

GUIDE TO OCCUPATIONAL RISKS BY TRADE

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OCCUPATIONAL RISKS BY TRADE

PREGNANT OR BREASTFEEDING WORKER

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Guide to Occupational Risks by Trade

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INTRODUCTION

Work is central to the lives of most adults. It is a source of income, identity, social integration and self-fulfilment, but can also be a source of accidents and disease.

Appointments for work-related health problems are frequent in most medical clinics, and can represent 7% to 9% of consultations. However, according to a Université de Montréal study, clinicians rarely document occupational factors in their medical evaluations. This lack of attention to occupational factors could have an impact on the diagnoses and therapeutic approaches. Failure to acknowledge the link between certain diseases and work could have significant consequences both for individuals and for society.

The *Guide to Occupational Risks by Trade* was developed at the request of occupational health professionals and physicians. It is the outcome of seven years of work carried out by a multidisciplinary team, who analyzed and synthesized the most up-to-date information in the field of occupational risks.

This easy-to-use guide is designed for clinicians, to help with the etiologic diagnosis. Occupational risks can lead to or aggravate a health problem. Work-related health problems often don't have specific clinical presentations. In addition, the impacts of occupational risks on workers' health aren't always immediate. Problems can develop years after exposure. Therefore, it is important to look for occupational exposures when assessing a patient, even if those risks go back many years. This guide can help with such assessments.

The *Guide* is also intended for occupational health professionals interested in finding out more about occupational risks to which workers in different areas of activity or trades are exposed, so as to help professionals improve their interventions with those workers and their employers.

Simple to use

The *Guide* covers 42 sectors of activity and 220 related trades, with data on the main health risks to which workers are exposed and their possible health effects. The information is presented in column format, which enables the reader to find it easily.

SEARCH BY TRADE

SEARCH BY SECTOR OF ACTIVITY



Key Messages



Additional details
and information

**Ask for safety data sheets*

Main Menu

The information is accessed by clicking on a trade or a sector of activity in the respective lists.

Each information sheet presents a sector of activity and related trades. Key messages can be found at the top of many information sheets, and additional details and information at the bottom.

The risks for which safety data sheets must be consulted (chemical products, for instance) are listed between the orange box with the text "Ask for safety data sheets" and the orange line below.

You can always go back to the main menu by clicking on the button in the top right corner of each page.

RISKS IN THE WORKPLACE

In addition to safety risks, there are also chemical, physical, biomechanical/ergonomic, biological, organizational and psychosocial risks in the workplace.

Chemical products: At the top of the list of health risks

There are important risks associated with chemicals, since these products are numerous and used in all kinds of industrial processes. Furthermore, many new products are put on the market each year, and their health effects aren't always well known.

For most chemical products, there is a threshold dose below which there are no effects. Workers must usually be exposed to a certain amount of a substance (dose) before health effects ensue. Generally, an increase in the dose results in more serious effects on an individual's health and/or a higher proportion of workers affected (dose-effect relationship). Respiratory exposure and to a lesser extent skin absorption are the main routes of entry of chemical products.

Health effects can be acute or chronic, and the toxic manifestations may be systemic or local causing irritation or sensitization. It can take weeks or even years before some effects are diagnosed—cancers, for example. These clinical presentations are called «with long latency». In the case of teratogenic effects (foetal malformations) or effects on fertility, it is often difficult to establish a link with a chemical product, unless clusters emerge.

Ask the patient to bring the SAFETY DATA SHEETS to their next medical appointment. The employer is required to give them to him. Safety data sheets, often referred to as SDS ([see PRACTICAL TOOLS section](#)).



CLINICAL EVALUATION

Work-related health problems often don't have specific clinical presentations. Therefore, it is important to look for occupational exposures when assessing patients because the therapeutic approach often calls for reducing or removing exposure if an occupational cause is suspected.

Unusual clinical presentation or course as well as symptoms that decrease or disappear when outside the workplace are key elements that point to an occupational cause. The most commonly affected systems are the musculoskeletal, respiratory and dermatological (routes of absorption) systems, central and peripheral nervous system, psychic system, auditory system, as well as blood (transport and distribution), hepatic (biotransformation) and renal (excretion) systems. In general, harmful health effects result from chronic occupational exposure, but in some circumstances, for instance exposure to high doses of a contaminant, health problems can appear relatively quickly and persist despite reduced exposure.

Occupational link considered? 4 questions to ask

1. What type of company do you work for?
2. What do you do, specifically?
3. Do your symptoms decrease when you're not at work or on vacation?
4. Do you think your health problems are linked to your job?

For a better understanding of the risks to which a worker might be exposed: 8 questions to ask

1. What products do you work with?
2. Are you exposed to dust, smoke, chemicals or noise?
3. Do you have access to protective equipment and do you use it?
4. What tools or equipment do you work with?
5. Do you handle heavy loads?
6. Does your job require significant physical effort?
7. Are you always repeating the same movements?
8. Do you work under time constraints?

Pregnant or breastfeeding worker

A pregnant or breastfeeding worker is especially sensitive to the risks of her workplace. This is why it is important that the attending physician consult with a public health physician at the very beginning of the pregnancy, so as to optimize the care and guidance provided to this pregnant worker.



PROCEDURES TO FOLLOW AFTER EVALUATION

Reducing exposure

After clinical evaluation, if the physician determines that the patient's health condition was caused or aggravated by exposure to an occupational health risk or risks, then this patient's exposure must be reduced as much as possible. For example, the physician should ask that the worker be reassigned to other tasks that don't involve these risks.

This can be done by noting down the restrictions related to exposure to those risks on the CNESST (Commission des normes, de l'équité, de la santé et de la sécurité au travail) form or by completing the temporary reassignment form the employer will provide.

If it isn't possible to control exposure to risk or if the worker is unable to carry out the tasks required for health reasons, then a medical leave of absence should be considered.

Applying for Compensation

If the physician determines that the health problem is probably work-related, the worker may be eligible for compensation, in accordance with the *Act respecting industrial accidents and occupational diseases*. The physician's role is to inform the patient of this possibility and complete the required forms with the necessary medical information (in particular the diagnosis of the lesion or illness) so the worker can file a claim with the CNESST.

See the [Guide d'utilisation des formulaires médicaux de la CNESST](#) (in French) for help.

Reporting at-risk situations and reportable disease

If the physician has good reasons to think that the patient is exposed to contaminants that may have caused health problems, it is important to report this apprehended health threat or any notifiable disease, infection or poisoning ([MADO](#)) to the regional public health department's occupational health team. When a health threat and/or [notifiable disease](#) involving a workplace is reported, that triggers an investigation by the occupational health team with the objective of protecting the health of the other workers.

Controlling risks in the workplace

The main goal of controlling risks in the workplace is to eliminate—or reduce as much as possible—workers' exposure to those risks (e.g. local exhaust ventilation, process enclosure, adapted workstations, worker rotation). The effectiveness of personal protective equipment varies and should not be considered to be an adequate, permanent solution. Health effects can arise even when legal standards are respected because some workers are more vulnerable and feel the effects following exposure to doses below the recommended standard.



LIMITS OF THE GUIDE AND NOTES

Information sheets content is based on an analysis and synthesis of information from the documentation and Websites listed in the references. Although these sources are reliable, the authors cannot guarantee the accuracy of the information reported in those sources.

Health risks described in the information sheets don't make up a complete list of potential risks, but rather only those that, in the authors' opinion, are most relevant. They aren't necessarily listed in order of importance. Since work and exposure vary among work settings, it is important to ask the worker about the conditions in which he works, his main tasks and the products he uses. Users of the *Guide* must keep in mind that the health effects linked to a substance depend on the type, duration and level of exposure, as well as the effectiveness of collective preventive methods (e.g. local exhaust system) and personal protective equipment.

The risks and main health effects reported in the information sheets aren't necessarily found in each and all trades of a sector of activity.

Risks of accidents and acute health effects due to accidental events aren't discussed here, since those cases are seen in emergency departments and a causal link with the substance is immediately identified (e.g. respiratory problems following acute exposure to chlorine vapours).

