Infrastructure Health & Safety Association™

*Work Safe for Life*

# Occupational Health Risks

Diagnostic toolkits for physicians and primary health providers

W120

The Infrastructure Health & Safety Association (IHSA) is your new partner in preventing workplace injury and illness. We serve the transportation, electrical, utilities, construction, aggregates, pipelines, and ready-mix concrete industries.

IHSA was founded in January 2010 by amalgamating the Construction Safety Association of Ontario (CSAO), the Electrical & Utilities Safety Association of Ontario (E&USA) and the Transportation Health and Safety Association of Ontario (THSAO).

We are committed to providing you with world-class service and the information you need to prevent occupational injury and illness.

**Disclaimer:**

*The contents contained in this publication are for general information only. This publication should not be regarded or relied upon as a definitive guide to government regulations or to safety practices and procedures. The contents of this publication were, to the best of our knowledge, current at the time of printing. However, no representations of any kind are made with regard to the accuracy, completeness or sufficiency of the contents. The appropriate regulations and statutes should be consulted. Readers should not act on the information contained herein without seeking specific independent legal advice on their specific circumstance. Infrastructure Health & Safety Association is pleased to answer individual requests for counseling and advice.*

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# Introduction

The Infrastructure Health and Safety Association (IHSA) have a network of labour-management health and safety committees operating at the provincial, regional, and trade/sector level. Through the dedicated and tireless efforts of our volunteer participants, the Labour-Management Network supports and affects change in the best interests of worker health and safety.

As part of their mandate, the Occupational Disease and Research Labour-Management Health and Safety Committee, with the assistance of IHSA, the Ontario Ministry of Labour (MOL), the Workplace Safety and Insurance Board (WSIB), and other trade committees, has developed several occupational health risk brochures. These brochures include prevention information for workers and a diagnostic toolkit for physicians and primary health providers.

For workers, it lists common tasks and possible hazards they may encounter while performing those tasks, as well as ways they can protect their health.

For physicians and primary health providers, the diagnostic toolkit is intended to familiarize them with common diseases associated with specific construction trades. It lists occupational diseases and hazardous agents encountered by the workers and provides diagnostic criteria for screening, early detection, and diagnosis.

These brochures are available online by visiting **ihsa.ca/occupational_health** and selecting **Occupational Health Risks by Trades**. Check back periodically for new and updated resources. Visit **ihsa.ca** for more health and safety information for workers in the trades.

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## OCCUPATIONAL HEALTH RISKS

# ACOUSTIC and DRYWALL TRADES

## A diagnostic toolkit for physicians and primary health providers. Prevention information for workers.

**Give pages 3 and 4 of this booklet to your doctor.**
**They give your doctor information about the health risks of your job.**

This booklet was prepared by the Ontario construction industry's Occupational Disease and Research Labour-Management Health and Safety Committee with assistance from the Infrastructure Health & Safety Association (IHSA), the Ontario Ministry of Labour (MOL), the Workplace Safety and Insurance Board (WSIB), and labour and employers in Ontario construction.

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1-800-263-5024 • www.ihsa.ca

Labour Management NETWORK

# FOR **WORKERS**

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## Tasks and possible hazards

Conventional pole sanding can generate high levels of dust, including respirable silica. Inhaling this dust is a health and safety hazard. Drywall dust has been associated with varying degrees of eye, nose, throat, and respiratory tract irritation. Over time, breathing the dust from drywall joint compounds may cause persistent throat and airway irritation, coughing, phlegm production, and breathing difficulties similar to asthma. When silica is present, you may also face an increased risk of silicosis and lung cancer.

Conventional pole sanding also places a lot of stress on your back, shoulders, arms, and wrist. This stress as well as the repetitive motion is a health and safety hazard.

### All tasks

- **Hazardous materials from industrial worksites** (coke ovens, refineries, chemical plants, refrigeration plants, factories, cement plants, pulp and paper mills, power plants)
- **Awkward postures, vibration, and hazardous noise** when using power tools and pole sanders
- **Dust** on construction sites
- **Insulation fibres** from ceiling tiles and spray-on fireproofing.

### Drywall sanding

- **Drywall dust** (talc, calcite, mica, gypsum, silica)
- **Noise and vibration** from power tools and electric sanders
- **Asbestos** in plaster, paint or texture
- **Lead** in older paint
- **Silica** in drywall.

### Clean up

- **Drywall dust** (talc, calcite, mica, gypsum, silica).

### Using heaters

- **Carbon monoxide** from heaters and generators.

## How to protect your health

- Ask your supervisor or employer for safe work **instructions** and training.
- Consult industrial clients about site-specific health and safety **procedures**.
- Use **sanders** with a **vacuum attachment** where possible to capture dust.
- Ask about any hazardous materials or unknown chemicals when **entering** an industrial site for work.
- Ensure adequate **ventilation.** Use natural and mechanical ventilation to dilute airborne contaminants with outside air.
- Don't use gasoline-powered equipment **inside**.
- Never use compressed air to blow dust away or for cleanup. Instead, use **wet sweeping**.
- Wear a proper **respirator** when sanding and during clean-up operations.
- Wear gloves or use creams to protect the **skin**. Wear coveralls.
- Wear **hearing protection** when exposed to loud noise.
- Consult material safety data sheets (**MSDSs**) for information about hazardous chemicals used at work, and obey workplace health and safety rules.
- **Never eat, drink, smoke, or chew gum** in areas contaminated with asbestos, lead, or toxic chemicals.
- Never use **solvents** to wash hands.
- Wash or wipe **hands** clean before eating, drinking, and smoking, and always clean up and change out of contaminated **clothing** before going home at the end of the shift.
- Wash work clothes **separately** from casual and other family members' clothes.
- **Report** hazards to your employer.

Workers who are without symptoms and who have been exposed to asbestos may participate in a research study at Princess Margaret Hospital by volunteering to be screened for mesothelioma/asbestos.
Phone: 416-340-5686 Fax: 416-340-4964

**For more information about health and safety in your job, contact your union or**

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Ontario Ministry of Labour: 1-877-202-0008, www.labour.gov.on.ca
Workplace Safety and Insurance Board: 1-800-387-5540, www.wsib.on.ca

Labour Management Network

# FOR **PHYSICIANS**

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## Occupational diseases and hazardous agents encountered by acoustic and drywall trades

## Job function

Workers in these trades install and finish drywall sheets and various types of ceiling systems.

### Asbestos-related Diseases

- Asbestosis
- Cancer (lung, mesothelioma, gastrointestinal)—*asbestos*
- Asbestos warts—*asbestos*.

### Cancer

- Lung—*asbestos, dust, environmental tobacco smoke, silica*
- Gastrointestinal—*asbestos*
- Stomach—*asbestos.*

### Miscellaneous Disorders

- Infertility, male—*lead*
- Noise-induced hearing loss—*power tools, heavy machinery, grinders, industrial noise*
- Renal disease—*lead*
- Scleroderma/Systemic sclerosis—*silica.*

### Neurological

- Hand-arm vibration syndrome—*vibrating tools*
- Neuropathy, toxic—*lead*
- Parkinsonism—*carbon monoxide, manganese*.

### Respiratory Diseases

- Bronchitis, chronic—*drywall dust, environmental tobacco smoke*
- Asthma, occupational—*fungi/mould, dust, mineral fibres*
- Silicosis—*silica* (see Scleroderma/Systemic sclerosis)
- Hypersensitivity pneumonitis (HP) acute/chronic—*fungi/mould*
    - Pulmonary edema—*silica.*

### Skin Disorders

- Dermatitis, allergic/contact— *drywall dust.*

**The next page provides important diagnostic criteria for screening, early detection, and diagnosis.**

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# DIAGNOSTIC **CRITERIA**

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## Asbestos disease

Asbestos-caused fibrosis of the lungs and pleura may lead to shortness of breath. It usually takes 15 or more years from the onset of exposure for radiographic abnormalities and symptoms to arise. Radiologists should be alerted to the suspected diagnosis. Drywallers occupationally exposed to asbestos are at increased risk of cancers of the lungs and pleura. Screening for cancer has not been proven to reduce mortality; however, it can result in early detection.

If there is any suspicion of asbestos-related illness (i.e., not screening scenario), patients may be referred directly to Princess Margaret Hospital's program where immediate assistance, rapid assessment and specialized treatments are available. Phone 1-877-LUNG 911 (5864 911) Fax 416-340-3353. Asbestos-exposed workers should be counseled about smoking cessation. http://www.wsib.on.ca/files/Content/OccDiseaseAsbestos/Asbestos_Related%20Diseases.pdf

## Contact dermatitis

Contact dermatitis is an inflammatory skin reaction to direct contact with noxious agents in the environment. Substances that produce this condition after single or multiple exposures may be either irritant or allergic in nature. Irritant contact dermatitis (ICD) results from contact with external agents that directly damage the epidermis, in contrast to allergic contact dermatitis (ACD) in which the damage occurs through the host's immune response as a result of a delayed type hypersensitivity reaction.

The diagnosis of contact dermatitis should be considered when there is a suspected workplace agent (allergen or irritant). Screening should include determination of the following: (A) Did the skin condition start after the worker started the job? OR Did the skin condition become worse after the worker started the job? AND (B) Are symptoms better on weekends or holidays off work? Referral to a specialist with experience diagnosing and treating occupational contact dermatitis should be considered when any of the following are suspected: all cases of possible ACD; ICD with allergic features; chronic ICD; complicated ICD (e.g., not improving, deteriorating, confounded by another skin disease such as psoriasis). http://www.wsib.on.ca/en/community/WSIB/ArticleDetail?vgnextoid=ff4de35c819d7210VgnVCM100000449c710aRCRD

## Hand-arm vibration syndrome (HAVS) and vibration-induced white finger (VWF)

HAVS and VWF are the major health hazards related to the use of vibrating tools. If workers develop symptoms of tingling or numbness, or if their fingers occasionally become white, blue, or painful—especially when cold—they should be examined by a doctor who knows about the diagnosis and treatment of these conditions. Diagnostic tests which can be used include plethysmography, arteriography, skin thermography, and sensory tests such as two-point discrimination depth sense, pinprick touch, and temperature sensation. The Occupational Medicine Clinic at St. Michael's hospital in Toronto has diagnostic facilities. http://www.wsib.on.ca/en/community/WSIB/OPMDetail?vgnextoid=1486fcea9bfc7210VgnVCM100000449c710aRCRD

## Inhalation disease: Silicosis

Silicosis an occupational lung disease caused by inhalation of crystalline silica dust. Silica inflammation and scaring is manifested as nodular lesions in the upper lobes of the lungs. Silicosis is progressive and signs may not appear until years after exposure has begun. Symptoms include: dyspnea on exertion, dry cough, and fatigue. The diagnosis is made by radiographic examination. It is preferred that the films be interpreted by a radiologist with experience with occupational lung disease since the finding may be subtle. http://www.wsib.on.ca/files/Content/OccDiseaseSilicosis/Silicosis.pdf.

## Neurologic effects

Acute toxic effect of solvents: Organic solvents are volatile substances commonly used in the workplace as cleaners and degreasers. The systemic symptoms of acute solvent poisoning resemble those of intoxication from alcoholic beverages.

Toxic Neuropathy: Chemicals that can cause toxic polyneuropathy include lead and N-hexane. Most symmetrical, sensorimotor neuropathies caused by exposure to chemicals are indistinguishable from similar effects caused by systemic diseases such as diabetes or B12 deficiency. The diagnosis of toxic polyneuropathy is usually made on the basis of symptoms following exposure to the chemical and the resolution of symptoms months to years after cessation of exposure.

## Noise-induced hearing loss

Noise-induced hearing loss (NIHL), is diagnosed by audiometric testing. With NIHL, there is a characteristic dip (notch) at 4 kHz on the audiogram.This contrasts with presbycusis where there is a continuous dropoff as frequency increases.
http://www.wsib.on.ca/en/community/WSIB/OPMDetail?vgnextoid=9956fcea9bfc7210VgnVCM100000449c710aRCRD

## Occupational asthma

Sensitizer-induced occupational asthma is caused by an immune response to specific workplace agents such as low-molecular-weight chemicals (such as diisocyanates, colophony [a pine resin product used in soldering], or epoxy compounds). Once a person has been sensitized to one of these materials, even exposure to extremely low quantities will exacerbate the asthma. If this form of occupational asthma is suspected from the patient's history, objective investigation is required to confirm or refute the diagnosis.

Patients with confirmed sensitizer-induced occupational asthma should have no further exposure to the causative agent, since the best outcome is achieved with early diagnosis and complete avoidance of exposure. An objectively confirmed diagnosis is very important. Patients with suspected sensitizer-induced occupational asthma should be referred as soon as possible to a specialist (a respirologist, an allergist, or an occupational physician) with expertise in this area. Investigations are most helpful if they can be performed while the patient is still working in the suspected causative work area; the primary care physician may be able to initiate some of these.
Source: Occupational asthma: An approach to diagnosis and management. Tarlo and Liss. *Canadian Medical Association Journal.* Apr 1, 2003. 168(7);867-71.
http://www.wsib.on.ca/files/Content/Fact%20Sheet_English0619A/0619A_Asthma_and_Work.pdf

## Scleroderma

Scleroderma is sometimes called systemic sclerosis. It is a type of connective tissue disorder. Diagnosis is recognized if the case is characterized by either:

**Proximal scleroderma**—skin changes suggestive of scleroderma that appear near the finger and wrist joints as well as on other parts of the extremities, face, neck, or trunk of the body. These changes usually appear symmetrically on both sides of the body and almost always include skin changes on fingers and toes.

OR two of the following

- **Sclerodactyl**—skin changes suggestive of scleroderma that is limited to fingers and toes
- **Digital pitting** of fingertips or loss of substance from the finger pad—depressed areas at tips of digits or loss of digital pad tissue
- **Bilateral basilar pulmonary fibrosis**—x-ray evidence of a bilateral pattern of linear or linear-nodular densities in the lower lung that are not due to primary lung disease.

http://www.wsib.on.ca/en/community/WSIB/OPMDetail?vgnextoid=1e27fcea9bfc7210VgnVCM100000449c710aRCRD

**For more info about occupational disease and workplace health and safety, contact the Workplace Safety and Insurance Board: 1-877-202-0008**



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## OCCUPATIONAL HEALTH RISKS

# BOILERMAKERS

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# Tasks and possible hazards

## All tasks

- **Hazardous materials from industrial worksites** (coke ovens, refineries, chemical plants, glass plants, factories, cement plants, pulp and paper mills, power plants)
- **Awkward postures, vibration, and hazardous noise** when using power tools, grinders, saws, and mobile equipment
- **Dust** on construction sites.

## Installation, removal, or repair of equipment

- **Asbestos** (could be part of the old insulation—or in building materials)
- **Lead**
- **Solvents, adhesives, and epoxies**
- **Liquids, sludges, or other materials** on, in, or under equipment
- **Exhaust fumes** from gas- or diesel-powered equipment
- **Biological materials** on equipment and in industrial plants.

## Welding, torch cutting, soldering, brazing, grinding

- **Lead**
- **Welding fumes, ultraviolet light, heavy metals, and chlorinated compounds**
- **Dust** from grinding activities.

# How to protect your health

- Ask your supervisor or employer for safe work **instructions** and training.
- Consult industrial clients on site-specific health and safety **procedures.**
- Ask about any hazardous materials or unknown chemicals when **entering** an industrial site for work.
- Ensure proper **ventilation**.
- Wear a proper **respirator** when
  - you suspect asbestos may be a hazard
  - working in dusty atmospheres
  - welding
  - using solvents, adhesives, or other hazardous substances.
- Wear gloves, coveralls or welding jackets, or use barrier creams to protect the **skin**.
- Consult material safety data sheets (**MSDSs**) for information about hazardous chemicals used at work, and obey workplace health and safety rules.
- **Never eat, drink, smoke, or chew gum** in areas contaminated with asbestos, lead, or toxic chemicals.
- Wash or wipe **hands** clean before eating, drinking, and smoking, and always clean up and change out of contaminated **clothing** before going home at the end of the shift.
- Wash work clothes **separately** from casual and other family members' clothes.
- **Report** hazards to your employer.

Workers who are without symptoms and who have been exposed to asbestos may participate in a research study at Princess Margaret Hospital by volunteering to be screened for mesothelioma/asbestos.
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Labour Management Network

# FOR **PHYSICIANS**

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## Occupational diseases and hazardous agents encountered by boilermakers and similar trades

### Asbestos-related Diseases

- Asbestosis
- Cancer (lung, mesothelioma, gastrointestinal)—*asbestos*
- Asbestos warts—*asbestos*.

### Cancer

- Leukemia—*benzene*
- Lung—*asbestos, coke oven emissions, diesel, dust, environmental tobacco smoke, silica, bioaerosols, nickel, hexavalent chromium*
- Gastrointestinal—*asbestos, hexavalent chromium*
- Haematological/lymphatic—*nickel, vinyl chloride, mineral wool*
- Nasal—*nickel, hexavalent chromium*
- Skin—*coal tar, ultraviolet (UV) light.*

### Neurological

- Chronic solvent toxic syndrome—*solvents, paints, chlorinated solvents, degreasers, thinners*
- Hand-arm vibration syndrome—*vibrating tools*
- Lead, subacute toxic effect—*lead*
- Neuropathy, toxic—*lead*
- Parkinsonism—*carbon monoxide, manganese*.

### Skin Disorders

- Dermatitis, contact—*hexavalent chromium, coal tar, epoxies, paints, degreasers, glues*
- Contact urticaria—*animal dusts.*

### Miscellaneous Disorders

- Asphyxiation—*work in confined spaces*
- Gastroenteritis—*bacteria, animal waste*
- Hantavirus, histoplasmosis, leptospirosis, lymphocytic choriomeningitis—*rodent/bird/bat droppings*
- Hepatitis (chronic solvent toxicity)—*chlorinated solvents*
- Infertility, male—*manganese, lead, chlorinated solvents, water-based paint solvents*
- Noise-induced hearing loss—*noise, power tools, heavy machinery, grinders, industrial noise*
- Renal disease—*cadmium, degreasers, lead, solvents*
- Scleroderma/Systemic sclerosis—*silica.*

### Respiratory Diseases

- Asthma, occupational—*fungi/mould, chromium, dust, mineral fibres, epoxies, PVC*
- Benign pneumoconiosis—*welding fume*
- Bronchitis, chronic—*organic dust, construction dust, welding fume, environmental tobacco smoke*
- Hypersensitivity pneumonitis (HP) acute/chronic—*fungi/mould, wood dust*
    - Chronic bronchitis—*ammonia gas*
    - Isocyanate HP—*polyurethane foams, epoxy*
    - Metal fume fever—*welding fume, iron, galvanized metal fumes*
    - Polymer fume fever—*PVC, plastics, teflon*
    - Pontiac fever, Legionnaires' disease—*Legionella*
    - Pulmonary edema—*cadmium, flux, solder, chlorine decomposition, silica*
- Silicosis—*silica* (see Scleroderma/Systemic sclerosis).

