



# Lungs@Work



## SHARP's Work-Related Asthma Bulletin

A newsletter of the Safety and Health Assessment and Research for Prevention (SHARP) Program  
Washington State Department of Labor and Industries, PO Box 44330, Olympia WA 98504-4330 1-888-66-SHARP

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### WELCOME!!

Dear Health Care Professional:

Welcome to the introductory issue of *Lungs@Work: SHARP's Work-Related Asthma Bulletin*. This newsletter is designed to serve as a resource for health care professionals on issues surrounding work-related asthma (**WRA**).

We hope that you find this newsletter useful and welcome any suggestions you may have for its improvement.

Sincerely,  
David Bonauto, MD, MPH

Work-related asthma is now a reportable condition in Washington State.

*see page 2 for details*

### Cases of Work-Related Asthma Have Doubled in Recent Years

- WRA is the most frequently diagnosed occupational lung disease in industrialized countries.
- 10-20% of all new adult asthma cases are attributed to work-related exposures.<sup>1,2</sup>
- Yearly costs associated with WRA are approximately \$400 million.<sup>3</sup>
- Over 250 chemical agents used in the workplace are known to cause asthma. This list is expected to grow steadily.<sup>4,5</sup>
- WRA can be associated with significant and long-term work disability.<sup>6-8</sup>
- The National Institute for Occupational Safety and Health (NIOSH) has made work-related asthma one of its priority research areas.<sup>3</sup>

From 1994 through 1998, Washington workers filed 940 potential WRA claims through the workers' compensation system. Over the five year period, the annual number of claims more than doubled from 116 to 250. Furthermore, the WRA claims rate increased significantly, despite the fact that the overall workers' compensation claims rate decreased during this time period. Cases were seen in a wide range of industries.

SHARP recently evaluated the utility of using workers' compensation data for the surveillance of WRA. Workers' compensation data were found to be useful, but limited and insufficient as a single source.

The complete report *Workers' Compensation Based Surveillance of Asthma, Hospitalized Burns, and Adult Blood Lead Levels in Washington State, 1994-1998*, Technical Report Number 64-1-2000 can be obtained by contacting SHARP at 1-888-66-SHARP. In addition, a two-page executive summary is available at SHARP's website: [www.Lni.wa.gov/sharp/sharp.htm](http://www.Lni.wa.gov/sharp/sharp.htm)

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# Work-Related Asthma: A New Reportable Condition

On July 12, 2000 the State Board of Health adopted WAC 246-101 (Notifiable Conditions Rule), a revised list of reportable injuries and illnesses for the State of Washington. WRA is one of the new conditions added to the revised list, which is currently in effect. For more information on the revised Notifiable Conditions Rule: [www.doh.wa.gov/os/policy/246-101.htm](http://www.doh.wa.gov/os/policy/246-101.htm)

## Case Definition

All health care providers and health care facilities should report any diagnosed or suspected case of asthma or reactive airways dysfunction syndrome (RADS) caused or exacerbated by workplace sensitizers or irritants.

## How to Report

SHARP and the Department of Health have entered into an agreement to have all WRA case reports sent directly to SHARP.

Reporting can be done by mail, fax, or phone:

- Mail: PO Box 44330, Olympia WA 98504-4330
- Fax: 360-902-5672
- Phone: 1-888-66-SHARP

SHARP has developed an automated voice messaging system to receive case reports by telephone 24-hours a day. Please let us know if this system works for you or if you have any recommendations for its improvement.

For more information on WRA reporting, or to download a reporting form, go to:

[www.Lni.wa.gov/sharp/reportable/asthma.htm](http://www.Lni.wa.gov/sharp/reportable/asthma.htm)

## SHARP's Goals

1. Describe the prevalence and incidence of WRA.
2. Characterize WRA's distribution across occupation, industry, and region.
3. Identify causative agents and factors associated with WRA's onset.
4. Discover and investigate potential clusters.
5. Develop and implement prevention strategies.
6. Share information learned with health care providers, public health professionals, and labor and industry stakeholders.

## Privacy and Confidentiality

All information obtained from case reports will be used for public health surveillance and prevention purposes only. Specific personal identifiers obtained by SHARP for surveillance purposes will not be shared with any other group within L&I for claims initiation/management or any other purpose without written permission by the case.

## Four Reasons to Report

1. Less than a quarter of WRA cases are reported to workers' compensation systems.
2. The claims rate for WRA has increased significantly in the last 5 years.
3. Many workers with unrecognized work-related asthma suffer from permanent breathing problems.
4. Reporting is the right thing to do to protect workers in Washington State.