The *Guide* is an interactive tool that acts as a checklist designed to guide the assessment of a worker who consults a primary care physician or another health professional. Although this tool is designed to help with the etiologic diagnosis, it not intended as a substitute for clinical judgement of the physician.

In no case shall the authors be liable for any bodily, moral or material injury resulting from the use of this tool.

It is not recommended to save a copy of the *Guide* on your computer since you would not have real-time access to any updates released.



PRACTICAL TOOLS

Safety data sheet (SDS) (as per the Globally Harmonized System of Classification and Labelling of Chemicals (GHS) currently being implemented in Canada) is the base document that provides information on the composition, certain physicochemical and toxicological properties, and prevention measures related to a controlled product because the product contains one or several dangerous ingredients. For an example, see the [Safety Data Sheet](#) for a commercial chemical containing toluene and xylene, solvents often used in work places.

Répertoire toxicologique de la CNESST provides information on 2,440 products and substances

<https://reptox.cnesst.gouv.qc.ca/en/Pages/to-english-users.aspx>

Guide d'utilisation des formulaires médicaux de la CNESST

<https://www.cnesst.gouv.qc.ca/Publications/400/Documents/DC400-351web.pdf>

List of reportable diseases, infections and poisonings (MADO)

https://msss.gouv.qc.ca/professionnels/documents/mado/19-268-06W_Liste_MADO_Medecins.pdf

Reporting a MADO – for Physicians

<https://msss.gouv.qc.ca/professionnels/maladies-a-declaration-obligatoire/mado/demarche-pour-les-medecins/>

WHAT IS YOUR OCCUPATION?

You can search with this tool using the following lists by trade and sector, or by right-clicking on the mouse and selecting **Search** in the drop-down menu . You can go back to the **Main menu** anytime by clicking on the button in the top right corner.

[SEARCH BY TRADE](#)
[SEARCH BY SECTOR OF ACTIVITY](#)

A

[Administrative assistant](#)
[Air controller](#)
[Animal attendant](#)
[Aquaculturist](#)
[Assembler \(aerospace\)](#)
[Assembler \(electrical/electronic products\)](#)
[Assistant cook](#)
[Attendant \(automotive detailing\)](#)
[Attendant \(fur and leather manufacturing\)](#)
[Attendant \(mines and quarries\)](#)
[Attendant \(pest control\)](#)
[Attendant \(waste management\)](#)
[Attendant \(wood processing\)](#)
[Auto body repairer](#)
[Auto bodybuilder](#)
[Automotive recycler](#)

B

[Backhoe operator \(construction\)](#)
[Baker](#)
[Bakery plant worker](#)
[Bartender](#)
[Beautician](#)
[Beekeeper](#)
[Biochemist](#)
[Biologist](#)
[Boiler attendant \(plumbing\)](#)
[Boilermaker \(construction\)](#)
[Boilermaker \(metallurgy\)](#)
[Boilermaker \(petrochemistry\)](#)
[Boilermaker \(welding\)](#)
[Breeder](#)
[Bricklayer-mason](#)
[Brush cutter](#)
[Building locksmith](#)
[Butcher](#)

C

[Cabinetmaker](#)
[Caretaker](#)
[Carpenter \(woodwork\)](#)
[Carpenter-joiner \(construction\)](#)
[Cashier](#)
[Cement finisher](#)
[Chemist \(laboratory / R & D\)](#)
[Chemist \(petrochemistry\)](#)
[Chemist \(rubber industry\)](#)
[Commercial fisherman](#)
[Composite material assembler](#)
[Controller](#)
[Cook](#)
[Crane operator](#)
[Cutter \(clothing\)](#)

D

[Daycare worker](#)
[Deckhand \(deck/engine room\)](#)
[Delivery person](#)
[Designer \(clothing\)](#)
[Display designer](#)
[Dressmaker](#)
[Drill operator](#)
[Driver \(bus/taxi\)](#)
[Driver/Conductor/Operator \(metro/train/heavy vehicle\)](#)
[Drycleaner](#)
[Drywall installer and finisher](#)
[Dyer \(leather/fur\)](#)
[Dynamiter](#)



WHAT IS YOUR OCCUPATION?

[SEARCH BY TRADE](#)
[SEARCH BY SECTOR OF ACTIVITY](#)

E

[Educator](#)
[Electrician](#)
[Electromechanic](#)
[Electrotechnician](#)
[Embalmer](#)
[Engineer \(mines and quarries\)](#)
[Executive employee \(office work\)](#)
[Exterminator](#)

F

[Farmer](#)
[Feller](#)
[Firefighter](#)
[First responder \(ambulance services\)](#)
[First responder \(firefighting services\)](#)
[Flight attendant](#)
[Floorcovering installer](#)
[Food inspector](#)
[Forestry engineer](#)
[Forklift truck driver](#)
[Funeral home worker](#)

G

[Garbage collector](#)
[Gardener](#)
[Glassworker \(glazier\)](#)
[Grave digger](#)
[Grower](#)

H

[Hair colourist](#)
[Hairdresser](#)
[Heating specialist](#)
[Heavy equipment operator \(construction\)](#)
[Heavy equipment operator \(mines and quarries\)](#)
[Heavy vehicle driver \(mines and quarries\)](#)
[Horticulturist](#)
[Hotel room attendant](#)
[Hygiene and cleanliness attendant](#)

I

[Industrial mechanic](#)
[Industrial pipefitter](#)
[Insulator](#)
[Interior finisher \(aerospace\)](#)
[Interior finisher \(mines and quarries\)](#)
[Iron worker \(concrete reinforcement installer\)](#)
[Iron worker \(welding\)](#)

J/K

[Joiner \(woodwork\)](#)
[Kiln attendant](#)

L

[Laborer \(mines and quarries\)](#)
[Laborer/specialized laborer \(construction\)](#)
[Laundry worker](#)
[Lineworker](#)
[Lumberjack](#)

M

[Machine operator \(aerospace\)](#)
[Machine operator \(metallurgy\)](#)
[Machine operator \(printing\)](#)
[Machine operator \(rubber industry\)](#)
[Machine operator \(wood processing\)](#)
[Machinist \(aerospace\)](#)
[Machinist \(metallurgy\)](#)
[Maintenance worker \(maintenance/cleaning/laundry services\)](#)
[Manager \(office work\)](#)
[Manicurist](#)
[Marine farmer](#)
[Mason-bricklayer](#)
[Material handler](#)
[Meat boner](#)
[Mechanic \(aerospace\)](#)
[Mechanic \(car/heavy vehicle\)](#)
[Mechanic \(diesel/locomotive/ship\)](#)
[Mechanic \(wood processing\)](#)



WHAT IS YOUR OCCUPATION?

SEARCH BY TRADE

SEARCH BY SECTOR OF ACTIVITY

[Mechanic or equipment repairman in mobile workshop \(forestry\)](#)

[Mechanized equipment operator \(forestry\)](#)

[Medical examiner](#)

[Melter](#)

[Metal reclaimer](#)

[Military service member](#)

[Milk producer](#)

[Miner](#)

[Mould maker](#)

[Mover](#)

N

[Navigation officer](#)

[Nurse](#)

[Nursery worker](#)

[Nursing assistant](#)

O

[Office worker](#)

[Operator \(fertilizer manufacturing\)](#)

[Operator \(waste management\)](#)

[Orderly](#)

P

[Painter \(automotive\)](#)

[Painter \(workshop/buildings\)](#)

[Paramedic](#)

[Pastry chef](#)

[Pathologist](#)

[Pedicurist](#)

[Pharmaceutical sector/forensic laboratory worker](#)

[Pharmacist](#)

[Pilot](#)

[Pipefitter \(plumbing\)](#)

[Plasterer](#)

[Plastics/composites worker](#)

[Plumber](#)

[Police officer](#)

[Press operator \(clothing\)](#)

[Press operator \(printing\)](#)

[Printer](#)

R

[Railway carman](#)

[Refinery operator](#)

[Reforester](#)

[Refrigeration mechanic](#)

[Research officer](#)

[Researcher](#)

[Roofer](#)

S

[Salesperson](#)

[Sawmill machine/lumber dryer operator](#)

[Sawyer](#)

[Security guard](#)

[Server](#)

[Sewer-pipe cleaner](#)

[Sewing machine operator](#)

[Sharpener](#)

[Sheet metal worker \(metallurgy\)](#)

[Sheet metal worker \(welding\)](#)

[Silviculture worker](#)

[Slaughterhouse worker](#)

[Stationary machine mechanic](#)

[Stationary machine mechanic \(petrochemistry\)](#)

[Stationary machine mechanic \(rubber industry\)](#)

[Steelmaker](#)

[Storekeeper](#)

[Structure assembler \(aerospace\)](#)

[Structure assembler \(construction\)](#)

T

[Tanner](#)

[Teacher](#)

[Technician \(aerospace\)](#)

[Technician \(forestry\)](#)

[Technician \(inhalation therapy\)](#)

[Technician \(laboratory\)](#)

[Technician \(medical imaging and radiotherapy\)](#)

[Technician \(petrochemistry\)](#)

[Technician \(printing\)](#)



WHAT IS YOUR OCCUPATION?

