286.

A FRAMEWORK FOR ACCESSING INFORMATION, METHODS, AND MODELS FOR OCCUPATIONAL DERMAL RISK ASSESSMENTS. P. Hakkinen, A. Maier, Toxicology Excellence for Risk Assessment, Cincinnati, OH; L. Rheins, T. Franz, DermTech International, San Diego, CA; G. Talaska, University of Cincinnati, Cincinnati, OH.

The development and standardization of information, methods, and models to assess occupational skin exposures is occurring globally via company, trade association, university, government agency, and other efforts. Important examples include European Union-sponsored Risk Assessment for Occupational Dermal Exposure to Chemicals (EU-RISKOFDERM) research projects, the development of new evaluation approaches by the United States National Institute of Occupational Safety and Health, and the development of new software such as the Chemical Screening Tool For Exposures & Environmental Releases (ChemSTEER) by the United States Environmental Protection Agency. Providing a systematic approach for evaluating this plethora of information will facilitate the use of the [illegible] odels for xample, izing rele- age the [illegible] upational exposure limits, and will help identify additional research needs and opportunities for refinement. A framework for accessing and utilizing the current information, and for understanding [illegible] ient re face- eloped.

287.

DEVELOPMENT OF A RECOMMENDED EXPOSURE LIMIT FOR A COMPLEX MIXTURE—ASPHALT. M. Sweeney, J. Wess, R. Zumwalde, L. Olsen, NIOSH, Cincinnati, OH.

The National Institute for Occupational Safety and Health (NIOSH) is updating its Recommended Exposure Limit (REL) of 5 mg/m^3 (15-minute ceiling) for asphalt fume, which is intended to prevent eye and respiratory irritation. Asphalt is a complex mixture of paraffinic and aromatic hydrocarbons and heterocyclic compounds. Some polyaromatic hydrocarbon (PAHs) constituents are classified as human carcinogens. The complexity of the mixture provides considerable challenge to the development of an occupational exposure limit.

Nationwide, approximately 350,000 workers are involved in the application of asphalt paving or hot asphalt roofing materials, or the manufacture of roofing products. In 2000, the National Institute for Occupational Safety and Health (NIOSH) evaluated the scientific evidence concerning the potential health effects of occupational exposure to roofing and paving asphalts and asphalt-based paints. Although existing data are limited for quantifying acute and chronic health risks of asphalt exposure, they indicate that workers may be experiencing adverse acute health effects. Furthermore, NIOSH determined there was sufficient evidence to conclude that roofing asphalt fumes and asphalt-based paints should be considered potential occupational carcinogens. Subsequent to this determination, NIOSH performed additional analysis of health data to evaluate the relationship between exposure to asphalt fumes and acute respiratory symptoms. Because of the risk for cancer, several of the PAHs that comprise the complex mixture of chemicals found in asphalt fumes were also evaluated to determine the feasibility of developing PAH specific RELs. This presentation will describe: (1) data used to determine feasibility of developing a REL, (2) evaluation of an exposure-response relationship for acute health effects, and (3) research needed to evaluate risk for acute and chronic health effects from exposure to different types of asphalt fumes, and to better characterize and control fume exposures.

Hazard Assessment

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288.

MODELING WORKER AND COMMUNITY EXPOSURES FROM HOSPITAL STERILIZERS. N. Tran, P. Kresta, J. Reimer, Health Sciences Centre, Winnipeg, MB, Canada; J. Elias, OHG Consulting, Winnipeg, MB, Canada.

Ethylene oxide (EtO) is widely used as a sterilant for heat-sensitive and moisture-sensitive materials in the health care sector. Studies have shown EtO to have various adverse effects in humans and animals, including carcinogenicity, neurotoxicity, cataract formation, reproductive effects, and mutagenicity. In sufficiently high concentrations, it can also cause skin and eye irritation, and vomiting and diarrhea.

EtO is released from the hospital sterilizers through abators and stacks. These emissions can potentially affect (1) workers on the building roofs, (2) people inside the building due to emissions drawn back into the building, and (3) people in the surrounding community.

Exposure evaluations were conducted at two structurally different facilities, a large multi-building tertiary care facility and a smaller community hospital. Worst case potential exposures were estimated mathematically with the Screen3 dispersion model developed by the Environmental Protection Agency rather than by air monitoring.

The threshold limit value–time-weighted average (TLV®-TWA) for EtO of 1.8 mg/m^3 as set by the American Conference of Governmental Industrial Hygienists (ACGIH) was used to evaluate worker exposures. Worker exposures on the building roofs under the worst case condition were below the TLV for both facilities.

The ambient air quality criteria (AAQC) for EtO of 0.005 mg/m^3 as set by the Ontario Ministry of the Environment was used to evaluate non-worker exposures. Under normal working conditions, exposures within the hospital from exhaust gases being drawn into the building would be below the AAQC, however poor stack design could create opportunities for the emissions to be drawn back into the building. Under worst case conditions, when an abator failed and two sterilizers were discharged manually, exposures could exceed the AAQC. All community exposures were below the AAQC.

289.

RISK ASSESSMENT, PRODUCT STEWARDSHIP, AND CORPORATE REPUTATION: LESSONS LEARNED FROM 20 YEARS OF CONSUMER PRODUCT SAFETY. C. Armstrong, Viridescent Inc., San Antonio, TX.

The enormous cost in human suffering and damage to brand reputation make product safety a crucial part of any company's continued success. Despite this perilous cause-and-effect relationship, the U.S. Consumer Products Safety Commission (CPSC) reported that 17 toy-related deaths and 191,000 injuries requiring trips to hospital emergency rooms occurred in 2000 alone. These statistics suggest that, despite our best intentions to effect fail-safe product stewardship policies in our manufacturing practices, health and safety approaches are falling short of societal needs.

The CPSC is an independent agency charged with regulatory responsibility over the safety of consumer products. The CPSC is responsible for promulgating consumer product safety standards when necessary to protect the public against unreasonable risks of injury and to pursue product recalls when appropriate. Over the past nearly 30 years, the CPSC has compiled detailed recall information on roughly 200 product types, 3400 product descriptions, and 3400 companies. Analysis of these data shows root causes of unsafe products resulting from misapplication of risk assessment, product stewardship, or supply chain management practices (or a combination). Product recall data from the past 20 years are reviewed in the context of a framework that incorporates risk assessment, product stewardship, and supply chain management.

290.

A METHOD TO IDENTIFY COUNTIES WITH POTENTIAL NON-OCCUPATIONAL ASBESTOSIS MORTALITY. K. Linch, P. Middendorf, R. Althouse, G. Syamlal, NIOSH, Morgantown, WV.

Description. Counties with possible high non-occupational asbestosis mortality rates were identified by comparing their actual asbestos mortality rate to predicted based on their estimated occupational exposure to asbestos. To estimate county exposures, indus-

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