

WORK-RELATED ASTHMA:

Preventing Work-related Asthma in the Cleaning Industry



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OHCOW is a multi-disciplinary team of health care professionals committed to promoting the highest degree of physical, mental and social well being for employees and their communities.

Workplace Safety & Prevention Services (WSPS), formed in 2010 through the amalgamation of Farm Safety Association (FSA), Industrial Accident Prevention Association (IAPA) and Ontario Service Safety Alliance (OSSA), is one of four Health & Safety Ontario partners.

WSPS provides health and safety products, training and consulting to Ontario's agricultural, manufacturing and service sectors, and is a trusted advisor to businesses seeking to boost productivity and profitability by reaching zero work-related injuries, illnesses and fatalities.

Note: Work-related asthma is largely preventable. This booklet is designed to help employers, employees and joint health and safety committees (JHSCs) to:

- recognize work-related asthma
- put in place general strategies that employers and JHSCs can use to help prevent work-related asthma, and
- know when, where and how to get professional help.

Employees are encouraged to share the information in the booklet with their JHSC, employer, union health and safety representative and health care provider.

Work-related Asthma: Preventing Work-related Asthma in the Cleaning Industry

What is Asthma?

Asthma is a serious chronic (long-term) lung disease that makes it difficult to breathe. Nearly one million children and adults in Ontario suffer from asthma.¹ In adults who have newly diagnosed asthma, exposures to asthma-causing agents at work need to be considered.²

People who have asthma have increased sensitivity in the airways, called hyper-responsiveness. The airways become irritated and inflamed when substances that cause or provoke asthma are inhaled. Because of this inflammation:

- the muscles around the airway tighten
- the airway tissues swell, and
- excess mucus is produced.

All of these events can prevent the person from moving air freely in and out of the lungs, producing shortness of breath, coughing and wheezing, and chest tightness (Figure 1).

What is Work-related Asthma?

Asthma is work related when it is caused or made worse by an agent that a person comes in contact with at work. These workplace agents generally take the form of dusts, gases, fumes or vapours and are classified as *sensitizers* or *irritants*.² The agents are released into the workplace air and, when they are inhaled, they can lead to an asthmatic response, as seen in Figure 1.

There are two main types of work-related asthma:

- occupational asthma, and
- work-aggravated asthma (also called work-exacerbated asthma).

OCCUPATIONAL ASTHMA

Occupational asthma is the term used to describe asthma that is induced (newly caused asthma) by a workplace sensitizer or an irritant. The two types are:

- sensitizer-induced occupational asthma, and
- irritant-induced occupational asthma.

Sensitizer-induced Occupational Asthma

Asthma induced (newly caused) by a workplace sensitizer is known as sensitizer-induced occupational asthma. When a sensitizer is inhaled (breathed in), the body builds up its immune defences against the agent. This process is known as sensitization. It may take from 2 weeks up to 20 or more years to occur. This is called the latency period.

After a person has become sensitized, even tiny concentrations of the sensitizer can cause an asthmatic reaction. Asthma symptoms can be immediate (within minutes after repeated exposure to the agent) or late (usually 4–8 hours after exposure). In some cases, there may be a combination of immediate symptoms (within minutes) and later symptoms (2–3 hours later).²

Examples of cleaning products that contain known sensitizers (chemicals known to cause asthma) include:

- disinfectants
- carpet cleaners
- floor cleaners, waxes, strippers and varnishes, and
- all-purpose cleaners, glass cleaners, degreasers, oven cleaners and laundry products.

For a complete list, see Table 1, on Page 2.

Some employees who use these products may develop sensitizer-induced occupational asthma.³ Most workers' compensation claims for work-related asthma are due to sensitizer-induced occupational asthma.²

Irritant-induced Occupational Asthma

REACTIVE AIRWAY DYSFUNCTION SYNDROME (RADS)

A high, often accidental, exposure to the vapours or gases from cleaning products can even cause asthma in a person who has never had it before.