SEARCH BY TRADE

SEARCH BY SECTOR OF ACTIVITY

[Technician \(railway track maintenance\)](#)

[Technician \(rubber industry\)](#)

[Technician \(textile dyeing\)](#)

[Technician \(waste management\)](#)

[Technician ground maintenance \(air transport\)](#)

[Technologist \(mines and quarries\)](#)

[Technologist \(wood processing\)](#)

[Technologist \(wooden objects manufacturing\)](#)

[Tile layer](#)

[Tinsmith](#)

[Tire specialist \(automotive\)](#)

[Tire specialist \(rubber industry\)](#)

[Tree planter](#)

[Tree pruner](#)

[Trucker](#)

U/V

[Veterinarian](#)

W

[Warehouse worker](#)

[Welder](#)

[Wine grower](#)

[Wood classifier](#)

[Wood engineer](#)

X/Y/Z

[Yard foreman](#)

WHAT IS YOUR OCCUPATION?

[SEARCH BY TRADE](#)[SEARCH BY SECTOR OF ACTIVITY](#)

A/B/C

[Aerospace](#)[Agriculture/Horticulture](#)[Air transport](#)[Ambulance services](#)[Animal husbandry/Animal production](#)[Automotive services](#)[Bakery](#)[Clothing manufacturing and clothing maintenance](#)[Construction](#)

D/E/F

[Electrical and electronic products manufacturing](#)[Electricity: Transport and distribution](#)[Extermination](#)[Firefighting services](#)[Food/Bar services](#)[Food preparation and processing](#)[Forestry: Logging and sawmills](#)[Funeral services](#)

G/H/I

[Hair styling/Aesthetic services](#)[Handling/Storage](#)[Industrial mechanics](#)[Inpatient and outpatient health services](#)

J/K/L

[Laboratory/Research and development](#)[Leather and fur](#)

M/N/O

[Maintenance/Cleaning/Laundry services](#)[Metallurgy \(metal transformation, refining and machining\)](#)[Mines and quarries: Extraction](#)[Office work / Public administration](#)

P/Q/R

[Painting](#)[Petrochemistry](#)[Plastics processes/Plastics processing](#)[Plumbing](#)[Police/Security services](#)[Printing/Graphic communications](#)[Retail: food and other goods](#)[Rubber industry](#)

S/T/U

[School/Daycare centre](#)[Seafisheries](#)[Transport \(road, rail, maritime\) – Merchandise/Passengers](#)

V/W/X/Y/Z

[Waste management](#)[Welding](#)[Wood processing
\(pulp and paper/board manufacturing\)](#)[Wooden objects manufacturing and woodwork](#)

RECOMMENDED WEBSITES

Québec

Commission des normes, de l'équité, de la santé et de la sécurité du travail (CNESST):

- Répertoire toxicologique
<https://reptox.cnesst.gouv.qc.ca/en/Pages/to-english-users.aspx>
- WHMIS 2015 classification
<https://reptox.cnesst.gouv.qc.ca/en/Pages/list-whmis-2015-a.aspx>
- Occupational asthma
<https://reptox.cnesst.gouv.qc.ca/en/occupational-asthma/Pages/occupational-asthma.aspx>

Institut de recherche Robert-Sauvé en santé et en sécurité du travail (IRSST)
<https://www.irsst.qc.ca/en/>

Canada

Canadian Centre for Occupational Health and Safety
<https://www.ccohs.ca>

France

Institut national de recherche et de sécurité pour la prévention des accidents du travail et des maladies professionnelles (INRS)

(English version accessible – Click on UK flag at the top of the first page of the website.)
www.inrs.fr

Cancer Environnement du Centre Léon Bérard
www.cancer-environnement.fr

Atousante.com – La santé au travail
(English version accessible – Click on UK flag at the top of the first page of the website.)
www.atousante.com

Officiel prévention santé et sécurité au travail
<https://www.officiel-prevention.com/categorie/sante-hygiene-medecine-du-travail-sst/service-de-sante-au-travail-reglementations>

Direccte Auvergne-Rhône-Alpes
auvergne-rhone-alpes.direccte.gouv.fr/PromouSee-la-sante-et-securite-au-travail

Agence nationale pour l'amélioration des conditions de travail (ANACT)
<https://www.anact.fr>

International Organizations

Encyclopaedia of Occupational Health and Safety – International Labour Office
Online edition
<http://www.ilocis.org/en/contilo.html>

International Agency for Research on Cancer (IARC–CIRC) – World Health Organization
https://www.iarc.fr/cards_page/about-iarc/

USA

National Institute for Occupational Safety and Health (NIOSH)
Workplace Safety and Health Topics
<https://www.cdc.gov/niosh/topics/industries.html>

Occupational Safety and Health Administration
See “Topics” section
<https://www.osha.gov>

ACGIH – Documentation and guidelines on exposure standards for contaminants
<https://www.acgih.org/tlv-bei-guidelines/policies-procedures-presentations/overview>

United Kingdom

Health and Safety Executive
www.hse.gov.uk/aboutus/occupational-disease/index.htm

NOTE

Most of the recommended Websites were accessed while writing this document. The authors used the information on those Websites when considered relevant.

PREGNANT OR BREASTFEEDING WORKER

Some working conditions can be harmful for a developing baby or breastfeeding infant, or for the pregnant worker.

A pregnant worker can request a reassignment upon presentation of a Preventive Withdrawal and Reassignment Certificate for a Pregnant or Breastfeeding Worker, attesting that her working conditions may constitute a hazard.

It is the attending physician's responsibility to provide the Certificate; however, he or she must first consult with the physician in charge of health service in the workplace or, if there is none, the director of public health or the physician designated by the director of public health. Without this consultation, the Preventive Withdrawal Certificate is not valid.

The attending physician confirms and includes the designated physician's recommendations on the Certificate. If the attending physician ascertains the patient has a specific condition (e.g. twin pregnancy, history of unfavourable obstetric history, gestational diabetes) that could affect the outcome of the pregnancy when combined with workplace constraints, he or she can bring changes to the designated physician's recommendations—for example, change the date on which recommendations start being applied. However, the attending physician cannot add or remove risks; to do so, the attending physician must ask the designated physician to examine the person's work station.

For more information, the attending physician can contact their regional CNESST physicians or physicians designated by their regional director of public health.



[Access PDF online](#)

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SPECIALIZED CLINICAL RESOURCES

Clinique de médecine du travail et de l'environnement (CMTE)

Centre hospitalier de l'Université de Montréal (CHUM)

1000, Saint-Denis St.

Pavillon C, 12th floor

Montréal (Québec) H2X 0C1

To request services, fax consultation request to the:
Centre des rendez-vous at the CHUM, at 514-412-7000

For information or talk to a doctor, contact the CHUM's Department of social and preventive medicine:

Telephone: 514-890-8000, ext. 25254

Fax: 514-412-7643

Email: cmte.chum@ssss.gouv.qc.ca

To reach the clinic nurse:

Telephone: 514-890-8000, ext. 10727

Fax: 514-412-7643

Email: cmte.chum@ssss.gouv.qc.ca

SAFETY DATA SHEET



TOLUENE

000003000083

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SECTION 1. IDENTIFICATION

Product name : TOLUENE
 Synonyms : Aromatic Hydrocarbon C7H8
 Product code : 101928, 100151, 100067

Manufacturer or supplier's details
 SUNCOR ENERGY INC.
 P.O. Box 2844, 150 - 6th Avenue South-West
 Calgary Alberta T2P 3E3
 Canada

Emergency telephone number
 Suncor Energy: +1 403-296-3000;
 Canutec Transportation: 1-888-226-8832 (toll-free) or 613-996-6666;
 Poison Control Centre: Consult local telephone directory for emergency number(s).

