

SENSOR

Occupational Lung Disease Bulletin

Massachusetts Department of Public Health

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Dear Health Care Provider,

The Occupational Health Surveillance Program (OHSP) is pleased to welcome Kathy Raleigh as the new coordinator of our SENSOR Work-Related Asthma surveillance project. Kathy's background includes community health work with the Peace Corps, an MPH from the University of Arizona, and industrial hygiene experience with a health and safety consulting company. OHSP looks forward to the coming year in which we will be working to improve our capacity to conduct surveillance and initiating several new activities. These include a survey of school staff regarding asthma symptoms and collaboration with community based pharmacies in developing and disseminating patient education materials about work-related asthma.

This issue of the *Occupational Lung Disease Bulletin* provides a summary of a recently published article on the association between work-related asthma and cleaning products based on data from Massachusetts and the three other SENSOR states. Also in this *Bulletin* is a brief report on Commonwealth of Massachusetts efforts to promote the use of environmentally preferable cleaning products. Information from SENSOR was instrumental in adding consideration of asthma causing-agents to the criteria for selecting cleaning products.

Please join us in welcoming Kathy as a new member of our team. OHSP looks forward to working with you as you continue to report cases and provide feedback regarding the *Bulletin*.

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.

Sincerely,
Elise Pechter MPH, CIH

severity throughout the workweek. On spirometry her FEV₁ was 81% of predicted value and FEV₁/FVC was 85%. Her FEV₁ improved 0.32 L (17%) with a bronchodilator.

She reported asthma symptoms associated with three cleaning products she used over the last 5 years of her 26 years in this job. The products contained an amine, two quaternary ammonium compounds (n-alkyl dimethyl benzyl ammonium chloride and didecyl dimethyl ammonium chloride) and two phenolic compounds. The material safety data sheets (MSDS) for the quaternary ammonium compounds did not include any warning regarding respiratory sensitization. The patient continued to work as a housekeeper, despite her physician's recommendation to change jobs.

Case #2—New Jersey

A 55-year-old female worked as a housekeeper in a hospital for eight years. She had a two-year history of wheezing, cough, shortness of breath, and chest tightness that were worse at work. She particularly noted symptoms when she used a floor cleaner that contained quaternary ammonium salts, ethyl alcohol, and sodium hydroxide.

She had no history of asthma, bronchitis, or allergic rhinitis prior to the onset of symptoms at work and had never smoked cigarettes. She quit her job because of her illness. After six weeks away from work her symptoms had markedly decreased. Her medications included albuterol and pirbuterol.

Case #3—California

A non-smoking male custodian worked in a large urban school district for 17 years. He first reported symptoms of asthma in 1995 after he was assigned to clean an area that contained large amounts of graffiti. He used several products to remove the graffiti for four hours at a time, up to five days per week. He reported that some of the graffiti he removed was in small spaces with little ventilation.

He developed symptoms of wheezing, cough, and chest-tightness that increased when he was re-assigned to do graffiti removal. The MSDS did not include any known asthma inducers. He left work on the advice of his doctor but remained symptomatic despite the use of steroid and metaproterenol inhalers.

Cleaning Products and Work-Related Asthma

Case #1—Massachusetts

A female housekeeper sought medical care for episodes of exertional dyspnea and chest pain, occurring 2-3 times per week while walking, climbing stairs or carrying items. The symptoms occurred during the workday, when she went home, and increased in

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Tens of thousands of workers have job duties that include the use of chemical cleaning materials in industrial and non-industrial settings. Even more workers may be exposed as bystanders. Exposure may occur during prescribed use as well as after spills or inappropriate mixing, and may involve a variety of allergens and irritants. These workers may be at risk of developing work-related asthma (WRA). Paradoxically, two home care products advertised to reduce dust mites to prevent allergy symptoms have been recalled for triggering asthma attacks.

Four states, Massachusetts, California, New Jersey and Michigan, conduct surveillance of WRA as part of the Sentinel Event Notification System for Occupational Risks (SENSOR). From 1993-1997, 1915 confirmed cases of WRA were reported to the four SENSOR states. Twelve percent of these cases (n=236) were reportedly associated with exposure to cleaning products. Most of these cases were new-onset asthma (80%), although aggravation of pre-existing asthma was not uncommon (20%). Among the new-onset asthma cases, 22% were defined as reactive airways dysfunction syndrome (RADS). The most frequently reported occupations included janitors/cleaners (22%), nurses/nurses' aides (20%), and clerical staff (13%). Individuals identified were predominantly white, non-Hispanic women, mid-30s or older. Individuals had most likely been exposed to cleaning products while working in medical settings (39%), schools (13%), and hotels (6%). Cleaning product ingredients identified by these cases included irritants such as acids, ammonia or bleach; and disinfectants such as formaldehyde, glutaraldehyde, and quaternary ammonia compounds. Over a third of the cases could not identify the specific products or ingredients associated with their symptoms.

Workers employed as "cleaners" have recently been found to be at increased risk of asthma in various studies outside the U.S. In a Finnish study, the risk of asthma in cleaners was found across many industries including hospitals, schools and hotels, with the greatest risk found in food and metal manufacturing¹. A study in Spain found that private home cleaners had an increased risk of developing WRA².

Further research to investigate the potential for cleaning products and their specific ingredients to cause asthma is needed. In the interim, there is a need for increased attention to careful product selection, ventilation, improved warning labels and workplace training about the potential hazards and appropriate mixing and use of cleaning products.

Adapted from:

Rosenman K, Reilly M, Schill D, Valiante D, Flattery J, Harrison R, Reinisch F, Pechter E, Davis L, Tumpowsky C, Filios M. Cleaning Products and Work-Related Asthma. *J Occup Environ Med.* 2003;45(5):556-563

OSD Announces Initiative on Cleaning Products

The central purchasing office for the Commonwealth of Massachusetts (Operational Service Division) recently awarded a statewide contract that enables all Massachusetts public entities and health and human services providers to purchase environmentally preferable cleaning products. The specifications for the contract were developed in collaboration with purchasing and environmental specialists from Minnesota to California and comply with Green Seal's standard for industrial and institutional cleaners (GS-37). The standard requires that the products be less toxic to humans and aquatic life, biodegradable and do not contain carcinogens or reproductive toxins. The contract specifications also address asthma-causing agents and skin sensitization. The products on the approved list were selected based on reducing environmental harm and protecting the health of the cleaning staff and building occupants, and were tested for performance.

For more information and/or to hear about state departments already using these products contact Dmitry Nikolayev, Environmental Purchasing Project Specialist, at dmitriy.nikolayev@osd.state.ma.us or (617) 720-3351.

Mail or fax the enclosed form to report new occupational lung disease cases.

Number of Work-Related Asthma Cases reported to Massachusetts SENSOR, March 1992 – Present

March 2003	April 2003	May 2003	June 2003	Total to Date (3/92-present)
6	3	3	8	933

¹ Karjalainen A., Martikainen R, Karjalainen J, Klauka T, Kurppa K. Excess incidence of asthma among Finnish cleaners employed in different industries. *Eur Respir J.* 2002;19:90-95.

² Zock JP, Kogevinas M, Sunyer J, et al. Asthma risk, cleaning activities and use of specific cleaning products among Spanish indoor cleaners. *Scan J Work Environ Health.* 2001;27:76-81.