

SENSOR

Occupational Lung Disease Bulletin

Massachusetts Department of Public Health

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Dear Health Care Provider,

This issue of the *Bulletin* includes a summary of cases of work-related asthma (WRA) reported to Massachusetts SENSOR from 1993 through 2004. Although the number of cases identified by the surveillance system is believed to be only a small fraction of the total number of WRA cases in the Commonwealth, the data provide important information about the industries and occupations where workers are at risk of WRA and about workplace exposures that need to be addressed. A more in-depth analysis of the data is planned.

Enclosed with this *Bulletin* is an updated copy of "Reporting Occupational Diseases and Injuries in Massachusetts," a brochure summarizing health care providers' responsibility under public health law to report select injuries and illnesses to us. Please continue to report cases of work-related asthma.

To receive your *Bulletin* by e-mail, to provide comments, or to contribute an article to the *Bulletin*, send a message to Occupational.Asthma@state.ma.us

Sincerely,
Elise Pechter MPH, CIH

Work-Related Asthma Massachusetts SENSOR 1993 – 2004

Cases of work-related asthma (WRA) are sentinel health events that indicate the need for preventive intervention. Massachusetts and three other states track cases of WRA to identify these sentinel health events and describe the industries, occupations and exposures that need attention. For surveillance purposes, a case of work-related asthma is defined as an individual with a physician's diagnosis of asthma and an association between the symptoms of asthma and work. WRA includes two main categories: 1) pre-existing asthma aggravated by workplace exposures, and 2) new onset asthma caused by sensitizers or irritants in the workplace. Reactive Airways Dysfunction Syndrome (RADS) is a subset of new onset asthma distinguished by persistent

asthma symptoms caused by a one-time high level irritant exposure.

WRA Surveillance Categories

1. Work-aggravated asthma
2. New-onset asthma
 - a) Occupational asthma
 - b) Reactive airways dysfunction syndrome (RADS)

Since 1993, physicians in Massachusetts (and since January 2003, all health care providers) have been required by public health regulations to report confirmed and suspected cases of WRA to the Massachusetts Department of Public Health. SENSOR staff conduct follow-up telephone interviews with those individuals reported to the Occupational Health Surveillance Program (OHSP) to learn more about the cases, and to confirm the association of asthma with work. Information from cases is used to identify suspect asthma-causing agents and inform intervention activities.

Between January 1993 and December 2004 SENSOR received 1048 case reports of work-related asthma (WRA). Interviews were completed with 594 cases (57%), of which 578 cases met the criteria for WRA. Summary findings about the 578 cases are presented below.

Individuals with WRA were predominantly female (62%) and white (81%); seven percent (n=38) were of Hispanic origin. The vast majority of the cases were new-onset occupational asthma (88%, n=506). RADS, a subset of new onset asthma accounted for 65 cases (11%), and the remaining 441 cases were new-onset occupational asthma. Work-aggravated asthma accounted for 61 cases (11%). An additional 11 cases met the case definition for work-related asthma, but were not classifiable.

Description of Industry, Occupation and Exposures

Over half of all the WRA cases were employed in the service sector (n=296, 52%), mostly in the health care industry (n=168, 30%), followed by educational services (n=75, 13%). Manufacturing accounted for one quarter of all cases (n=138, 24%) led by chemical manufacturing (n=22, 4%) and miscellaneous manufacturing (n=15, 3%). Public administration employed another nine percent (n=49, 9%) followed by the retail and wholesale trade industries (n=38, 7%). Construction accounted for only 4% (n=21). See **Table I**.

Table II presents the occupations of the WRA cases. Managerial and professional workers accounted for one-third of all occupations (n=186, 32%). Operators, repair workers and laborers accounted for 28% of cases (n=158); this is a varied group of professions that includes construction workers, machine operators, and repair technicians. Technical, sales and administrative workers accounted for nearly one quarter (n=130, 23%).

Overall, nurses, office workers, and teachers were the most frequently reported occupations, together accounting for 36% of all WRA cases.

SENSOR staff record up to three exposures per person that trigger his or her asthma. As shown in **Table III**, many of the cases were unable to identify the specific agent of concern. The most frequently reported exposures included indoor air pollutants (n=140, 13%), dusts and fibers (n=122, 12%), cleaning products (n=120, 11%), mold (n=72, 7%) and solvents (n=49, 5%). Specific agents identified included latex (n=44, 4%), isocyanates (n=34, 3%) smoke (n=29, 3%), and formaldehyde (n=22, 2%). Among the 65 RADS cases, cleaning products (n=30, 46%) and unspecified chemicals (n=11, 17%) were most frequently reported. Among the 61 work-aggravated asthma cases, dust (n=19, 31%) and indoor air pollutants (n=17, 28%) were most frequently reported. The most frequently reported specific agents* known to cause new-onset asthma were latex, isocyanates, formaldehyde, quaternary ammonium compounds, glutaraldehyde, baking flour, and metal working oils.

