



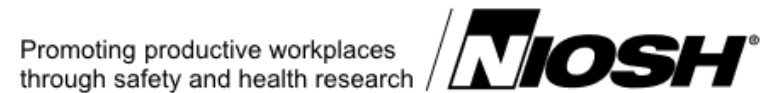
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The National Institute for Occupational Safety and Health (NIOSH)



Alice B. Hamilton Awards 2006

Educational Materials Category

Winner:

- **Title:** HazCom Helper ver. 2.5.
- **Authors:** Scott DF, Drake PL, Brady TM
- **Source:** U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, (DHHS) NIOSH Publication No. 2005-135c [CD-ROM], 2005
- **Description:** This CD-ROM provides those responsible for creating a hazard communication written program with software to aid in writing their program and for identifying hazardous chemicals on site. The Occupational Safety and Health Administration (OSHA) Hazard Communication Standard requires all employers having hazardous chemicals in their workplaces to develop a written hazard communication program. Employers must list all these chemicals and describe how the company will label containers used to store hazardous chemicals, obtain or develop Material Safety Data Sheets (MSDS) for hazardous chemicals, provide potentially exposed workers with information about and training in working around hazardous chemicals, and provide appropriate protective measures. The HazCom helper software leads the person responsible for writing a HazCom plan step-by-step through its preparation. The program can be saved and recalled at any time so it can be updated whenever necessary. It is available on both the OSHA and the NIOSH Web sites.



[See more information or download HazCom helper](#)

Honorable Mention:

- **Title:** Tell Me a Story: Why Stories are Essential to Effective Safety Training
- **Authors:** Cullen ET, Fein AH
- **Source:** U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, DHHS (NIOSH) Publication No.2005-152, 2005
- **Description:** This document describes how NIOSH created nine training videos for the mining industry, using story telling. It has been cited or discussed in many industry journals and magazines, and nearly 1000 copies of it have been distributed. The safety training videos have become popular world-wide and have won numerous awards. The document discusses the theoretical frameworks that were considered, the barriers that were encountered, and the methodologies that were used to create training for both underground and surface miners. It also discusses the external evaluations that were conducted to assess the effectiveness and utility of the training videos.

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Biological Science Category

Winner:

- **Title:** Unusual inflammatory and fibrogenic pulmonary responses to single-walled carbon nanotubes in mice
- **Authors:** Shvedova, AA, Kisin ER, Mercer R, Murray AR, Johnson VJ, Potapovich AI, Tyurina YY, Gorelik O, Arepalli S, Schwegler-Berry D, Hubbs AF, Antonini J, Evans DE, Ku BK, Ramsey D, Maynard A, Kagan VE, Castranova V, Baron P
- **Source:** Am J Physiol Lung Cell Molecular Physiol 289(5):L698-L708, 2005
- **Description:** This paper provides compelling evidence that pulmonary exposure to single-walled carbon nanotubes can cause significant inflammatory responses in mice. The results suggest the potential for significant toxicity at low exposure levels in workers exposed to single-walled carbon nanotubes. Given the potential for widespread exposure of workers to this particular agent, this study is timely and could become a seminal report that prompts essential research into the health impacts of nanotechnology.

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Honorable Mention:

- **Title:** Bioaerosol mass spectrometry for rapid detection of individual airborne Mycobacterium tuberculosis H37Ra particles
- **Authors:** Tobias HJ, Schafer MP, Pitesky M, Ferguson DP, Horn J, Frank M, Gard EE
- **Source:** Appl Environ Microbiol 71(10):6086-6095, 2005
- **Description:** Transmission of airborne M. tuberculosis is a recognized occupational risk in healthcare settings. Airborne TB infections are often not detected until many weeks or months after they occur, because the conversion of negative to positive TB skin test results are used as a "detector." If an early detection method was developed, many new airborne infections could be prevented. The use of bioaerosol mass spectrometry (BAMS) indicated that individual particles of airborne TB could be detected and identified in real time. The mass spectral signature of captured aerosolized avirulent TB particles was compared to the mass spectral signature of captured Mycobacterium smegmatis particles. BAMS was able to distinguish and identify the different species of mycobacteria.

