

# SENSOR

# Occupational Lung Disease Bulletin

Massachusetts Department of Public Health

Occupational Health Surveillance Program, 250 Washington Street, 6th fl, Boston, MA 02108

Tel: (617) 624-5632 \* Fax: (617) 624-5696 \* [www.mass.gov/dph/bhsre/ohsp/ohsp.htm](http://www.mass.gov/dph/bhsre/ohsp/ohsp.htm)

March 2005

Dear Health Care Provider,

This issue of the *Occupational Lung Disease Bulletin* provides a summary of a recently published article about work-related asthma among health care workers.

Remember to report suspected and confirmed cases of occupational asthma to the Occupational Health Surveillance Program by phone, fax or mail. Case reporting is mandated by public health regulations, and allows us to identify hazardous exposures in Massachusetts and plan informed prevention strategies. Please let us know if there is anything we can do to reduce barriers you may face in reporting cases of occupational asthma.

REMINDER: To receive your *Bulletin* by e-mail, or add names of colleagues to our mailing list, send a message to [Occupational.Asthma@state.ma.us](mailto:Occupational.Asthma@state.ma.us).

Sincerely,  
Elise Pechter MPH, CIH

## Work-Related Asthma Among Health Care Workers, 1993-1997

### Case #1—California

A 45-year old, nonsmoking, female x-ray technician sought emergency medical treatment for throat irritation, cough, chest tightness, shortness of breath, and hives which began five minutes after x-ray developing tanks overflowed at work. She was treated with inhaled albuterol and oral diphenhydramine hydrochloride. She returned to the emergency room five times over the next five days for breathing treatments and missed work for seven days after the incident.

Her asthma symptoms persisted for the following 10 months and were triggered by many different substances. She still worked in the same job, and reported that conditions improved after the hospital added a wall and ventilation. Among 10 coworkers with similar exposures, she knew of two others with breathing problems.

### Case #2—Michigan

After ten years working in the same hospital, a male worker in his 40s started a three-month rotation as a radiation therapist in the hospital's cancer center. His duties included pouring a two-part mixture into a plastic bag, sealing it and molding the bag to fit the patient. He developed sneezing, headaches and sinus problems along with chest tightness and slight cough, but did not notice shortness of breath or wheezing. He had smoked approximately a pack of cigarettes a day for two years in his teens. His breathing tests were within normal limits but he had a positive methacholine challenge test.

He developed work-related asthma from exposure to methylene bisphenyl diisocyanate (MDI) which was used to create the foam immobilization cradles for radiation patients. He stopped working in the cancer center at his doctor's recommendation; his intermittent symptoms did not resolve completely until five months later. The inspection by Michigan OSHA found that employees had no training about MDI, and that latex gloves usually worn for this work were not protective against it. Among nine coworkers interviewed, two others had developed breathing problems.

### Case #3—Massachusetts

A 42 year-old, nonsmoking female nurse had been employed at a hospital for over six years when she began to notice respiratory symptoms associated with work. She reported wheezing, cough, chest tightness and shortness of breath, diagnosed as work-related asthma. She was hospitalized once for her asthma. She had been diagnosed with asthma when she was three years old, with allergies to trees, grass, dust, dogs and molds, but had been free of symptoms since she was 24 years old. Her work-related symptoms were triggered by the use of powdered latex gloves. She was out of work nearly two years after her diagnosis. The hospital assessed latex in the environment and implemented changes to minimize exposures, replacing latex gloves with non-latex gloves and low allergen, non-powdered gloves.

*continued on other side*

### Case # 4—New Jersey

*A 52 year-old, nonsmoking female worked for nine years in the pulmonary function testing department of an ambulatory care facility. During that time she suffered recurrent symptoms of cough, shortness of breath, wheezing and chest tightness, as well as episodes of sinusitis and bronchitis. Symptoms improved on weekends and resolved while on vacations. An evaluation of the facility revealed that the employees were exposed to glutaraldehyde vapors released from a bucket of sterilizing solution stored in a cabinet. Her job required immersion of equipment in the bucket for an hour, then removal and rinsing until the odor was gone. Evidence of splashes and spills was visible around the bucket under the cabinet. The bucket of glutaraldehyde has since been removed and equipment is now sent out of the department for sterilization.*

### Background

Employment in health care services has grown steadily since the early 1990's. Today over 10% of the U.S. workforce—more than 16 million individuals—are employed in health care services. Health care workers may be exposed to a variety of hazards in the workplace that can cause or exacerbate asthma. Three states in addition to Massachusetts—New Jersey, Michigan and California—conduct surveillance of work-related asthma as part of the Sentinel Event Notification System (SENSOR). All four states have identified asthma hazards in health care settings.

### Results

From 1993-1997, 1,879 confirmed cases of WRA were reported to the four SENSOR states. Sixteen percent of these cases (n=305) were among health care workers. Health care workers accounted for the greatest number of cases in three of the four states.

Most of the cases were new-onset asthma (68%), although aggravation of pre-existing asthma was not uncommon (23%) and 10% were reactive airways dysfunction syndrome (RADS), a subset of new-onset asthma.

Compared to cases employed in other industries, health care workers with work-related asthma were more likely to be female (93% vs. 50%;  $p \leq 0.01$ ) and white (79% vs. 72%;  $p \leq 0.01$ ). More than half (160/305) of the health care workers filed workers' compensation claims, compared to only 38% of cases employed in other industries ( $p \leq 0.01$ ). Of those who

filed claims, health care workers were significantly more likely than non-health care workers to be awarded benefits (46% vs. 35%;  $p \leq 0.01$ ).

Cleaning products were the agents most frequently reported by cases (74/305, 24%), but the exposures that triggered asthma varied by occupation. Nurses most commonly reported latex, followed by cleaning products then aldehydes (glutaraldehyde and formaldehyde). Office workers in health care settings most often identified miscellaneous chemicals, paints, solvents and glues, followed by cleaning products and new carpet, dust (including renovation), molds, smoke and perfume. Laboratory workers and technicians reported aldehydes (glutaraldehyde and formaldehyde) most often and dental workers reported latex.

These data should be used to guide changes that protect health care workers and prevent both development of and exacerbation of asthma. Potential asthma hazards should be considered in the selection, purchasing and use of cleaning products, as well as disinfection and sterilization methods. For example, case 4 led to the elimination of glutaraldehyde in the pulmonary function testing department. Cleaning where possible, instead of disinfection, will reduce hazardous chemical exposures. Latex products should be replaced with safer alternatives and indoor air quality may be improved by prevention of moisture incursion, caution with construction, and better ventilation design and maintenance.

### Adapted from:

Pechter E, Davis LK, Tumpowsky C, Flattery J, Harrison R, Reinisch F, Reilly MJ, Rosenman KD, Schill DP, Valiante D, Filios M. Work-Related Asthma among Health Care Workers: Surveillance Data from California, Massachusetts, Michigan and New Jersey, 1993-1997.

*Am J Ind Med* 47(3):265-275.

**Number of Work-Related Asthma Cases Reported to Massachusetts SENSOR**

December 2004	January 2005	February 2005	Total (3/92 – 2/05)
5	8	2	1008