## Guidance on Diagnosis

The diagnosis of WRA requires a complete clinical and occupational history, as well as objective testing to both diagnose asthma and attribute the onset or exacerbation of asthma to the workplace.

The use of objective testing is crucial, since the standard for care in cases of WRA is significant exposure reduction, or possibly, permanent removal from the workplace.

The diagnosis of WRA is difficult and referral to an appropriate specialist may be necessary.

For more information on the diagnosis of WRA:

Chan-Yeung M, Malo J-L. Occupational Asthma. *NEJM*; 333:107-112 (1995).

Lombardo LJ, Balmes JR. Occupational Asthma: A Review. *Env Health Perspect.*; 108(suppl 4):697-704 (2000).

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## A Case Presentation

Mr. M is a 42-year-old automobile painter with no previous history of respiratory problems. During the 10 months prior to seeing a health care provider, Mr. M had rhinitis followed by episodes of coughing, shortness of breath and chest tightness. His symptoms were progressing in severity and at the insistence of a friend, he sought medical evaluation. Evaluation by a primary care physician suggested asthma associated with work. Mr. M. was referred to an occupational medicine clinic.

On evaluation by an occupational medicine physician, Mr. M reported his symptoms occurred towards the end of the workday and resolved over the course of the weekend. Symptoms were more frequently associated with use of isocyanate-containing paints in his workplace. Mr. M was an ex-cigarette smoker with a five-pack per year history. He discontinued smoking with the onset of chest tightness, shortness of breath, and cough without improvement in these symptoms. He denied other known cardiac risk factors, orthopnea and reported his cough to be non-productive. He confirmed no history of seasonal allergy or family history of atopy. He did not have a history of medication or aspirin allergy.

Mr. M. was an automobile painter for approximately 10 years. Over the years he used many different types of paints, but for the last three years used paints containing diphenylmethane diisocyanate. He used a respirator with supplied air, but was frequently exposed to paint spills. Compliance to respirator use was poor. Previous occupational history included work as a laborer, auto collision repair and sales support at an auto dealership.

Physical exam was non-remarkable. Cardiac and lung sounds were normal. There were no inspiratory or expiratory wheezes, nor a prolonged expiratory phase. Chest X-ray was normal.

**Comment:** *The history is suggestive of occupational asthma. Occupational asthma is a disease characterized by variable airflow limitation and/or airway hyperresponsiveness due to causes and conditions attributable to a particular work environment and not to stimuli encountered outside of the workplace.<sup>9</sup> The temporal variation of symptoms in association with work, the absence of pre-existing asthma and the known association of isocyanates as a potent sensitizing agent are suggestive for occupational asthma. The use of the term occupational asthma is reserved for asthma thought to be caused by work. Pre-existing asthma exacerbated by work is typically called work-aggravated asthma. Physical exam findings are normal and at the*

*time of exam the worker was probably asymptomatic. While the history is suggestive of occupational asthma, the ability to diagnose occupational asthma solely based on history and physical is only 63% accurate.<sup>10</sup> Objective tests for the diagnosis of asthma followed by objective tests to attribute the asthma to the workplace are essential. The standard treatment for occupational asthma is removal from work. Removal should be done only when objective tests demonstrate an occupational association to airflow limitation.*

Spirometry was normal with no reduction of FEV1 or a decreased FEV1/FVC. Methacholine challenge precipitated a 23% reduction in FEV1 at 2.5mg/ml. Workplace challenge testing using a peak flow meter every 4 hours while at work and on weekends was performed. A greater than 20% reduction in peak flow rates occurred on days Mr. M was exposed to isocyanates.

Mr. M was removed from work due to a diagnosis of occupational asthma. He presently is employed outside of the auto painting industry.

**Comment:** *General steps to diagnose occupational asthma include an occupational history and physical, a diagnosis of asthma supported with objective testing and subsequent objective testing to demonstrate variability of asthma in association with workplace exposures. In this particular case, the normal spirometry led to a test of non-specific bronchial hyperresponsiveness, a methacholine challenge test. Reactivity to 8 µg/ml or lower of methacholine is a relatively sensitive and specific test for asthma; therefore, Mr. M's response at 2.5 µg/ml is considered a positive test. Subsequent testing for attribution to work included workplace challenge with serial peak flow testing. This should be performed every 2-4 hours during the course of 2 weeks of work and subsequently during periods off from work. A 20% diurnal variation in peak flow related to workplace exposure, which is absent when not exposed to work, is considered a positive test.*

*Even negligible exposures to isocyanates in workers sensitized to them are associated with progression of respiratory disease. Use of respiratory protection devices does not afford complete protection from isocyanate exposure.*

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