH&S INVENTORY MANAGEMENT PROGRAM ON THE WEB.** W. Jancuk, AT&T, Parma, OH; D. Nargis, AT&T, Chicago, IL; R. Collipi, AT&T, Londonderry, NH

Management of compliance-related data can be especially daunting, and success requires the development and implementation of practical, user-friendly applications. These systems must be designed to help reduce the time, cost, and risk associated with the operational aspects of environment, health and safety compliance. The advantages of the Internet and e-business to computer applications present the

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## ABSTRACTS



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## PF 101 Agricultural Health and Safety

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### 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<sup>3</sup>, 10.01 ±8.84 mg/m<sup>3</sup>; endotoxin 6046±6089 EU/m<sup>3</sup>, 5457±5934 EU/m<sup>3</sup> 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<sub>1</sub>, 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