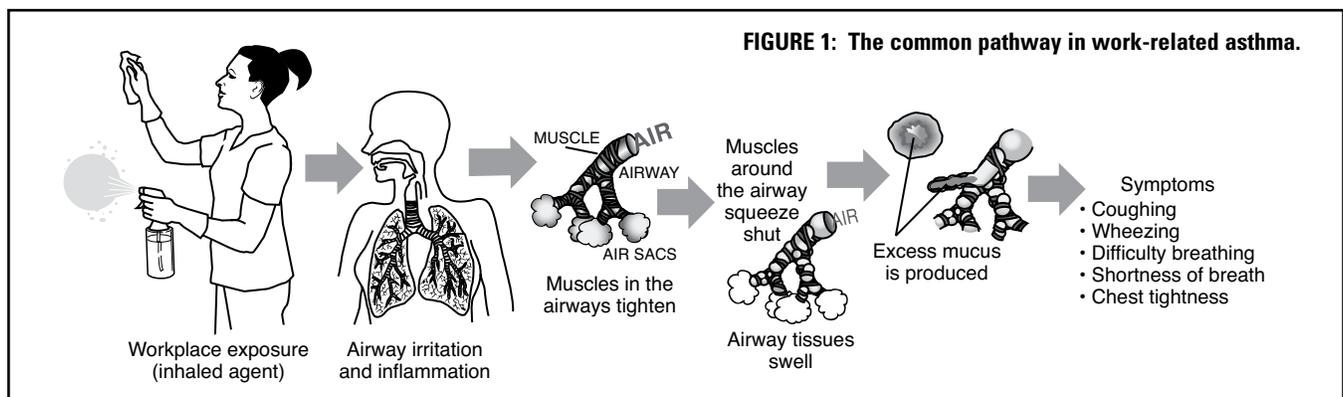


Table 1: Some Chemicals that are Related to Cleaning Products and may Cause Occupational Asthma ³⁻¹³	
Cleaning Duties or Products	Chemicals
All-purpose cleaning, glass cleaning, degreasing, oven cleaning, tile and grout cleaning	<ul style="list-style-type: none"> • ethanolamines (all-purpose cleaners, degreasers, glass cleaners, oven cleaners): <ul style="list-style-type: none"> ◦ monoethanolamine (MEA) ◦ triethanolamine (TEA) • quaternary ammonium compounds, such as benzalkonium chloride (all-purpose cleaner and tile and grout cleaners) • amino alcohols • aliphatic polyamides: <ul style="list-style-type: none"> ◦ ethylene diamine ◦ diethylene triamine ◦ triethylene tetramine
Disinfecting (e.g., kitchen, toilet, other surfaces)	<ul style="list-style-type: none"> • in any setting: <ul style="list-style-type: none"> ◦ quaternary ammonium compounds (prasterol or benzalkonium chloride, benzethonium chloride, cetalkonium chloride, cetrimide, cetylpyridinium chloride, benzyldimethylstearyl ammonium chloride) • in industrial and hospital settings: <ul style="list-style-type: none"> ◦ formaldehyde ◦ glutaraldehyde ◦ chlorhexamine, chloramine T
Floor cleaning, waxing, stripping and polishing	<ul style="list-style-type: none"> • ethanolamines • formaldehyde • benzalkonium chloride
Carpet cleaning	<ul style="list-style-type: none"> • tributyl tin oxide
Laundry	<ul style="list-style-type: none"> • MEA • ethylene diamine triethylene tetramine (EDTA)
Pool cleaning and/or disinfecting	<ul style="list-style-type: none"> • muriatic acid • chloramines
Any cleaning products containing isocyanates	<ul style="list-style-type: none"> • isocyanates, including diisocyanates

Asthma resulting from such a high-level exposure may be diagnosed as reactive airway dysfunction syndrome (RADS). ² RADS begins when a person's airways have become severely irritated (hyper-reactive) after a single high-level, often accidental, exposure to one or more workplace irritants (e.g., a large spill, different cleaning products mixed together).

RADS may be diagnosed when:

- asthma symptoms start less than 24 hours after the airways become highly irritated due to the exposure, and
- the symptoms are severe enough to require first aid or emergency medical treatment, and
- the symptoms last for 3 months or longer. ^{2, 14}

The most common cleaning practice that can lead to RADS is the improper mixing of cleaning products. RADS can also occur when a large amount of a cleaning product is spilled, especially a cleaning product that contains chlorine bleach, ammonia or hydrochloric acid.

Never mix cleaning products that contain ammonia with chlorine bleach or with products that contain acids. These mixtures create a toxic reaction that may cause RADS.

OTHER IRRITANT-INDUCED OCCUPATIONAL ASTHMA

Other irritant-induced occupational asthma is diagnosed when symptoms and the results of breathing tests are similar to RADS but:

- the symptoms start more than 24 hours after exposure, or
- repeated exposures to a workplace irritant occur over several days or weeks (rather than one single, very large exposure), or
- the symptoms last for a shorter period of time.