**The next page provides important diagnostic criteria for screening, early detection, and diagnosis.**

This booklet was prepared by the Ontario construction industry's Occupational Disease and Research Labour-Management Health and Safety Committee with assistance from the Infrastructure Health & Safety Association (IHSA), the Ontario Ministry of Labour (MOL), the Workplace Safety and Insurance Board (WSIB), and labour and employers in Ontario construction.

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# DIAGNOSTIC **CRITERIA**

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## Asbestos disease

Asbestos-caused fibrosis of the lungs and pleura may lead to shortness of breath. It usually takes 15 or more years from the onset of exposure for radiographic abnormalities and symptoms to arise. Radiologists should be alerted to the suspected diagnosis. Boilermakers occupationally exposed to asbestos are at increased risk of cancers of the lungs and pleura. Screening for cancer has not been proven to reduce mortality; however, it can result in early detection.

If there is any suspicion of asbestos-related illness (i.e., not screening scenario), patients may be referred directly to Princess Margaret Hospital's program where immediate assistance, rapid assessment and specialized treatments are available. Phone 1-877-LUNG 911 (5864 911) Fax 416-340-3353. Asbestos-exposed workers should be counseled about smoking cessation.
http://www.wsib.on.ca/files/Content/OccDiseaseAsbestos/Asbestos_Related%20Diseases.pdf

## Contact dermatitis

Contact dermatitis is an inflammatory skin reaction to direct contact with noxious agents in the environment. Substances that produce this condition after single or multiple exposures may be either irritant or allergic in nature. Irritant contact dermatitis (ICD) results from contact with external agents that directly damage the epidermis, in contrast to allergic contact dermatitis (ACD) in which the damage occurs through the host's immune response as a result of a delayed type hypersensitivity reaction.

The diagnosis of contact dermatitis should be considered when there is a suspected workplace agent (allergen or irritant). Screening should include determination of the following: (A) Did the skin condition start after the worker started the job? OR Did the skin condition become worse after the worker started the job? AND (B) Are symptoms better on weekends or holidays off work? Referral to a specialist with experience diagnosing and treating occupational contact dermatitis should be considered when any of the following are suspected: all cases of possible ACD; ICD with allergic features; chronic ICD; complicated ICD (e.g., not improving, deteriorating, confounded by another skin disease such as psoriasis).
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## Inhalation diseases: Silicosis, welding fume fever & polymer fume fever

**Silicosis.** An occupational lung disease caused by inhalation of crystalline silica dust. Silica inflammation and scaring is manifested as nodular lesions in the upper lobes of the lungs. Silicosis is progressive and signs may not appear until years after exposure has begun. Symptoms include: dyspnea on exertion, dry cough, and fatigue. The diagnosis is made by radiographic examination. It is preferred that the films be interpreted by a radiologist with experience with occupational lung disease since the finding may be subtle.
http://www.wsib.on.ca/files/Content/OccDiseaseSilicosis/Silicosis.pdf.

**Welding Fume Fever**. A flu-like illness with a metallic taste in the mouth, throat irritation, and dry cough. Leucocytosis is common. Normal chest x-ray. Occurs 3–10 hours after heavy exposure to zinc oxide fume or dust (e.g., after welding or flame cutting galvanized steel). Resolves spontaneously within 48 hours.

**Polymer Fume Fever.** A flu-like illness with chest tightness and mild cough occurring 4–8 hours after exposure to pyrolysis products of polytetrafluoroethylene (PTFE—trade names: Fluon, Teflon, Halon). There is leucocytosis but normal chest x-ray. Resolves within 48 hours.

## Neurologic effects

Acute toxic effect of solvents: Organic solvents are volatile substances commonly used in the workplace as cleaners and degreasers. The systemic symptoms of acute solvent poisoning resemble those of intoxication from alcoholic beverages.

Toxic Neuropathy: Chemicals that can cause toxic polyneuropathy include lead and N-hexane. Most symmetrical, sensorimotor neuropathies caused by exposure to chemicals are indistinguishable from similar effects caused by systemic diseases such as diabetes or B12 deficiency. The diagnosis of toxic polyneuropathy is usually made on the basis of symptoms following exposure to the chemical and the resolution of symptoms months to years after cessation of exposure.

## Noise-induced hearing loss

Noise-induced hearing loss (NIHL), is diagnosed by audiometric testing. With NIHL, there is a characteristic dip (notch) at 4 kHz on the audiogram. This contrasts with presbycusis where there is a continuous dropoff as frequency increases.
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## Occupational asthma

Sensitizer-induced occupational asthma is caused by an immune response to specific workplace agents such as low-molecular-weight chemicals (such as diisocyanates, colophony [a pine resin product used in soldering], or epoxy compounds). Once a person has been sensitized to one of these materials, even exposure to extremely low quantities will exacerbate the asthma. If this form of occupational asthma is suspected from the patient's history, objective investigation is required to confirm or refute the diagnosis.

Patients with confirmed sensitizer-induced occupational asthma should have no further exposure to the causative agent, since the best outcome is achieved with early diagnosis and complete avoidance of exposure. An objectively confirmed diagnosis is very important. Patients with suspected sensitizer-induced occupational asthma should be referred as soon as possible to a specialist (a respirologist, an allergist, or an occupational physician) with expertise in this area. Investigations are most helpful if they can be performed while the patient is still working in the suspected causative work area; the primary care physician may be able to initiate some of these.
Source: Occupational asthma: An approach to diagnosis and management. Tarlo and Liss. *Canadian Medical Association Journal.* Apr 1, 2003. 168(7);867-71.
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OR two of the following

- **Sclerodactyl**—skin changes suggestive of scleroderma that is limited to fingers and toes
- **Digital pitting** of fingertips or loss of substance from the finger pad—depressed areas at tips of digits or loss of digital pad tissue
- **Bilateral basilar pulmonary fibrosis**—x-ray evidence of a bilateral pattern of linear or linear-nodular densities in the lower lung that are not due to primary lung disease.

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## OCCUPATIONAL HEALTH RISKS

# ELECTRICAL WORKERS

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# FOR **WORKERS**

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## Tasks and possible hazards

### All tasks

- **Hazardous materials from industrial worksites** (refineries, chemical plants, glass plants, factories, cement plants, pulp and paper mills, and power plants)
- **Hazardous material from soldering, transformers, light fixtures, cutting, threading and installing conduit, and powder-actuated tools**
- **Awkward postures** while pulling, installing, maintaining, and repairing electrical wiring, equipment and fixtures
- **Vibration, and hazardous noise** while using power tools, grinders, saws, and mobile equipment
- **Dust** and **insulation fibres** on construction sites.

### Installing or removing

- **Asbestos** (could be part of the equipment—especially as insulation—or in building materials)
- **Polychlorinated biphenyls (PCBs)** from transformers and capacitors, fluorescent lights ballasts, and other old electrical devices
- **Solvents/epoxy** from adhesives, glues, cleaners, cutting fluids, lubricants
- **Diisocyanate** from polyurethane sealants
- **Biological materials (moulds, bacteria, and viruses)** on surfaces and in industrial plants
- **Exhaust fumes** from gas- or diesel-powered equipment.

### Welding and soldering

- **Colophon** from soldering
- **Welding fumes, ultraviolet light, heavy metals, and chlorinated compounds**
- **Dust** from power tools and equipment and grinding activities.

## How to protect your health

- Ask your supervisor or employer for safe work **instructions** and training.
- Consult industrial clients on site-specific health and safety **procedures**.
- Ask about any hazardous materials or unknown chemicals when **entering** an industrial site for work.
- Ensure adequate **ventilation**.
- Wear a proper **respirator** when
  - you suspect asbestos may be a hazard
  - working in dusty atmospheres
  - welding
  - using solvents, adhesives, or other hazardous substances.
  - using metalworking fluids (cutting oils).
- Wear rubber gloves, coveralls, welding jackets, or use barrier creams to protect the **skin**.
- Wear **hearing protection** when exposed to loud noise.
- Consult material safety data sheets (**MSDSs**) for information about hazardous chemicals used at work, and obey workplace health and safety rules.
- **Never eat, drink, smoke, or chew gum** in areas contaminated with asbestos, lead, or toxic chemicals.
- **Wash or wipe hands** clean before eating, drinking, and smoking, and always clean up and change out of contaminated **clothing** before going home at the end of the shift.
- Wash work clothes **separately** from casual and other family members' clothes.
- **Report** hazards to your employer.

Workers who are without symptoms and who have been exposed to asbestos may participate in a research study at Princess Margaret Hospital by volunteering to be screened for mesothelioma/asbestos.
Phone: 416-340-5686 Fax: 416-340-4964

**For more information about health and safety in your job, contact your union or**

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Labour Management Network

# FOR **PHYSICIANS**

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Work Safe for Life

## Occupational diseases and hazardous agents encountered by electrical workers

## Job function

Electrical workers do wiring layouts for new and existing installations. They install, replace, and repair lighting fixtures and electrical control and distribution equipment such as switches, relays, and circuit-breaker panels.

### Asbestos-related Diseases

- Asbestosis
- Cancer (lung, mesothelioma, gastrointestinal)—*asbestos*.

### Cancer

- Lung—*asbestos, diesel exhaust, environmental tobacco smoke, silica, nickel, hexavalent chromium*
- Gastrointestinal—*asbestos, hexavalent chromium*

Although not conclusive, studies have reported that that PCBs are associated with malignant melanoma, and that electrical workers may be at slightly increased risk of developing these cancers.

- Nasal—*nickel, hexavalent chromium*
- Skin—*ultraviolet light.*

Workers exposed to high levels of PCBs have been found to have an increased risk of liver cancer.

### Neurological

- Central Nervous System (CNS) effects—*solvents, degreasers, thinners, chlorinated solvents, mercury*
- Hand-arm vibration syndrome—*vibrating tools.*

### Miscellaneous Disorders

- Gastroenteritis—*bacteria, animal waste*
- Infertility, male—*chlorinated solvents*
- Noise-induced hearing loss—*noise, power tools, heavy machinery, grinders, industrial noise*
- Renal disease—*cadmium, degreasers, solvents*
- Inhalation of extremely hot air or vaporized metal fumes from an arc flash can cause significant damage to the lungs.

### Respiratory Diseases

- Bronchitis, chronic—*silica dust, environmental tobacco smoke, welding fumes*
- Asthma, occupational—*fungi/mould, chromium, epoxies, diisocyanate, colophony*
- Hypersensitivity pneumonitis (HP) acute/chronic—*fungi/mould, wood dust, diisocyanate (polyurethane foam insulation), metalworking fluids*
- Polymer fume fever—PVCs, plastics, teflon
- Pulmonary edema—cadmium, chlorine decomposition
- Metal fume fever—welding fumes.

### Skin Disorders

- Dermatitis, allergic/contact—*epoxies, paints, degreasers, glues, lubricants.*
- Chloracne and rashes—*extremely high levels of PCBs*
- Contact urticaria—*animal dusts.*

**The next page provides important diagnostic criteria for screening, early detection, and diagnosis.**

This booklet was prepared by the Ontario construction industry's Occupational Disease and Research Labour-Management Health and Safety Committee with assistance from the Infrastructure Health & Safety Association (IHSA), the Ontario Ministry of Labour (MOL), the Workplace Safety and Insurance Board (WSIB), and labour and employers in Ontario construction.

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# DIAGNOSTIC **CRITERIA**

IHSA.ca Work Safe for Life

## Asbestos disease

Asbestos-caused fibrosis of the lungs and pleura may lead to shortness of breath. It usually takes 15 or more years from the onset of exposure for radiographic abnormalities and symptoms to arise. Radiologists should be alerted to the suspected diagnosis. Electricians occupationally exposed to asbestos are at increased risk of cancers of the lungs and pleura. Screening for cancer has not been proven to reduce mortality; however, it can result in early detection.

If there is any suspicion of asbestos-related illness (i.e., not screening scenario), patients may be referred directly to Princess Margaret Hospital's program where immediate assistance, rapid assessment and specialized treatments are available. Phone 1-877-LUNG 911 (5864 911) Fax 416-340-3353. Asbestos-exposed workers should be counseled about smoking cessation.
http://www.wsib.on.ca/files/Content/OccDiseaseAsbestos/Asbestos_Related%20Diseases.pdf

## Contact dermatitis

Contact dermatitis is an inflammatory skin reaction to direct contact with noxious agents in the environment. Substances that produce this condition after single or multiple exposures may be either irritant or allergic in nature. Irritant contact dermatitis (ICD) results from contact with external agents that directly damage the epidermis, in contrast to allergic contact dermatitis (ACD) in which the damage occurs through the host's immune response as a result of a delayed type hypersensitivity reaction.

The diagnosis of contact dermatitis should be considered when there is a suspected workplace agent (allergen or irritant). Screening should include determination of the following: (A) Did the skin condition start after the worker started the job? OR Did the skin condition become worse after the worker started the job? AND (B) Are symptoms better on weekends or holidays off work? Referral to a specialist with experience diagnosing and treating occupational contact dermatitis should be considered when any of the following are suspected: all cases of possible ACD; ICD with allergic features; chronic ICD; complicated ICD (e.g., not improving, deteriorating, confounded by another skin disease such as psoriasis).
http://www.wsib.on.ca/en/community/WSIB/ArticleDetail?vgnextoid=ff4de35c819d7210VgnVCM100000449c710aRCRD

## Hand-arm vibration syndrome (HAVS) and vibration-induced white finger (VWF)

HAVS and VWF are the major health hazards related to the use of vibrating tools. If workers develop symptoms of tingling or numbness, or if their fingers occasionally become white, blue, or painful—especially when cold—they should be examined by a doctor who knows about the diagnosis and treatment of these conditions. Diagnostic tests which can be used include plethysmography, arteriography, skin thermography, and sensory tests such as two-point discrimination depth sense, pinprick touch, and temperature sensation. The Occupational Medicine Clinic at St. Michael's hospital in Toronto has diagnostic facilities.
http://www.wsib.on.ca/en/community/WSIB/OPMDetail?vgnextoid=1486fcea9bfc7210VgnVCM100000449c710aRCRD

## Neurologic effects

**Acute toxic effect of solvents:** Organic solvents are volatile substances commonly used in the workplace as cleaners and degreasers. The systemic symptoms of acute solvent poisoning resemble those of intoxication from alcoholic beverages.

**Toxic Neuropathy:** Chemicals that can cause toxic polyneuropathy include lead and N-hexane. Most symmetrical, sensorimotor neuropathies caused by exposure to chemicals are indistinguishable from similar effects caused by systemic diseases such as diabetes or B12 deficiency. The diagnosis of toxic polyneuropathy is usually made on the basis of symptoms following exposure to the chemical and the resolution of symptoms months to years after cessation of exposure.

## Noise-induced hearing loss

Noise-induced hearing loss (NIHL), is diagnosed by audiometric testing. With NIHL, there is a characteristic dip (notch) at 4 kHz on the audiogram.This contrasts with presbycusis where there is a continuous dropoff as frequency increases.
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## Occupational asthma

Sensitizer-induced occupational asthma is caused by an immune response to specific workplace agents such as low-molecular-weight chemicals (such as diisocyanates, colophony [a pine resin product used in soldering], or epoxy compounds). Once a person has been sensitized to one of these materials, even exposure to extremely low quantities will exacerbate the asthma. If this form of occupational asthma is suspected from the patient's history, objective investigation is required to confirm or refute the diagnosis.

Patients with confirmed sensitizer-induced occupational asthma should have no further exposure to the causative agent, since the best outcome is achieved with early diagnosis and complete avoidance of exposure. An objectively confirmed diagnosis is very important. Patients with suspected sensitizer-induced occupational asthma should be referred as soon as possible to a specialist (a respirologist, an allergist, or an occupational physician) with expertise in this area. Investigations are most helpful if they can be performed while the patient is still working in the suspected causative work area; the primary care physician may be able to initiate some of these.
Source: Occupational asthma: An approach to diagnosis and management. Tarlo and Liss. *Canadian Medical Association Journal*. Apr 1, 2003. 168(7);867-71.
http://www.wsib.on.ca/files/Content/Fact%20Sheet_English0619A/0619A_Asthma_and_Work.pdf

**For more info about occupational disease and workplace health and safety, contact the Workplace Safety and Insurance Board: 1-877-202-0008**

Infrastructure Health & Safety Association™

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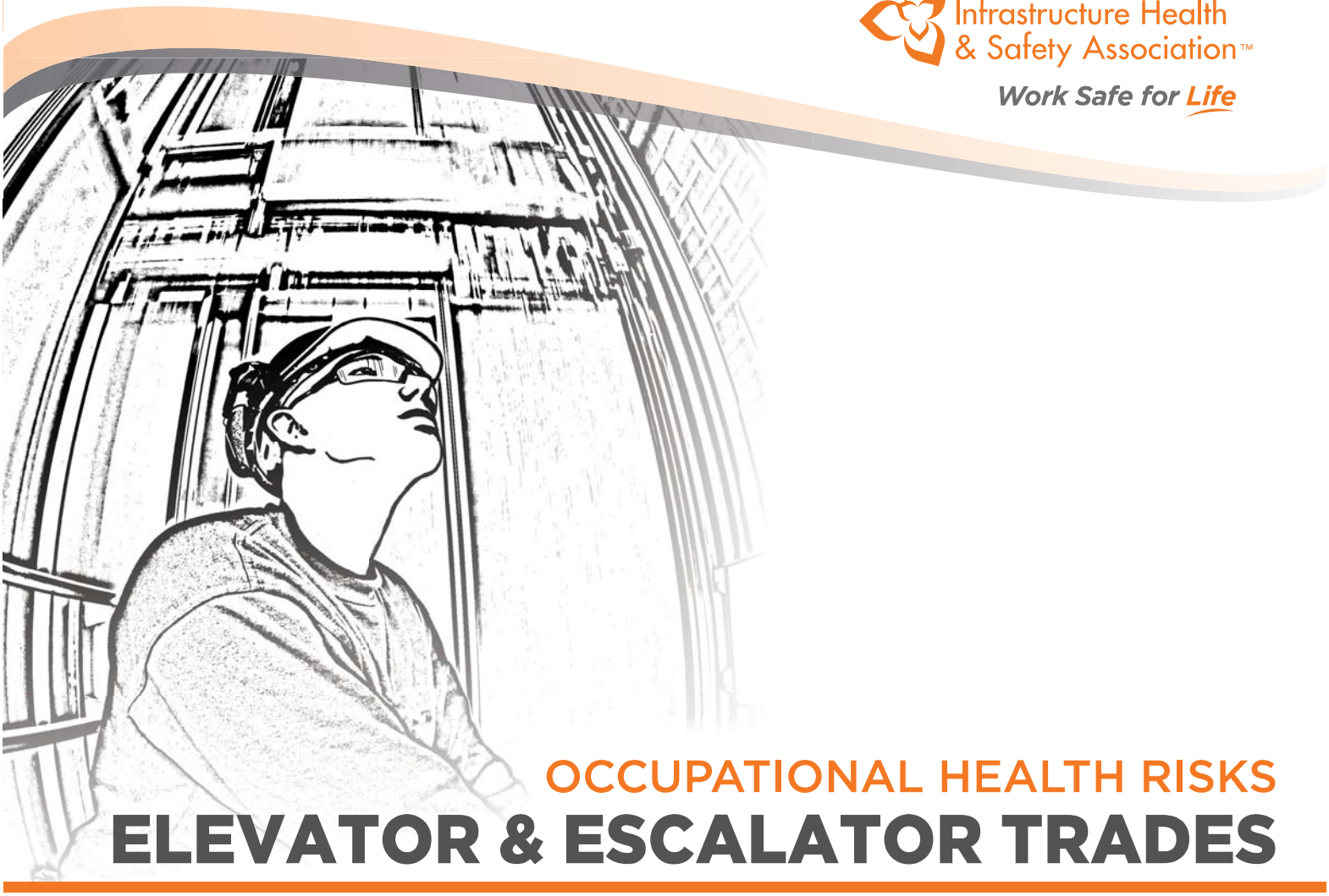

