

# SENSOR

# Occupational Lung Disease Bulletin

Massachusetts Department of Public Health  
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Dear Health Care Provider,

We are pleased to announce in this issue of the *SENSOR Occupational Lung Disease Bulletin* that the Occupational Health Surveillance Program has received funding from the National Institute for Occupational Safety and Health (NIOSH) to continue surveillance of work-related asthma in Massachusetts for the next four years. Massachusetts is one of four states with NIOSH support to participate in the *SENSOR* asthma program. This grant will allow us to continue to collect data on work-related asthma (WRA) to identify respiratory hazards in Massachusetts workplaces and target prevention efforts.

On June 27, 2006, the US Surgeon General, Richard Carmona, released a report stating that there is no safe level of exposure to secondhand smoke. While this caution was based primarily on evidence that secondhand smoke causes cardiovascular disease and lung cancer, it also documents the association between secondhand smoke and adult asthma (available at [http://www.cdc.gov/tobacco/sqr/sqr\\_2006/index.htm](http://www.cdc.gov/tobacco/sqr/sqr_2006/index.htm))<sup>1</sup>.

Please feel free to contact us with any questions. To receive your bulletin electronically, send an email message to: [occupational.asthma@state.ma.us](mailto:occupational.asthma@state.ma.us).

Sincerely,  
Elise Pechter MPH, CIH

secondhand smoke may be a trigger that increases the severity of asthma attacks in those with asthma and could also be associated with new-onset asthma in previously non-asthmatic adults.

These recent studies strengthen the correlation between secondhand smoke and adult asthma noted in reports by the Surgeon General and the Institute of Medicine (IOM). Both reports concluded that there was "limited" evidence of a causal relationship between cigarette smoke and adult asthma.<sup>1,2</sup> However, these reports were based largely on studies published through 2001. In the following sections, we summarize two of the recent articles on secondhand smoke and adult asthma.

## Secondhand Smoke and Adults with Asthma<sup>3</sup>

The impact of secondhand smoke on adults with asthma was investigated by Eisner *et al.* The researchers recruited non-smoking individuals with asthma through a group of randomly selected physicians in Northern California. The subjects were interviewed to obtain baseline data, and follow-up interviews were conducted 18 months later. Follow-up interviews were completed by 349 subjects (87% response rate). The interviews assessed the subjects' socioeconomic status, asthma history, and health status, as well as exposure to secondhand smoke in the home, workplace, car, and other locations. Symptoms associated with secondhand smoke exposures were also evaluated. Interview data were analyzed and controlled for variables such as age, sex, income, and education level.

The results of the study showed that exposure to secondhand smoke, as identified during the baseline interview, was associated with impaired health at the 18 month follow up. Individuals who reported secondhand smoke exposure were more likely to visit the emergency room (odds ratio = 3.4; CI=1.1, 10.3) and be hospitalized for asthma-related problems (odds ratio = 12.2; CI=1.5, 102). They also experienced more severe asthma flares, poorer overall physical health, and lower asthma specific quality of life than those who were not exposed to secondhand smoke. The author cites previous studies

<sup>2</sup> Institute of Medicine, Clearing the Air: Asthma and Indoor Air Exposures:2000. <http://www.iom.edu/CMS/3793/5511.aspx>

<sup>3</sup> Eisner MD, Yelin EH, Katz PP, Earnest G, Blanc PD. Exposure to indoor combustion and adult asthma outcomes: environmental tobacco smoke, gas stoves, and woodsmoke. *Thorax* 2002;57:973-978.

## REPORT JULY, AUGUST AND SEPTEMBER CASES NOW

Help us protect workers' health and promote safe workplaces! By October 31<sup>st</sup>, please report all occupational lung disease cases seen for the first time in July, August, and September 2006. Thank you.

## The Dangers of Secondhand Smoke

Secondhand smoke contains over 4,000 substances and is a well-known cause of cancer, but its relationship to adult asthma has not been well studied. Since 2001, a number of studies have concluded that

<sup>1</sup> US Department of Health and Human Services, The Health Consequences of Involuntary Exposure to Tobacco Smoke: A Report of the Surgeon General, 2006. ([http://www.cdc.gov/tobacco/sqr/sqr\\_2006/index.htm](http://www.cdc.gov/tobacco/sqr/sqr_2006/index.htm))

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that have shown links between secondhand smoke exposure and increased medication use and lower pulmonary function. This study provides additional prospective evidence that exposure to secondhand smoke is associated with poorer asthma health outcomes.