Irritant-induced occupational asthma is becoming more frequently associated with cleaning. It may be related to:

- the chemical ingredients in the product (e.g., a product may contain strong irritants such as chlorine, ammonia and hydrochloric acid [bleach])

- the application of the product or type of cleaning task (e.g., floor cleaning with a mop [low exposure] versus floor polishing with a buffer [high exposure])
- the frequency of cleaning (e.g., spray cleaning once a week versus spray cleaning several times a week)
- the application of different products one after another (combination of tasks), especially in a small, poorly ventilated area (e.g., a bathroom)
- improper dilution of a product (e.g., using a product at full strength when it should be diluted, especially if it is used at full strength regularly), and
- exposure to dust and dust mites while using some disinfectants.^{3, 4, 6, 12, 14-19}

For ways to reduce the chance of developing work-related asthma (occupational asthma or work-aggravated asthma) related to the use of cleaning products and disinfectants, see Working Safely with Cleaning Products and Disinfectants, Page 7.

WORK-AGGRAVATED OR WORK-EXACERBATED ASTHMA

Work-aggravated asthma (also known as work-exacerbated asthma) occurs when an employee already has asthma (pre-existing asthma) and it is worsened by *irritants or common allergens* in the workplace (listed below). Usually, the affected person's symptoms get worse and his or her need for medications to control the symptoms increases.

Irritants and Common Allergens that can Trigger Work-aggravated Asthma

The same types of cleaning products and cleaning practices that cause irritant-induced occupational asthma (see above) may also trigger work-aggravated asthma.^{3, 4, 6, 12-18}

In addition to cleaning products, other irritants and common allergens that may cause work-aggravated asthma are present in many workplaces. They include:²

- fumes, vapours, dusts and sprays (e.g., those from industrial sources [particularly acids, chlorine, alkaline dusts, smoke and/or aldehydes]; paints; perfumes and scented products, and second-hand cigarette smoke^a)
- other irritants and common allergens (e.g., irritant dusts from mineral sources such as cement dusts; common allergens from animal or plant sources such as dust mites, mould and fungal spores)
- viral respiratory infections
- indoor air pollution (inadequate ventilation), and
- outdoor air pollution or smog (for outdoor employees).

Other Factors

Other factors that may cause work-aggravated asthma in any workplace include:

- temperature and humidity extremes (cold and heat), and
- physical exertion.

An employee who has pre-existing asthma needs to pay particular attention to whether symptoms increase during the workday or workweek. If so, the employee should see the doctor right away to make sure the asthma is properly managed. Employees diagnosed with work-aggravated asthma may be compensated by the Workplace Safety and Insurance Board (WSIB).

Who is at Risk for Work-related Asthma from Cleaning Products?

Janitors, cleaners and others who clean and disinfect at work are at risk for work-related asthma. In addition, other employees who are present in the work area where cleaning and disinfection products are used are also at risk.

Employees may be at risk for developing work-related asthma if:

- they clean or disinfect
- they work in an area where cleaning or disinfection products are being used, or
- they are exposed to freshly cleaned or disinfected areas.^{3, 4, 6, 17, 19-22}

People who work in many different industries and jobs may be exposed to cleaning products. The most common jobs are:^{3, 4, 7, 20-23}

- janitor, cleaner
- maid or housekeeper (e.g., in a hotel)
- domestic cleaner (e.g., working in another person's home)
- health care worker (e.g., nurse, practical nurse)
- office worker
- hotel maintenance staff
- restaurant worker or bartender, and
- teacher.

Regardless of the type of work-related asthma you have, you must take action right away!

How to Recognize Work-related Asthma

Common symptoms of asthma (including work-related asthma) are:

- coughing
- wheezing
- difficulty breathing
- shortness of breath, and
- chest tightness.

These symptoms may not occur until early the next morning or towards the end of the workweek.

Usually, only some of the employees who are exposed to asthma-causing agents develop occupational asthma. They may be affected at different times. However, if one employee is diagnosed with occupational asthma, others may be affected in the future because they are also probably exposed to the asthma-causing agent or agents in the workplace.

^a Second-hand smoke cases in Ontario are now reduced because of anti-smoking bylaws in workplaces.²

The presence of one employee who has occupational asthma is a sign (sentinel event) that intervention is needed to protect other employees. ²

What can Employees do?

Employees can:

- assess their risk
- make an appointment with their doctor
- get a diagnosis, and
- talk to their supervisor, JHSC and union representative.

