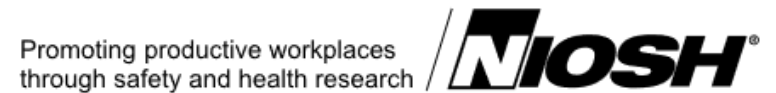




The Wayback Machine - <https://www.cdc.gov/niosh/awards/hamilton/aliceabs08.html>

The National Institute for Occupational Safety and Health (NIOSH)



Alice B. Hamilton Awards 2008

Educational Materials Category

Winner:

- **Title:** Simple Solutions: Ergonomics for Construction Workers
- **Authors:** Albers JT, Estill CF
- **Source:** U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health; DHHS (NIOSH) Publication No. 2007-122, 2007
- **Description:** Construction is one of the most hazardous industries in the U.S. This booklet addresses ergonomic issues affecting the construction industry, and is a great resource intended for construction workers, unions, supervisors, contractors, safety specialists, human resources managers-anyone with an interest in safe construction sites. Some of the most common injuries in construction are the result of job demands that push the human body beyond its natural limits. Workers who must often lift, stoop, kneel, twist, grip, stretch, reach overhead, or work in other awkward positions to do a job are at risk of developing a work-related musculoskeletal disorder (WMSD). These can include back problems, carpal tunnel syndrome, tendinitis, rotator cuff tears, sprains, and strains. To aid in the prevention of these injuries, this booklet suggests many simple and inexpensive ways to make construction tasks easier, more comfortable, and better suited to the needs of the human body.



[Link to full publication](#)

Biological Sciences Category

Winner:

- **Title:** Inhalation of Toluene Diisocyanate Vapor Induces Allergic Rhinitis in Mice
- **Authors:** Johnson VJ, Yucesoy B, Reynolds JS, Fluharty K, Wang W, Richardson D, Luster MI
- **Source:** Journal of Immunology 179: 1864-1871, 2007
- **Description:** Diisocyanates are the leading cause of occupational asthma and epidemiological evidence suggests that occupational rhinitis is a comorbid and preceding condition in patients who develop asthma. The goal of the present studies was to develop and characterize a murine model of toluene diisocyanate (TDI)-induced rhinitis. Female C57BL/6 mice were exposed to workplace-relevant concentrations of TDI vapor via inhalation for 4 hours per day for 12 days with or without a 2-week rest period and TDI challenge. The present model shows that TDI inhalation induces immune-mediated allergic rhinitis, displaying the major features observed in human disease. Future studies will use this model to define disease mechanisms and examine the temporal/dose relationship between TDI-induced rhinitis and asthma.

[Link to abstract in NIOSHTIC-2](#)

Honorable Mention:

- **Title:** Effect of Short-Term Stainless Steel Welding Fume Inhalation Exposure on Lung Inflammation, Injury, and Defense Response in Rats
- **Authors:** Antonini JM, Stone S, Roberts JR, Chen B, Schwegler-Berry D, Afshari AA, Frazer DG
- **Source:** Toxicology and Applied Pharmacology 223: 234-245, 2007
- **Description:** Many welders have experienced bronchitis, metal fume fever, lung function changes, and an increase in the incidence of lung infection. Questions remain regarding the possible mechanisms associated with the potential pulmonary effects of welding fume exposure. The objective of this study was to assess the early effects of stainless steel (SS) welding fume inhalation on lung injury, inflammation, and defense responses. Male Sprague-Dawley rats were exposed to gas metal arc-SS welding fume at a concentration of 15 or 40 mg/m³ 3 hours per day for 1, 3, or 10 days. The control group was exposed to filtered air. To assess lung defense responses, some animals were intratracheally inoculated with 5 10⁴ *Listeria monocytogenes* 1 day after the last exposure. Welding particles were collected during exposure, and elemental composition and particle size were determined. At 1, 4, 6, 11, 14, and 30 days after the final exposure, parameters of lung injury (lactate dehydrogenase and albumin) and inflammation (PMN influx) were measured in the bronchoalveolar lavage fluid. In addition, particle-induced effects on pulmonary clearance of bacteria and macrophage function were assessed. SS particles were composed of Fe, Cr, Mn, and Ni. In summary, short-term exposure of rats to SS welding fume caused significant lung damage and suppressed lung defense responses to bacterial infection, but had a delayed effect on pulmonary inflammation. Additional chronic inhalation studies are needed to further examine the lung effects associated with SS welding fume exposure.