Recommended use of the chemical and restrictions on use

Recommended use : Found in the gasoline blend components. Concentrated into BTX and separated as petrochemical feed in some refineries.

Prepared by : Product Safety: +1 905-804-4752

SECTION 2. HAZARDS IDENTIFICATION

Emergency Overview

Appearance	liquid
Colour	colourless
Odour	aromatic

GHS Classification

Flammable liquids : Category 2
 Skin irritation : Category 2
 Germ cell mutagenicity : Category 1B
 Carcinogenicity : Category 1A
 Reproductive toxicity : Category 2
 Specific target organ toxicity - single exposure : Category 3 (Central nervous system)

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Specific target organ toxicity - repeated exposure : Category 2

Aspiration hazard : Category 1

GHS label elements

Hazard pictograms :



Signal word : Danger

Hazard statements : Highly flammable liquid and vapour.
 May be fatal if swallowed and enters airways.
 Causes skin irritation.
 May cause drowsiness or dizziness.
 May cause genetic defects.
 May cause cancer.
 Suspected of damaging fertility or the unborn child.
 May cause damage to organs through prolonged or repeated exposure.

Precautionary statements : **Prevention:**
 Obtain special instructions before use.
 Do not handle until all safety precautions have been read and understood.
 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
 Keep container tightly closed.
 Ground and bond container and receiving equipment.
 Use explosion-proof electrical/ ventilating/ lighting equipment.
 Use non-sparking tools.
 Take action to prevent static discharges.
 Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
 Wash skin thoroughly after handling.
 Use only outdoors or in a well-ventilated area.
 Wear protective gloves/ protective clothing/ eye protection/ face protection.
Response:
 IF SWALLOWED: Immediately call a POISON CENTER/doctor.
 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.
 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor if you feel unwell.
 IF exposed or concerned: Get medical advice/ attention.
 Do NOT induce vomiting.
 If skin irritation occurs: Get medical advice/ attention.
 Take off contaminated clothing and wash it before reuse.
 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.
Storage:
 Store in a well-ventilated place. Keep container tightly closed.
 Store in a well-ventilated place. Keep cool.
 Store locked up.



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**Disposal:**

Dispose of contents/ container to an approved waste disposal plant.

Potential Health Effects

Primary Routes of Entry : Eye contact
Ingestion
Inhalation
Skin contact

Aggravated Medical Condition : None known.

Other hazards

None known.

IARC

Group 1: Carcinogenic to humans

Benzene 71-43-2

ACGIH

Confirmed human carcinogen

Benzene 71-43-2

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Hazardous components

Chemical name	CAS-No.	Concentration
toluene	108-88-3	99 - 100 %
xylylene	1330-20-7	0.1 - 0.5 %
benzene	71-43-2	0 - 0.5 %

All concentrations are in percent by weight.

SECTION 4. FIRST AID MEASURES

If inhaled : Move to fresh air.
Artificial respiration and/or oxygen may be necessary.
Seek medical advice.

In case of skin contact : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
Wash skin thoroughly with soap and water or use recognized skin cleanser.
Wash clothing before reuse.
Seek medical advice.

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In case of eye contact : Remove contact lenses.
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
Obtain medical attention.

If swallowed : Rinse mouth with water.
DO NOT induce vomiting unless directed to do so by a physician or poison control center.
Never give anything by mouth to an unconscious person.
Seek medical advice.

Most important symptoms and effects, both acute and delayed : Respiratory, skin and eye irritation; nausea; cancer.

Notes to physician : Treat symptomatically.
Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media : Dry chemical
Carbon dioxide (CO₂)
Water fog.
Foam

Unsuitable extinguishing media : Do NOT use water jet.

Specific hazards during fire-fighting : Cool closed containers exposed to fire with water spray.

Hazardous combustion products : Carbon oxides (CO, CO₂), reactive hydrocarbons, aldehydes, smoke and irritating vapours as products of incomplete combustion.

Further information : Prevent fire extinguishing water from contaminating surface water or the ground water system.

Special protective equipment for firefighters : Wear self-contained breathing apparatus for firefighting if necessary.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures : For personal protection see section 8.
Ensure adequate ventilation.
Evacuate personnel to safe areas.
Material can create slippery conditions.

Environmental precautions : If the product contaminates rivers and lakes or drains inform respective authorities.



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Methods and materials for containment and cleaning up : Prevent further leakage or spillage if safe to do so. Remove all sources of ignition. Soak up with inert absorbent material. Non-sparking tools should be used. Ensure adequate ventilation. Contact the proper local authorities.

SECTION 7. HANDLING AND STORAGE

Advice on safe handling : For personal protection see section 8. Smoking, eating and drinking should be prohibited in the application area. Take precautionary measures against static discharges. Avoid spark promoters. Ground/bond container and equipment. These alone may be insufficient to remove static electricity. Use only with adequate ventilation. In case of insufficient ventilation, wear suitable respiratory equipment. Keep away from open flames, hot surfaces and sources of ignition. Avoid contact with skin, eyes and clothing. Do not ingest. Keep container closed when not in use.

Conditions for safe storage : Store in original container. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Keep in a dry, cool and well-ventilated place. Keep in properly labelled containers. To maintain product quality, do not store in heat or direct sunlight. Keep away from sources of ignition - No smoking. Ensure the storage containers are grounded/bonded.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
toluene	108-88-3	TWA	50 ppm 188 mg/m ³	CA AB OEL
		TWA	20 ppm	CA BC OEL
		TWAEV	50 ppm 188 mg/m ³	CA QC OEL
xylene	1330-20-7	TWA	20 ppm	ACGIH
		TWA	100 ppm	ACGIH
		STEL	150 ppm	ACGIH
		TWA	100 ppm 435 mg/m ³	OSHA Z-1
		STEL	150 ppm	CAL PEL

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		C	655 mg/m ³ 300 ppm	CAL PEL
		PEL	100 ppm 435 mg/m ³	CAL PEL
benzene	71-43-2	TWA	0.5 ppm 1.6 mg/m ³	CA AB OEL
		STEL	2.5 ppm 8 mg/m ³	CA AB OEL
		TWA	0.5 ppm	CA BC OEL
		STEL	2.5 ppm	CA BC OEL
		TWA	0.5 ppm	CA ON OEL
		STEL	2.5 ppm	CA ON OEL
		TWAEV	1 ppm 3 mg/m ³	CA QC OEL
		STEV	5 ppm 15.5 mg/m ³	CA QC OEL
		TWA	0.5 ppm	ACGIH
		STEL	2.5 ppm	ACGIH

Biological occupational exposure limits

Components	CAS-No.	Control parameters	Biological specimen	Sampling time	Permissible concentration	Basis
Toluene	108-88-3	Toluene	In blood	Prior to last shift of work-week	0.02 mg/l	ACGIH BEI

Engineering measures : Adequate ventilation to ensure that Occupational Exposure Limits are not exceeded. Use only in well-ventilated areas. Ensure that eyewash station and safety shower are proximal to the work-station location.

Personal protective equipment

Respiratory protection : Concentration in air determines protection needed. Use respiratory protection unless adequate local exhaust ventilation is provided or exposure assessment demonstrates that exposures are within recommended exposure guidelines. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Filter type : A NIOSH-approved air-purifying respirator with an organic vapour cartridge or canister may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Protection provided by air-purifying respirators is limited. Use a positive-pressure, air-



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supplied respirator if there is any potential for uncontrolled release, exposure levels are unknown, or any other circumstances where air-purifying respirators may not provide adequate protection.