## OCCUPATIONAL HEALTH RISKS

# ELEVATOR & ESCALATOR TRADES

## A diagnostic toolkit for physicians and primary health providers. Prevention information for workers.

**Give pages 3 and 4 of this booklet to your doctor.**
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1-800-263-5024 • **www.ihsa.ca**

Labour Management NETWORK

# FOR **WORKERS**

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Work Safe for Life

## Tasks and possible hazards

### All tasks

- **Hazardous materials from industrial worksites** (refineries, chemical plants, glass plants, factories, cement plants, pulp and paper mills, power plants)
- **Awkward postures, vibration, and hazardous noise** while using power tools, grinders, saws, and mobile equipment
- **Musculoskeletal injuries** from carrying or lifting materials and tools
- **Solvents** used for cleaning or degreasing
- **Extreme temperatures** (hot and cold environments)
- **Adhesives and epoxies** (e.g., PVC glue) to join pipes

### Installation or removal

- **Asbestos** (part of the equipment or in building materials, such as old brake pads/shoes)
- **Liquids, sludges, or other materials** on or under equipment
- **Exhaust** from gas- or diesel-powered equipment
- **Biological materials** on surfaces and in industrial plants
- **Bearing greases, lubricants, cleaning solutions, machine and cutting fluids**
- **Dust and silica** from grinding, drilling, and cutting concrete and other material
- **Welding fumes, ultraviolet light, heavy metals and chlorinated compounds** when welding, torch cutting, soldering, brazing, or grinding

### Maintenance

- **Biological hazards** (used needles or animal feces)
- **Atmospheric hazards** (e.g., carbon monoxide)
- **Concrete dust and silica** when sweeping pit of new building
- **Dusts from carbon brushes** on generators/motors

## How to protect your health

- Ask your supervisor or employer for safe work **instructions** and training.
- Consult industrial clients on site-specific health and safety **procedures**.
- Ask about any hazardous materials or unknown chemicals when **entering** an industrial site for work.
- Ensure proper **ventilation**.
- Wear a proper **respirator** when
  - you suspect asbestos may be a hazard
  - working in dusty atmospheres
  - welding
  - using solvents, adhesives, or other hazardous substances
  - using metalworking fluids (cutting oils).
- Wear gloves, coveralls, welding jackets, or use barrier creams to protect the **skin**.
- Wear **hearing protection** when exposed to loud noise.
- Consult material safety data sheets (**MSDSs**) for information about hazardous chemicals used at work, and obey workplace health and safety rules.
- **Never eat, drink, smoke, or chew gum** in areas contaminated with asbestos, lead, or toxic chemicals.
- Wash or wipe your **hands** clean before eating, drinking, or smoking.
- Always clean up and change out of contaminated **clothing** before going home at the end of a shift.
- Wash work clothes **separately** from casual and other family members' clothes.
- **Report** hazards to your employer.

Workers who are without symptoms and who have been exposed to asbestos may participate in a research study at Princess Margaret Hospital by volunteering to be screened for mesothelioma/asbestos.
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Labour Management Network

# FOR **PHYSICIANS**

IHSA.ca
Work Safe for Life

## Occupational diseases and hazardous agents encountered by elevator and escalator trades

### Job function

Elevator constructors and mechanics assemble, install, maintain, and repair freight and passenger elevators, escalators, moving walkways, and related equipment. They are employed by elevator construction and maintenance companies.

### Asbestos-Related Diseases

- Asbestosis
- Cancer (lung, mesothelioma, gastrointestinal)—*asbestos.*

### Cancer

- Gastrointestinal—*asbestos*
- Leukemia—*benzene*
- Lung—*asbestos, diesel exhaust, environmental tobacco smoke, silica, refractory ceramic fibres, nickel, hexavalent chromium*
- Nasal—*nickel, hexavalent chromium.*

### Miscellaneous Disorders

- Anemia—*lead-based paint*
- Gastroenteritis—*bacteria, animal waste*
- Hantavirus, histoplasmosis, leptospirosis—*rodent/bird/bat droppings*
- Infertility, male—*lead, chlorinated solvents*
- Noise-induced hearing loss—*power tools, heavy machinery, grinders, industrial noise*
- Renal disease—*cadmium, lead, degreasers, solvents.*

### Neurological

- Central nervous system (CNS) effects—*solvents, paints, degreasers, chlorinated solvents, thinners*
- Hand-arm vibration syndrome—*vibrating tools*
- Lead, subacute toxic effect—*lead-based paint*
- Neuropathy, toxic—*lead-based paint*
- Parkinsonism—*manganese.*

### Respiratory Diseases

- Asthma, occupational—*fungi/mould, hexavalent chromium, metalworking fluids*
- Benign pneumoconiosis—*welding fume*
- Bronchitis, chronic—*silica dust, environmental tobacco smoke*
- Hypersensitivity pneumonitis (HP) acute/chronic— *fungi/mould*
  - Metal fume fever—*metallic oxide fumes such as zinc, copper, or magnesium from welding*
  - Pontiac fever, Legionnaires' disease—*Legionella*
  - Pulmonary edema—*cadmium.*

### Skin Disorders

- Contact urticaria—*animal dusts*
- Dermatitis, allergic/contact—*hexavalent chromium, epoxies, paints, degreasers, glues.*

**The next page provides important diagnostic criteria for screening, early detection, and diagnosis.**

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# DIAGNOSTIC **CRITERIA**

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Work Safe for Life

## Asbestos disease

Asbestos-caused fibrosis of the lungs and pleura may lead to shortness of breath. It usually takes 15 or more years from the onset of exposure for radiographic abnormalities and symptoms to arise. Radiologists should be alerted to the suspected diagnosis. Elevator and escalator workers occupationally exposed to asbestos are at increased risk of cancers of the lungs and pleura. Screening for cancer has not been proven to reduce mortality; however, it can result in early detection.

If there is any suspicion of asbestos-related illness (i.e., not screening scenario), patients may be referred directly to Princess Margaret Hospital's program where immediate assistance, rapid assessment and specialized treatments are available. Phone 1-877-LUNG 911 (5864 911) Fax 416-340-3353. Asbestos-exposed workers should be counseled about smoking cessation.
http://www.wsib.on.ca/files/Content/OccDiseaseAsbestos/Asbestos_Related%20Diseases.pdf

## Contact dermatitis

Contact dermatitis is an inflammatory skin reaction to direct contact with noxious agents in the environment. Substances that produce this condition after single or multiple exposures may be either irritant or allergic in nature. Irritant contact dermatitis (ICD) results from contact with external agents that directly damage the epidermis, in contrast to allergic contact dermatitis (ACD) in which the damage occurs through the host's immune response as a result of a delayed type hypersensitivity reaction.

The diagnosis of contact dermatitis should be considered when there is a suspected workplace agent (allergen or irritant). Screening should include determination of the following: (A) Did the skin condition start after the worker started the job? OR Did the skin condition become worse after the worker started the job? AND (B) Are symptoms better on weekends or holidays off work? Referral to a specialist with experience diagnosing and treating occupational contact dermatitis should be considered when any of the following are suspected: all cases of possible ACD; ICD with allergic features; chronic ICD; complicated ICD (e.g., not improving, deteriorating, confounded by another skin disease such as psoriasis).
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## Hand-arm vibration syndrome (HAVS) and vibration-induced white finger (VWF)

HAVS and VWF are the major health hazards related to the use of vibrating tools. If workers develop symptoms of tingling or numbness, or if their fingers occasionally become white, blue, or painful—especially when cold—they should be examined by a doctor who knows about the diagnosis and treatment of these conditions. Diagnostic tests which can be used include plethysmography, arteriography, skin thermography, and sensory tests such as two-point discrimination depth sense, pinprick touch, and temperature sensation. The Occupational Medicine Clinic at St. Michael's hospital in Toronto has diagnostic facilities. http://www.wsib.on.ca/en/community/WSIB/OPMDetail?vgnextoid=1486fcea9bfc7210VgnVCM100000449c710aRCRD

## Inhalation diseases: Welding fume fever

Welding Fume Fever. A flu-like illness with a metallic taste in the mouth, throat irritation, and dry cough. Leucocytosis is common. Normal chest x-ray. Occurs 3–10 hours after heavy exposure to zinc oxide fumes (e.g., zinc, copper, or magnesium fumes) or dust (e.g., after welding or flame cutting of galvanized steel). Resolves spontaneously within 48 hours.

## Neurologic effects

Acute toxic effect of solvents: Organic solvents are volatile substances commonly used in the workplace as cleaners and degreasers. The systemic symptoms of acute solvent poisoning resemble those of intoxication from alcoholic beverages.

Toxic Neuropathy: Chemicals that can cause toxic polyneuropathy include lead and N-hexane. Most symmetrical, sensorimotor neuropathies caused by exposure to chemicals are indistinguishable from similar effects caused by systemic diseases such as diabetes or B12 deficiency. The diagnosis of toxic polyneuropathy is usually made on the basis of symptoms following exposure to the chemical and the resolution of symptoms months to years after cessation of exposure.

## Noise-induced hearing loss

Noise-induced hearing loss (NIHL), is diagnosed by audiometric testing. With NIHL, there is a characteristic dip (notch) at 4 kHz on the audiogram.This contrasts with presbycusis where there is a continuous dropoff as frequency increases.
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## Occupational Asthma

Sensitizer-induced occupational asthma is caused by an immune response to specific workplace agents such as low-molecular-weight chemicals (such as diisocyanates, colophony [a pine resin product used in soldering], or epoxy compounds). Once a person has been sensitized to one of these materials, even exposure to extremely low quantities will exacerbate the asthma. If this form of occupational asthma is suspected from the patient's history, objective investigation is required to confirm or refute the diagnosis.

Patients with confirmed sensitizer-induced occupational asthma should have no further exposure to the causative agent, since the best outcome is achieved with early diagnosis and complete avoidance of exposure. An objectively confirmed diagnosis is very important. Patients with suspected sensitizer-induced occupational asthma should be referred as soon as possible to a specialist (a respirologist, an allergist, or an occupational physician) with expertise in this area. Investigations are most helpful if they can be performed while the patient is still working in the suspected causative work area; the primary care physician may be able to initiate some of these.
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http://www.wsib.on.ca/files/Content/Fact%20Sheet_English0619A/0619A_Asthma_and_Work.pdf

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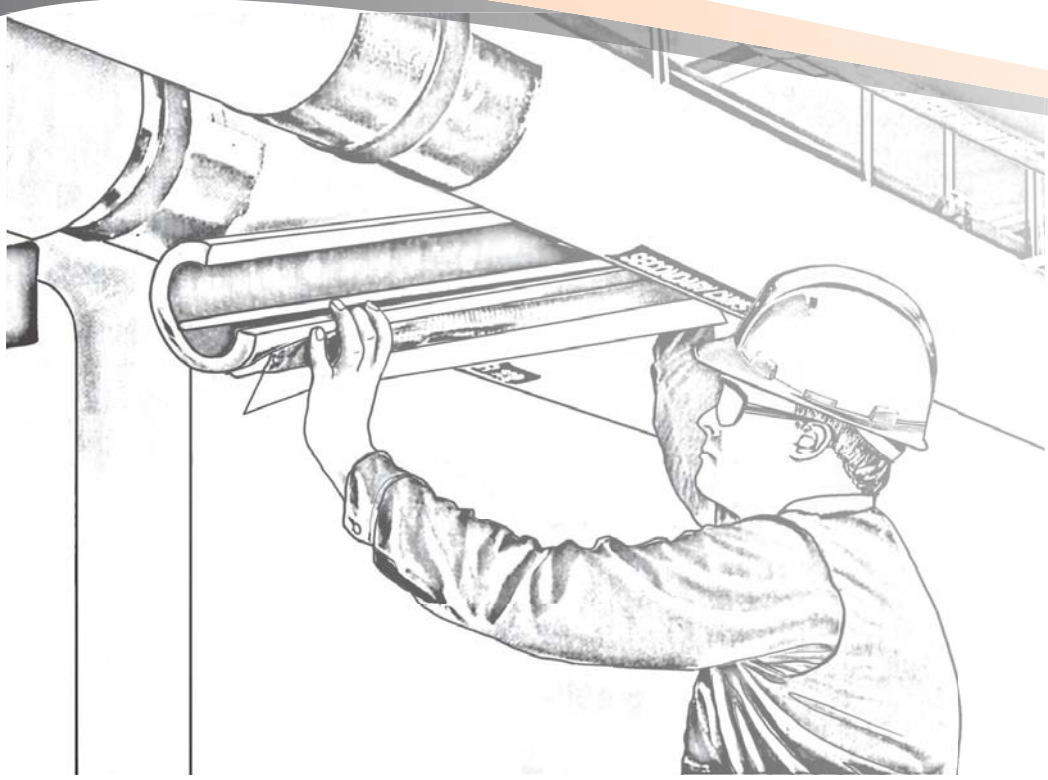

# OCCUPATIONAL HEALTH RISKS
# INSULATOR TRADES

## A diagnostic toolkit for physicians and primary health providers. Prevention information for workers.

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# FOR **WORKERS**

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Work Safe for Life

## Tasks and possible hazards

### All tasks

- **Hazardous materials from industrial worksites** (coke ovens, refineries, chemical plants, glass plants, factories, cement plants, pulp and paper mills, power plants)
- **Awkward postures and vibration** when installing, maintaining or repairing insulation materials
- **Hazardous noise** from surrounding construction activities.

### Installation, removal, or repair of equipment

- **Asbestos** (could be part of the old insulation—or in building materials)
- **Insulation wools (fiberglass, calcium silicate, foam glass, slag wool, rock wool)** could be part of the insulation—or in building materials. Handling, cutting, or blowing insulation wool without dust control can release fibres into the air.
- **Refractory ceramic fibres** – results of long-term inhalation experiments in animals have shown that RCFs can produce lung cancer, mesothelioma, and lung fibrosis following long-term inhalation of very high concentrations.
- **Diisocyanates** exposure while applying foam insulation
- **Mould** from wet insulation
- **Biological materials (moulds, bacteria, viruses)** from animal droppings on surfaces and in industrial plants.

## How to protect your health

- Ask your supervisor or employer for safe work **instructions** and training.
- Consult industrial clients on site-specific health and safety **procedures.**
- Ask about any hazardous materials or unknown chemicals when **entering** an industrial site for work.
- Ensure proper **ventilation**.
- Wear a proper **respirator** when
  - you suspect asbestos may be a hazard
  - working in dusty atmospheres
  - welding
  - using solvents, adhesives, or other hazardous substances
  - using metalworking fluids (cutting oils).
- Wear gloves, coveralls or welding jackets, or use barrier creams to protect the **skin**.
- Consult material safety data sheets (**MSDSs**) for information about hazardous chemicals used at work, and obey workplace health and safety rules.
- **Never eat, drink, smoke, or chew gum** in areas contaminated with asbestos, lead, or toxic chemicals.
- Wash or wipe **hands** clean before eating, drinking, and smoking, and always clean up and change out of contaminated **clothing** before going home at the end of the shift.
- Wash work clothes **separately** from casual and other family members' clothes.
- **Report** hazards to your employer.

Workers who are without symptoms and who have been exposed to asbestos may participate in a research study at Princess Margaret Hospital by volunteering to be screened for mesothelioma/asbestos.
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Labour Management Network

# FOR **PHYSICIANS**

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## Occupational diseases and hazardous agents encountered by the insulation trade

## Job function

Insulators apply insulation materials to plumbing, air-handling, heating, cooling, and refrigeration systems, as well as to piping equipment, pressure vessels, and walls, floors, and ceilings of buildings and other structures.

### Asbestos-related Diseases

- Asbestosis
- Cancer (lung, mesothelioma, gastrointestinal) – *asbestos*

### Cancer

- Lung – *asbestos, environmental tobacco smoke, refractory ceramic fibre* (Results of long-term inhalation experiments in animals have shown that RCFs can produce lung cancer, mesothelioma, and lung fibrosis following long-term inhalation of very high concentrations.)
- Gastrointestinal – *asbestos*
- Stomach – *asbestos*

### Miscellaneous Disorders

- Noise-induced hearing loss – *power tools, industrial noise, etc.*

### Respiratory Diseases

- Asthma, occupational – *fungi/mould, chromium, dust, mineral fibres, polyurethane foam*
- Bronchitis, chronic – *environmental tobacco smoke*
- Hypersensitivity pneumonitis (HP) acute/chronic – *fungi/mould, polyurethane foam*

### Skin Disorders

- Dermatitis, contact – *insulation wools, various mastics, cements, adhesives, and solvents*

**The next page provides important diagnostic criteria for screening, early detection, and diagnosis.**

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# DIAGNOSTIC **CRITERIA**

## Asbestos disease

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If there is any suspicion of asbestos-related illness (i.e., not screening scenario), patients may be referred directly to Princess Margaret Hospital's program where immediate assistance, rapid assessment and specialized treatments are available. Phone 1-877-LUNG 911 (5864 911) Fax 416-340-3353. Asbestos-exposed workers should be counseled about smoking cessation.
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## Contact dermatitis

Contact dermatitis is an inflammatory skin reaction to direct contact with noxious agents in the environment. Substances that produce this condition after single or multiple exposures may be either irritant or allergic in nature. Irritant contact dermatitis (ICD) results from contact with external agents that directly damage the epidermis, in contrast to allergic contact dermatitis (ACD) in which the damage occurs through the host's immune response as a result of a delayed type hypersensitivity reaction.

The diagnosis of contact dermatitis should be considered when there is a suspected workplace agent (allergen or irritant). Screening should include determination of the following: (A) Did the skin condition start after the worker started the job? OR Did the skin condition become worse after the worker started the job? AND (B) Are symptoms better on weekends or holidays off work? Referral to a specialist with experience diagnosing and treating occupational contact dermatitis should be considered when any of the following are suspected: all cases of possible ACD; ICD with allergic features; chronic ICD; complicated ICD (e.g., not improving, deteriorating, confounded by another skin disease such as psoriasis).
http://www.wsib.on.ca/en/community/WSIB/ArticleDetail?vgnextoid=ff4de35c819d7210VgnVCM100000449c710aRCRD

## Noise-induced hearing loss

Noise-induced hearing loss (NIHL), is diagnosed by audiometric testing. With NIHL, there is a characteristic dip (notch) at 4 kHz on the audiogram. This contrasts with presbycusis where there is a continuous dropoff as frequency increases.
http://www.wsib.on.ca/en/community/WSIB/OPMDetail?vgnextoid=9956fcea9bfc7210VgnVCM100000449c710aRCRD

## Occupational asthma

Sensitizer-induced occupational asthma is caused by an immune response to specific workplace agents such as low-molecular-weight chemicals (such as diisocyanates, colophony [a pine resin product used in soldering], or epoxy compounds). Once a person has been sensitized to one of these materials, even exposure to extremely low quantities will exacerbate the asthma. If this form of occupational asthma is suspected from the patient's history, objective investigation is required to confirm or refute the diagnosis.