ASSESS RISK

To help find out whether they may have work-related asthma, employees can ask themselves the following questions:

1. Do I have symptoms of asthma (cough, chest tightness, wheeze and/or shortness of breath)?
 Yes No
2. Did my symptoms of asthma first start, or become worse, after I began to work in this job or field of work?
 Yes No
3. Do my symptoms get worse as the workday or workweek goes on?
 Yes No
4. Do my symptoms decrease on holidays and/or when I am away from work?
 Yes No
5. Do I work with any asthma-causing agents listed in Table 1 or any other known asthma-causing agents? ^b
 Yes No
6. Was there an unusual exposure at work (such as a chemical spill) within 24 hours before my symptoms started?
 Yes No
7. Do my co-workers have symptoms of asthma?
 Yes No

Anyone who answers yes to questions 1 & 2 needs to be assessed by a doctor. The doctor can determine whether the employee's symptoms are work related. If the workplace has an employee health department, the employee should go there as well as going to his or her doctor.

If a doctor suspects that the symptoms are work related, or the employee is concerned that they may be work related, the employee should:

- tell his or her supervisor
- complete an employee incident report (as applicable), and
- notify the JHSC and/or union representative.

MAKE AN APPOINTMENT WITH THE DOCTOR

Employees who suspect that they have work-related asthma should make an appointment *right away* with their family doctor. Employees who do not have a family doctor can go to a walk-in clinic. They need to report:

- their symptoms (and those of their co-workers)
- where they work
- what substances (chemicals and materials) they are exposed to, and
- how long they have worked with these substances (throughout their working lives).

The sooner the symptoms are recognized, the better. Asthma can be managed with early recognition, accurate diagnosis and treatment. Allowing the disease to progress without medical management and workplace interventions can significantly affect the employee's activity level, productivity, ability to work and, most importantly, health and quality of life.

GET A DIAGNOSIS

The diagnosis of occupational asthma requires special tests. These tests may include:

- skin testing to determine sensitization to a work substance, and
- breathing tests, done at work or elsewhere.

These tests usually need to be done by a specialist (e.g., respirologist, allergist, occupational health doctor) who is knowledgeable and experienced in diagnosing occupational asthma. These tests can also help to determine whether asthma is caused or aggravated by the workplace. This information is necessary for appropriate management.

What can Workplaces do to Prevent Work-related Asthma due to Cleaning Products and Disinfectants?

REVIEW PRODUCT INGREDIENTS

Cleaning products and disinfectants may contain sensitizers known to cause occupational asthma (as shown in Table 1). Also, some cleaning products and disinfectants used in workplaces contain ingredients that can be very irritating to the respiratory system (e.g., lungs) and may aggravate asthma.

Products that contain ingredients that may cause or aggravate asthma may be identified by reviewing the material safety data sheets (MSDSs) for each product.

CHECK MATERIAL SAFETY DATA SHEETS (MSDSs)

Under WHMIS (Workplace Hazardous Materials Information System) legislation, all hazardous substances (controlled products) require an MSDS. The MSDS provides information about any

^b An occupational hygienist or other occupational health professional can provide information on other known asthma-causing agents.

hazardous ingredients in the product. It also explains how to protect anyone who uses the product.²⁴

Employers must make sure that all controlled products have an up-to-date MSDS.^c If a controlled product is made in the workplace, the employer has a duty to prepare an MSDS for it.

The MSDSs must be readily available to:

- the employees who are exposed to the controlled product, and
- the JHSC or health and safety representative.

MSDSs and Asthma

The MSDS of a product that can cause asthma should state that:

- the product is a respiratory tract sensitizer, or causes respiratory sensitization,^d and
- asthma is a possible health effect.

If the statements above are on the MSDS, the product may cause asthma in some employees. Employees who prepare or use these products must be properly protected (see *Working Safely with Cleaning Products and Disinfectants*, Page 7, for more information).

You may need more information about a product when the MSDS states that it:

- may cause respiratory sensitization but asthma is not listed as a possible health effect, or
- is a respiratory irritant and/or can cause “asthma-like” symptoms.

Sometimes potential sensitizers or irritants contained in cleaning products are not listed on the MSDS.^{2, 4} More information may be needed about the product, particularly if incidents of work-related asthma have increased since starting to use the product. **Contact the manufacturer of the product for more information about its ingredients and how to prepare and use the product safely.**²⁰

LOOK FOR “ENVIRONMENTALLY PREFERABLE” CLEANING PRODUCTS

Environmentally preferable cleaning products and disinfectants are made to be safer for the environment (environmentally friendly). They may also be less irritating to employees’ skin, eyes and respiratory systems (e.g., lungs) than standard cleaning products and disinfectants.

Check the label of the product for one of the following certified (official) environmental designations:

- Environmental Choice (Canadian)



- Envirodesic (Canadian), and



- Green Seal (American).