Hand protection
Material

: polyvinyl alcohol (PVA), Viton(R), specialty laminated. Consult your PPE provider for breakthrough times and the specific glove that is best for you based on your use patterns. It should be realized that eventually any material regardless of their imperviousness, will get permeated by chemicals. Therefore, protective gloves should be regularly checked for wear and tear. At the first signs of hardening and cracks, they should be changed.

Remarks

: Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Eye protection

: Wear face-shield and protective suit for abnormal processing problems.

Skin and body protection

: Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place.

Protective measures

: Wear suitable protective equipment.

Hygiene measures

: Remove and wash contaminated clothing and gloves, including the inside, before re-use.
Wash face, hands and any exposed skin thoroughly after handling.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	: liquid
Colour	: colourless
Odour	: aromatic
Odour Threshold	: No data available
pH	: No data available
Melting point	: No data available
Boiling point/boiling range	: 111 °C (232 °F)
decomposition temperature	No data available
Flash point	: 4 °C (39 °F) Method: Tagliabue.

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Auto-Ignition Temperature	: 480 °C (896 °F)
Evaporation rate	: No data available
Flammability	: Extremely flammable in presence of open flames and sparks. May accumulate static electrical charge. Vapours are heavier than air and may travel considerable distance to sources of ignition and flash back.
Upper explosion limit	: 7.1 %(V)
Lower explosion limit	: 1.1 %(V)
Vapour pressure	: 22 mmHg (20 °C / 68 °F)
Relative vapour density	: 3.1
Relative density	: 0.865 - 0.87
Solubility(ies)	
Water solubility	: insoluble
Partition coefficient: n-octanol/water	: No data available
Viscosity	
Viscosity, kinematic	: No data available

SECTION 10. STABILITY AND REACTIVITY

Reactivity	: Stable at normal ambient temperature and pressure.
Chemical stability	: Stable under normal conditions.
Possibility of hazardous reactions	: Hazardous polymerisation does not occur.
Conditions to avoid	: Heat, flames and sparks.
Incompatible materials	: Reactive with oxidising agents, acids, halogens and halogenated compounds.
Hazardous decomposition products	: May release COx, reactive hydrocarbons, aldehydes, ketones, smoke and irritating vapours when heated to decomposition.

SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Eye contact
Ingestion



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Inhalation
Skin contact**Acute toxicity****Product:**

Acute oral toxicity : Remarks: No data available

Acute inhalation toxicity : Remarks: No data available

Acute dermal toxicity : Remarks: No data available

Components:**toluene:**

Acute oral toxicity : LD50 (Rat): 5,580 mg/kg,

Acute inhalation toxicity : LC50 (Rat): 7585 ppm
Exposure time: 4 h
Test atmosphere: dust/mist

Acute dermal toxicity : LD50 (Rabbit): 12,125 mg/kg,

xylene:

Acute oral toxicity : LD50 (Rat): 4,300 mg/kg,

Acute inhalation toxicity : LC50 (Rat): 5000 ppm
Exposure time: 4 h
Test atmosphere: dust/mist

Acute dermal toxicity : LD50 (Rabbit): > 1,700 mg/kg,

benzene:

Acute oral toxicity : LD50 (Rat): 2,990 mg/kg,

Acute inhalation toxicity : LC50 (Rat): 13700 ppm
Exposure time: 4 h
Test atmosphere: dust/mist

Acute dermal toxicity : LD50 (Rabbit): > 8,240 mg/kg,

Skin corrosion/irritation**Product:**

Remarks: Causes skin irritation.

Serious eye damage/eye irritation**Product:**

Remarks: No data available

Respiratory or skin sensitisation

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No data available

Germ cell mutagenicity**Product:**Germ cell mutagenicity-
Assessment : May cause genetic defects.

No data available

Carcinogenicity**Product:**Carcinogenicity - As-
sessment : May cause cancer.**Reproductive toxicity****Product:**Reproductive toxicity -
Assessment : Suspected of damaging fertility or the unborn child.**STOT - single exposure****Product:**

Remarks: May cause drowsiness or dizziness.

STOT - repeated exposure**Product:**

Remarks: May cause damage to organs through prolonged or repeated exposure.

No data available

Aspiration toxicity**Product:**

May be fatal if swallowed and enters airways.

SECTION 12. ECOLOGICAL INFORMATION**Ecotoxicity****Product:**Toxicity to fish :
Remarks: No data availableToxicity to daphnia and other
aquatic invertebrates :
Remarks: No data available

Toxicity to algae :



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Remarks: No data available

Toxicity to bacteria : Remarks: No data available

Persistence and degradability**Product:**

Biodegradability : Remarks: No data available

Bioaccumulative potential

No data available

Mobility in soil

No data available

Other adverse effects

No data available

SECTION 13. DISPOSAL CONSIDERATIONS**Disposal methods**

Waste from residues : The product should not be allowed to enter drains, water courses or the soil. Offer surplus and non-recyclable solutions to a licensed disposal company. Waste must be classified and labelled prior to recycling or disposal. Send to a licensed waste management company. Dispose of as hazardous waste in compliance with local and national regulations. Dispose of product residue in accordance with the instructions of the person responsible for waste disposal.

SECTION 14. TRANSPORT INFORMATION**International Regulations****IATA-DGR**

UN/ID No. : UN 1294

Proper shipping name : Toluene

Class : 3

Packing group : II

Labels : Class 3 - Flammable Liquid

Packing instruction (cargo aircraft) : 364

IMDG-Code

UN number : UN 1294

Proper shipping name : TOLUENE

Class : 3

Packing group : II

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Labels : 3
 EmS Code : F-E, S-D
 Marine pollutant : no

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code**National Regulations****TDG**

UN number : UN 1294

Proper shipping name : TOLUENE

Class : 3

Packing group : II

Labels : 3

ERG Code : 130

Marine pollutant : no

SECTION 15. REGULATORY INFORMATION

This product has been classified according to the hazard criteria of the Hazardous Products Regulations (HPR) and the SDS contains all of the information required by the HPR.

The components of this product are reported in the following inventories:

DSL On the inventory, or in compliance with the inventory

SECTION 16. OTHER INFORMATION

For Copy of SDS : Internet: www.petro-canada.ca/msds
 Canada-wide: telephone: 1-800-668-0220; fax: 1-800-837-1228
 For Product Safety Information: 1 905-804-4752

Prepared by : Product Safety: +1 905-804-4752

Revision Date : 2018/12/21

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.


AEROSPACE









RELATED TRADES

- Assembler
- Composite material assembler
- Interior finisher
- Machine operator
- Machinist
- Mechanic
- Structure assembler
- Technician

See also [Industrial mechanics](#)

See also [Welding](#)

 High-tech industries may use products whose health effects are poorly known, such as nanoparticles and composite materials.

RISKS	HEALTH EFFECTS
*Ask what metals were used and specify the type of welding. Ask for the safety data sheets for the products used.	
Paints/Varnishes/Glues  Degreasers (solvents)	<ul style="list-style-type: none"> • Rhinitis/asthma • Contact dermatitis • Upper respiratory tract irritation • Systemic effects  • Pancytopenia/leukemia (benzene)
Metal fumes and dust  (machining, welding, etc.)	<ul style="list-style-type: none"> • Welder's fever (same as metal-fume fever) • Chronic bronchitis/emphysema • Granulomatous lung disease • Parkinsonism (manganese) • Siderosis • Cancers  • Rhinitis/asthma • Contact dermatitis • Systemic effects 
Fibreglass Composite materials	<ul style="list-style-type: none"> • Contact dermatitis • Upper respiratory tract irritation • Pulmonary fibrosis • Neurotoxic effects (styrene)
Cutting oils and greases 	<ul style="list-style-type: none"> • Contact dermatitis/acne • Upper and lower respiratory tract irritation • Rhinitis/asthma • Hypersensitivity pneumonitis (allergic alveolitis) • Cancers 
Beryllium	<ul style="list-style-type: none"> • Berylliosis • Lung cancer • Contact dermatitis
Noise	<ul style="list-style-type: none"> • Hearing loss
Vibrating or percussive tools (hand-arm vibration)	<ul style="list-style-type: none"> • Vibration syndrome 

