

Occupational Medicine Clinical Update

Occupational Health Clinics for Ontario Workers Inc, Sarnia-Lambton

'Restricted Duties' on Smog Alert Days for Workers?



People are being advised to consider being a little 'lazy' on those 'hazy days of summer'

In this issue:

Activity Levels on Smog Days	1
Is Work Causing the Wheeze?	2,3
Windsor Asthma Outreach	4
What's Your Opinion?	4

In June 2003, the Toronto Board of Public Health adopted the recommendations of a report by then Toronto Medical Officer of Health (MOH), Dr. Sheela Basrur (who became Ontario's chief MOH in February 2004). The report advised that on smog alert days and when air quality index (AQI) is 50 or higher, people shift activity levels from vigorous to moderate or light, reduce the duration of activity and introduce more rest breaks.

The report also called on the Federal Minister of Health, in consultation with Toronto Public Health, the Federal and Ontario Ministers of Environment, and the Ontario Minister of Health and Long Term Care to undertake a number of initiatives including:

"...provide guidance on the promotion of physical activity to health units that includes consideration of the appropriate times, locations and Intensity of physical activity by children and adults, including those with heart and breathing problems, when outdoor air pollution levels are elevated."

The report cited numerous studies showing increased adverse health impacts of breathing polluted air with increased activity levels:

"These effects tend to be most pronounced in people with underlying health conditions such as asthma."

The recommendations came out of a study by the City of Toronto on air pollution and physical activity. The study targeted exercise and did not specifically address exertion in the workplace. Considering that raking leaves or walking briskly for a duration of 30-60 minutes was defined as moderate activity, the recommendations have potentially enormous implications for outdoor workers, employers and society as a whole.

Physicians should be hearing more about these initiatives from their respective local health units, and possibly from other agencies (including the OMA) as these groups have all received the report. However, it may be some time before the workplace gets specific consideration in these precautions. Doctors should keep in mind not only the potential impact of air pollution on exercise, but also of working outdoors, when patients present with worsening cardiac or respiratory symptoms.

Dr. Basrur and the Toronto Board of Public Health have recognized the importance of taking action on the human health effects of smog. This will likely take on even greater significance as the report cited, "with climate change and the associated increase in hot sunny days, the number of smog alert days is likely to increase."

Reference

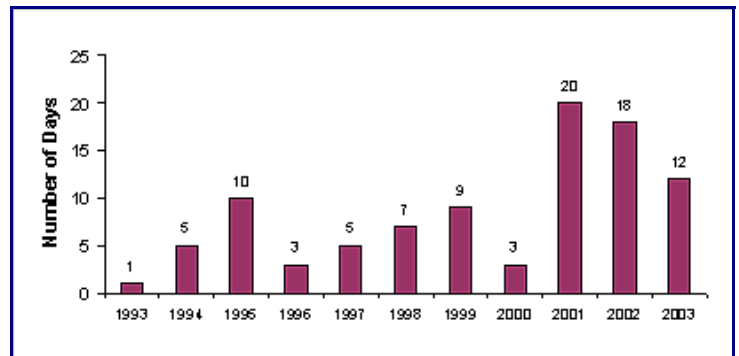
Basrur SV. 2003. Air pollution and physical activity: Examination of Toronto air data to guide public advice on smog and exercise. http://www.city.toronto.on.ca/health/hp/he/pdf/ercise_technical.pdf

The Toronto Board of Public Health has taken aim at the clear evidence that air pollution is shortening lives



Considering raking leaves for 30-60 minutes is moderate activity, the implications for the workplace are enormous

Smog alert days in Toronto since 1993



Occupational Asthma: Is Work Causing the Wheeze?



Estimates of the prevalence of work-related asthma run as high as 25%

Occupational Asthma Tool Chest

- *History (timing of symptoms)*
- *Peak flow metering*
- *PFT (with bronchochallenge)*
- *Immunologic testing*

A 56-year-old welder presented to his family doctor's office with worsening symptoms of asthma. The doctor had suspected for some time that the symptoms were work related. They had not appeared until three years prior, with no previous history of respiratory disease, atopy or family history. There was a remote smoking history.

PFT's from a year earlier had shown mild to moderate obstruction with reversibility. As the symptoms seemed to be worsening, the physician felt he should send the patient for a repeat PFT and histamine bronchoprovocation test to confirm his suspicions.

Several months later the test came back with, to the family doctor's surprise, the bronchochallenge showing no significant airway reactivity. What might be going on?