Patients with confirmed sensitizer-induced occupational asthma should have no further exposure to the causative agent, since the best outcome is achieved with early diagnosis and complete avoidance of exposure. An objectively confirmed diagnosis is very important. Patients with suspected sensitizer-induced occupational asthma should be referred as soon as possible to a specialist (a respirologist, an allergist, or an occupational physician) with expertise in this area. Investigations are most helpful if they can be performed while the patient is still working in the suspected causative work area; the primary care physician may be able to initiate some of these.
http://www.wsib.on.ca/files/Content/Fact%20Sheet_English0619A/0619A_Asthma_and_Work.pdf
Source: Occupational asthma: An approach to diagnosis and management. Tarlo and Liss. *Canadian Medical Association Journal.* Apr 1, 2003. 168(7);867-71.

**For more info about occupational disease and workplace health and safety, contact the Workplace Safety and Insurance Board: 1-877-202-0008**

Infrastructure Health & Safety Association™

*Work Safe for Life*

# OCCUPATIONAL HEALTH RISKS
# IRONWORKERS

## A diagnostic toolkit for physicians and primary health providers. Prevention information for workers.

**Give pages 3 and 4 of this booklet to your doctor.**
**They give your doctor information about the health risks of your job.**

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1-800-263-5024 • **www.ihsa.ca**



Labour Management NETWORK

# FOR **WORKERS**

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Work Safe for Life

## Tasks and possible hazards

### All tasks

- **Hazardous materials from industrial worksites** (coke ovens, refineries, chemical plants, glass plants, factories, cement plants, pulp and paper mills, power plants)
- **Awkward postures, vibration, and hazardous noise** when using power tools, grinders, saws, and mobile equipment
- **Dust** and **insulation fibres** on construction sites
- **Working in the heat and cold.**

### Installation, removal, or repair of equipment

- **Asbestos** (could be part of the old insulation—or in building materials)
- **Lead**
- **Solvents**
- **Cutting fluids**
- **Exhaust fumes** from gas- or diesel-powered equipment.

### Welding, torch cutting, soldering, brazing, grinding

- **Lead**
- **Welding fumes, ultraviolet (UV) light, heavy metals, and chlorinated compounds**
- **Dust** from grinding activities.

## How to protect your health

- Ask your supervisor or employer for safe work **instructions** and training.
- Consult industrial clients on site-specific health and safety **procedures.**
- Ask about any hazardous materials or unknown chemicals when **entering** an industrial site for work.
- Ensure proper **ventilation**.
- Wear a proper **respirator** when
  - you suspect asbestos may be a hazard
  - working in dusty atmospheres
  - welding
  - using solvents.
- Wear gloves, coveralls or welding jackets, or use barrier creams to protect the **skin**.
- Consult material safety data sheets (**MSDSs**) for information about hazardous chemicals used at work, and obey workplace health and safety rules.
- **Never eat, drink, smoke, or chew gum** in areas contaminated with asbestos, lead, or toxic chemicals.
- Wash or wipe **hands** clean before eating, drinking, and smoking, and always clean up and change out of contaminated **clothing** before going home at the end of the shift.
- Wash work clothes **separately** from casual and other family members' clothes.
- **Report** hazards to your employer.

Workers who are without symptoms and who have been exposed to asbestos may participate in a research study at Princess Margaret Hospital by volunteering to be screened for mesothelioma/asbestos.
Phone: 416-340-5686 Fax: 416-340-4964

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Labour Management Network

# FOR **PHYSICIANS**

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Work Safe for Life

## Occupational diseases and hazardous agents encountered by ironworkers

## Job function

Ironworkers fabricate, erect, hoist, install, repair, and service structural ironwork, precast concrete, concrete reinforcing materials, curtain walls, ornamental iron, and other metals.

### Miscellaneous Disorders

- Asphyxiation – *inadequate ventilation (e.g., during work in a confined space)*
- Gastroenteritis – *bacteria, animal waste*
- Hantavirus, histoplasmosis, leptospirosis, lymphocytic choriomeningitis – *rodent/bird/bat droppings*
- Hepatitis (chronic solvent toxicity) – *chlorinated solvents*
- Infertility, male – *manganese, lead, chlorinated solvents*
- Renal disease – *cadmium, lead, degreasers, solvents*
- Noise-induced hearing loss – *construction noise, power tools, industrial noise, heavy machinery, grinders.*

### Neurological

- Chronic solvent toxic syndrome – *solvents, chlorinated solvents, degreasers, thinners*
- Hand-arm vibration syndrome – *vibrating tools*
- Lead, subacute toxic effect – *lead*
- Neuropathy, toxic – *lead*
- Parkinsonism – *carbon monoxide, manganese*.

### Cancer

- Lung – *asbestos, diesel, environmental tobacco smoke, bioaerosols, nickel, hexavalent chromium*
- Gastrointestinal – *asbestos, hexavalent chromium*
- Leukemia – *benzene*
- Nasal – *nickel, hexavalent chromium*
- Skin – *ultraviolet (UV) light.*

### Asbestos-related Diseases

- Asbestosis
- Asbestos warts – *asbestos*
- Cancer (lung, mesothelioma, gastrointestinal) – *asbestos.*

### Skin Disorders

- Dermatitis, allergic/contact – *hexavalent chromium, epoxies, paints, degreasers, glues, insulation fibres*
- Contact urticaria – *animal dusts.*

### Respiratory Diseases

- Asthma, occupational – *fungi/mould, hexavalent chromium, dust, epoxies, mineral fibres, PVC*
- Benign pneumoconiosis – *welding fume*
  - Bronchitis, chronic – *organic dust, construction dust, welding fume, environmental tobacco smoke*
- Hypersensitivity pneumonitis (HP) acute/chronic – *metalworking fluid*
  - Chronic bronchitis – *welding fume*
  - Metal fume fever – *welding fume, iron, galvanized metal fumes*
  - Polymer fume fever – *PVC, plastics, teflon*
  - Pontiac fever, Legionnaires' disease – *Legionella*
  - Pulmonary edema – *cadmium, flux, solder, chlorine decomposition, silica*.

**The next page provides important diagnostic criteria for screening, early detection, and diagnosis.**

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# DIAGNOSTIC **CRITERIA**

IHSA.ca Work Safe for Life

## Asbestos disease

Asbestos-caused fibrosis of the lungs and pleura may lead to shortness of breath. It usually takes 15 or more years from the onset of exposure for radiographic abnormalities and symptoms to arise. Radiologists should be alerted to the suspected diagnosis. Ironworkers occupationally exposed to asbestos are at increased risk of cancers of the lungs and pleura. Screening for cancer has not been proven to reduce mortality; however, it can result in early detection.

If there is any suspicion of asbestos-related illness (i.e., not screening scenario), patients may be referred directly to Princess Margaret Hospital's program where immediate assistance, rapid assessment and specialized treatments are available. Phone 1-877-LUNG 911 (5864 911) Fax 416-340-3353. Asbestos-exposed workers should be counseled about smoking cessation.
http://www.wsib.on.ca/files/Content/OccDiseaseAsbestos/Asbestos_Related%20Diseases.pdf

## Contact dermatitis

Contact dermatitis is an inflammatory skin reaction to direct contact with noxious agents in the environment. Substances that produce this condition after single or multiple exposures may be either irritant or allergic in nature. Irritant contact dermatitis (ICD) results from contact with external agents that directly damage the epidermis, in contrast to allergic contact dermatitis (ACD) in which the damage occurs through the host's immune response as a result of a delayed type hypersensitivity reaction.

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http://www.wsib.on.ca/en/community/WSIB/ArticleDetail?vgnextoid=ff4de35c819d7210VgnVCM100000449c710aRCRD

## Neurologic effects

Acute toxic effect of solvents: Organic solvents are volatile substances commonly used in the workplace as cleaners and degreasers. The systemic symptoms of acute solvent poisoning resemble those of intoxication from alcoholic beverages.

Toxic Neuropathy: Chemicals that can cause toxic polyneuropathy include lead and N-hexane. Most symmetrical, sensorimotor neuropathies caused by exposure to chemicals are indistinguishable from similar effects caused by systemic diseases such as diabetes or B12 deficiency. The diagnosis of toxic polyneuropathy is usually made on the basis of symptoms following exposure to the chemical and the resolution of symptoms months to years after cessation of exposure.

## Noise-induced hearing loss

Noise-induced hearing loss (NIHL), is diagnosed by audiometric testing. With NIHL, there is a characteristic dip (notch) at 4 kHz on the audiogram. This contrasts with presbycusis where there is a continuous dropoff as frequency increases.
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## Occupational asthma

Sensitizer-induced occupational asthma is caused by an immune response to specific workplace agents such as low-molecular-weight chemicals (such as diisocyanates, colophony [a pine resin product used in soldering], or epoxy compounds). Once a person has been sensitized to one of these materials, even exposure to extremely low quantities will exacerbate the asthma. If this form of occupational asthma is suspected from the patient's history, objective investigation is required to confirm or refute the diagnosis.

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Source: Occupational asthma: An approach to diagnosis and management. Tarlo and Liss. *Canadian Medical Association Journal.* Apr 1, 2003. 168(7);867-71.

## Vibration syndrome and vibration-induced white finger (VWF)

Vibration Syndrome and VWF are the major health hazards related to the use of vibrating tools. If workers develop symptoms of tingling or numbness, or if their fingers occasionally become white, blue, or painful—especially when cold—they should be examined by a doctor who knows about the diagnosis and treatment of these conditions. Diagnostic tests which can be used include plethysmography, arteriography, skin thermography, and sensory tests such as two-point discrimination depth sense, pinprick touch, and temperature sensation. The Occupational Medicine Clinic at St. Michael's hospital in Toronto has diagnostic facilities.

**For more info about occupational disease and workplace health and safety, contact the Workplace Safety and Insurance Board: 1-877-202-0008**

Labour Management Network

Infrastructure Health & Safety Association™

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## OCCUPATIONAL HEALTH RISKS

# MASONRY and ALLIED CRAFTS

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Labour Management NETWORK

# FOR **WORKERS**

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Work Safe for Life

## Tasks and possible hazards

### All tasks

- **Hazardous materials from industrial worksites** (refineries, chemical plants, glass plants, factories, cement plants, pulp and paper mills, power plants)
- **Awkward postures, vibration, and hazardous noise** when using power tools, grinders, saws, and mobile equipment
- **Dust** and **insulation fibres** on construction sites
- **Working in the heat and cold.**

### Installation, removal, or repair of equipment

- **Asbestos** (could be part of the equipment—especially as insulation—or in building materials)
- **Insulation fibres**
- **Lead in mortar**
- **Solvents, adhesives, epoxies, sealers**
- **Silica** in marble, granite, aggregate, or brick
- **Corrosive chemicals** in wet cement or wet mortar
- **Exhaust fumes** from gas- or diesel-powered equipment.

### Mixing, cutting, chipping, or grinding

- **Silica dust** if water is not used
- **Noise and vibration** from power tools and equipment.

## How to protect your health

- Ask your supervisor or employer for safe work **instructions** and training.
- Use **water** or **vacuum systems** where possible to control dust.
- Ask about any hazardous materials or unknown chemicals when **entering** an industrial site for work.
- Ensure adequate **ventilation** when using gas- or diesel-powered equipment or when heating a work space.
- Never use compressed air to blow dust away or for cleanup. Instead, use **wet sweeping**.
- Wear a proper **respirator** when
  - you suspect asbestos may be a hazard
  - working in dusty atmospheres
  - welding
  - using solvents, adhesives, or other hazardous substances.
- Wear rubber gloves and rubber boots to protect the **skin**.
- Wear **hearing protection** when exposed to loud noise.
- Consult material safety data sheets (**MSDSs**) for information about hazardous chemicals used at work, and obey workplace health and safety rules.
- **Never eat, drink, smoke, or chew gum** in areas contaminated with asbestos, lead, or toxic chemicals.
- Wash or wipe **hands** clean before eating, drinking, and smoking, and always clean up and change out of contaminated **clothing** before going home at the end of the shift.
- Wash work clothes **separately** from casual and other family members' clothes.
- When working in the **heat** or near heat sources, drink lots of **water** and take frequent rest breaks to prevent heat stress.
- When working in the cold take frequent breaks in a **warm** area to prevent cold stress.
- **Report** hazards to your employer.

Workers who are without symptoms and who have been exposed to asbestos may participate in a research study at Princess Margaret Hospital by volunteering to be screened for mesothelioma/asbestos.
Phone: 416-340-5686 Fax: 416-340-4964

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Labour Management Network

# FOR **PHYSICIANS**

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Work Safe for Life

## Occupational diseases and hazardous agents encountered by masons and allied trades

## Job function

Bricklayers lay bricks, concrete blocks, stone and other similar materials to construct or repair walls, arches, chimneys, fireplaces, and other structures. Tile setters set tile, install terrazzo, and other similar materials to construct or repair floors and walls.

### Asbestos-related Diseases

- Asbestosis
- Cancer (lung, mesothelioma, gastrointestinal)—*asbestos*
- Asbestos warts—*asbestos*.

### Cancer

- Lung—*asbestos, refractory ceramic fibre, dust, diesel exhaust, environmental tobacco smoke, silica, bioaerosols, nickel, hexavalent chromium*
- Gastrointestinal—*asbestos, hexavalent chromium*
- Nasal—*hexavalent chromium*
- Stomach—*asbestos, inorganic dusts*
- Skin—*ultraviolet light.*

### Miscellaneous Disorders

- *Asphyxiation—inadequate ventilation (during work in a confined space, for example)*
- *Gastroenteritis—bacteria, animal waste*
- Infertility, male—*lead*
- Noise-induced hearing loss—*noise, power tools, heavy machinery, grinders, industrial noise*
- Renal disease—*lead, solvents*
- Scleroderma/Systemic sclerosis—*silica.*

### Neurological

- Chronic solvent toxic syndrome—*solvents, paints, degreasers, thinners, epoxies*
- Hand-arm vibration syndrome—*vibrating tools*
- Lead, subacute toxic effect—*lead*
- Neuropathy, toxic—*lead*
- Parkinsonism—*carbon monoxide, manganese*.

### Respiratory Diseases

- Silicosis—*silica* (see Scleroderma/Systemic sclerosis)
- Bronchitis, chronic—*organic dust, construction dust, form oil, environmental tobacco smoke*
- Asthma, occupational—*fungi/mould, hexavalent chromium, dust, epoxies, mineral fibres*
- Hypersensitivity pneumonitis (HP) acute/chronic—*fungi/mould, wood dust*
    - Chronic bronchitis—*ammonia from some curing concrete products, dust*
    - Pontiac fever, Legionnaires' disease—*Legionella*
    - Pulmonary edema—*silica.*

### Skin Disorders

- Dermatitis, allergic/contact— *hexavalent chromium, coal tar, epoxies, paints, degreasers, glues, form oil, acrylic, resins, bonding agents.*

**The next page provides important diagnostic criteria for screening, early detection, and diagnosis.**

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# DIAGNOSTIC **CRITERIA**

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Work Safe for Life

## Asbestos disease

Asbestos-caused fibrosis of the lungs and pleura may lead to shortness of breath. It usually takes 15 or more years from the onset of exposure for radiographic abnormalities and symptoms to arise. Radiologists should be alerted to the suspected diagnosis. Masons occupationally exposed to asbestos are at increased risk of cancers of the lungs and pleura. Screening for cancer has not been proven to reduce mortality; however, it can result in early detection.

If there is any suspicion of asbestos-related illness (i.e., not screening scenario), patients may be referred directly to Princess Margaret Hospital's program where immediate assistance, rapid assessment and specialized treatments are available. Phone 1-877-LUNG 911 (5864 911) Fax 416-340-3353. Asbestos-exposed workers should be counseled about smoking cessation.
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## Hand-arm vibration syndrome (HAVS) and vibration-induced white finger (VWF)

HAVS and VWF are the major health hazards related to the use of vibrating tools. If workers develop symptoms of tingling or numbness, or if their fingers occasionally become white, blue, or painful—especially when cold—they should be examined by a doctor who knows about the diagnosis and treatment of these conditions. Diagnostic tests which can be used include plethysmography, arteriography, skin thermography, and sensory tests such as two-point discrimination depth sense, pinprick touch, and temperature sensation. The Occupational Medicine Clinic at St. Michael's hospital in Toronto has diagnostic facilities. http://www.wsib.on.ca/en/community/WSIB/OPMDetail?vgnextoid=1486fcea9bfc7210VgnVCM100000449c710aRCRD

## Inhalation disease: Silicosis

Silicosis an occupational lung disease caused by inhalation of crystalline silica dust. Silica inflammation and scaring is manifested as nodular lesions in the upper lobes of the lungs. Silicosis is progressive and signs may not appear until years after exposure has begun. Symptoms include: dyspnea on exertion, dry cough, and fatigue. The diagnosis is made by radiographic examination. It is preferred that the films be interpreted by a radiologist with experience with occupational lung disease since the finding may be subtle.
http://www.wsib.on.ca/files/Content/OccDiseaseSilicosis/Silicosis.pdf.

## Neurologic effects

Acute toxic effect of solvents: Organic solvents are volatile substances commonly used in the workplace as cleaners and degreasers. The systemic symptoms of acute solvent poisoning resemble those of intoxication from alcoholic beverages.

Toxic Neuropathy: Chemicals that can cause toxic polyneuropathy include lead and N-hexane. Most symmetrical, sensorimotor neuropathies caused by exposure to chemicals are indistinguishable from similar effects caused by systemic diseases such as diabetes or B12 deficiency. The diagnosis of toxic polyneuropathy is usually made on the basis of symptoms following exposure to the chemical and the resolution of symptoms months to years after cessation of exposure.

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## Occupational asthma

Sensitizer-induced occupational asthma is caused by an immune response to specific workplace agents such as low-molecular-weight chemicals (such as diisocyanates, colophony [a pine resin product used in soldering], or epoxy compounds). Once a person has been sensitized to one of these materials, even exposure to extremely low quantities will exacerbate the asthma. If this form of occupational asthma is suspected from the patient's history, objective investigation is required to confirm or refute the diagnosis.

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http://www.wsib.on.ca/files/Content/Fact%20Sheet_English0619A/0619A_Asthma_and_Work.pdf

## Scleroderma

Scleroderma is sometimes called systemic sclerosis. It is a type of connective tissue disorder. Diagnosis is recognized if the case is characterized by either:

**Proximal scleroderma**—skin changes suggestive of scleroderma that appear near the finger and wrist joints as well as on other parts of the extremities, face, neck, or trunk of the body. These changes usually appear symmetrically on both sides of the body and almost always include skin changes on fingers and toes.