1. Can contain isocyanates, formaldehyde and various solvents
2. Neurotoxic, hepatotoxic, nephrotoxic, carcinogenic or teratogenic, according to safety data sheets
3. Cadmium, manganese, nickel, chrome, lead, chrome VI, etc.
4. Lung cancer is the most common. Type of cancer varies depending on the metal
5. Neurotoxic, hepatotoxic, nephrotoxic, hematotoxic, depending on metals and welding techniques
6. May be contaminated with metals (cobalt), moulds, yeasts, bacteria, nitrosamines or PAH
7. Depending on type of product used, increased risk of cancers: skin, laryngeal, pancreatic, esophageal, rectal, bladder, etc.
8. Possible effects: neurological, vascular (Raynaud), musculoskeletal

LEGEND



Key message



Details and additional information

AGRICULTURE/HORTICULTURE

RELATED TRADES

- Farmer
- Gardener
- Grower
- Horticulturist
- Nursery worker
- Wine grower

See also [Animal husbandry/animal production](#)

RISKS	HEALTH EFFECTS
<i>* Ask for the safety data sheets for the products used.</i>	
Irritating chemicals ¹	<ul style="list-style-type: none"> • Contact dermatitis • Systemic effects ²
Exhaust (including diesel fumes and PAH)	<ul style="list-style-type: none"> • Lung, bladder cancer
Exposure to carbon monoxide (CO)	<ul style="list-style-type: none"> • Symptoms linked to chronic CO exposure or persistent symptoms following acute poisoning ³
Outdoor work	<ul style="list-style-type: none"> • Skin cancer (UV radiation) • Effects linked to extreme heat or cold
Insect and animal bites Contact with bird droppings or animal feces	<ul style="list-style-type: none"> • Allergic reaction • Zoonoses ⁴
Noise	<ul style="list-style-type: none"> • Hearing loss
Agricultural equipment and road vehicles (whole-body vibration)	<ul style="list-style-type: none"> • Lumbar spine problems
Vibrating or percussive tools (hand-arm vibration)	<ul style="list-style-type: none"> • Vibration syndrome ⁵
Bacteria (clostridium tetani)	<ul style="list-style-type: none"> • Tetanus
Sensitizing substances ⁶	<ul style="list-style-type: none"> • Upper respiratory tract irritation • Rhinitis/asthma • Contact dermatitis • Hypersensitivity pneumonitis (allergic alveolitis)
Constrained postures/Repetitive movements/Effort and force/Handling loads	<ul style="list-style-type: none"> • Musculoskeletal involvement

In collaboration with IRSST

LEGEND



Key message





Details and additional information

1. Pesticides (insecticides), fungicides, herbicides, rodenticides in spray mist (finer particles)
2. Neurotoxic, hepatotoxic, nephrotoxic, hematotoxic, carcinogenic or teratogenic, according to safety data sheets
3. Digestive problems, chest pains, tiredness, memory and concentration problems, cardiovascular effects
4. Lyme disease, West Nile virus, rabies, psittacosis, histoplasmosis, leptospirosis, etc.
5. Possible effects: neurological, vascular (Raynaud), musculoskeletal
6. Moulds, pollen, grain dust and various plants

AIR TRANSPORT


RELATED TRADES


- Air controller
- Flight attendant
- Ground maintenance technician
- Pilot

RISKS	HEALTH EFFECTS
Irregular schedules/Night work 	<ul style="list-style-type: none"> • Sleep problems • Mood disorders • Digestive problems • Carcinogenic risk 2A (IARC)
Prolonged sitting or standing	<ul style="list-style-type: none"> • Venous stasis
Constrained postures/Repetitive movements/Effort and force/Handling loads	<ul style="list-style-type: none"> • Musculoskeletal involvement
Ethylene glycol and propylene glycol (aircraft deicing fluid)	<ul style="list-style-type: none"> • Eye and upper respiratory tract irritation • Contact dermatitis
Noise 	<ul style="list-style-type: none"> • Hearing loss
Sustained vigilance (air controller)	<ul style="list-style-type: none"> • Fatigue • Stress

In collaboration with IRSST

LEGEND

 Key message


 Details and additional information



1. Long work hours and jet lag
2. Mainly for helicopter pilots and ground technicians


AMBULANCE SERVICES

RELATED TRADES


- First responder
- Paramedic


 **Most health workers don't wear latex gloves anymore. As a result, the risks of allergy caused by wearing gloves is lower.**

RISKS	HEALTH EFFECTS
Constrained postures/Handling loads	<ul style="list-style-type: none"> • Musculoskeletal involvement
Bacteria/Viruses (body fluids)	<ul style="list-style-type: none"> • Hepatitis B • Hepatitis C and HIV  • Tuberculosis
Irregular schedules/Night work/ Rotating shifts 	<ul style="list-style-type: none"> • Sleep problems • Mood disorders • Digestive problems • Carcinogenic risk 2A (IARC)
Stressful and unpredictable situations/ Catastrophes	<ul style="list-style-type: none"> • Post-traumatic stress • Depression

-  1. In case of contact with blood or injury caused by contaminated sharp objects
2. Recuperating from the harmful effects linked to rotating shifts takes longer as a worker gets older

LEGEND

 Key message

 Details and additional information

ANIMAL HUSBANDRY/ANIMAL PRODUCTION

RELATED TRADES

- Beekeeper
- Breeder
- Milk producer
- Veterinarian

See also
[Agriculture / Horticulture](#)

RISKS	HEALTH EFFECTS
<i>* Ask for the safety data sheets for the products used.</i>	
Sensitizing chemicals (allergens) ¹	<ul style="list-style-type: none"> • Rhinitis/asthma • Contact dermatitis • Hypersensitivity pneumonitis (allergic alveolitis)
Irritating chemicals ²	<ul style="list-style-type: none"> • Contact dermatitis • Systemic effects ³
Cleaning products	<ul style="list-style-type: none"> • Rhinitis/asthma • Contact dermatitis • Upper respiratory tract irritation • Systemic effects ³
Toxic gases linked to putrefaction (hydrogen sulfide, ammonia) ⁴	<ul style="list-style-type: none"> • Keratoconjunctivitis • Upper and lower respiratory tract irritation • Pulmonary oedema • Neuropsychiatric disorders
Constrained postures/Repetitive movements/Effort and force/Handling loads	<ul style="list-style-type: none"> • Musculoskeletal involvement
Agricultural equipment and road vehicles (whole-body vibration)	<ul style="list-style-type: none"> • Lumbar spine problems
Outdoor work	<ul style="list-style-type: none"> • Skin cancer (UV radiation) • Effects linked to extreme heat or cold
Insect and animal bites	<ul style="list-style-type: none"> • Allergic reaction
Contact with bird droppings or animal feces	<ul style="list-style-type: none"> • Zoonoses ⁵
Direct contamination from sick animals, carcasses or blood (brucella)	<ul style="list-style-type: none"> • Brucellosis
Bioaerosols ⁶	<ul style="list-style-type: none"> • Rhinitis/asthma/bronchitis • Hypersensitivity pneumonitis (allergic alveolitis) • Gastrointestinal symptoms • Eye, skin and mucous membrane irritation • Headaches, fatigue • Organic dust toxic syndrome (ODTS) = influenza-like illness with cough and dyspnea

1. Animal hair, feathers, dander, antibiotics, latex gloves
2. Pesticides (insecticides), fungicides, herbicides, rotenticides; sprayed, nebulized or spray misted (finer particles)
3. Neurotoxic, hepatotoxic, nephrotoxic, hematotoxic, carcinogenic or teratogenic, according to safety data sheets
4. Significant exposure to these gases can kill!
5. Lyme disease, West Nile virus, rabies, psittacosis, histoplasmosis, leptospirosis, etc.
6. Bioaerosols: "...bacteria, moulds, protozoa (amoeba), viruses, dust mites (acarina), endotoxins, as well as other components of the bacterial cell membrane, fungal toxins (mycotoxins), antigens and microbial volatile organic compounds," in Dangers et risques associés aux bioaérosols et agents infectieux dans les systèmes d'égouts, la collecte des déchets, les matières recyclables et le compostage (PII Risques biologiques) – [See Bibliography](#)