Table I: Distribution of WRA cases by industry, Massachusetts SENSOR, 1993-2004, n=566

INDUSTRY	No.	%
Services	296	52.3%
<i>Health Care*</i>	168	29.7%
Hospital**	134	23.7%
<i>Educational services</i>	75	13.3%
Elementary and Secondary **	57	10.1%
All other	53	9.4%
Manufacturing	138	24.4%
<i>Chemicals and allied*</i>	22	3.9%
<i>Miscellaneous mfr</i>	15	2.7%
<i>Machinery, excl electrical</i>	14	2.5%
<i>Electrical machinery</i>	13	2.3%
<i>Fabricated metal products</i>	12	2.1%
<i>Measuring devices</i>	11	1.9%
<i>Food and kindred products</i>	10	1.8%
All other	41	7.2%
Public Administration	49	8.7%
<i>Justice, public order, safety</i>	20	3.5%
<i>Regulation of transportation*</i>	14	2.5%
All other	15	2.7%
Trade (wholesale/retail)	38	6.7%
Construction	21	3.7%
<i>Construction, special trade</i>	16	2.8%
All other	5	0.9%
Transportation	14	2.5%
Other	10	1.8%

* Table includes industries at the 2-digit level with 10 or more cases.

** Table includes industries at the 3-digit level with 35 or more cases.

Table II: Distribution of WRA cases for select occupations, MA SENSOR, 1993-2004, n=573

OCCUPATION	No.	%
Managerial and Professional	186	32.5%
<i>Nurses</i>	83	14.5%
<i>Teachers</i>	48	8.4%
<i>Managers</i>	21	3.7%
<i>Engineers/scientists</i>	10	1.7%
Technical, Sales, Administrative	130	22.7%
<i>Administration/office workers</i>	74	12.9%
<i>Health technicians</i>	38	6.6%
<i>Sales</i>	12	2.1%
Operators/Repair/Laborers	158	27.6%
<i>Construction/painters</i>	19	3.3%
<i>Mechanics/repairers</i>	19	3.3%
<i>Welders</i>	12	2.1%
<i>Spray painting</i>	11	1.9%
<i>Plastic/metal machine operators</i>	11	1.9%
<i>Auto repair</i>	6	1.0%
<i>Bakers</i>	5	0.9%
Service	74	12.9%
<i>Health aides</i>	18	3.1%
<i>Cleaning occupations</i>	18	3.1%
<i>Protective services (police/fire)</i>	17	3.0%
<i>Hairdressers</i>	7	1.2%
Transportation	18	3.1%
Farming, Forestry, Fishing	5	1.2%

Table III: Fifteen most frequently reported asthma causing agents for cases of WRA by case classification: Work Aggravated Asthma (WAA), Reactive Airways Dysfunction Syndrome (RADS), and New Onset Asthma (NOA), Massachusetts SENSOR, 1993-2004, n=1057 agents*

AGENT	NOA	RADS	WAA	WRA		
				unclass.	No.	%*
Indoor Air Pollutants **	116	5	17	2	140	13.2
Dust and fibers, all	91	9	19	3	122	11.5
Cleaning Products ***	78	30	10	2	120	11.4
Mold	61	1	10	0	72	6.8
Solvents	33	7	9	0	49	4.6
Latex	38	2	4	2	44	4.2
Chemicals, NOS	24	11	4	1	41	3.9
Isocyanates****	31	2	1	0	34	3.2
Smoke, NOS	15	8	6	0	29	2.7
Acids and bases	15	7	3	0	25	2.4
Metals	20	2	3	0	25	2.4
Exhaust	20	0	2	0	22	2.1
Formaldehyde	20	0	2	0	22	2.1
Paints and lacquers	15	1	3	2	21	2.0
Welding fumes	13	4	1	0	18	1.7

NOS = Not otherwise specified

*Up to 3 agents were reported for each of 578 cases

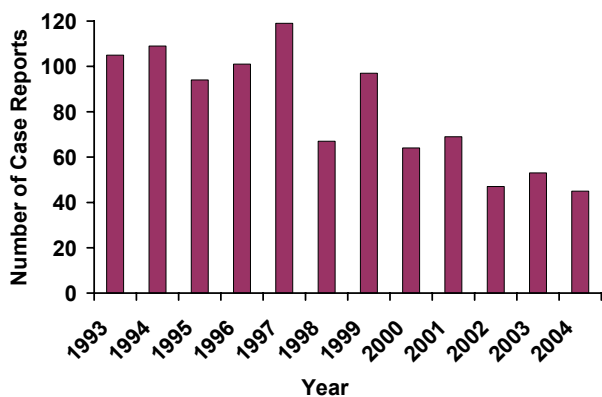
*** Includes specific cleaning products (e.g., bleach and ammonia)