OR two of the following

- **Sclerodactyl**—skin changes suggestive of scleroderma that is limited to fingers and toes
- **Digital pitting** of fingertips or loss of substance from the finger pad—depressed areas at tips of digits or loss of digital pad tissue
- **Bilateral basilar pulmonary fibrosis**—x-ray evidence of a bilateral pattern of linear or linear-nodular densities in the lower lung that are not due to primary lung disease.

http://www.wsib.on.ca/en/community/WSIB/OPMDetail?vgnextoid=1e27fcea9bfc7210VgnVCM100000449c710aRCRD

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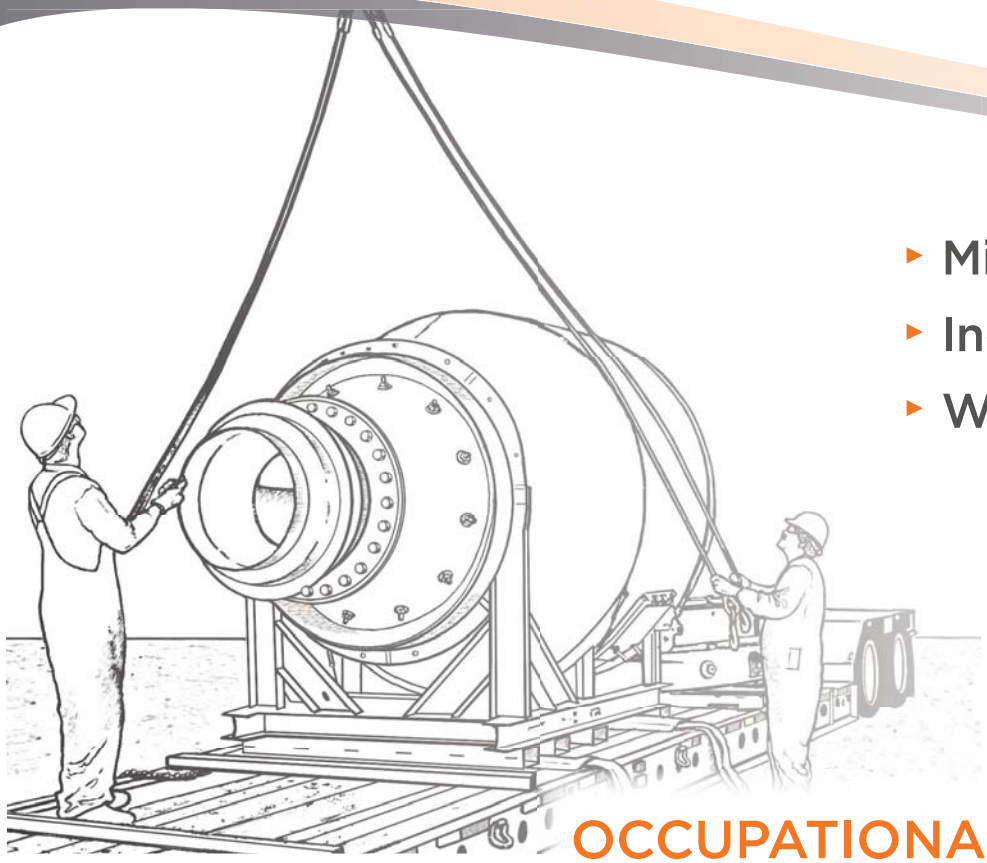

- Millwrights
- Industrial mechanics
- Welders

## OCCUPATIONAL HEALTH RISKS

# MILLWRIGHTS and SIMILAR TRADES

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Labour Management NETWORK

# FOR **WORKERS**

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## Tasks and possible hazards

### All tasks

- **Hazardous materials from industrial worksites** (coke ovens, refineries, chemical plants, glass plants, factories, cement plants, pulp and paper mills, power plants)
- **Awkward postures, vibration, and hazardous noise** when using power tools, grinders, saws, and mobile equipment
- **Dust** and **insulation fibres** on construction sites.

### Installation, removal, or repair of equipment

- **Asbestos** (could be part of the equipment or in building materials)
- **Lead** (e.g., when removing anchors)
- **Solvents, adhesives,** and **epoxies**
- **Silica**
- **Exhaust fumes** from gas- or diesel-powered equipment.
- **Liquids, sludges, or other materials** on or under equipment
- **Bearing greases, lubricants, cleaning solutions, and machine and cutting fluids.**
- **Biological materials** on equipment and in industrial plants.

### Welding, torch cutting, soldering, brazing, grinding

- **Lead**
- **Welding fumes, ultraviolet light, heavy metals,** and **chlorinated compounds**
- **Dust** from grinding activities.

## How to protect your health

- Ask your supervisor or employer for safe work **instructions** and training.
- Consult industrial clients about site-specific health and safety **procedures**.
- Ask about any hazardous materials or unknown chemicals when **entering** an industrial site for work.
- Ensure adequate **ventilation** when using gas- or diesel-powered equipment or when heating a work space.
- Wear a proper **respirator** when
  - you suspect asbestos may be a hazard
  - working in dusty atmospheres
  - welding
  - using solvents, adhesives, or other hazardous substances
  - using metalworking fluids (cutting oils).
- Wear gloves, coveralls, welding jackets, or use barrier creams to protect the **skin**.
- Wear **hearing protection** when exposed to loud noise.
- Consult material safety data sheets (**MSDSs**) for information about hazardous chemicals used at work, and obey workplace health and safety rules.
- **Never eat, drink, smoke, or chew gum** in areas contaminated with asbestos, lead, or toxic chemicals.
- Wash or wipe **hands** clean before eating, drinking, and smoking, and always clean up and change out of contaminated **clothing** before going home at the end of the shift.
- Wash work clothes **separately** from casual and other family members' clothes.
- **Report** hazards to your employer.

Workers who are without symptoms and who have been exposed to asbestos may participate in a research study at Princess Margaret Hospital by volunteering to be screened for mesothelioma/asbestos.
Phone: 416-340-5686 Fax: 416-340-4964

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Labour Management Network

# FOR **PHYSICIANS**

IHSA.ca
Work Safe for Life

## Occupational diseases and hazardous agents encountered by millwrights, industrial mechanics, welders, and similar trades

### Asbestos-related Diseases

- Asbestosis
- Cancer (lung, mesothelioma, gastrointestinal)—*asbestos*
- Asbestos warts—*asbestos*.

### Cancer

- Lung—*asbestos, coke oven emissions, dust, diesel exhaust, environmental tobacco smoke, silica, bioaerosols, nickel, hexavalent chromium, metalworking fluids*
- Gastrointestinal—*asbestos, hexavalent chromium*
- Haematological/lymphatic—*nickel, metalworking fluids, vinyl chloride, mineral wool*
- Leukemia—*benzene*
- Nasal—*nickel, hexavalent chromium*
- Stomach—*metalworking fluids*
- Skin—*coal tar, ultraviolet light*
- Pancreas—*metalworking fluids.*

### Miscellaneous Disorders

- Asphyxiation—*inadequate ventilation (e.g., during work in a confined space)*
- Gastroenteritis—*bacteria, animal waste*
- Hantavirus, histoplasmosis, leptospirosis, lymphocytic choriomeningitis—*rodent/bird/bat droppings*
- Hepatitis (chronic solvent toxicity)—*chlorinated solvents*
- Infertility, male—*manganese, lead, chlorinated solvents, water-based paint solvents*
- Noise-induced hearing loss—*noise, power tools, heavy machinery, grinders, industrial noise*
- Renal disease—*cadmium, lead, degreasers, solvents.*

### Neurological

- Chronic solvent toxic syndrome—*solvents, paints, degreasers, thinners, chlorinated solvents*
- Hand-arm vibration syndrome—*vibrating tools*
- Lead, subacute toxic effect—*lead*
- Neuropathy, toxic—*lead*
- Parkinsonism—*carbon monoxide, manganese*.

### Respiratory Diseases

- Asthma, occupational—*fungi/mould, chromium, dust, epoxies, mineral fibres, metalworking fluids, PVC*
- Benign pneumoconiosis—*welding fume*
- Bronchitis, chronic—*organic dust, construction dust, welding fume, environmental tobacco smoke*
- Hypersensitivity pneumonitis (HP) acute/chronic—*fungi/mould, wood dust, metalworking fluids*
  - Chronic bronchitis—*ammonia gas*
  - Isocyanate HP—*polyurethane foams, epoxy paints*
  - Metal fume fever—*welding fume, iron, galvanized metal fumes*
  - Polymer fume fever—*PVC, plastics, teflon*
  - Pontiac fever, Legionnaires' disease—*Legionella*
  - Pulmonary edema— *cadmium, flux, solder, chlorine decomposition, silica.*

### Skin Disorders

- Dermatitis, allergic/contact— *hexavalent chromium, coal tar, epoxies, paints, degreasers, glues*
- Contact urticaria—*animal dusts.*

**The next page provides important diagnostic criteria for screening, early detection, and diagnosis.**

This booklet was prepared by the Ontario construction industry's Occupational Disease and Research Labour-Management Health and Safety Committee with assistance from the Infrastructure Health & Safety Association (IHSA), the Ontario Ministry of Labour (MOL), the Workplace Safety and Insurance Board (WSIB), and labour and employers in Ontario construction.

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# DIAGNOSTIC **CRITERIA**

IHSA.ca Work Safe for Life

## Asbestos disease

Asbestos-caused fibrosis of the lungs and pleura may lead to shortness of breath. It usually takes 15 or more years from the onset of exposure for radiographic abnormalities and symptoms to arise. Radiologists should be alerted to the suspected diagnosis. Millwrights occupationally exposed to asbestos are at increased risk of cancers of the lungs and pleura. Screening for cancer has not been proven to reduce mortality; however, it can result in early detection.

If there is any suspicion of asbestos-related illness (i.e., not screening scenario), patients may be referred directly to Princess Margaret Hospital's program where immediate assistance, rapid assessment and specialized treatments are available. Phone 1-877-LUNG 911 (5864 911) Fax 416-340-3353. Asbestos-exposed workers should be counseled about smoking cessation.
http://www.wsib.on.ca/files/Content/OccDiseaseAsbestos/Asbestos_Related%20Diseases.pdf

## Contact dermatitis

Contact dermatitis is an inflammatory skin reaction to direct contact with noxious agents in the environment. Substances that produce this condition after single or multiple exposures may be either irritant or allergic in nature. Irritant contact dermatitis (ICD) results from contact with external agents that directly damage the epidermis, in contrast to allergic contact dermatitis (ACD) in which the damage occurs through the host's immune response as a result of a delayed type hypersensitivity reaction.

The diagnosis of contact dermatitis should be considered when there is a suspected workplace agent (allergen or irritant). Screening should include determination of the following: (A) Did the skin condition start after the worker started the job? OR Did the skin condition become worse after the worker started the job? AND (B) Are symptoms better on weekends or holidays off work? Referral to a specialist with experience diagnosing and treating occupational contact dermatitis should be considered when any of the following are suspected: all cases of possible ACD; ICD with allergic features; chronic ICD; complicated ICD (e.g., not improving, deteriorating, confounded by another skin disease such as psoriasis).
http://www.wsib.on.ca/en/community/WSIB/ArticleDetail?vgnextoid=ff4de35c819d7210VgnVCM100000449c710aRCRD

## Inhalation diseases: Silicosis, welding fume fever & polymer fume fever

**Silicosis.** An occupational lung disease caused by inhalation of crystalline silica dust. Silica inflammation and scaring is manifested as nodular lesions in the upper lobes of the lungs. Silicosis is progressive and signs may not appear until years after exposure has begun. Symptoms include: dyspnea on exertion, dry cough, and fatigue. The diagnosis is made by radiographic examination. It is preferred that the films be interpreted by a radiologist with experience with occupational lung disease since the finding may be subtle.
http://www.wsib.on.ca/files/Content/OccDiseaseSilicosis/Silicosis.pdf.

**Welding Fume Fever.** A flu-like illness with a metallic taste in the mouth, throat irritation, and dry cough. Leucocytosis is common. Normal chest x-ray. Occurs 3–10 hours after heavy exposure to zinc oxide fume or dust (e.g., after welding or flame cutting galvanized steel). Resolves spontaneously within 48 hours.

**Polymer Fume Fever.** A flu-like illness with chest tightness and mild cough occurring 4–8 hours after exposure to pyrolysis products of polytetrafluoroethylene (PTFE—trade names: Fluon, Teflon, Halon). There is leucocytosis but normal chest x-ray. Resolves within 48 hours.

## Neurologic effects

Acute toxic effect of solvents: Organic solvents are volatile substances commonly used in the workplace as cleaners and degreasers. The systemic symptoms of acute solvent poisoning resemble those of intoxication from alcoholic beverages.

Toxic Neuropathy: Chemicals that can cause toxic polyneuropathy include lead and N-hexane. Most symmetrical, sensorimotor neuropathies caused by exposure to chemicals are indistinguishable from similar effects caused by systemic diseases such as diabetes or B12 deficiency. The diagnosis of toxic polyneuropathy is usually made on the basis of symptoms following exposure to the chemical and the resolution of symptoms months to years after cessation of exposure.

## Noise-induced hearing loss

Noise-induced hearing loss (NIHL), is diagnosed by audiometric testing. With NIHL, there is a characteristic dip (notch) at 4 kHz on the audiogram.This contrasts with presbycusis where there is a continuous dropoff as frequency increases.
http://www.wsib.on.ca/en/community/WSIB/OPMDetail?vgnextoid=9956fcea9bfc7210VgnVCM100000449c710aRCRD

## Occupational asthma

Sensitizer-induced occupational asthma is caused by an immune response to specific workplace agents such as low-molecular-weight chemicals (such as diisocyanates, colophony [a pine resin product used in soldering], or epoxy compounds). Once a person has been sensitized to one of these materials, even exposure to extremely low quantities will exacerbate the asthma. If this form of occupational asthma is suspected from the patient's history, objective investigation is required to confirm or refute the diagnosis.

Patients with confirmed sensitizer-induced occupational asthma should have no further exposure to the causative agent, since the best outcome is achieved with early diagnosis and complete avoidance of exposure. An objectively confirmed diagnosis is very important. Patients with suspected sensitizer-induced occupational asthma should be referred as soon as possible to a specialist (a respirologist, an allergist, or an occupational physician) with expertise in this area. Investigations are most helpful if they can be performed while the patient is still working in the suspected causative work area; the primary care physician may be able to initiate some of these.
Source: Occupational asthma: An approach to diagnosis and management. Tarlo and Liss. *Canadian Medical Association Journal.* Apr 1, 2003. 168(7);867-71.
http://www.wsib.on.ca/files/Content/Fact%20Sheet_English0619A/0619A_Asthma_and_Work.pdf

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Labour Management Network

Infrastructure Health & Safety Association™

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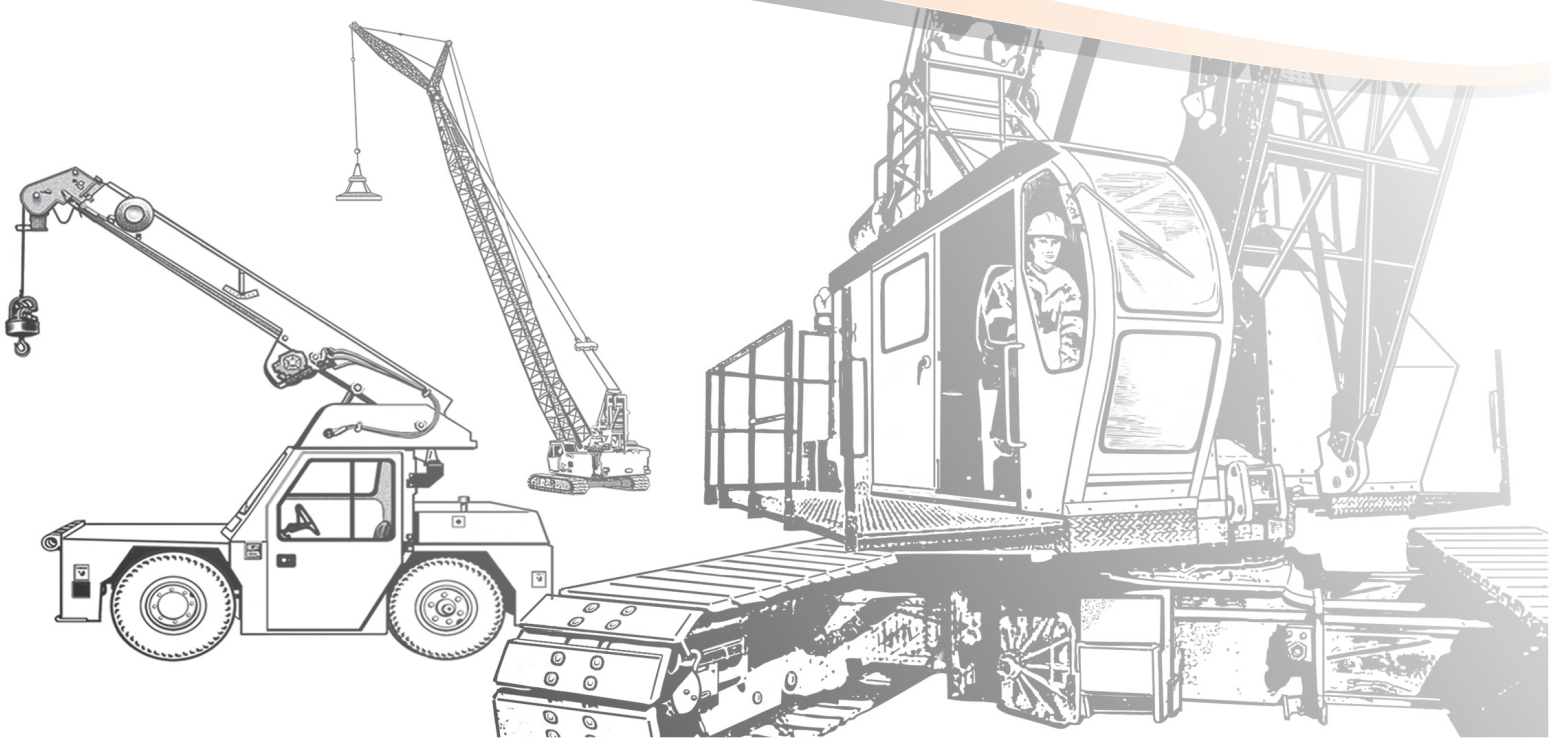

## OCCUPATIONAL HEALTH RISKS

# OPERATING ENGINEERS/ HEAVY EQUIPMENT OPERATORS

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# Tasks and possible hazards

## All tasks

- **Hazardous materials from industrial worksites** (pulp and paper, refineries, chemical plants, glass plants, factories, cement plants, foundries/smelters, power plants, nuclear plants)
- **Awkward postures and vibration** when mounting or dismounting equipment, **vibration and hazardous noise** while using heavy equipment
- **Asbestos** (could be part of the equipment—in old brake pads—or in building materials)
- **Dust and insulation fibres** on construction sites
- **Bearing greases**, **lubricants, cleaning solutions, machine and cutting fluids**
- **Solvents, adhesives, and epoxies**
- **Biological hazards** in soil, industrial plants or on equipment
- **West Nile Virus** from mosquito bites
- **Ultraviolet light** from the sun
- **Exhaust fumes** from gas- or diesel-powered equipment
- **Injection hazards** from compressed air or hydraulic hose failure
- **Radio frequency (RF) energy** from base station antennas such as cell towers
- **Hazardous noise** from surrounding construction activities.