[Link to abstract in NIOSHTIC-2](#)

Engineering and Physical Sciences Category

Winner:

- **Title:** Explosion Pressure Design Criteria for New Seals in U.S. Coal Mines
- **Authors:** Zipf RK Jr., Sapko MJ, Brune JF
- **Source:** U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health; DHHS (NIOSH) Publication No. 2007-144, IC 9500, 2007
- **Description:** This document was prepared largely in response to the Sago Mine disaster in 2006 where an explosion breached several seals and resulted in the death of 11 mine workers. Seals are used in underground coal mines throughout the U.S. to isolate abandoned mining areas from the active workings. Prior to the disaster, mining regulations required seals to withstand a 140-kPa (20-psig) explosion pressure (30 CFR 475.335(a)(2)). However, Program Information Bulletin No. P06-16 issued by MSHA on July 19, 2006 [McKinney 2006], requires seals to withstand a 345-kPa (50-psig) explosion pressure. The recently enacted MINER Act requires MSHA to increase this design standard by the end of 2007. This report provides a sound scientific and engineering justification to recommend a three-tiered explosion pressure design criterion for new seals in coal mines in response to the MINER Act. The recommendations contained herein apply to new seal design and construction in U.S. coal mines.

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- **Paper #1:** Follow-Up Study of Chrysotile Textile Workers: Cohort Mortality and Exposure-Response
- **Paper #2:** Development of a Fiber Size-Specific Job-Exposure Matrix for Airborne Asbestos Fibers
- **Paper #3:** An Epidemiologic Study of the Role of Chrysotile Asbestos Fiber Dimensions in Determining Respiratory Disease Risk in Exposed Workers
- **Authors:**
 - **Paper #1:** Hein MJ, Stayner LT, Lehman E, Dement JM
 - **Paper #2:** Dement JM, Kuempel E, Zumwalde R, Smith R, Stayner L, Loomis D
 - **Paper #3:** Stayner LT, Kuempel E, Gilbert S, Hein M, Dement J
- **Source:**
 - **Paper #1:** Occupational and Environmental Medicine 64: 616-625, 2007, [Epub ahead of print] PMID 17449563
 - **Paper #2:** Occupational and Environmental Medicine (online), 2007 [Epub ahead of print] PMID 17984198
 - **Paper #3:** Occupational and Environmental Medicine (online), 2007 [Epub ahead of print] PMID 18096653
- **Description:** This series of three manuscripts reports the findings from an update and re-analysis of a cohort of chrysotile asbestos exposed workers using fiber-size specific estimates of asbestos exposure. A fiber dimension-specific exposure matrix was developed based on an analysis of a sample of the original air samples using transmission electron microscopy. Findings were confirmed from previous investigations of this cohort of excess mortality from lung cancer and asbestosis and a strong exposure-response relationship between mortality and cumulative exposures. Exposure-response analyses demonstrated a significant improvement in the fit of models relative to the fit of models using conventional measures. Thin fibers were found to be the most highly predictive of both lung cancer and asbestosis mortality. All fiber sizes were found to be significant predictors of lung cancer or asbestosis mortality, although the high degree of correlation between the different fiber size measures complicates the interpretation of these findings. Investigation findings confirmed the importance of considering fiber dimensions in determining the disease risk associated with exposure to asbestos fibers. Differences in the distribution of fiber sizes may explain the large discrepancies in the findings from previous epidemiologic investigations. The findings have major implications for revisions in risk assessment models that are being considered by the Environmental Protection Agency to reflect differences in risk related to fiber dimensions and for the management of risk associated with exposures to asbestos.
- **Links to abstracts in NIOSHTIC-2**
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 - [Paper #3](#)

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