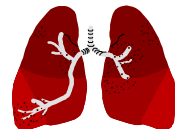




Occupational Airways



A newsletter of the Occupational Health & Special Projects Program, Division of Environmental Epidemiology and Occupational Health (EEOH), Connecticut Department of Public Health, 410 Capitol Avenue, MS# 11OSP, P.O. Box 340308, Hartford, CT 06134-0308 (860) 509-7744

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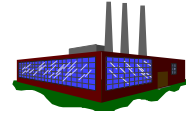
December 1998

This issue:

- ⇒ Hypersensitivity Pneumonitis in Workplaces which use Metal Working Fluids - Article & Case Study
- ⇒ Material Safety Data Sheet (MSDS): A Useful tool for Physicians
- ⇒ Summary Table of Reported Cases of Selected Respiratory Diseases in CT

Hypersensitivity Pneumonitis in Workplaces which use Metal Working Fluids

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Exposure to Metal Working Fluids (MWFs) has been associated with several occupational diseases including dermatitis, cancer, asthma, bronchitis and hypersensitivity pneumonitis (HP). The prevention of the diseases associated with MWFs has become a national occupational health and safety priority.

Hypersensitivity Pneumonitis is an interstitial lung disease thought to be caused by an immune response to inhaled antigen particles. HP is a disease characterized in its acute phase by alveolar inflammation and flu-like symptoms; in its chronic phase, it is characterized by pulmonary fibrosis and respiratory impairment.

In non-metal working settings, HP usually has been associated with antigens which are of bacterial, fungal or animal protein origin. In metal working settings, HP has been associated with exposure to water-based soluble and synthetic MWFs. MWFs are used to cool parts as they are machined. They also remove excess metal chips and shavings from the area near the machining tool. Used MWF is returned to a sump (a collection area) and then pumped back over the machining tool. Microbial contaminants grow in water-based metal working fluids when they become contaminated with dirt, metal and lubricating oils. Although an HP etiologic agent has not been identified in metal working

(Continued on page 2)

Dear Health Care Provider:

As we enter the fourth year of production of *Occupational Airways*, I would like to thank all the health care providers for continuing to report occupational diseases to the Departments of Labor and Public Health. With your support, we are able to investigate disease clusters and initiate prevention efforts in the workplace. We have conducted a variety of investigations of disease clusters which include chemical and heavy metal poisonings, respiratory diseases and cumulative trauma disorders.

We are again in need of guest authors to write short articles for future issues of *Occupational Airways*. The article can be about a specific occupational respiratory disease or about an experience treating a patient with occupational asthma or another occupational respiratory disease. You are the experts! If you are interested in being a guest author, please call me at (860) 509-7744.

As always, please report occupational diseases. Thank you for your support.
 Have a great new year!

Juanita Estrada, MSPH, Editor



(Continued from page 1)

settings, MWF microbial contamination characterized by the dominance of unusual flora is suspected.

Large and small metal working facilities dominate Connecticut's manufacturing sector. Metal working is found in industries which fabricate parts from metal such as the automotive, aerospace and hardware industries. Workers employed in the machining divisions of these industries may have job titles such as "machinist", "machine operator", "CNC operator" or "Set-up Mechanic". These employees may be at an increased risk of developing work-related lung diseases such as HP.

Because the symptoms associated with HP resemble the flu, bronchitis or pneumonia, the disease is often missed in the clinical setting. Therefore, patients who describe symptoms such as cough, chest tightness, dyspnea, chills, fever, and fatigue should be evaluated for work-related HP if they work with or near water-based metal working fluids. In addition to the medical/occupational history and physical exam, this evaluation could include bracketed spirometry (before and after work), pulmonary function tests with diffusion capacity, and complete blood counts. High-resolution CT scan of the chest, gallium scan of the lung, and a lung biopsy may be indicated to make a definitive diagnosis. To prevent the irreversible progression of HP, patients with work-related disease should be removed from exposure.

Several outbreaks of HP in the metal working environment have been reported in the US and European literature. At the metal working facilities where HP outbreaks have been documented, recommended interventions have included comprehensive MWF sump maintenance, local exhaust ventilation and dilution ventilation.

For more information on hypersensitivity pneumonitis and metal working fluids, the following publications are recommended: National Institute for Occupational Safety and Health (NIOSH): Criteria for a Recommended Standard:

Occupational Exposure to Metal Working Fluids Publication # 98-102. (800-35-NIOSH)

The Organization Resources Counselors, Inc.(ORC): Metal Removal Fluids: A Guide to their Management and Control. (202-293-2980)

State of Washington Department of Labor and Industries-SHARP Program: Metal Working Fluids: A Resource for Employers and Health and Safety Personnel in Washington State. Technical Report #46-2-1997 (888-66-SHARP)

Hypersensitivity Pneumonitis Case Study

A 57 year old male quality control (QC) engineer from a midsize metal working plant visited the University of Connecticut Health Center's Division of Occupational and Environmental Medicine (DOEM) with complaints of chest discomfort, other nonspecific respiratory ailments, and lack of energy. Six months earlier, his private physician diagnosed pneumonia. As a QC engineer, he spent much of his work day inspecting parts in departments which used metal working fluids (MWFs) during machining. For 30 of the 31 years he had worked at the plant, he had been in good health.



The combination of chest discomfort, lack of energy, and a recent bout with "pneumonia" of unknown cause indicated possible interstitial lung disease. Although spirometry before and after work showed little reduction over the work day, his diffusion capacity was well below the normal range. A high resolution computerized tomography (CT) scan showed areas of "ground glass", a finding indicative of disease. He experienced some resolution of symptoms when on vacation and away from work. After an episode of bronchitis and continued malaise, a transbronchial biopsy confirmed that he was ill with hypersensitivity pneumonitis (HP).