## Other hoisting devices

- **Extreme temperatures** in cold or hot environments
- **Dust** on construction sites.

# How to protect your health

- Ask your supervisor or employer for safe work **instructions** and training.
- Consult industrial clients on site-specific health and safety **procedures.**
- Ask about any hazardous materials or unknown chemicals when **entering** an industrial site for work.
- Ensure proper **ventilation**.
- Wear a proper **respirator** when
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  - welding
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# FOR **PHYSICIANS**

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## Occupational diseases and hazardous agents encountered by heavy equipment operators and similar trades

## Job function

Heavy equipment operators use mobile and tower cranes, boom trucks, carry decks, derricks, tuggers, winches, and excavators to move and place rocks, soil, and other objects that are too heavy for humans to handle.

### Asbestos-related Diseases

- Asbestosis
- Cancer (lung, mesothelioma, gastrointestinal) – *asbestos.*

### Cancer

- Lung – *asbestos, diesel exhaust, environmental tobacco smoke, silica*
- Leukemia – *benzene*
- Skin melanoma and other skin cancers – *sun exposure.*

### Respiratory Diseases

- Bronchitis, chronic – *silica dust, environmental tobacco smoke*
- Hypersensitivity pneumonitis (HP) acute/chronic – *fungi/mould*
- Pontiac fever, Legionnaires' disease – *Legionella.*

### Neurological

- Central Nervous system (CNS) effects – *solvents, paints, degreasers, thinners, mercury*
- Whole-body vibration.

### Miscellaneous Disorders

- Noise-induced hearing loss – *power tools, heavy equipment, industrial noise*
- Infertility, male – *lead, chlorinated solvents*
- Gastroenteritis – *bacteria, animal waste*
- Blastomycosis – *contaminated soil*
- Renal disease – *lead, degreasers, solvents*
- Hantavirus, histoplasmosis, leptospirosis – *rodent/bird/bat droppings*
- Low back injury and gastrointestinal disorders – *whole body vibration (WBV) in equipment with frequent movement*.

### Skin Disorders

- Dermatitis, allergic/contact – *epoxies, paints, degreasers, glues*
- Contact urticaria – *animal dusts*
- Chloracne – *polychlorinated biphenyls (PCBs).*

**The next page provides important diagnostic criteria for screening, early detection, and diagnosis.**

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If there is any suspicion of asbestos-related illness (i.e., not screening scenario), patients may be referred directly to Princess Margaret Hospital's program where immediate assistance, rapid assessment and specialized treatments are available. Phone 1-877-LUNG 911 (5864 911) Fax 416-340-3353. Asbestos-exposed workers should be counseled about smoking cessation.
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## Contact dermatitis

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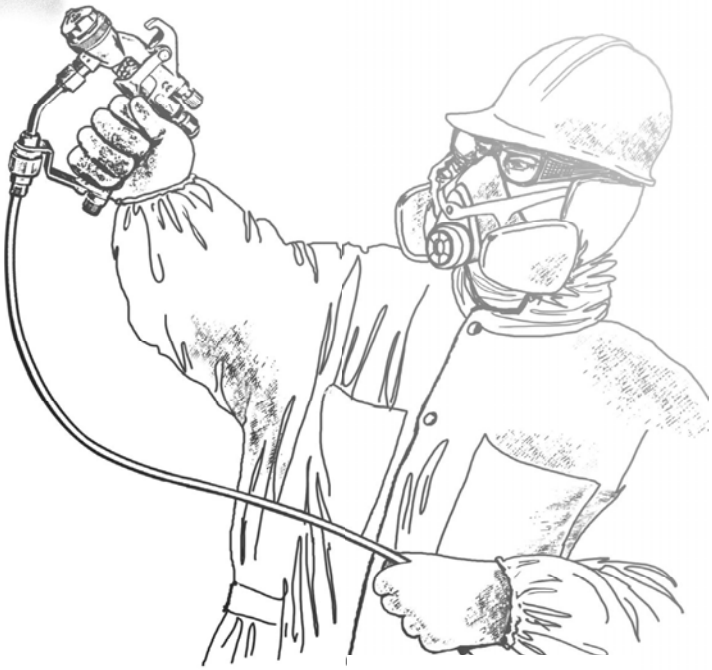

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# PAINTERS

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Labour Management NETWORK

# FOR **WORKERS**

IHSA.ca
Work Safe for Life

## Tasks and possible hazards

### All tasks

- **Hazardous materials from industrial worksites** (coke ovens, refineries, chemical plants, glass plants, factories, cement plants, pulp and paper mills, power plants)
- **Awkward postures, vibration, and hazardous noise** when using power tools, grinders, saws, and mobile equipment
- **Dust** and **insulation fibres** on construction sites
- **Injection injury** caused by high pressure liquid can be serious.

### Painting

- Painting **solvents, epoxies**
- **Injection hazard** when spray painting
- **Carbon monoxide** from heaters and generators.

### Sanding

- **Asbestos** in plaster, paint or texture
- **Lead** in paint
- **Wood dust**
- **Silica** in drywall
- **Noise and vibration** from power tools.

### Sandblasting

- **Solvents**
- **Silica**
- **Lead**

### Cleanup

- **Solvents**

## How to protect your health

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- Ensure proper **ventilation**.
- Wear a proper **respirator** when
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  - working in dusty atmospheres
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Labour Management NETWORK

# FOR **PHYSICIANS**

IHSA.ca
Work Safe for Life

## Occupational diseases and hazardous agents encountered by painters

## Job function

Painters tend to and operate machines or use brushes and spray equipment to apply paint, enamel, lacquer or other non-metallic protective and decorative coatings to surfaces of various products.

### Asbestos-related Diseases

- Asbestosis
- Cancer (lung, mesothelioma, gastrointestinal) – *asbestos.*

### Cancer

- Lung – *asbestos, diesel, environmental tobacco smoke, nickel, hexavalent chromium*
- Gastrointestinal – *asbestos*
- Skin – *ultraviolet (UV) light.*

### Miscellaneous Disorders

- Infertility, male – *lead, chlorinated solvents*
- Hepatitis (chronic solvent toxicity) – *chlorinated solvents*
- Noise-induced hearing loss – *noise, power tools, heavy machinery, grinders, industrial noise*
- Renal disease – *lead, degreasers, solvents.*

### Neurological

- Chronic solvent toxic syndrome – *solvents, paints, degreasers, thinners, epoxies*
- Hand-arm vibration syndrome – *vibrating tools*
- Lead, subacute toxic effect – *lead*.

### Respiratory Diseases

- Silicosis – *silica*
- Bronchitis, chronic – *silica dust, environmental tobacco smoke*
- Asthma, occupational – *isocyanates*
- Hypersensitivity pneumonitis (HP) acute/chronic – *fungi/ mould, wood dust*
- Metal fume fever – *metallic oxide fumes such as zinc, copper or magnesium from welding.*

### Skin Disorders

- Dermatitis, allergic/contact – *epoxies, paints, degreasers, glues.*

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## Asbestos disease

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## Hand-arm vibration syndrome (HAVS) and vibration-induced white finger (VWF)

HAVS and VWF are the major health hazards related to the use of vibrating tools. If workers develop symptoms of tingling or numbness, or if their fingers occasionally become white, blue, or painful—especially when cold—they should be examined by a doctor who knows about the diagnosis and treatment of these conditions. Diagnostic tests which can be used include plethysmography, arteriography, skin thermography, and sensory tests such as two-point discrimination depth sense, pinprick touch, and temperature sensation. The Occupational Medicine Clinic at St. Michael's hospital in Toronto has diagnostic facilities.
http://www.wsib.on.ca/en/community/WSIB/OPMDetail?vgnextoid=1486fcea9bfc7210VgnVCM100000449c710aRCRD

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Ref: http://www.wsib.on.ca/wsib/wsibsite.nsf/LookupFiles/OccDiseaseSilicosis/$File/Silicosis.pdf

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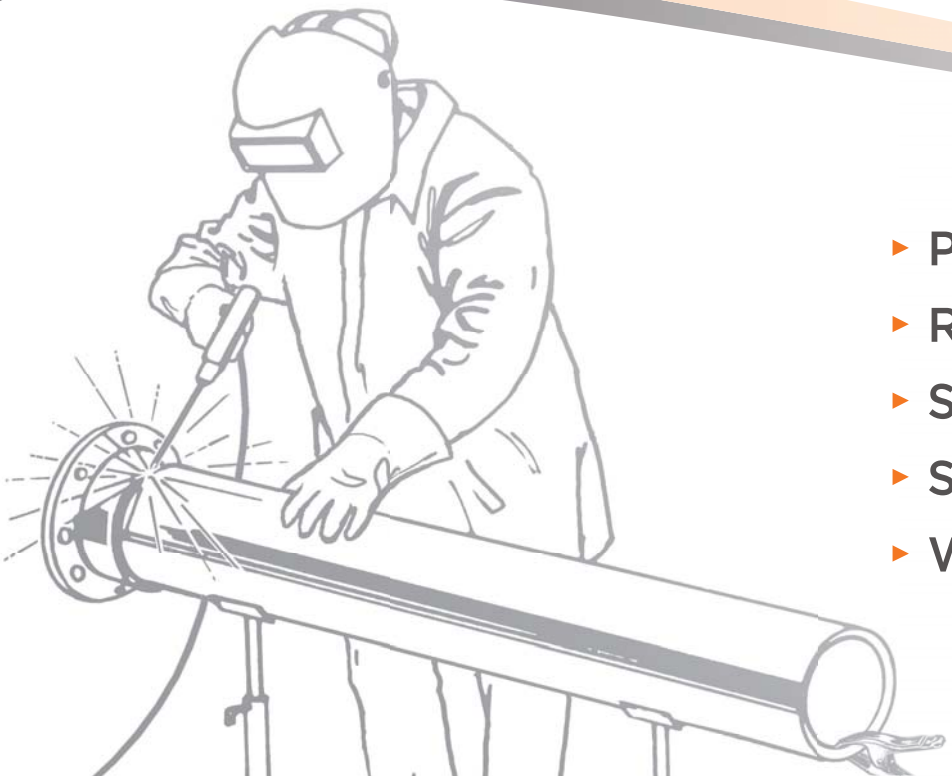
Ref: http://www.wsib.on.ca/en/community/WSIB/OPMDetail?vgnextoid=9956fcea9bfc7210VgnVCM100000449c710aRCRD

**For more info about occupational disease and workplace health and safety, contact the Workplace Safety and Insurance Board: 1-877-202-0008**

Labour Management Network

Infrastructure Health & Safety Association™

*Work Safe for Life*



- Plumbers
- Refrigeration workers
- Sprinkler fitters
- Steamfitters
- Welders

## OCCUPATIONAL HEALTH RISKS

# PIPE TRADES

## A diagnostic toolkit for physicians and primary health providers. Prevention information for workers.

**Give pages 3 and 4 of this booklet to your doctor.**
**They give your doctor information about the health risks of your job.**

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1-800-263-5024 • **www.ihsa.ca**



Labour Management NETWORK

# FOR **WORKERS**

IHSA.ca
Work Safe for Life

## Tasks and possible hazards

### All tasks

- **Hazardous materials from industrial worksites** (coke ovens, refineries, chemical plants, glass plants, factories, cement plants, pulp and paper mills, power plants)
- **Awkward postures, vibration, and hazardous noise** when using power tools, grinders, saws, and mobile equipment
- **Dust** and **insulation fibres** on construction sites.

### Installation, removal, or repair of equipment

- **Asbestos** (could be part of the equipment—especially as pipe insulation—or in building materials)
- **Refractory ceramic fibres** (used for high temperature insulation)
- **Glass and mineral wool**
- **Exposure** to materials and liquids in old pipes during repair or removal
- **Lead** from lead pipes
- **Biological materials** in pipes and drains
- **Solvents, adhesives,** and **epoxies**
- **Exhaust fumes** from gas- or diesel-powered equipment.

### Welding, torch cutting, soldering, brazing, grinding

- **Dust** from grinding activities
- **Lead** from working with lead-based solder
- **Welding fumes, ultraviolet (UV) light, heavy metals, and chlorinated compounds.**

## How to protect your health

- Ask your supervisor or employer for safe work **instructions** and training.
- Consult industrial clients on site-specific health and safety **procedures**.
- Ask about any hazardous materials or unknown chemicals when **entering** an industrial site for work.
- Ensure proper **ventilation**.
- Wear a proper **respirator** when
  - you suspect asbestos may be a hazard
  - working in dusty atmospheres
  - welding
  - using solvents, adhesives, or other hazardous substances
  - using metalworking fluids (cutting oils).
- Wear **personal protective equipment** (PPE), such as a hard hat, safety glasses, reflective vest, and safety boots, where necessary.
- Wear **eye protection** when using a hammer to remove or install pins, or when working with solvents/additives, caustics, and acids.
- Wear **fall protection equipment** where necessary, including a harness.
- Wear gloves, coveralls or welding jackets, or use barrier creams to protect the **skin**.
- Consult material safety data sheets (**MSDSs**) for information about hazardous chemicals used at work, and obey workplace health and safety rules.
- **Never eat, drink, smoke, or chew gum** in areas contaminated with asbestos, lead, or toxic chemicals.
- Wash or wipe **hands** clean before eating, drinking, and smoking, and always clean up and change out of contaminated **clothing** before going home at the end of the shift.
- Wash work clothes **separately** from casual and other family members' clothes.
- **Report** hazards to your employer.

Workers who are without symptoms and who have been exposed to asbestos may participate in a research study at Princess Margaret Hospital by volunteering to be screened for mesothelioma/asbestos.
Phone: 416-340-5686 Fax: 416-340-4964

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Labour Management Network

# FOR **PHYSICIANS**

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## Occupational diseases and hazardous agents in the pipe trades (plumbers, refrigeration workers, sprinkler fitters, steamfitters, welders)

### Asbestos-related Diseases

- Asbestosis
- Asbestos warts—*asbestos*
- Cancer (lung, mesothelioma, gastrointestinal)—*asbestos*.

### Cancer

- Lung—*asbestos, diesel exhaust, dust, environmental tobacco smoke, silica, metalworking fluids, nickel, chromium*
- Nasal—*nickel, chromium*
- Gastrointestinal—*asbestos, chromium*
- Haematological/lymphatic—*nickel, metalworking fluids, vinyl chloride, mineral wool*
- Skin—*coal tar, ultraviolet light*
- Refractory ceramic fibres (RCFs)—*Results of long-term inhalation experiments in animals have shown that RCFs can produce lung cancer, mesothelioma, and lung fibrosis following long-term inhalation of very high concentrations.*

### Miscellaneous Disorders

- Infertility, male—*manganese, lead, water-based paint solvents*
- Hepatitis (chronic solvent toxicity)—*chlorinated solvents, halon fire suppression agents, ammonia, refrigeration gases*
- Gastroenteritis—*bacteria, animal waste*
- Renal disease—*cadmium, lead, degreasers, solvents, refrigeration gases*
- Noise-induced hearing loss—*power tools, heavy machinery, grinders.*

### Respiratory Diseases

- Asthma, occupational—*fungi/mould, chromium, dust, epoxies, mineral fibres, metalworking fluids, PVC*
- Bronchitis, chronic—*organic dust, construction dust, welding fume, environmental tobacco smoke*
- Hypersensitivity pneumonitis (HP) acute/chronic—*fungi/mould, wood dust, metalworking fluids*
  - Isocyanate HP—*polyurethane foams, epoxy paints*
  - Metal fume fever—*welding fume, iron, galvanized metal fumes*
  - Pulmonary edema—*cadmium, flux, solder, chlorine decomposition, silica*
  - Polymer fume fever—*PVC, plastics, teflon*
  - Chronic bronchitis—*ammonia gas.*

### Neurological

- Hand-arm vibration syndrome—*vibrating tools*
- Lead, subacute toxic effect—*lead*
- Neuropathy, toxic—*lead*
- Chronic solvent toxic syndrome—*solvents, paints, degreasers, chlorinated solvents, thinners*
- Parkinsonism—*carbon monoxide, manganese (scientific evidence inconclusive).*

### Skin Disorders

- Dermatitis, allergic/contact—*hexavalent chromium, coal tar, epoxies, degreasers, glues, paints, metalworking fluids*
- Contact urticaria—*animal dusts.*

**The next page provides important diagnostic criteria for screening, early detection, and diagnosis.**

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# DIAGNOSTIC **CRITERIA**

IHSA.ca Work Safe for Life

## Asbestos disease

Asbestos-caused fibrosis of the lungs and pleura may lead to shortness of breath. It usually takes 15 or more years from the onset of exposure for radiographic abnormalities and symptoms to arise. Radiologists should be alerted to the suspected diagnosis. Plumbers and pipefitters occupationally exposed to asbestos are at increased risk of cancers of the lungs and pleura. Screening for cancer has not been proven to reduce mortality; however, it can result in early detection.

If there is any suspicion of asbestos-related illness (i.e., not screening scenario), patients may be referred directly to Princess Margaret Hospital's program where immediate assistance, rapid assessment and specialized treatments are available. Phone 1-877-LUNG 911 (5864 911) Fax 416-340-3353. Asbestos-exposed workers should be counseled about smoking cessation.
http://www.wsib.on.ca/files/Content/OccDiseaseAsbestos/Asbestos_Related%20Diseases.pdf

## Contact dermatitis

Contact dermatitis is an inflammatory skin reaction to direct contact with noxious agents in the environment. Substances that produce this condition after single or multiple exposures may be either irritant or allergic in nature. Irritant contact dermatitis (ICD) results from contact with external agents that directly damage the epidermis, in contrast to allergic contact dermatitis (ACD) in which the damage occurs through the host's immune response as a result of a delayed type hypersensitivity reaction.

The diagnosis of contact dermatitis should be considered when there is a suspected workplace agent (allergen or irritant). Screening should include determination of the following: (A) Did the skin condition start after the worker started the job? OR Did the skin condition become worse after the worker started the job? AND (B) Are symptoms better on weekends or holidays off work? Referral to a specialist with experience diagnosing and treating occupational contact dermatitis should be considered when any of the following are suspected: all cases of possible ACD; ICD with allergic features; chronic ICD; complicated ICD (e.g., not improving, deteriorating, confounded by another skin disease such as psoriasis).
http://www.wsib.on.ca/en/community/WSIB/ArticleDetail?vgnextoid=ff4de35c819d7210VgnVCM100000449c710aRCRD

## Inhalation diseases: Welding fume fever & polymer fume fever

**Welding Fume Fever.** A flu-like illness with a metallic taste in the mouth, throat irritation, and dry cough. Leucocytosis is common. Normal chest x-ray. Occurs 3–10 hours after heavy exposure to zinc oxide fume or dust (e.g., after welding or flame cutting galvanized steel). Resolves spontaneously within 48 hours.