Estimates on the prevalence of work-related asthma run between 5-25%. Thus up to 1 out of every 4 asthma patients in a family practice may have the workplace contributing to, or causing, their asthma. Furthermore, the societal cost of occupational asthma is significant. A recent analysis¹ in the U.S. pegged this figure at 1.6 billion USD annually.

Hence, the diagnosis should be routinely considered in any adult with new-onset asthma or an exacerbation of pre-existing asthma.

The case above highlights a few of the issues in determining the role work may play in a relatively common condition such as asthma. Understanding how to classify the type of asthma can be very helpful in sorting out this sometimes thorny problem.

Classifying work-related asthma

Work-related asthma (WRA) can manifest as true occupational asthma (asthma *induced* by work), from either an IgE sensitizing agent or an irritant. WRA can also *aggravate* asthma from another underlying cause.

Sensitizer-induced occupational asthma (**SIA**) is more common (90%) than irritant-induced (7%). The former results from ongoing exposure to any one of the growing list of 250 known sensitizing agents² (see Table 1, page 3).

Irritant-induced occupational asthma (**IIA**) results from a single exposure to very high concentrations of an irritant. This includes a wide variety of dusts, gases, vapor and fumes with irritant qualities encountered in the workplace.

Making the diagnosis

Timing of symptoms is usually crucial to the diagnosis of occupational asthma. Historical details like the improvement of symptoms on evenings, weekends and holidays is helpful in establishing a diagnosis of WRA.

The physician also needs to consider the pattern of early vs. late response bronchoconstriction in asthmatics. **Early responses** typically develop within minutes of exposure and peak within 10-30 minutes. **Late responses** develop within 2-10 hours of exposure and can persist for several hours before resolution.

Early and late responses can occur sequentially in response to the same stimulus. Complicating matters further, the symptoms can persist for weeks following the stimulus.

While a detailed history may be helpful in detecting occupational asthma, specificity of the history has been shown to be poor².

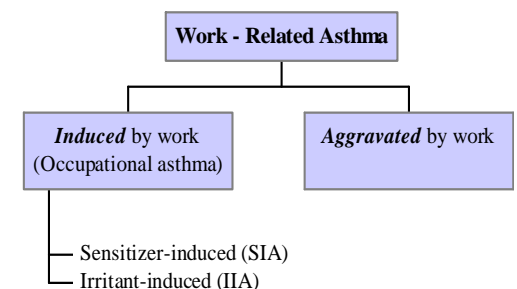
Objective testing is key to the diagnosis of WRA. Peak flow metering remains an inexpensive and practical way of documenting symptoms in relation to workplace stimuli. Pulmonary function tests (PFT's) with pre and post bronchodilator measurements and possibly histamine or methacholine challenge tests should be performed.

In performing these tests, it is crucial to know the

(Continued on page 3)



The workplace needs to be routinely considered in exacerbation of, or new-onset, asthma



Classification of Work-Related Asthma

Occupational Asthma (continued)

work status of the patient. To rule out occupational asthma, PFT's must be done within 24 hours of the patient's usual work exposures³.

Immunologic testing may also play a role in diagnosing occupational asthma provided a reagent exists to test the suspected inducer. This type of testing is usually only available in academic centres with occupational specialization.

Management

This must be tailored to the underlying cause. For asthma aggravated by work and IIA, identification and reduction of exposure to the culprit irritants (along with maximizing medical management) may be sufficient. For SIA, mere reduction of exposure will not be adequate.

Consideration may also have to be given to the cumulative impact of poor air quality days for outdoor workers (see 'Smog', page 1).

Physicians should report asthma *aggravated* by work (with lost work time) and *induced* by work (SIA and IIA) to the Workplace Safety and Insurance Board (WSIB)³. In Ontario this occurs through completion of a Physician's First Report (Form 8).

When the patient came in for follow-up a clearer picture began to emerge. Shortly after the last visit to the GP the patient was laid off from welding. A two month interval from his last work date and the histamine challenge test occurred. Hence, he was out of the exposure.

More interestingly, the patient had gone to the U.S. following the test and began welding again. Once again, his symptoms returned and a PFT done by a physician in the States again showed a pattern of reversible airways obstruction.

This highlights the importance of knowing the work status of the patient when testing for WRA. It also is a reminder that asthma is not a static disease and the timing of testing is crucial to establish the diagnosis.

