270.

NIOSH HEALTH HAZARD EVALUATION OF A CULTURED MARBLE MANUFACTURING FACILITY. R. McCleery, R. Tubbs, A. Warren, CDC/NIOSH, Cincinnati, OH.

A health hazard evaluation request was submitted to NIOSH from employees of a cultured marble manufacturing facility who were concerned that their headaches, itchy skin, and respiratory issues were related to exposures from chemicals and dust generated in the production of cultured marble bathroom vanities, tubs, walls, and floors. NIOSH investigators responded with two site visits in 2004–2005 to gather pertinent facility information and conduct a comprehensive evaluation of employee exposures, including personal exposure sampling for total and respirable particulate, styrene, á-methyl styrene, methyl methacrylate, and noise during various facility operations. Respirable particulate, á-methyl styrene, and methyl methacrylate air sample concentrations were all below OSHA, NIOSH, and ACGIH evaluation criteria. Total particulate concentrations were all below relevant evaluation criteria except for that of the product grinder whose eight-hr TWAs were 38 mg/m^3 and 43 mg/m^3 over two days of sampling. Styrene concentrations were below relevant evaluation criteria except for those of two mold pourers whose eight-hr TWAs of 22 and 31 ppm exceeded the ACGIH limit of 20 ppm. Noise monitoring data indicated that the individual daily noise doses of the product grinder and a product buffer exceeded the allowable amount according to the OSHA PEL noise criterion (246% and 140%, respectively). Using the NIOSH noise criterion, virtually all employees whose noise dose was evaluated exceeded the daily allowable noise dose (ranging from 92% to 2,339%). Based on the air sampling and noise monitoring results, NIOSH investigators provided the company with recommendations to improve the safety and health of employees that included, but were not limited to, establishing written respirator and hearing conservation programs, changes to compressed air nozzles and mold vibration tables to reduce generated noise, and training employees on the appropriate use, storage, etc., of personal protective equipment.

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271.

HERBAL MEDICINES: AN OCCUPATIONAL HEALTH PERSPECTIVE. T. Morris, Ohio BWC, Employer Management Services, Cincinnati, OH.

Herbal medicines (HM) are a multibillion dollar a year U.S. industry; worldwide sales are estimated at $60 billion. Included in this category are traditional Chinese or Indian medicines, other ethnic medicinal preparations, and individual medicinal herbs such as St. John's wort or echinacea. An estimated 42% of the U. S. adult population (94 million people) has used HMs; the percentages are higher in Europe, Australia, and Asia. In general, HMs have a long history of few adverse effects, but the actual safety and efficacy of these products are not adequately known. In the United States, HMs are exempt from the FDA oversight prescription drugs receive and are classified as a dietary supplement by the DSHE Act of 1994. HM use in the occupational setting is of concern for many reasons. The large number of users puts many of them in our workplaces every day. Many consider HMs to be natural, safe, and effective, and they may not associate an adverse effect with its use. HM use is rarely reported to health care providers or health and safety professionals. Active compound levels (when known) can vary considerably. HMs can be directly toxic. Some can induce, inhibit, or compete for cytochrome P-450, affecting how industrial solvents and prescription drugs are metabolized. Some contain metals (As, Cd, Pb, Hg) or adulterants, including therapeutic levels of prescription medicines leading to toxicity, accidents, adverse drug reactions, or a positive drug test. HM users can present with the classic symptoms of an occupational disease (e. g., lead poisoning) that are missed because there is no occupational toxicant exposure history, delaying the diagnosis and treatment and wasting valuable time and resources. HMs will be introduced to heighten health and safety professionals' awareness of this overlooked area of self-medication and its potential for adverse employee impact.

272.

DEVELOPMENT OF A COMPUTER DATABASE OF SKIN SENSITIZERS. A. Fedorowicz, T. Michette, CDC/NIOSH, Morgantown, WV.

Estimates indicate that more than 13 million workers in the United States are potentially exposed to chemicals that can be absorbed through the skin. Contact dermatitis from workplace chemicals accounts for 10–15% of all occupational illnesses at an estimated annual cost of at least $1 billion. Allergic contact dermatitis is considered to be a significant factor for the development of eczema in 48% of the cases for women and in 40% of the cases for men. Access to information that could be used for developing skin exposure limits is very important for the industrial hygienist. Most of the experimental methods, which have been proposed to assess the skin sensitization potential of a chemical, produce results using a binary scale that cannot be easily used to develop skin exposure limits. The dose-response data of the murine Local Lymph Node Assay (LLNA) can be used to produce a standardized continuous scale in the quantitative assessment of skin sensitization. A computer application containing LLNA-tested substances with data for more than 350 chemicals has been developed. The availability of continuous data allows them to be applied in the process of risk assessment and for recommendation of skin exposure limits. These recommendations will be based on potency, in contrast to current approaches that often do not differentiate between weak and extreme skin sensitizers, thus permitting the latter to be present in concentrations that can still cause health problems. In addition, the inclusion of several models for calculating the skin permeation coefficient provides an additional tool for risk assessment. The database can be used to search for LLNA-tested substances that structurally resemble the entry chemical. The results of this search might be used in qualitative assessment of skin sensitization activity of untested chemicals.

273.

GUIDELINES FOR ASSESSING HEALTH RISK FROM OCCUPATIONAL EXPOSURE TO CARCINOGENS WITH AN EXAMPLE OF 2,4-DNT. S. Czerczak, A. Palaszewska, Nofer Institute of Occupational Medicine, Lodz, Poland.

The increasing incidence of occupational diseases among workers exposed to different toxic agents, including carcinogens, has become a matter of interest in the course of continuing industrial development. Among steps taken to reduce the discussed morbidity the proper restrictions and employers duties were implemented in the legal system. ILO Convention No. 139 (Occupational Cancer Convention) resulted in implementation of suitable regulations within the European Union countries. Polish regulation of the Minister of Health of December 1, 2004, concerning carcinogenic or mutagenic substances, preparations, agents, or technological processes in working environments containing the registry of over 800 carcinogens and mutagens, similar to the previous legislation in this field, specifies duties of the employers hiring the workers in the exposure to carcinogens. Among those the employer is not only obliged to diagnose the working environment in terms of carcinogenic agents occurrence and potential exposure levels but also to assess employees' health risks resulting from occupational exposure. To facilitate assessing health risk from carcinogens to employers and relevant labor safety services, the Nofer Institute of Occupational Medicine prepared guidelines for assessing health risk from carcinogens. Guidelines are being prepared on the basis of the latest studies results that have been described in the international scientific journals. The scope of the guidelines comprises data concerning physicochemical properties, occurrence, usage, and exposure to the substance, its biological activity including absorption, acute and chronic toxicity, carcinogenicity, mutagenicity, and reprotoxicity in humans and experimental animals, and moreover qualitative and quantitative risk assessment of the neoplastic changes development and occupational exposure limit values in force in Poland and other countries. It should be noted that the quantitative risk assessment mentioned above enables estimation of the potential health risk with reference to the specified exposure levels of particular carcinogenic agents within specific working conditions. An example of quantitative risk assessment for 2,4-dinitrotoluene is to be presented.

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