Some products that have an environmental label may still contain sensitizers or irritants that may lead to work-related asthma in some employees. For example, any product that comes in a spray form will still expose employees to mists. Therefore, employers and employees should always take standard precautions to reduce exposure to these products (see Pages 6–7). Read the label and the MSDS to see what is in the product, how the ingredients might harm employees and how to protect employees using the product.

Green Seal has recently certified cleaning products (GS-37) that have eliminated ingredients known to cause sensitizer-induced occupational asthma. If you are buying GS-37-certified products, check to make sure that they comply with the 2008 standard.²⁵ See *Environmentally Preferable and Safer Cleaning Resources* on the back page for more information.

ASK FOR A WORKSITE EVALUATION

Trained occupational health professionals can be invited to the workplace to do a worksite evaluation. You can ask the Occupational Health Clinics for Ontario Workers (OHCOW) or Workplace Safety & Prevention Services (WSPS) for an industrial hygienist to speak about product safety, safer alternatives and how employees can be properly protected when preparing or using a product. An evaluation can help to:

- identify the least hazardous (safest) cleaning products and disinfectants for the job
- identify any other sensitizers and/or irritants in the workplace, and
- provide recommendations for the worksite to reduce exposures that may be causing work-related asthma.

Worksite evaluations should be considered when:

- there is even one new case of sensitizer-induced occupational asthma, or
- there are increasing cases of work-aggravated asthma.

A team from OHCOW can provide a free, on-site workplace visit and make recommendations to improve workplace conditions. The WSPS regional consultant can also do an on-site assessment. However, a referral is required from the employer or the JHSC before staff from OHCOW or WSPS can respond. Check the back page of this booklet for contact information.

^c MSDSs should be less than 3 years old, or replaced as new information is available, such as change in legislated occupational exposure levels, health effects, etc.

^d WHMIS requires that any sensitizer be listed as hazardous if it is present in the product at a concentration of 0.1%² or greater. See the Ministry of Labour website for labelling requirements for MSDSs.²⁴

USE A PREVENTION STRATEGY

The costs of unmanaged work-related asthma are high for both employers and employees. If it is left untreated, work-related asthma can result in disability and job loss. In Ontario from 2005 to 2009, the WSIB accepted 85 claims of work-related asthma from exposure to cleaning products.

The related financial and health costs of work-related asthma can be largely prevented by including a prevention strategy in the workplace (Table 2).

Table 2: Outcomes when Work-related Asthma is Not Managed Compared with When a Prevention Strategy is in Place	
Unmanaged Work-related Asthma	Workplace-related Asthma Prevention Strategy
Loss of productivity	Greater productivity
Staff turnover	Improved working conditions
Increased insurance costs (including medical and drug-related costs)	Reduced insurance premiums
Disability (morbidity and mortality)	Less sick time
Loss of work and income	Decreased economic burden for all taxpayers
Reduced quality of life	Improved quality of life

All employers and employees need to work towards preventing work-related asthma in their workplaces. This preventive approach requires the cooperation of employers, employees and JHSCs.

A comprehensive prevention strategy consists of three parts:

- an exposure-control program (including training and education)
- possibly, medical surveillance, and
- management of work-related asthma.

Exposure Control

Controlling exposure to sensitizers and irritants in the workplace is the most important step in preventing work-related asthma. The risk of work-related asthma is directly related to the level of workplace exposures: the higher (and longer) the exposure level, the greater the risk to employees.² For more tips on reducing exposure to sensitizers and irritants found in cleaning products, see Working Safely with Cleaning Products and Disinfectants, Page 7.

Exposure control is a step-by-step process. Below are general guidelines that can be used by employers and JHSCs.

1. With the help of an occupational health professional, **identify** all of the substances known to cause or worsen asthma in the workplace.

2. Try to **eliminate** each substance that is a known sensitizer by removing it from the workplace. For example, do not use a disinfectant, such as a product containing quaternary ammonium compounds, unless disinfection is specifically required.¹⁶
3. If a sensitizer cannot be eliminated, **substitute** a product that is known to be less likely to cause sensitization leading to asthma. It can be difficult to find effective (useful) substitutes for some of the chemicals listed in Table 1, but substitutions have helped to reduce exposures in many industries.

The substitution may involve:

- replacing the substance (e.g., use a peroxide-based disinfectant instead of a disinfectant containing quaternary ammonium compounds), or
- changing the form of the cleaning product.

For example, it is generally safer to choose the liquid formulation of a product rather than a powder. This helps to prevent the release of fine dusts of the sensitizing-agent into the air, which can occur when powders are used.

The substitution of a “safer” chemical should be reviewed closely to ensure that it really is safer (i.e., that it has been well tested or researched for occupational hazards). Check MSDSs and ask for additional help from the product’s supplier, your JHSC, the employee health department or a qualified health and safety professional (e.g., from OHCOW or WSPS).