He was removed from work and treated with prednisone. After he showed recovery, an initial attempt at return to the work environment

(Continued on page 4)

RESOURCE SERIES ARTICLE

Material Safety Data Sheet (MSDS): A Useful Tool for Physicians



Workers who handle hazardous substances often do not know which chemicals they are handling or the hazards associated with them. When a worker becomes ill from chemicals in the workplace, it is important for his/her physician to know the potential cause(s) of the illness. A product's material safety data sheet (MSDS) can be a useful tool for physicians. A MSDS is a form that is prepared by the product's manufacturer with information about the product's ingredients, hazards and control measures. It should always be provided when the product is purchased.

MSDSs are one aspect of OSHA's Hazard Communication Standard* (29 CFR 1910.1200), also known as "HazCom" or the "Worker Right-to-Know" law. This standard requires employers to have information *on site* about the chemicals used in the workplace and to inform workers regarding chemical hazards through proper labeling, MSDSs and training programs. In CT, this standard applies to both private and public sector employees.

Although OSHA does not require a specific form design, it does require every MSDS to have the following information:

- Product identity
- Hazardous Ingredients
- Physical Data
- Fire and Explosion Hazard Data
- Health Hazard Data
- Precautions for Handling
- Control Measures
- Manufacturer's information

*The Hazard Communication Standard does not apply to hazardous waste, pesticides, food, drugs, and cosmetic products. These are regulated by other federal agencies.
Connecticut Department of Public Health
Division of Environmental Epidemiology & Occupational Health

Under the hazard communication standard, workers can request a copy of the MSDS from the employer. With the employee's permission, a physician or health care provider may request copies of the MSDS(s) from the employer (though the hazard communication standard applies to the employee and not the employee's provider). MSDSs may also be obtained directly from the manufacturer.

Other sources of information about particular products and chemicals are available from the internet and on-line databases like MEDLINE and TOXNET. North Carolina State University has a free MSDS Service on the web, www2.ncsu.edu/ncsu/ehs/msds/index.html. This site has information about MSDSs and linkages with other web sites that have databases of MSDSs. The National Institute of Occupational Safety & Health (NIOSH) has a database of International Chemical Safety Cards on the web, which are a source of information about specific chemicals. The web address is www.cdc.gov/niosh/ipcs/ipcs0000.html.



There are limitations to MSDSs. MSDSs are prepared by the manufacturer of the product. There is no government agency or organization reviewing the MSDSs, so quality (accuracy and completeness) of the information may vary. For example, information about chronic health effects may be incomplete or out of date. While the MSDS provides important information, it may be necessary to obtain additional information about the product or any of its components.



It is always important to take a patient's complete work history. When the illness is thought to be work-related, inform your patients of their "right to know". Obtaining MSDSs may help in making an accurate diagnosis, therefore providing the patient with the most appropriate treatment. For more information regarding MSDSs, please call the DPH EEOH Division at 860/509-7744 or 7742.

(Continued on Page 4)

TO:

Summary of Number of Reported Cases of Selected Respiratory Diseases in CT					
CT DPH Occupational Disease Surveillance Data					
	1995	1996	1997	1998*	ODSS Total**
Asthma	34	33	26	18	165
RADS***	1	5	4	5	22
Silicosis	1	0	1	3	11
Asbestosis	5	10	3	18	66
Asbestos-related pleural diseases	8	7	2	6	131
Total	49	55	36	50	395

* As of September 30, 1998. Data subject to change.

** Occupational Disease Surveillance System (ODSS) total since 11/91

*** Reactive Airways Dysfunction Syndrome

(Continued from page 3)

REFERENCES

29 CFR 1910.1200, Hazard Communication Standard.

Lowry, George G. and Robert C. Lowry. *Handbook of Hazard Communication and OSHA Requirements*. Michigan: Lewis Publishers, Inc., 1987.

Massachusetts Department of Public Health, Occupational Health Surveillance Program, the Massachusetts Thoracic Society and the Massachusetts Allergy Society. *Material Data Sheets: An Information Source for Physicians*. SENSOR Occupational Lung Disease Bulletin, August 1995.

The New England Consortium. *Basic Health and Safety Course for Hazardous Waste Personnel*. Student Manual, 3rd ed., University of Massachusetts Lowell, 1997.

US Department of Labor, Occupational Safety and Health Administration. *Material Safety Data Sheet: Requirements for Reporting Hazardous Materials Safety and Health Regulations for Ship Repairing, Shipbuilding, and Shipbreaking*. OSHA 2265, 1976.

(Continued from page 2)

was unsuccessful. Diminished spirometry, lung crackles upon examination, and a return of chest symptoms dictated his removal from work again.

While he was away from work, the plant made a number of recommended changes in the machining department: improved metal working fluids maintenance, better metal working fluids mist collection and increased outside air ventilation.

With his diffusion capacity testing within normal range, the QC engineer once again returned to his job. Although improvements had been made in the machining department, he was encouraged to spend as much time as possible away from the machining area. Because of the severity of his illness, the DOEM followed him closely. Lung function including cross shift spirometry, blood tests and clinic follow-up visits were regularly scheduled. One hundred and forty days after his return to work, this individual is reporting continual improvement in his stamina and respiratory health.

Occupational Airways is produced by the Occupational Health & Special Projects Program, Division of Environmental Epidemiology & Occupational Health, Connecticut Department of Public Health.

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