**Polymer Fume Fever.** A flu-like illness with chest tightness and mild cough occurring 4–8 hours after exposure to pyrolysis products of polytetrafluoroethylene (PTFE—trade names: Fluon, Teflon, Halon). There is leucocytosis but normal chest x-ray. Resolves within 48 hours.

## Neurologic effects

**Acute toxic effect of solvents:** Organic solvents are volatile substances commonly used in the workplace as cleaners and degreasers. The systemic symptoms of acute solvent poisoning resemble those of intoxication from alcoholic beverages.

**Toxic Neuropathy:** Chemicals that can cause toxic polyneuropathy include lead and N-hexane. Most symmetrical, sensorimotor neuropathies caused by exposure to chemicals are indistinguishable from similar effects caused by systemic diseases such as diabetes or B12 deficiency. The diagnosis of toxic polyneuropathy is usually made on the basis of symptoms following exposure to the chemical and the resolution of symptoms months to years after cessation of exposure.

## Noise-induced hearing loss

Noise-induced hearing loss (NIHL), is diagnosed by audiometric testing. With NIHL, there is a characteristic dip (notch) at 4 kHz on the audiogram. This contrasts with presbycusis where there is a continuous dropoff as frequency increases.
http://www.wsib.on.ca/en/community/WSIB/OPMDetail?vgnextoid=9956fcea9bfc7210VgnVCM100000449c710aRCRD

## Occupational asthma

Sensitizer-induced occupational asthma is caused by an immune response to specific workplace agents such as low-molecular-weight chemicals (such as diisocyanates, colophony [a pine resin product used in soldering], or epoxy compounds). Once a person has been sensitized to one of these materials, even exposure to extremely low quantities will exacerbate the asthma. If this form of occupational asthma is suspected from the patient's history, objective investigation is required to confirm or refute the diagnosis.

Patients with confirmed sensitizer-induced occupational asthma should have no further exposure to the causative agent, since the best outcome is achieved with early diagnosis and complete avoidance of exposure. An objectively confirmed diagnosis is very important. Patients with suspected sensitizer-induced occupational asthma should be referred as soon as possible to a specialist (a respirologist, an allergist, or an occupational physician) with expertise in this area. Investigations are most helpful if they can be performed while the patient is still working in the suspected causative work area; the primary care physician may be able to initiate some of these.
http://www.wsib.on.ca/files/Content/Fact%20Sheet_English0619A/0619A_Asthma_and_Work.pdf
Source: Occupational asthma: An approach to diagnosis and management. Tarlo and Liss. *Canadian Medical Association Journal.* Apr 1, 2003. 168(7);867-71.

**For more info about occupational disease and workplace health and safety, contact the Workplace Safety and Insurance Board: 1-877-202-0008**

Labour Management Network

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## OCCUPATIONAL HEALTH RISKS

# REFRIGERATION WORKERS

## A diagnostic toolkit for physicians and primary health providers. Prevention information for workers.

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Labour Management NETWORK

# FOR **WORKERS**

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Work Safe for Life

## Tasks and possible hazards

### All tasks

- **Hazardous materials from industrial worksites** (coke ovens, refineries, chemical plants, glass plants, factories, cement plants, pulp and paper mills, power plants)
- **Awkward postures, vibration, and hazardous noise** when using power tools, grinders, saws, and mobile equipment
- **Dust** and **insulation fibres** on construction sites.

### Installation, removal, or repair of equipment

- **Asbestos** (could be part of the equipment—especially as pipe insulation—or in building materials)
- **Refractory ceramic fibres** (used for high temperature insulation)
- **Glass and mineral wool**
- **Hydrochlorofluorocarbon (HCFC) and hydrofluorocarbon (HFC) refrigerants**
- **Refrigerants** will decompose when exposed to high temperatures. Do not attempt to continue working in these fumes; they can injure you.
- **Ammonia**
- **Refrigerants**
- **Biological materials** on surfaces and in industrial plants
- **Legionella.**

### Welding, torch cutting, soldering, brazing, grinding

- **Lead**
- **Welding fumes, ultraviolet (UV) light, heavy metals, and chlorinated compounds.**

## How to protect your health

- Ask your supervisor or employer for safe work **instructions** and training.
- Consult industrial clients on site-specific health and safety **procedures.**
- Ask about any hazardous materials or unknown chemicals when **entering** an industrial site for work.
- Ensure proper **ventilation.**
- Wear a proper **respirator** when
  - you suspect asbestos may be a hazard
  - working in dusty atmospheres
  - welding
  - using solvents, adhesives, or other hazardous substances
  - using metalworking fluids (cutting oils).
- Wear personal protective equipment (PPE), such as a hard hat, safety glasses, reflective vest, and safety boots, where necessary.
- Wear eye protection when using a hammer to remove or install pins, or when working with solvents/additives, caustics, and acids.
- Wear fall protection equipment where necessary, including a harness.
- Wear gloves, coveralls or welding jackets, or use barrier creams to protect the **skin.**
- Consult material safety data sheets (**MSDSs**) for information about hazardous chemicals used at work, and obey workplace health and safety rules.
- **Never eat, drink, smoke, or chew gum** in areas contaminated with asbestos, lead, or toxic chemicals.
- Wash or wipe **hands** clean before eating, drinking, and smoking, and always clean up and change out of contaminated **clothing** before going home at the end of the shift.
- Wash work clothes **separately** from casual and other family members' clothes.
- **Report** hazards to your employer.

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Labour Management Network

# FOR **PHYSICIANS**

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## Occupational diseases and hazardous agents encountered by refrigeration workers

## Job function

Refrigeration and air conditioning mechanics install, maintain, repair, and overhaul residential central air conditioning systems, commercial and industrial refrigeration and air conditioning systems, and combined heating, ventilation and cooling systems.

### Asbestos-related Diseases

- Asbestosis
- Cancer (lung, mesothelioma, gastrointestinal) – *asbestos*.

### Cancer

- Lung – *asbestos, diesel exhaust, environmental tobacco smoke, silica*
- HCFC-123 chronic exposure linked to the risk of liver injury
- Refractory ceramic fibres (RCFs) – *Results of long-term inhalation experiments in animals have shown that RCFs can produce lung cancer, mesothelioma, and lung fibrosis following long-term inhalation of very high concentrations.*

### Miscellaneous Disorders

- Infertility, male – *lead, chlorinated solvents*
- Cardiac sensitization – *Inhalation of refrigerant (HCFC and HFC) vapours may produce heartbeat irregularities (cardiac sensitization).*
- Gastroenteritis – *bacteria, animal waste*
- Hantavirus, histoplasmosis, leptospirosis – *rodent/bird/bat droppings*
- Renal disease – *cadmium, lead, degreasers, solvent*
- Noise-induced hearing loss – *power tools, heavy machinery, grinders, industrial noise.*

### Respiratory Diseases

- Bronchitis, chronic – *silica dust, environmental tobacco smoke*
- Hypersensitivity pneumonitis (HP) acute/chronic – *fungi/mould*
- Metal fume fever – *metallic oxide fumes such as zinc, copper or magnesium from welding*
- Pontiac fever, Legionnaires' disease – *Legionella.*

### Neurological

- Hand-arm vibration syndrome – *vibrating tools*
- Neuropathy, toxic – *lead*
- Parkinsonism – *manganese (scientific evidence inconclusive).*

### Skin Disorders

- Dermatitis, allergic/contact – *hexavalent chromium, epoxies, degreasers, glues*
- Contact urticaria – *animal dusts*
- In liquid form, refrigerants can freeze skin or eyes on contact, causing frostbite
- Temporary irritation of skin – *fibre insulation.*

**The next page provides important diagnostic criteria for screening, early detection, and diagnosis.**

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# DIAGNOSTIC **CRITERIA**

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## Asbestos disease

Asbestos-caused fibrosis of the lungs and pleura may lead to shortness of breath. It usually takes 15 or more years from the onset of exposure for radiographic abnormalities and symptoms to arise. Radiologists should be alerted to the suspected diagnosis. Screening for cancer has not been proven to reduce mortality; however, it can result in early detection.

If there is any suspicion of asbestos-related illness (i.e., not screening scenario), patients may be referred directly to Princess Margaret Hospital's program where immediate assistance, rapid assessment and specialized treatments are available. Phone 1-877-LUNG 911 (5864 911) Fax 416-340-3353. Asbestos-exposed workers should be counseled about smoking cessation.
http://www.wsib.on.ca/files/Content/OccDiseaseAsbestos/Asbestos_Related%20Diseases.pdf

## Cardiac sensitization

Inhalation of high concentrations of hydrocarbons refrigerants in the presence of high blood levels of the body's adrenaline may result in serious heart irregularities and possible death, an effect known as cardiac sensitization. Because of possible disturbances of cardiac rhythm, catecholamine drugs such as epinephrine should be considered only as a last resort in life-threatening emergencies.

## Contact dermatitis

Contact dermatitis is an inflammatory skin reaction to direct contact with noxious agents in the environment. Substances that produce this condition after single or multiple exposures may be either irritant or allergic in nature. Irritant contact dermatitis (ICD) results from contact with external agents that directly damage the epidermis, in contrast to allergic contact dermatitis (ACD) in which the damage occurs through the host's immune response as a result of a delayed type hypersensitivity reaction.

The diagnosis of contact dermatitis should be considered when there is a suspected workplace agent (allergen or irritant). Screening should include determination of the following: (A) Did the skin condition start after the worker started the job? OR Did the skin condition become worse after the worker started the job? AND (B) Are symptoms better on weekends or holidays off work? Referral to a specialist with experience diagnosing and treating occupational contact dermatitis should be considered when any of the following are suspected: all cases of possible ACD; ICD with allergic features; chronic ICD; complicated ICD (e.g., not improving, deteriorating, confounded by another skin disease such as psoriasis).
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## Metal fume fever

**Metal Fume Fever**. A flu-like illness with a metallic taste in the mouth, throat irritation, and dry cough; Leucocytosis is common; normal chest x-ray. Occurs 3-10 hours after heavy exposure to zinc oxide fume or dust (e.g., after welding or flame cutting of galvanized steel). Resolves spontaneously within 48 hours.

## Neurologic effects

**Acute toxic effect of solvents:** Organic solvents are volatile substances commonly used in the workplace as cleaners and degreasers. The systemic symptoms of acute solvent poisoning resemble those of intoxication from alcoholic beverages.

**Toxic Neuropathy:** Chemicals that can cause toxic polyneuropathy include lead and N-hexane. Most symmetrical, sensorimotor neuropathies caused by exposure to chemicals are indistinguishable from similar effects caused by systemic diseases such as diabetes or B12 deficiency. The diagnosis of toxic polyneuropathy is usually made on the basis of symptoms following exposure to the chemical and the resolution of symptoms months to years after cessation of exposure.

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## Occupational asthma

Sensitizer-induced occupational asthma is caused by an immune response to specific workplace agents such as low-molecular-weight chemicals (such as diisocyanates, colophony [a pine resin product used in soldering], or epoxy compounds). Once a person has been sensitized to one of these materials, even exposure to extremely low quantities will exacerbate the asthma. If this form of occupational asthma is suspected from the patient's history, objective investigation is required to confirm or refute the diagnosis.

Patients with confirmed sensitizer-induced occupational asthma should have no further exposure to the causative agent, since the best outcome is achieved with early diagnosis and complete avoidance of exposure. An objectively confirmed diagnosis is very important. Patients with suspected sensitizer-induced occupational asthma should be referred as soon as possible to a specialist (a respirologist, an allergist, or an occupational physician) with expertise in this area. Investigations are most helpful if they can be performed while the patient is still working in the suspected causative work area; the primary care physician may be able to initiate some of these.
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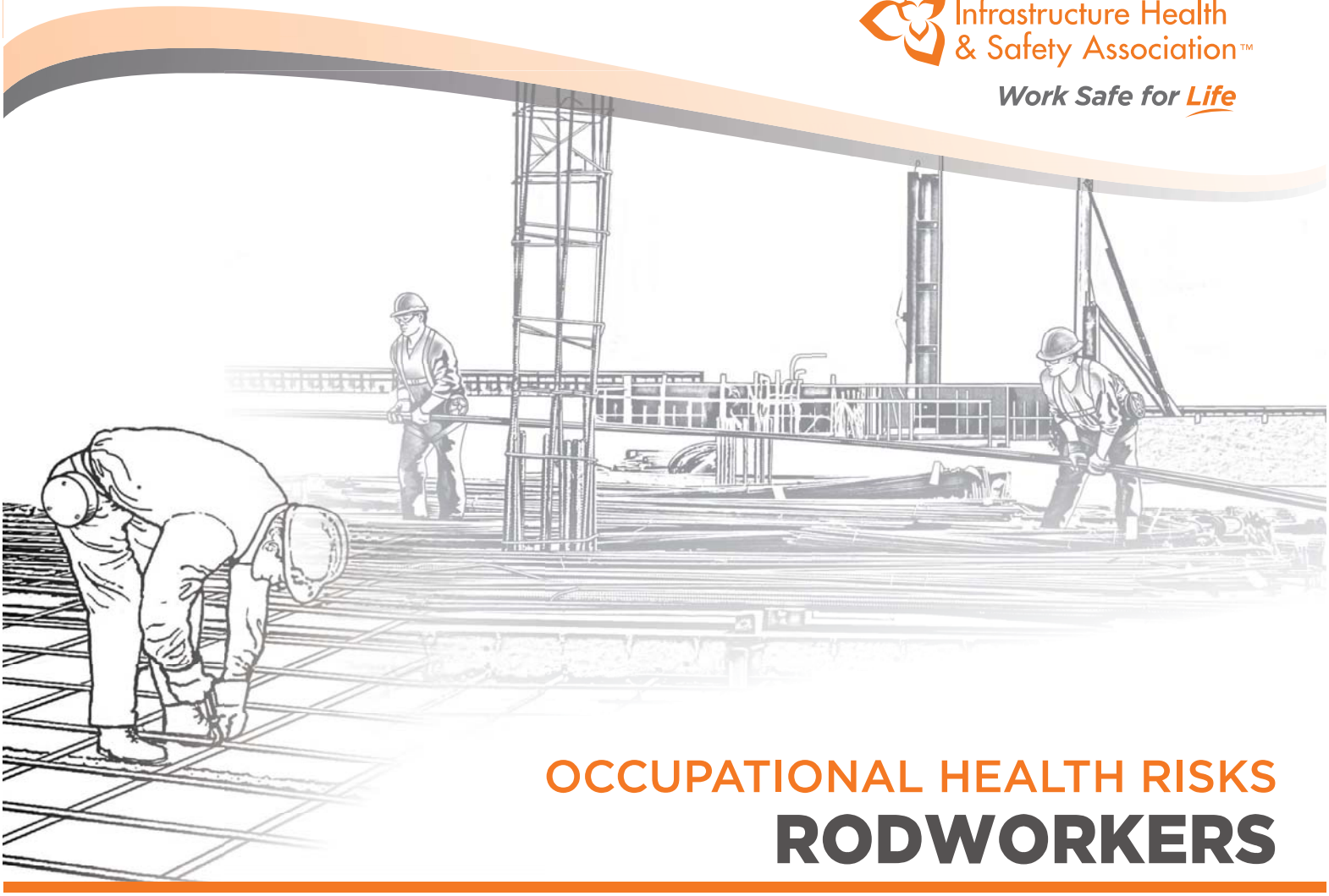

# OCCUPATIONAL HEALTH RISKS
# RODWORKERS

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Labour Management NETWORK

# FOR **WORKERS**

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## Tasks and possible hazards

### All tasks

- **Dust and insulation fibres** on construction sites, including stainless steel
- **Hazardous materials from industrial work sites** (coke ovens, refineries, chemical plants, glass plants, factories, cement plants, pulp and paper mills, power plants)
- **Awkward postures, vibration, and hazardous noise** while using power tools, grinders, saws, and mobile equipment
- **Injection injury** caused by high-pressure liquid (can be serious)
- **Extreme temperatures** (hot and cold environments)
- **Ultraviolet light** from working in direct sunlight.

### Installing, removing, and repairing equipment

- **Asbestos** (could be part of the insulation or in building materials)
- **Solvents** used for cleaning or degreasing
- **Coke oven emissions and benzene** from by-products of industrial processes
- **Cutting fluids**
- **Exhaust fumes** from gas- or diesel-powered equipment.

### Welding, torch cutting, soldering, brazing, and grinding

- **Welding fumes, ultraviolet light, heavy metals, and chlorinated compounds**
- **Zinc oxide** from galvanized steel
- **Stainless steel**
- **Combustion products** from epoxy-coated rebar
- **Dust** from grinding activities.

## How to protect your health

- Ask your supervisor or employer for safe work **instructions** and training.
- Consult industrial clients on site-specific health and safety **procedures**.
- Ask about any hazardous materials or unknown chemicals when **entering** an industrial site for work.
- Ensure proper **ventilation**.
- Wear a proper **respirator** when
  - you suspect asbestos may be a hazard
  - working in dusty atmospheres
  - welding
  - using solvents
- Wear gloves, coveralls, welding jackets, or use barrier creams to protect the **skin**.
- Wear **hearing protection** when exposed to loud noise.
- Consult material safety data sheets **(MSDSs)** for information about hazardous chemicals used at work, and obey workplace health and safety rules.
- **Never eat, drink, smoke, or chew gum** in areas contaminated with asbestos, lead, or toxic chemicals.
- Wash or wipe your **hands** clean before eating, drinking, or smoking.
- Always clean up and change out of contaminated **clothing** before going home at the end of a shift.
- Wash work clothes **separately** from casual and other family members' clothes.
- **Report** hazards to your employer.

Workers who are without symptoms and who have been exposed to asbestos may participate in a research study at Princess Margaret Hospital by volunteering to be screened for mesothelioma/asbestos.
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Labour Management NETWORK

# FOR **PHYSICIANS**

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## Occupational diseases and hazardous agents encountered by roworkers

### Job function

A rodworker installs reinforcing steel and accessories during the building of all types of concrete structures. They position and secure steel bars or mesh in concrete forms in order to reinforce concrete. They use a variety of fasteners, rod-bending machines, blowtorches, and hand tools.

