along one dimension. The average UVR % transmission measured using the radiometer method with an un-stretched glove was 10.5%, 0.005%, and 0.003% for vinyl, nitrile, and latex, respectively. The average UVR % transmission measured using a 30 % stretched glove was 11.5%, 0.013%, and 0.073% for vinyl, nitrile, and latex, respectively. Results with the spectrophotometer method and radiometer method agreed in indicating that vinyl gloves had the highest transmission; however, the spectrophotometer was not able to accurately determine the attenuation of gloves with very low transmission (i.e. nitrile and latex) due to instrument noise.

274.

RESPIRATOR SURVEILLANCE AT FIVE VETERANS AFFAIRS MEDICAL CENTERS. B. Doney, M. Greskevitch, P. Middendorf, K. Bang, NIOSH, Morgantown, WV.

The National Institute for Occupational Safety and Health (NIOSH) gathered information on respirator programs and use at five Veterans Affairs Medical Centers from April 16, 2001, through August 14, 2002. Information was obtained through a mail-out questionnaire to management, an on-site evaluation of various departments where respirators were used, and a questionnaire distributed to workers required to use respirators. The purposes of the project were to: identify difficulties with respirators and respirator use, determine how airborne hazards were controlled, identify methods for future tracking of respirator use, share information about the respirator programs including parts of the program that worked well or could be improved, and obtain worker input on the respirator programs. Some findings include: the majority of the respirators were used to protect against biological agents (especially tuberculosis); the primary type of respirator used was a N95 or N100 disposable half-mask respirator; two medical centers' fire departments used self-contained breathing apparatus (SCBA); full-face respirators were rarely used; canister gas masks were used for ethylene oxide; and powered air-purifying respirators with a hood were used by employees with beards to protect against tuberculosis. Some of the difficulties mentioned include: maintaining the program, and conducting annual fit-testing for a large number of employees, including residents, interns, nurses, maintenance workers, and housekeeping personnel. The majority of the medical centers quantitatively fit-tested the employees. Some of the medical centers offered fit-testing on the wards to ease the time burden for employees, which improved participation.

275.

COMPARISON OF PERFORMANCE OF THREE DIFFERENT TYPES OF RESPIRATORY PROTECTION. R. Lawrence, C. Coffey, M. Duling, C. Calvert, NIOSH, Morgantown, WV.

Respiratory protection is offered to American workers in a variety of ways to guard against potential tuberculosis infection. Three of the most common ways are: elastomeric N95 respirators, N95 filtering-facepiece respirators, and surgical masks. This study compared the performance of these types of respiratory protection during a simulated workplace test. A panel of 25 test subjects with varying face sizes tested 15 models of elastomeric N95 respirators, 15 models of N95 filtering-facepiece respirators, and six models of surgical masks. A simulated workplace test was conducted using a TSI PORTACOUNT Plus model 8020, and consisted of a series of seven exercises. Six simulated workplace tests were performed with re-donning of the respirator/mask occurring between each test. The results of these tests produced a simulated workplace protection factor (SWPF). The mean of the SWPFs were computed by category of respiratory protection. Elastomeric N95 respirators had a mean SWPF of 65, N95 filtering-facepiece respirators had a mean SWPF of 35, and surgical masks produced a mean SWPF of 3. An analysis of variance (ANOVA) demonstrated a statistically significant difference between all three means. The 5th percentile SWPF was calculated from the six overall SWPF values. Elastomeric N95 respirators had the highest 5th percentile SWPF of 11. N95 filtering-facepiece respirators and surgical masks had 5th percentile SWPFs of 7 and 2, respectively. An ANOVA revealed that the 5th percentile SWPFs for the elastomeric N95 and N95 filtering-facepiece respirators were statistically the same, while the 5th percentile SWPF for surgical masks was statistically different.

276.

ELECTROSTATIC RESPIRATOR FILTER MEDIA EXPOSED TO IDLH CONCENTRATIONS OF COMMON ORGANIC VAPORS. S. Martin, J. Fox, R. Stallings, E. Moyer, NIOSH, Morgantown, WV.

NIOSH and other researchers have previously shown that electrostatic respirator filters can exhibit significant filter efficiency degradation after exposures to saturated organic vapors. However, using these filters in an environment saturated with organic vapor is not realistic. In fact, the highest organic vapor concentration that non-powered, air-purifying respirators can be properly used in is either the Assigned Protection Factor of the respirator multiplied by the Permissible Exposure Limit of the vapor or the Immediately Dangerous to Life and Health (IDLH) concentration of the vapor, whichever is lower. In this study, new electrostatic non-powered, air-purifying respirator filters, approved under 42 CFR 84 for use in conjunction with organic vapor cartridges, were tested for filter efficiency degradation resulting from organic vapor exposures. N-, R-, and P-series filters were exposed to isopropanol and acetone vapors at IDLH concentrations of 2000 and 2500 ppm, respectively, which are the highest concentrations in which these respirator filters could properly be used. The vapor exposures were carried out inside an enclosed chamber as part of a flow-through system. This flow-through system maintains a stable vapor concentration throughout the duration of the 8-hour exposures. After vapor exposure, the filters were tested on a TSI CertiTest® Model 8130 Automated Filter Tester against NaCl aerosol (N-series filters) or a TSI CertiTest® Model 8110 Automated Filter Tester against DOP aerosol (R- and P-series filters) for aerosol penetration. The measured penetration values for the exposed filters were compared to penetration values for unexposed control filters. The electrostatic N-, R-, and P-series filters showed no significant efficiency degradation from exposure to the IDLH vapor concentrations. This research shows that these electrostatic respirator filters were not degraded by exposures to maximum use concentrations of isopropanol and acetone.

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Exposure Assessment

Papers 277–283

277.

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EXPOSURE ASSESSMENT. A. Lori, 3M, St. Paul, M

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process, specific knowledge for individuals collecting data, and skills knowledge for individuals interpreting the data. The use of electronic media and tools along with on-the-job group exercises can be an effective method of delivering training for the differing audiences. One large manufacturing company has developed a training process, which includes the integration of web-based interactive, instructor-led remote access, and on-site training to meet these needs. The process used for development and implementation of the integrated training program will be presented.

278.

IMPROVING THE EFFECTIVENESS AND EFFICIENCY OF THE IH DECISION-MAKING PROCESS. P. Hewett, Exposure Assessment Solutions Inc., Morgantown, WV.

A method, based on Bayesian statistical techniques, was developed for determining if the exposure profile of a similar exposure

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