### Secondhand Smoke and Adult Onset Asthma<sup>4</sup>

Jaakkola *et al* conducted a large population-based study to examine the impact of secondhand smoke on new-onset asthma. This study identified newly-diagnosed asthma in the working-age population (21-63 years old) during a 2.5 year period (1997-2000) in a district of South Finland. Individuals with a history of asthma, and those who were past and present smokers were eliminated from the study, resulting in a sample population of 239 patients with new-onset asthma. A control population of 487 participants was recruited by using census data of the district's population and excluding persons with a history of asthma or smoking.

A self-administered questionnaire queried subjects about their exposure to secondhand smoke both in the previous 12 months, and throughout their lifetime. The questionnaire also collected demographic and health information, active smoking history, occupation and work environment characteristics, as well as dietary information.

The relationship between exposure to secondhand smoke and adult-onset asthma was evaluated. The analysis controlled for other exposures related to asthma, including mold in the home or workplace, history of pets in the home, and dust, fumes, or sensitizers in the workplace. The results of the study showed that the risk of developing asthma as an adult was significantly related to total exposure to secondhand smoke during the past year (odds ratio = 1.97; CI=1.19, 3.25). Asthma was also significantly related to *workplace* secondhand smoke exposure (odds ratio = 2.16; CI=1.26, 3.72). The fraction of asthma attributable to total secondhand smoke exposure during the previous year was 49.2% (CI=16.0, 69.2) among exposed individuals. Eight percent (8%) of all new asthma cases in the previous year in the working age population were attributable to secondhand smoke. A statistically significant exposure-response relation was not observed; however, cumulative work exposure appeared to have a stronger effect than home exposure.

### 19 Year-Old Waitress Died from Asthma Attack<sup>5</sup>

The Michigan Fatality Assessment and Control Evaluation (MIFACE) program investigated the 2004 death of a 19-year-old waitress who suffered a fatal asthma attack in a bar where smoking was permitted.

<sup>4</sup> Jaakkola MS, Piipari R, Jaakkola N, and Jaakola JJK. Environmental Tobacco Smoke and Adult-Onset Asthma: A Population-Based Incident Case—Control Study. *American Journal of Public Health* 2003;23:2055-2060.

<sup>5</sup> Adapted from MIFACE investigation, #04MI223 <http://www.oem.msu.edu/MiFace/04mi223.pdf>

She died less than 50 minutes after arriving for work. She had left her inhaler at home, and collapsed while attempting to leave the building to get fresh air. Emergency response was delayed because the bar did not have an emergency response plan and the bar manager called the owner before calling 911.

In response to the growing evidence about the hazards of secondhand smoke, a number of government agencies, including MDPH and the EPA have advocated for protection against smoking in the workplace. Nongovernmental organizations have also promoted protection against secondhand smoke. The American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) wrote that no engineering solutions can be relied upon to control health risks from secondhand smoke in spaces where smoking occurs.<sup>6</sup> The American Lung Association stated, "for adult nonsmokers, the workplace is the primary source of secondhand smoke exposure...Levels of secondhand smoke in restaurants and bars are approximately 1.6 times greater and 7.6 times greater, respectively, than office workplaces. Food service workers have a 50% greater risk of dying from lung cancer than the general population"<sup>7</sup>. Gilmour *et al* summarized recent evidence and concluded that "ETS is related to an increased risk of adult-onset asthma."<sup>8</sup>

In July 2004, Massachusetts became one of nine states that banned smoking in all enclosed work-places.

For more information about the smoke-free workplace law, or to report violations, call the Massachusetts Tobacco Control Program at 1-800-992-1895.

Health care providers play an important role in encouraging asthmatic patients to avoid secondhand smoke. Compliance with MA law prohibiting smoking in the workplace will aide in reducing both the severity of asthma symptoms as well as the prevalence of asthma in adults.

### Work-Related Asthma Cases Reported to Massachusetts SENSOR

July 2006	August 2006	September 2006	Total (3/92 – 9/06)
1	1	1	1046

<sup>6</sup> ASHRAE June 30, 2005 Environmental Tobacco Smoke Position Document

[http://www.ashrae.org/content/ASHRAE/ASHRAE/ArticleAltFormat/20058211239\\_347.pdf](http://www.ashrae.org/content/ASHRAE/ASHRAE/ArticleAltFormat/20058211239_347.pdf)

<sup>7</sup> American Lung Association, State of Tobacco Control:2005  
<sup>8</sup> Gilmour MI, Jaakola MS, London SJ, Nel AE, Rogers CA. How exposure to environmental tobacco smoke, outdoor air pollutants and increased pollen burdens influences the incidence of asthma. *Environmental Health Perspectives* 2006;114:627-633.

*Please report work-related asthma cases to SENSOR by phone, fax, or mail!*