### Asbestos-Related Diseases

- Asbestosis
- Cancer (lung, mesothelioma, gastrointestinal)—*asbestos.*

### Cancer

- Gastrointestinal—*asbestos*
- Lung—*asbestos, diesel exhaust, environmental tobacco smoke, nickel, hexavalent chromium*
- Nasal—*nickel, hexavalent chromium*
- Skin—*ultraviolet light.*

### Miscellaneous Disorders

- Gastroenteritis—*bacteria, animal waste*
- Hantavirus, histoplasmosis, leptospirosis—*rodent/bird/bat droppings*
- Infertility, male—*chlorinated solvents*
- Noise-induced hearing loss—*noise, power tools, heavy machinery, grinders, industrial noise*
- Renal disease—*cadmium, degreasers, solvents.*

### Neurological

- Hand-arm vibration syndrome—*vibrating tools*
- Neuropathy, toxicity—*lead*
- Parkinsonism—*manganese*
- Central Nervous System (CNS) effects—*solvents, degreasers, thinners, chlorinated solvents.*

### Respiratory Diseases

- Benign pneumoconiosis—*welding fumes*
- Asthma, occupational—*fungi/mould, hexavalent chromium, epoxies*
- Bronchitis, chronic—*dust, environmental tobacco smoke, welding fumes*
- Hypersensitivity pneumonitis (HP) acute/chronic—*metalworking fluid*
- Metal fume fever—*metallic oxide fumes such as zinc, copper, or magnesium from welding, galvanized metal fumes*
- Pulmonary edema—*cadmium.*

### Skin Disorders

- Dermatitis, allergic/contact—*hexavalent chromium, epoxies, degreasers, glues, insulation fibres*
- Contact urticaria—*animal dusts.*

**The next page provides important diagnostic criteria for screening, early detection, and diagnosis.**

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# DIAGNOSTIC **CRITERIA**

IHSA.ca
Work Safe for Life

## Asbestos disease

Asbestos-caused fibrosis of the lungs and pleura may lead to shortness of breath. It usually takes 15 or more years from the onset of exposure for radiographic abnormalities and symptoms to arise. Radiologists should be alerted to the suspected diagnosis. Rodworkers occupationally exposed to asbestos are at increased risk of cancers of the lungs and pleura. Screening for cancer has not been proven to reduce mortality; however, it can result in early detection.

If there is any suspicion of asbestos-related illness (i.e., not screening scenario), patients may be referred directly to Princess Margaret Hospital's program where immediate assistance, rapid assessment and specialized treatments are available. Phone 1-877-LUNG 911 (5864 911) Fax 416-340-3353. Asbestos-exposed workers should be counseled about smoking cessation. http://www.wsib.on.ca/files/Content/OccDiseaseAsbestos/Asbestos_Related%20Diseases.pdf

## Contact dermatitis

Contact dermatitis is an inflammatory skin reaction to direct contact with noxious agents in the environment. Substances that produce this condition after single or multiple exposures may be either irritant or allergic in nature. Irritant contact dermatitis (ICD) results from contact with external agents that directly damage the epidermis, in contrast to allergic contact dermatitis (ACD) in which the damage occurs through the host's immune response as a result of a delayed type hypersensitivity reaction.

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HAVS and VWF are the major health hazards related to the use of vibrating tools. If workers develop symptoms of tingling or numbness, or if their fingers occasionally become white, blue, or painful—especially when cold—they should be examined by a doctor who knows about the diagnosis and treatment of these conditions. Diagnostic tests which can be used include plethysmography, arteriography, skin thermography, and sensory tests such as two-point discrimination depth sense, pinprick touch, and temperature sensation. The Occupational Medicine Clinic at St. Michael's hospital in Toronto has diagnostic facilities. http://www.wsib.on.ca/en/community/WSIB/OPMDetail?vgnextoid=1486fcea9bfc7210VgnVCM100000449c710aRCRD

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Welding Fume Fever. A flu-like illness with a metallic taste in the mouth, throat irritation, and dry cough. Leucocytosis is common. Normal chest x-ray. Occurs 3–10 hours after heavy exposure to zinc oxide fumes (e.g., zinc, copper, or magnesium fumes) or dust (e.g., after welding or flame cutting of galvanized steel). Resolves spontaneously within 48 hours.

## Neurologic effects

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## Occupational Asthma

Sensitizer-induced occupational asthma is caused by an immune response to specific workplace agents such as low-molecular-weight chemicals (such as diisocyanates, colophony [a pine resin product used in soldering], or epoxy compounds). Once a person has been sensitized to one of these materials, even exposure to extremely low quantities will exacerbate the asthma. If this form of occupational asthma is suspected from the patient's history, objective investigation is required to confirm or refute the diagnosis.

Patients with confirmed sensitizer-induced occupational asthma should have no further exposure to the causative agent, since the best outcome is achieved with early diagnosis and complete avoidance of exposure. An objectively confirmed diagnosis is very important. Patients with suspected sensitizer-induced occupational asthma should be referred as soon as possible to a specialist (a respirologist, an allergist, or an occupational physician) with expertise in this area. Investigations are most helpful if they can be performed while the patient is still working in the suspected causative work area; the primary care physician may be able to initiate some of these. Source: Occupational asthma: An approach to diagnosis and management. Tarlo and Liss. *Canadian Medical Association Journal.* Apr 1, 2003. 168(7);867-71. http://www.wsib.on.ca/files/Content/Fact%20Sheet_English0619A/0619A_Asthma_and_Work.pdf

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Labour Management Network

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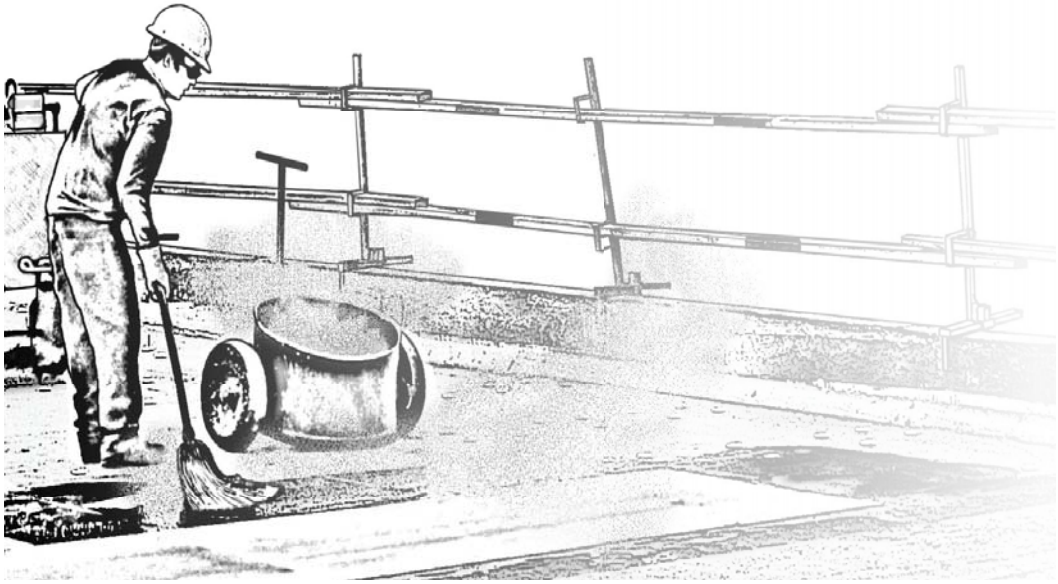

# OCCUPATIONAL HEALTH RISKS
# ROOFERS

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Labour Management NETWORK

# FOR **WORKERS**

IHSA.ca
Work Safe for Life

## Tasks and possible hazards

### All tasks

- **Hazardous materials from industrial worksites** (coke ovens, refineries, chemical plants, glass plants, factories, cement plants, pulp and paper mills, power plants)
- **Awkward postures, vibration, and hazardous noise** while using power tools, grinders, saws, and mobile equipment and fixtures
- **Dust** and **insulation fibres** on construction sites
- **Musculoskeletal injuries** from carrying or lifting materials and tools
- **Working in the heat and cold.**

### Installation and removal

- **Asphalt fumes/coal tar pitch volatiles**
- **Asbestos/insulation fibres** (could be part of the equipment—especially as insulation—or in building materials)
- **Lead**
- **Solvents, adhesives, epoxies**
- **Noise and vibration**
- **Animal and bird droppings**
- **Exhaust fumes** from gas- or diesel-powered equipment.

## How to protect your health

- Ask your supervisor or employer for safe work **instructions** and training.
- Consult industrial clients on site-specific health and safety **procedures**.
- Ask about any hazardous materials or unknown chemicals when **entering** an industrial site for work.
- Ensure adequate **ventilation** when using gas- or diesel-powered equipment.
- Wear a proper **respirator** when
  - you suspect asbestos may be a hazard
  - working in dusty atmospheres
  - welding
  - using solvents, adhesives, or other hazardous substances
  - using metalworking fluids (cutting oils).
- Wear rubber gloves, coveralls, welding jackets, or use barrier creams to protect the **skin**.
- Wear **hearing protection** when exposed to loud noise.
- Consult material safety data sheets (**MSDSs**) for information about hazardous chemicals used at work, and obey workplace health and safety rules.
- **Never eat, drink, smoke, or chew gum** in areas contaminated with asbestos, lead, or toxic chemicals.
- Wash or wipe **hands** clean before eating, drinking, and smoking, and always clean up and change out of contaminated **clothing** before going home at the end of the shift.
- Wash work clothes **separately** from casual and other family members' clothes.
- When working in the **heat** or near heat sources, drink lots of **water** and take frequent rest breaks to prevent heat stress.
- When working in the cold take frequent breaks in a **warm** area to prevent cold stress.
- **Report** hazards to your employer.

Workers who are without symptoms and who have been exposed to asbestos may participate in a research study at Princess Margaret Hospital by volunteering to be screened for mesothelioma/asbestos.
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Labour Management Network

# FOR **PHYSICIANS**

IHSA.ca
Work Safe for Life

## Occupational diseases and hazardous agents encountered by roofers

Job function: Roofers install, repair, and replace all roofing systems.

### Asbestos-related Diseases

- Asbestosis
- Cancer (lung, mesothelioma, gastrointestinal)—*asbestos*.

### Cancer

- Gastrointestinal—*asbestos*
- Lung—*asbestos, coal tar, environmental tobacco smoke*

  *Some studies have linked roofers to an increased risk of lung cancer, but it is unclear if this risk is caused by exposure to asphalt fumes or to other hazards such as smoking, coal tar, or asbestos.*
- Bladder—*coal tar pitch volatiles*

  *Some studies have found a relationship between coal tar pitch volatiles, and bladder cancer.*
- Skin—*ultraviolet light, coal tar.*

### Miscellaneous Disorders

- Gastroenteritis—*bacteria, animal waste*
- Hantavirus, histoplasmosis, leptospirosis—*rodent, bird, or bat droppings*
- Hepatitis (chronic solvent toxicity)—*chlorinated solvents*
- Infertility, male—*chlorinated solvents*
- Noise-induced hearing loss—*noise, power tools, heavy machinery, grinders, industrial noise, scrapers*

### Neurological

- Central Nervous System (CNS) effects—*solvents, chlorinated solvents, thinners*
- Hand-arm vibration syndrome—*vibrating tools*

### Respiratory Diseases

- Bronchitis, chronic—*silica dust, environmental tobacco smoke*
- Asthma, occupational—*fungi/mould, dust, diisocyanates (polyurethane foam insulation)*
- Pontiac fever, Legionnaires' disease—*Legionella*

### Skin Disorders

- Skin irritation, pruritus, rashes—*asphalt*
- Dermatitis, allergic/contact—*epoxies, degreasers, glues, insulating fibres*

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IHSA.ca Work Safe for Life

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Infrastructure Health & Safety Association™

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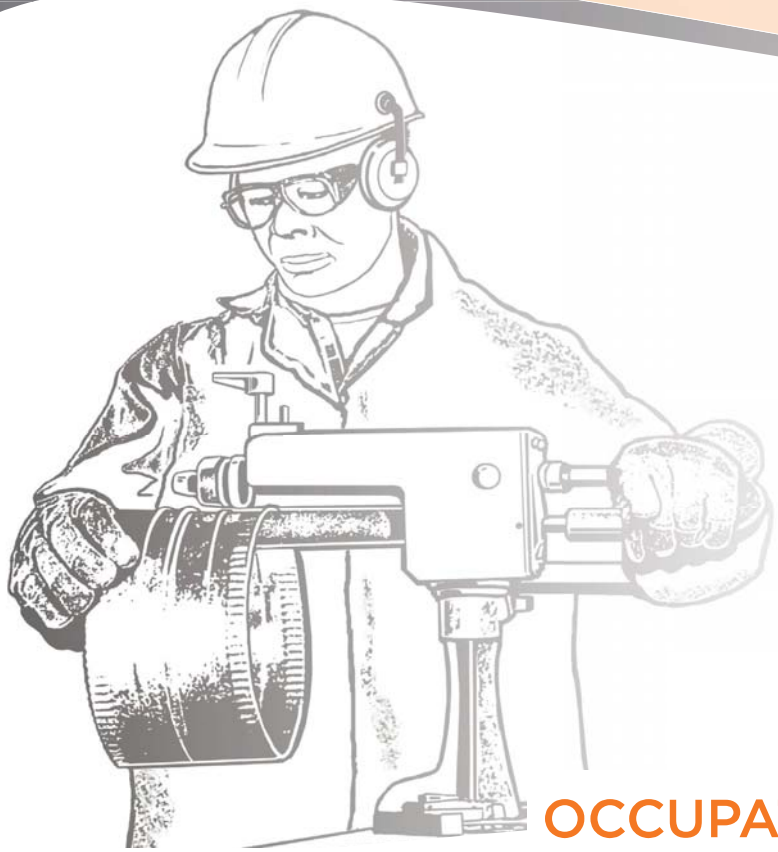

## OCCUPATIONAL HEALTH RISKS

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# FOR **WORKERS**

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## Tasks and possible hazards

### All tasks

- **Hazardous materials from industrial worksites** (coke ovens, refineries, chemical plants, glass plants, factories, cement plants, pulp and paper mills, power plants)
- **Awkward postures, vibration, and hazardous noise** when using power tools, grinders, saws, and mobile equipment
- **Dust** and **insulation fibres** on construction sites
- **Working in the heat and cold.**

### Installation, removal, or repair of equipment

- **Asbestos** (could be part of the equipment—especially as insulation—or in building materials)
- **Lead**
- **Solvents, adhesives, epoxies, sealers, caulking**
- **Acid cleaners including muriatic acid**
- **Exhaust fumes** from gas- or diesel-powered equipment
- **Biological materials** on equipment and in industrial plants or medical institutions.

### Welding, torch cutting, soldering, brazing, grinding

- **Lead**
- **Welding fumes, ultraviolet (UV) light, iron, cadmium, zinc, manganese, aluminum, chromium, nickel, copper, heavy metals, chlorinated compounds, tungsten**
- **Dust** from grinding activities
- **Ammonia and hydrochloric acid gases** from the use of sal ammoniac (ammonium chloride) in soldering.

## How to protect your health

- Ask your supervisor or employer for safe work **instructions** and training.
- Consult industrial clients on site-specific health and safety **procedures.**
- Ask about any hazardous materials or unknown chemicals when **entering** an industrial site for work.
- Ensure proper **ventilation**.
- Wear a proper **respirator** when
  - you suspect asbestos may be a hazard
  - working in dusty atmospheres
  - welding
  - using solvents, adhesives, or other hazardous substances.
- Wear gloves, coveralls or welding jackets, or use barrier creams to protect the **skin**.
- Consult material safety data sheets (**MSDSs**) for information about hazardous chemicals used at work, and obey workplace health and safety rules.
- **Never eat, drink, smoke, or chew gum** in areas contaminated with asbestos, lead, or toxic chemicals.
- **Wash or wipe hands** clean before eating, drinking, and smoking, and always clean up and change out of contaminated **clothing** before going home at the end of the shift.
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Labour Management Network

# FOR **PHYSICIANS**

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## Occupational diseases and hazardous agents encountered by sheetmetal workers

## Job function

Sheetmetal work can involve any of the following: setting up and operating fabricating machines to cut, bend, or straighten sheetmetal; shaping metal over anvils, blocks, or forms, using a hammer; operating soldering and welding equipment to join sheetmetal parts; inspecting, assembling, and smoothing seams and joints of burred surfaces.

### Asbestos-related Diseases

- Asbestosis
- Asbestos warts—*asbestos*
- Cancer (lung, mesothelioma, gastrointestinal)—*asbestos.*

### Cancer

- Lung—*asbestos, diesel, dust, environmental tobacco smoke, silica, bioaerosols, nickel, hexavalent chromium*
- Gastrointestinal—*asbestos, hexavalent chromium*
- Leukemia—*benzene*
- Nasal—*nickel, hexavalent chromium*
- Skin—*coal tar, ultraviolet (UV) light.*

### Miscellaneous Disorders

- Asphyxiation—*inadequate ventilation (e.g., during work in a confined space)*
- Gastroenteritis—*bacteria, animal waste*
- Hepatitis (chronic solvent toxicity)—*chlorinated solvents*
- Infertility, male—*manganese, lead, chlorinated solvents, water-based paint solvents*
- Renal disease—*lead, solvents*
- Noise-induced hearing loss—*power tools, industrial noise, heavy machinery, grinders.*

### Neurological

- Chronic solvent toxic syndrome—*solvents, paints, chlorinated solvents, degreasers, thinners*
- Hand-arm vibration syndrome—*vibrating tools*
- Lead, subacute toxic effect—*lead*
- Neuropathy, toxic—*lead*
- Parkinsonism—*carbon monoxide, manganese*.

### Respiratory Diseases

- Asthma, occupational—*fungi/mould, hexavalent chromium, dust, epoxies, mineral fibres, PVC*
- Benign pneumoconiosis—*welding fume*
  - Bronchitis, chronic—*organic dust, construction dust, welding fume, environmental tobacco smoke*
- Hypersensitivity pneumonitis (HP) acute/chronic—*fungi/mould, wood dust*
  - Chronic bronchitis—*welding*
  - Metal fume fever—*welding fume, iron, galvanized metal fumes*
  - Pontiac fever, Legionnaires' disease—*Legionella*
  - Pulmonary edema—*cadmium, flux, solder, chlorine decomposition, silica.*

### Skin Disorders

- Dermatitis, allergic/contact—*hexavalent chromium, coal tar, epoxies, paints, degreasers, glues.*

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http://www.wsib.on.ca/files/Content/Fact%20Sheet_English0619A/0619A_Asthma_and_Work.pdf

## Hand-arm vibration syndrome (HAVS) and vibration-induced white finger (VWF)

HAVS and VWF are the major health hazards related to the use of vibrating tools. If workers develop symptoms of tingling or numbness, or if their fingers occasionally become white, blue, or painful—especially when cold—they should be examined by a doctor who knows about the diagnosis and treatment of these conditions. Diagnostic tests which can be used include plethysmography, arteriography, skin thermography, and sensory tests such as two-point discrimination depth sense, pinprick touch, and temperature sensation. The Occupational Medicine Clinic at St. Michael's hospital in Toronto has diagnostic facilities.
http://www.wsib.on.ca/en/community/WSIB/OPMDetail?vgnextoid=1486fcea9bfc7210VgnVCM100000449c710aRCRD

**For more info about occupational disease and workplace health and safety, contact the Workplace Safety and Insurance Board: 1-877-202-0008**

Labour Management Network

Infrastructure Health & Safety Association™

*Work Safe for Life*

## About IHSA

IHSA's vision is the elimination of all workplace injuries, illnesses, and fatalities within our member firms.

We engage with our member firms, workers, and other stakeholders to help them continuously improve their health and safety performance. We do this by providing effective and innovative sector-specific programs, products, and services.

### We offer

- Training programs
- Consulting services
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Find out what we can do for you at **www.ihsa.ca**

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