4. **Control exposures** to sensitizers and irritants in cleaning products by using appropriate engineering designs in the workplace. These types of controls protect all employees. For example:
 - **improve general ventilation** in all work areas where cleaning products are used, and in areas where there are uncontrolled exposures to fumes, smoke, dusts and other irritants or common allergens
 - increase ventilation rates when extensive cleaning is done
 - **centralize** areas where sensitizers are used to a few key locations and **isolate** or **enclose** these areas; provide local exhaust, whenever possible
 - provide **local exhaust ventilation** systems or a **closed ventilation system** to reduce exposure to airborne vapours or fumes from the sensitizer (e.g., use an enclosed system with a scrubber when using floor burnishers and scrubbers), and/or
 - implement **administrative controls** (e.g., policies, procedures, safe work practices, job rotation) to minimize exposure time of employees).
5. Provide **personal protective equipment (PPE)**. PPE is the last line of defence and should not be the only method of exposure control when exposures are ongoing and cannot be prevented or significantly reduced by elimination, substitution and control. All employees using PPE should receive training in its proper use and care. When respirators are indicated, provide

a detailed respiratory protection program that includes proper respirator selection, training in its use, fit testing and respirator maintenance.

6. Consider an **exposure-monitoring program** to measure exposure levels to sensitizers and irritants and the effectiveness of your controls. An occupational hygienist can help to set up a thorough exposure-monitoring program. From time to time, review your program to assess its effectiveness.

It is not possible to completely avoid all potential asthma triggers (e.g., physical exertion, cold air, dusts, fumes, common allergens). To reduce exposure to irritants and common allergens, make sure the workplace has good ventilation and humidity control. In addition, consider policies and procedures, such as the use of environmentally preferable cleaning products and programs that reduce exposure to scented products.

Prevention of work-aggravated asthma includes:

- providing good control of asthma by controlling exposures to sensitizers and irritants at work and home, and
- ensuring that the most appropriate asthma medication for each patient is prescribed and used.

These measures are especially important for those who have moderate or severe asthma.

TRAINING AND EDUCATION

Employers, in consultation with the JHSC and their occupational health department, should provide training and education to employees to help prevent and manage work-related asthma.

A thorough training program should help employees to:

- identify the agents that can cause work-related asthma
- follow safe work practices to reduce exposure to these agents
- recognize the symptoms of work-related asthma, and
- understand the process of reporting concerns in the workplace and of seeking immediate medical attention.

Education on work-related asthma management and prevention is available from OHCOW clinics, and/or WSPS, as well as other occupational health and respiratory clinics. You may also want to speak with a certified asthma educator by contacting the Lung Association’s Asthma Action Helpline at 1-800-668-7682 (see *For More Information* on Page 9).

If you are self-employed, or work in a workplace that does not have a JHSC, contact OHCOW and/or WSPS, for more information on occupational health and safety and cleaning products.

Medical Surveillance

Medical surveillance helps to:

- screen employees for possible signs and symptoms of asthma
- identify any changes in their lung function, and
- identify early signs of sensitization or sensitizer-induced occupational asthma before it progresses to permanent asthma.

Medical surveillance is suggested for employees who are exposed to agents that carry a relatively high risk of causing asthma, such as employees exposed to isocyanates.²⁶

Working Safely with Cleaning Products and Disinfectants ^{16, 26}		
<ul style="list-style-type: none"> • choose environmentally preferable cleaning products and disinfectants (when they contain fewer sensitizing and irritating agents than conventional products) • read warning labels and follow them • read MSDSs for the products you use • select the right cleaning product or disinfectant for the job (check with the employer, JHSC and/or OHCOW or WSPS industrial hygienist) • plan how often to disinfect (e.g., high traffic areas need to be disinfected more often – check with the employer and JHSC) • follow instructions when preparing cleaning products and disinfectants; never use a product at full strength when the instructions say to dilute it 	<ul style="list-style-type: none"> • mix only the amount needed for the job • clean the area before disinfecting (follow the manufacturer’s instructions) • use the fewest number of products for the job • use the smallest amount of any product that will do the job • use the lowest concentration of the disinfectant recommended by the manufacturer • never mix different cleaning or disinfection products; mixing bleach and ammonia or bleach and acids can create poisonous vapours • use the proper equipment for the job (e.g., microfibre cloths and mops pick up more dirt than “regular” dust cloths and mops) • wear the correct PPE for the job (a dust mask will not protect you from 	<p>breathing vapours from cleaning products)</p> <ul style="list-style-type: none"> • whenever possible, use products that can be poured and wiped rather than sprays and aerosols • clean up spills immediately • increase ventilation rates and/or leave windows and doors open during and after applying cleaning products or disinfectants (for at least 1 hour after cleaning) • whenever possible, do not clean or disinfect when other employees are present (e.g., clean after regular working or school hours); if this is not possible, let others know in advance when you will be cleaning in their work area, and • store cleaning and disinfection products in their original containers.