In collaboration with IRSST

LEGEND



Key message



Details and additional information

AUTOMOTIVE SERVICES

RELATED TRADES

- Auto body repairer
- Auto bodybuilder
- Automotive detailing attendant
- Automotive recycler
- Car mechanic
- Heavy vehicle mechanic
[See also *Industrial Mechanics*](#)
- Painter
- Tire specialist
[See also *Rubber industry*](#)

RISKS	HEALTH EFFECTS
<p><i>*Ask what metals were used and specify the type of welding.</i> <i>**Ask for the safety data sheets for the products used.</i></p>	
Paints/Hardeners ¹	<ul style="list-style-type: none"> • Rhinitis/asthma • Contact dermatitis
Metal dust and fumes ² (machining, welding, etc.)	<ul style="list-style-type: none"> • Welder's fever (same as metal-fume fever) • Chronic bronchitis/emphysema • Granulomatous lung disease • Siderosis • Parkinsonism (manganese) • Cancers ³ • Rhinitis/asthma • Contact dermatitis • Systemic effects ⁴
Mineral oils and greases	<ul style="list-style-type: none"> • Contact dermatitis • Acne • Skin cancer
Degreasers/Cleaning products Solvents including styrene and dichloromethane	<ul style="list-style-type: none"> • Contact dermatitis • Upper respiratory tract irritation • Pancytopenia/leukemia (benzene) • Systemic effects ⁵
Exhaust (including diesel fumes and PAH)	<ul style="list-style-type: none"> • Lung, bladder cancer
Exposure to carbon monoxide (CO)	<ul style="list-style-type: none"> • Symptoms linked to chronic CO exposure or persistent symptoms following acute poisoning ⁶
Asbestos ⁷	<ul style="list-style-type: none"> • Asbestosis/pleural plaque • Lung cancer/mesothelioma
Lead (radiators)	<ul style="list-style-type: none"> • Systemic effects ⁸
Vibrating or percussive tools (hand-arm vibration)	<ul style="list-style-type: none"> • Vibration syndrome ⁹
Noise	<ul style="list-style-type: none"> • Hearing loss ¹⁰
Constrained postures/Repetitive movements/Effort and force/Handling loads	<ul style="list-style-type: none"> • Musculoskeletal involvement

1. Can contain isocyanates
2. Lead, chrome, cadmium, nickel, manganese, etc.
3. Lung cancer is the most common. Type of cancer varies depending on the metal
4. Neurotoxic, hepatotoxic, nephrotoxic, hematotoxic, carcinogenic or teratogenic, depending on metals and welding techniques
5. Neurotoxic, hepatotoxic, nephrotoxic, hematotoxic, carcinogenic or teratogenic, according to safety data sheets
6. Digestive problems, chest pains, tiredness, memory and concentration problems, cardiovascular effects
7. Still found in some brake pads
8. Neurotoxic, nephrotoxic, hematotoxic, etc.
9. Possible effects: neurological, vascular (Raynaud), musculoskeletal
10. Synergistic effects during exposure to lead or certain solvents, in noisy settings

LEGEND



Key message





Details and additional information


BAKERY

RELATED TRADES



- Baker
- Bakery plant worker
- Pastry chef

 Symptoms of allergic rhinitis usually precede those of asthma.

RISKS	HEALTH EFFECTS
<p>Flour and other components </p> <p>Spices and seasonings</p>	<ul style="list-style-type: none"> • Rhinitis/asthma • Contact dermatitis • Upper respiratory tract irritation • Hypersensitivity pneumonitis (allergic alveolitis)
<p>Latex gloves</p>	<ul style="list-style-type: none"> • Rhinitis/asthma • Contact dermatitis
<p>Repetitive movements / Handling loads</p>	<ul style="list-style-type: none"> • Musculoskeletal involvement
<p>Noise</p>	<ul style="list-style-type: none"> • Hearing loss
<p>Staggered hours/Night work</p>	<ul style="list-style-type: none"> • Sleep problems • Mood disorders • Digestive problems • Carcinogenic risk 2A (IARC)

 1. Enzymes, dust mites, additives, moulds

LEGEND

-  Key message
-  Details and additional information

CLOTHING MANUFACTURING AND CLOTHING MAINTENANCE

RELATED TRADES

Manufacturing


- Clothes designer
- Cutter
- Dressmaker
- Industrial mechanic
See [Industrial mechanics](#)
- Sewing machine operator
- Textile dyeing technician


Maintenance

- Drycleaner
- Laundry worker
- Press operator

In collaboration with IRSST

LEGEND


 Key message

 Details and additional information

RISKS

Textile fibre dust 

** Ask for the safety data sheets for the products used.*

Textile finishing products 


Drycleaning products 



Noise

**Constrained postures /
Repetitive movements**

HEALTH EFFECTS


- Upper and lower respiratory tract irritation
- Rhinitis/asthma
- Contact dermatitis

- Rhinitis/asthma
- Contact dermatitis
- Cancers 

- Contact dermatitis
- Upper respiratory tract irritation
- Neurobehavioural disorders 
- Systemic effects 

- Hearing loss


- Musculoskeletal involvement

-  1. Examples: cotton, linen, wool, silk, acetate, viscose, polyamide, polyester, polyvinyl
- 2. Colourants, dyes, bleaching agents, formaldehyde, etc.
- 3. Depends on the nature of the substance involved
- 4. Organic solvents: especially perchloroethylene, trichloroethylene, trichloroethane, etc.
- 5. Drowsiness, headaches, difficulty with balance, slurred speech, memory and concentration problems, depression (psycho-organic)
- 6. Neurotoxic, hepatotoxic, nephrotoxic, hematotoxic, carcinogenic or teratogenic, according to safety data sheets

CONSTRUCTION

RELATED TRADES

- Backhoe operator
- Boilermaker
[See also Petrochemistry](#)
[See also Welding](#)
- Bricklayer-mason
- Building locksmith
- Carpenter-joiner
- Cement finisher
- Crane operator
- Drywall installer and finisher
- Electrician
[See Electricity: Transport and distribution](#)
- Floorcovering installer
- Glassworker (glazier)
- Heavy equipment operator
- Industrial mechanic
[See Industrial mechanics](#)
- Insulator
[See Plumbing](#)
- Iron worker (concrete reinforcement installer)
[See also Welding](#)
- Laborer/
Specialized laborer
- Painter
[See Painting](#)
- Pipefitter
[See Plumbing](#)
- Plasterer
[See Painting](#)
- Refrigeration mechanic
- Roofer
- Structure assembler
- Tile layer
- Tinsmith
- Welder
[See Welding](#)

 Pay attention to synergistic effect.

RISKS	HEALTH EFFECTS
Asbestos	<ul style="list-style-type: none"> • Asbestosis/pleural plaque • Lung cancer/mesothelioma
Silica	<ul style="list-style-type: none"> • Silicosis ¹
Wood dust	<ul style="list-style-type: none"> • Rhinitis/asthma • Contact dermatitis • Nasopharyngeal, ethmoid, sinus cancer
<i>* Ask for the safety data sheets for the products used.</i>	
Paints/Varnishes/Glues ² Degreasers (solvents)	<ul style="list-style-type: none"> • Rhinitis/asthma • Contact dermatitis • Upper respiratory tract irritation • Systemic effects ³
Cement	<ul style="list-style-type: none"> • Contact dermatitis ⁴ • Chronic bronchitis (dust)
Mineral wool/Insulation	<ul style="list-style-type: none"> • Contact dermatitis • Upper respiratory tract irritation • Pulmonary fibrosis
Bitumen/Asphalt/Tar (polycyclic aromatic hydrocarbons (PAH))	<ul style="list-style-type: none"> • Skin and eye irritation • Chronic bronchitis/emphysema • Skin, lung cancer
Cutting oils and greases ⁵	<ul style="list-style-type: none"> • Contact dermatitis/acne • Upper respiratory tract irritation • Rhinitis/asthma • Hypersensitivity pneumonitis (allergic alveolitis) • Cancers ⁶
Heavy machinery (whole-body vibration)	<ul style="list-style-type: none"> • Lumbar spine problems
Vibrating or percussive tools (hand-arm vibration)	<ul style="list-style-type: none"> • Vibration syndrome ⁷
Constrained postures/Repetitive movements/Effort and force/Handling loads	<ul style="list-style-type: none"> • Musculoskeletal involvement
Noise	<ul style="list-style-type: none"> • Hearing loss
Outdoor work	<ul style="list-style-type: none"> • Skin cancer (UV radiation) • Effects linked to extreme heat or cold
Legionella (refrigeration mechanic)	<ul style="list-style-type: none"> • Legionellosis
Insect and animal bites Contact with bird droppings or animal feces	<ul style="list-style-type: none"> • Allergic reaction • Zoonoses ⁸