**** Includes MDI, TDI, and HDI etc.

** Includes cases who report "bad air", "indoor air pollutants", "poor ventilation", or "sick building syndrome". More specific agents associated with indoor air pollution, including dust and mold, are coded separately

WRA can have very serious health and financial impacts on working adults. Eighty-eight percent (n=495) of those with WRA still had breathing problems at the time of the interview and 23% reported their symptoms had become “more severe,” since their initial diagnosis. More than half of the cases (n=304) reported one or more emergency room treatments for their asthma symptoms; nearly one third of the cases (n=180, 31%) reported multiple visits to the emergency department. A total of 211 (37%) cases reported leaving the job that caused their breathing problems, including 19 cases who reported that they were fired because of their breathing problems.

Graph I: Number of health care provider case reports per year, Massachusetts, SENSOR, 1993-2004, n=1017



More than half the cases (n=314, 53%) applied for workers’ compensation.

As shown in **Graph I**, the number of cases of WRA reported to SENSOR has declined in recent years.

Discussion

It is well recognized that only a small proportion of WRA cases are reported to SENSOR and that findings may not be representative of the underlying incidence of WRA in the Massachusetts population. Interview response patterns also influence the findings reported here, which are based on the 57% (n=594) of all reported cases who consented to participate in telephone interviews. White-collar workers were more likely to respond than blue-collar workers and women were more likely to respond than men. Thus white-collar workers and women are over-represented in the findings.

It is unlikely that the observed decline in reported cases over time reflects a true drop in incidence, but is more likely due to reduced reporting. It has been suggested that this decline may be due, in part, to the time and paperwork required in the face of ever increasing workloads. There has also been increased concern in recent years about patient confidentiality.

Health care providers are reminded that reporting cases of WRA to the Massachusetts Department of Public Health (MDPH) is **NOT** a violation of the Health Insurance Portability and Accountability Act (HIPAA) because Massachusetts regulations require reporting of this condition. HIPAA expressly “authorizes health care providers to disclose protected health information without permission of the individual, to MDPH, the public health authority authorized to receive it.”

SENSOR has several initiatives underway to address the data limitations. We are now using the new statewide database of all emergency department visits to identify cases of asthma with workers’ compensation as the expected payer. We are also preparing an in-depth report on all reported cases (not just those interviewed) to address selection bias. In addition, SENSOR plans to collect medical records for those workers not reached by telephone, to increase case confirmation.

SENSOR also has some good news about WRA reporting. In 2003/2004, 36% of cases were reported by health care providers who had not reported previously. We thank and welcome these new reporters.

While the SENSOR data are not necessarily representative, findings do provide important information about the industries and occupations where workers are at risk of WRA and about workplace exposures that need to be addressed.

Over the last 10 years, the Massachusetts SENSOR data have: drawn attention to the issue of latex exposures, contributing to a national alert on latex gloves; led to identification of a new asthma causing agent; and, together with findings from other SENSOR states, helped bring attention to cleaning products and indoor air pollution as potential asthma hazards in health care and schools. Inspections and referrals by the SENSOR program have led to reduction of hazards in a number of specific Massachusetts workplaces. SENSOR also continues to serve as an important vehicle for educating the community—providers and the public alike—about work-related asthma and the potential for asthma prevention.

*Known asthma causing agents according to the Association of Occupational and Environmental Clinics, and used by NIOSH. Exposures labeled with “A” meet the criteria as a known asthma inducer. <http://www.aeec.org/tools.htm>

**Number of Work-Related Asthma Cases Reported to Massachusetts SENSOR by Health Care Providers
March 1992 – Present**

September 2005	October 2005	November 2005	Total to Date (3/92-present)
2	5	0	1031

Asthma & Construction Workers



1 out of 10 adults in Massachusetts has asthma. DO YOU?

SENSOR has developed an educational brochure about work-related asthma in construction workers, and contributed to “Addressing Work-related Injuries and Illnesses: A Guide for Primary Care Providers,” being distributed by MassCOSH to community health centers in the Boston area. Contact MassCOSH for copies of the Guide (617 825-7233).

Addressing Work-related Injuries and Illnesses: A Guide for Primary Care Providers

Developed by the Massachusetts Coalition for Occupational Safety and Health and the Greater Boston Physicians for Social Responsibility with significant support provided by the Massachusetts Department of Public Health.