Although products containing isocyanates are not routinely used in the cleaning industry (see Table 1), you must always check the MSDS for all products, to see whether isocyanates are present. For example, diisocyanates (a form of isocyanate) are in some products used to remove graffiti.

If you use any product that contains isocyanates:

- look for a **substitute** product that does not contain isocyanates (or diisocyanates), and
- if there is no substitute, establish a **medical surveillance program**, which includes:
 - a questionnaire, provided regularly (e.g., every 6 or 12 months)
 - pulmonary (lung) function tests, if indicated by the questionnaire, and
 - a health history, provided regularly (e.g., every 6 months).

Medical surveillance is done by the family doctor or an occupational health physician (e.g., from your occupational health department, OHCOW or another occupational health clinic).

If you do not use products that contain isocyanates, medical surveillance is not legally required. However, you should always **consider establishing a medical surveillance program** (or pilot program) **whenever the number of employees who have sensitizer-induced occupational asthma in your workplace is either consistently high or increasing.** A surveillance program can significantly protect the health of

all employees and help to reduce work-related asthma in any industry where sensitizers are used.

You can get further information about starting a workplace medical surveillance program from OHCOW. Their staff of occupational health professionals can help your workplace to implement the surveillance program. See *For More Information* on Page 9.

Management of Work-related Asthma

Prevention of work-related asthma by controlling workplace exposures is always the main objective of a workplace asthma prevention strategy. However, if an employee does develop work-related asthma, he or she needs medical treatment and protection from the offending agent or agents to keep the disease from getting worse.

Anyone who has work-related asthma also needs ongoing protection from sensitizers or irritants at work, even if the asthma is controlled with medications (i.e., workplace exposure reduction and medical treatment are both necessary). The law requires that the employer take every precaution reasonable in the circumstances to protect the employee.²

Specific management depends on the type of work-related asthma that is involved: sensitizer-induced occupational asthma, irritant-induced occupational asthma and RADS, or work-aggravated asthma (see Table 3).^{2, 27, 28}

Step	Sensitizer-induced Occupational Asthma	Irritant-induced Occupational Asthma and RADS	Work-aggravated Asthma
1	Remove the employee from the source of exposure to the sensitizer immediately after the diagnosis has been confirmed by a specialist (recommended action). If job change or leaving the job is not an option, reduce exposure to the lowest level possible and ensure optimal medical treatment.	Reduce irritant exposures.	Reduce workplace exposures to common irritants. The employee should also reduce exposure to non-work asthma triggers in consultation with his or her doctor and/or other health care professionals, such as a certified asthma educator. The employee should visit the doctor immediately to ensure that he or she is receiving optimal medical treatment.
2	Have the doctor provide optimal medical treatment.	Have the doctor provide optimal medical treatment.	Have the doctor provide optimal medical treatment.
3	Consider providing medical surveillance of exposed employees.	Consider job change and retraining if the employee's asthma does not improve or becomes worse after reduced exposure.	In severe or worsening asthma related to a workplace irritant, consider job change and retraining.
4	Apply to the WSIB for financial compensation.	Apply to the WSIB for financial compensation.	Consider application to the WSIB for financial compensation.
5	Take steps to prevent work-related asthma for other exposed employees.	Consider prevention for other exposed employees.	Consider prevention for other exposed employees.

Medical treatment is prescribed by a doctor. The treatment usually consists of short- and long-acting medications that are taken to control inflammation and constriction in the airways. All employees who have work-related asthma should consult their doctors to receive the appropriate medical care and monitoring.

For further details on managing work-related asthma, see the booklet *Work-related Asthma: Preventing Work-related Asthma in Higher Risk Industries*, available from the WSPS, OHCOW or Ontario Lung Association website.

Summary

Work-related asthma can be largely prevented. Employers, industry agencies, employees, unions, JHSCs and health care professionals need to work together to help prevent work-related asthma and its consequences.

For More Information

For more information on occupational asthma in the higher risk industries, see the fact sheet *Work-related Asthma and You: Cleaning Products* available online from OHCOW (<http://www.ohcow.on.ca/>) and WSPS (<http://www.wspss.ca/>) or at the addresses shown on the back page. Other titles in this series are shown in Table 4.