References

1. Sim M. The continuing challenge to reduce the burden of occupational asthma. *Occup. Environ. Med.* Oct 2003; 60: 713 - 714.
2. Banks DE, Wang ML. Occupational asthma. *Occupational asthma: State of the Art Reviews.* 15(2) Apr-Jun 2000.
3. Tarlo SM, Liss GM. Occupational asthma: an approach to diagnosis and management. *CMAJ.* 2003 Apr 1;168(7):867-71.
4. Reprinted from reference 3 "Occupational asthma: an approach to diagnosis and management" —Reprinted from, *CMAJ* 01-Apr-03; 168(7), Page(s) 867-871 by permission of the publisher. © 2003 Canadian Medical Association



PFT's must be done within 24 hours of the patient's usual work exposures to rule out occupational asthma³.

Asthma aggravated by work (with lost time) and induced by work should be reported to the WSIB by completing a Form 8

Table 1: Examples of workplace sensitizers to which workers in various professions may be exposed⁴

Occupation	Potential sensitizers
Health care workers	Natural latex rubber in gloves Glutaraldehyde used in sterilization of endoscopy equipment and development of x-ray film Penicillin and other aerosolized or powdered medications
Woodworkers - dusts, resins, glues	Dusts from red cedar and other woods Phenol formaldehyde resins in particle board Diisocyanates in glues
Automotive workers	Diisocyanates or epoxy compounds in spray paints Diisocyanates in manufacture of rigid or flexible polyurethane foam and glues
Electronic workers	Colophony or amines in soldering flux Acrylic glues
Welders & other metal workers	Metal dusts or fumes (e.g., nickel, cobalt, chromium) Coolants containing pine products or other sensitizers
Food processors and animal workers	Food or animal protein allergens (e.g., egg processors exposed to egg proteins, bakers exposed to wheat and fungal amylase)
Farmers or gardeners	Animal, plant, insect and fungal allergens
Cleaners and laboratory workers	Enzymes or cleaning agents

⁴ By permission of the publisher. © 2003 Canadian Medical Association

Windsor Getting Message Out on Occupational Asthma



OHCOW Windsor is targeting smaller, high-risk industries for education on the hazards of occupational asthma

Over the past decade, staff at the Windsor OHCOW clinic have identified occupational groups at risk for the development of respiratory disease from workplace exposures. In particular, they have identified a significant need for prevention and education strategies in occupational asthma. This is especially relevant considering there is an increased prevalence of asthma in Southwestern Ontario, combined with high industrial employment.

The Windsor clinic has targeted smaller, high-risk industries, where exposures to respiratory irritants and sensitizers occur. This project will include non-unionized industries such as auto

body repair shops, agricultural workers and acrylic nail salons. Several brochures related to these topics have been produced by the Windsor clinic and can be accessed (along with other resources) at <http://www.ohcow.on.ca/resources/handouts.html>

The project consists of four elements including worker/employer education and outreach, physician education and outreach, work site visits/enhancement of the present medical surveillance programs, and the development of three, five-minute videos. Project completion is targeted for December 2005.

What Do You Think?



We are looking for physicians who would like to exchange ideas on occupational medical issues

A local physician recently expressed an interest in some sort of interactive forum, within this newsletter. He suggested it could be an opportunity for community physicians to discuss occupational/environmental issues.

Some ideas included comments, questions, or perhaps getting local generalists or specialists to discuss a particular problem or topic they deal with that they would like to share.

We could also use the feedback for generating topics that would be of interest to physicians

reading the *Update*.

If you have thoughts or suggestions on this we would be interested in hearing about them. You can e-mail me directly at wteel@ohcow.on.ca or call the phone number below.

We look forward to any feedback you may have.

Warren Teel, MD



Occupational Health
Clinics for Ontario
Workers Inc.

*Occupational Health Clinics for Ontario Workers Inc,
Sarnia-Lambton*

171 Kendall Street
Point Edward, Ontario
N7V 4G6

Phone: 519-337-4627
Fax: 519-337-9442
Email: sarnia@ohcow.on.ca
WEBSITE: WWW.OHCOW.ON.CA

Edited by:
Warren Teel, M.D.

Medical Staff:
Abe Reinhart, M.D. areinhart@ohcow.on.ca
Jim Mackenzie, M.D. jmackenzie@ohcow.on.ca
Warren Teel, M.D. wteel@ohcow.on.ca

Occupational Health Clinics for Ontario Workers (OHCOW) is a pro-active team of health professionals committed to promoting the highest degree of physical, mental and social well being for workers and their communities. At five clinics in Ontario (Sudbury, Toronto, Hamilton, Sarnia and Windsor) a team of nurses, hygienists, ergonomists and physicians see patients and identify work-related illness and injuries, promote awareness of health and safety issues, and develop prevention strategies.