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Engineering and Physical Sciences Category

Winner:

- **Title:** Anthropometric criteria for the design of tractor cabs and protection frames
- **Authors:** Hsiao H, Whitestone J, Bradtmiller B, Whisler R, Zwiener J, Lafferty C, Kau TY, Gross M
- **Source:** Ergonomics 48(4):323-353, 2005
- **Description:** This study investigated agriculture worker-tractor interfaces for safe tractor operation, using three dimensional human and tractor-scan information. The reported research presents an innovative approach to study how human body shape and dimensions interact with tractor cab layout to affect safe tractor operation. It also provides practical solutions for



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Human Studies Category

Winner:

- **Title:** A nested case-control study of leukemia mortality and ionizing radiation at the Portsmouth Naval Shipyard
- **Authors:** Kubale TL, Daniels RD, Yiin JH, Couch, J, Schubauer-Berigan MK, Kinnes GM, Silver SR, Nowlin SJ, Chen PH
- **Source:** Radiat Res 164(6):810-819, 2005
- **Description:** This case-control study utilized a novel exposure assessment for external radiation, including work-related medical x-rays and occupational chemical leukemogens, to determine that the lifetime risk estimates for occupational exposures were four to six times greater than previously estimated. NIOSH researchers found statistically significant greater risks for leukemia mortality following occupational radiation exposures than had been previously predicted by the extensive risk analyses of A-bomb survivor and medical therapy studies.

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Honorable Mention:

(These two sequential articles represent a single nomination.)

- **Title:** Risk of silicosis in cohorts of Chinese tin and tungsten miners and pottery workers (I): an epidemiological study Risk of silicosis in cohorts of Chinese tin and tungsten miners and pottery workers (II): workplace-specific silica particle surface composition
- **Authors:** Chen W, Hnizdo E, Chen JQ, Attfield MD, Gao P, Hearl F, Lu J, Wallace WE Harrison J, Chen JQ, Miller W, Chen W, Hnizdo E, Lu J, Chisholm W, Keane M, Gao P, Wallace WE
- **Source:** Am J Ind Med 48(1):1-9, 2005 Am J Ind Med 48(1):10-15, 2005
- **Description:** While respirable crystalline silica dust is a well-known exposure agent for pulmonary fibrosis disease risk, there have been numerous observations of inconsistencies in the exposure-response relationship between cumulative respirable silica dust exposure and risk of radiological signs of silicosis. An earlier collaborative study between NIOSH, the U.S. National Cancer Institute, and Tongji Medical College, Wuhan, People's Republic of China, also had suggested inconsistencies in the exposure-response relationship between metal miners and pottery workers in China. To investigate the potential inconsistencies, an extensive collaborative study has been conducted over the last decade by NIOSH and Tengji researchers. The epidemiological investigation quantified the exposure-response relationships between radiological signs of silicosis and cumulative dust exposure in three cohorts of Chinese workers exposed to different types of silica dust in tin mines, tungsten mines, and potteries. Radiological data were obtained from approximately 20,000 workers to determine the risk of silicosis. NIOSH and Tongji researchers made representative workplace respirable dust exposure measurements. The exposure-response relationships were subsequently normalized for the biologically available silica surface fraction of respirable silica particles. Biological availability was determined using a spectroscopic surface analysis method that was developed and patented by NIOSH. The method determined the fraction of silica particles that were surface-coated with alumino-silicate clay, a material of low toxicity for lung fibrosis. Correcting exposure for the fraction of respirable silica particles with non-occluded, biologically available toxic silica surfaces resolved much of the anomalous difference in silicosis risk. This identified a parameter, not measured in conventional industrial hygiene assessments of occupational dust exposures, which can significantly affect disease risk, and demonstrated a method for evaluating that parameter.

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