Our primary goal for this booklet is to improve the health and working conditions for all employees in your industry. Using awareness and prevention strategies, we want to help you to reduce the number of people affected by work-related asthma in these industries.

However, this booklet was designed to provide *general* guidelines for helping to reduce work-related asthma. If you have symptoms, see your family doctor right away.

To speak with an occupational health professional about questions or concerns specific to your place of employment, contact the WSPS office or OHCOW clinic closest to you.

For more information about MSDSs, refer to the Ministry of Labour's *Workplace Hazardous Materials Information System: A Guide to the Legislation*.²⁴

For more information about designated substances, refer to the Ministry of Labour.²⁹

Table 4: Booklets and Fact Sheets on Occupational Asthma in Various Industries

Industry	Title	Format
Bakery	<i>Work-related Asthma and You: Preventing Work-related Asthma in Bakeries</i>	Booklet
	<i>Baker's Asthma</i>	Fact sheet
Health care	<i>Work-related Asthma and You: Preventing Work-related Asthma in Health Care Workers</i>	Booklet
	<i>Work-related Asthma in Health Care: Recognition and Prevention</i>	Fact sheet
Plastics, expanded foam, and auto parts manufacturing	<i>Work-related Asthma and You: Preventing Work-related Asthma in the Auto Parts Manufacturing and Foam and Expanded Plastic Industries</i>	Booklet
	<i>Occupational Asthma in the Auto Parts Manufacturing and Foam and Expanded Plastic Industries</i>	Fact sheet
Machinists and other industries where metal-working fluids are used	<i>Work-related Asthma and You: Preventing Work-related Asthma from Metal-working Fluids and Metal Dusts and Fumes</i>	Booklet
	<i>Work-related Asthma in the Primary Metals Sector</i>	Fact sheet
All industries (generic WRA materials)	<i>Work-related Asthma: Preventing Work-related Asthma in Higher Risk Industries</i>	Booklet
	<i>Work-related Asthma and You: Preventing Work-related Asthma in Higher Risk Industries</i>	Fact Sheet

Occupational Health Clinics for Ontario Workers (OHCOW)

On the web: <http://www.ohcow.on.ca/>
or by telephone at these locations.

Hamilton Clinic

848 Main Street East, Hamilton L8M 1L9
Tel: 905-549-2552 or 1-800-263-2129
Fax: 905-549-7993
Email: hamilton@ohcow.on.ca

Sarnia–Lambton Clinic

171 Kendall Street, Point Edward N7V 4G6
Tel: 519-337-4627
Fax: 519-337-9442
Email: sarnia@ohcow.on.ca

Sudbury Clinic

84 Cedar Street, Sudbury P3E 1A5
Tel: 705-523-2330 or 1-800-461-7120
Fax: 705-523-2606
Email: sudbury@ohcow.on.ca

Toronto Clinic

970 Lawrence Avenue West, Suite 110
Toronto M6A 3B6
Tel: 416-449-0009 or 1-888-596-3800
Fax: 416-449-7772
Email: toronto@ohcow.on.ca

Windsor Clinic

3129 Marentette Avenue, Unit #1
Windsor N8X 4G1
Tel: 519-973-4800 or 1-800-565-3185
Fax: 519-973-1906
Email: windsor@ohcow.on.ca

Workplace Safety & Prevention Services (WSPS)

On the web at www.wspss.ca

HEAD OFFICE

Centre for Health and Safety Innovation
5110 Creekbank Road
Mississauga L4W 0A1
Tel: 905 614 1400
Toll-free: 1 877 494 WSPS (9777)
Fax: 905 614 1414

For further information on work-related asthma, contact:

The Lung Association's Asthma Action
Helpline: 1-800-668-7682

The Lung Association: www.on.lung.ca or
1-888-344-5864

The Asthma Society of Canada: www.asthma.ca or 1-866-787-4050

Workplace Safety and Insurance Board:
www.wsib.on.ca or 1-800-465-5606

Workers Health and Safety Centre: www.whsc.on.ca or 1-888-869-7950

Environmentally Preferable and Safer Cleaning Resources

Green Seal: Find a Certified Product: <http://www.greenseal.org/findaproduct/i&i&cleaners.cfm>

Toxic Use Reduction Institute (TURI).

Cleaner Solutions Database: <http://www.cleanersolutions.org/>

Hospitals for a Healthy Environment.

Green Cleaners and Other Environmental Service Products: http://h2e-online.org/tools/grnpurch/prod_cleaners.htm

Terra Choice: Eco logo program: <http://www.terrachoice-certified.com/en/>

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