LEGEND



Key message



Details and additional information

1. Increased risk of tuberculosis and lung cancer
2. Can contain isocyanates, formaldehyde and various solvents
3. Neurotoxic, hepatotoxic, nephrotoxic, hematotoxic, carcinogenic or teratogenic, according to safety data sheets
4. Allergic dermatosis linked to chrome VI
5. May be contaminated with metals (cobalt), moulds, yeasts, bacteria, nitrosamines or PAH
6. Depending on type of product used, increased risk of cancers: skin, laryngeal, pancreatic, esophageal, rectal and bladder
7. Possible effects: neurological, vascular (Raynaud), musculoskeletal
8. Lyme disease, West Nile virus, rabies, histoplasmosis, etc.

ELECTRICAL AND ELECTRONIC PRODUCTS MANUFACTURING

RELATED TRADES

- Assembler
- Electromechanic
- Electrotechnician

RISKS	HEALTH EFFECTS
<i>*Ask what metals were used and specify the type of welding. **Ask for the safety data sheets for the products used.</i>	
Epoxy resin ¹	<ul style="list-style-type: none"> • Contact dermatitis
Solvents ²	<ul style="list-style-type: none"> • Contact dermatitis • Upper respiratory tract irritation • Systemic effects ³
Talc (release agent)	<ul style="list-style-type: none"> • Upper respiratory tract irritation • Talcose
Metal dust and fumes ⁴	<ul style="list-style-type: none"> • Welder's fever (same as metal-fume fever) • Chronic bronchitis/emphysema • Granulomatous lung disease • Berylliosis (Beryllium) • Parkinsonism (manganese) • Siderosis • Cancers ⁵ • Rhinitis/asthma • Contact dermatitis • Systemic effects ⁶
Colophony in brazing flux	<ul style="list-style-type: none"> • Rhinitis/asthma
Noise	<ul style="list-style-type: none"> • Hearing loss
Constrained postures/ Repetitive movements	<ul style="list-style-type: none"> • Musculoskeletal involvement

1. Often used in electronic components
2. Examples: trichlorethylene, acetone, isopropanol, formaldehyde, styrene, etc.
3. Neurotoxic, hepatotoxic, nephrotoxic, hematotoxic, carcinogenic or teratogenic, according to safety data sheets
4. Examples: lead, cadmium, mercury, beryllium, copper, manganese dioxide, arsenic, phosphorus, tin, boron and lithium
5. Lung cancer is the most common. Type of cancer varies depending on the metal
6. Neurotoxic, hepatotoxic, nephrotoxic, hematotoxic, depending on metals and welding techniques

In collaboration with IRSST

LEGEND



Key message



Details
and additional
information

ELECTRICITY: TRANSPORT AND DISTRIBUTION

RELATED TRADES

- Electrician
- [See also Construction](#)
- Lineworker

RISKS	HEALTH EFFECTS
Asbestos ¹	<ul style="list-style-type: none"> • Asbestosis/pleural plaque • Lung cancer/mesothelioma
Silica ²	<ul style="list-style-type: none"> • Silicosis ³
Plaster and cement dust	<ul style="list-style-type: none"> • Upper respiratory tract irritation • Chronic bronchitis (dust) • Contact dermatitis
<i>* Ask for the safety data sheets for the products used.</i>	
Solvents (chlorinated, including PCB)	<ul style="list-style-type: none"> • Contact dermatitis • Systemic effects ⁴ • Lung cancer
Noise	<ul style="list-style-type: none"> • Hearing loss
Vibrating or percussive tools (hand-arm vibration)	<ul style="list-style-type: none"> • Vibration syndrome ⁵
Outdoor work	<ul style="list-style-type: none"> • Skin cancer (UV radiation) • Effects linked to extreme heat or cold
Insect and animal bites Contact with bird droppings or animal feces	<ul style="list-style-type: none"> • Allergic reaction • Zoonoses ⁶
Constrained postures/Repetitive movements/Effort and force/Handling loads	<ul style="list-style-type: none"> • Musculoskeletal involvement
Irregular schedules/Night work (in emergency situation)	<ul style="list-style-type: none"> • Sleep problems • Mood disorders • Digestive problems • Carcinogenic risk 2A (IARC)

1. Especially in renovation of buildings built before 1990
2. Plaster of Paris and cement can contain silica
3. Increased risk of tuberculosis and lung cancer
4. Neurotoxic, hepatotoxic, nephrotoxic, hematotoxic, carcinogenic or teratogenic, according to safety data sheets
5. Possible effects: neurological, vascular (Raynaud), musculoskeletal
6. Lyme disease, West Nile virus, rabies, histoplasmosis, etc.

LEGEND



Key message



Details and additional information

EXTERMINATION



RELATED TRADES

- Exterminator
- Pest control attendant

RISKS	HEALTH EFFECTS
<i>* Ask for the safety data sheets for the products used.</i>	
Toxic chemicals 1	<ul style="list-style-type: none"> • Contact dermatitis • Systemic effects 2
Insect bites	<ul style="list-style-type: none"> • Allergic reaction • Lyme disease • West Nile virus
Animal bites Contact with bird droppings or animal feces Contaminated dust/Insect exoskeletons/ Animal hair	<ul style="list-style-type: none"> • Rhinitis/asthma • Contact dermatitis • Zoonoses 3
Constrained postures/Repetitive movements	<ul style="list-style-type: none"> • Musculoskeletal involvement

1. Pesticides (insecticides), fungicides, herbicides, rodenticides; sprayed, nebulized or spray misted (finer particles)
2. Neurotoxic, hepatotoxic, nephrotoxic, hematotoxic, carcinogenic or teratogenic, according to safety data sheets
3. Rabies, psittacosis, histoplasmosis, leptospirosis, hantavirus, etc.


LEGEND




-  Key message
-  Details and additional information

FIREFIGHTING SERVICES


RELATED TRADES


- Firefighter
- First responder


 **Be careful: During clearing operations (smouldering fire), there are still risks linked to combustion smoke.**


RISKS	HEALTH EFFECTS
Combustion smoke (various materials, including soot on clothing and cross-contamination)	<ul style="list-style-type: none"> • Various respiratory conditions • Cancers 
Exhaust (including diesel fumes and PAH)	<ul style="list-style-type: none"> • Lung, bladder cancer
Asbestos	<ul style="list-style-type: none"> • Asbestosis/pleural plaque • Lung cancer/mesothelioma
Irregular schedules/Night work 	<ul style="list-style-type: none"> • Sleep problems • Mood disorders • Digestive problems • Carcinogenic risk 2A (IARC)
Dangerous and unpredictable situations/ Catastrophes	<ul style="list-style-type: none"> • Post-traumatic stress • Depression
Constrained postures/Effort and force/ Handling loads/Wearing heavy equipment (around 35 kg)	<ul style="list-style-type: none"> • Musculoskeletal involvement
Exposure to extreme temperatures	<ul style="list-style-type: none"> • Effects linked to extreme heat or cold
Bacteria/Viruses (body fluids), for first responders	<ul style="list-style-type: none"> • Hepatitis B • Hepatitis C and HIV  • Tuberculosis


LEGEND

 Key message

 Details and additional information

 1. Cancers recognized by CNESST to be linked to work: kidney, bladder, laryngeal, lung, multiple myeloma, non-Hodgkins lymphoman, mesothelioma, melanoma and prostate

 2. Long work hours

 3. In case of contact with blood or injury caused by contaminated sharp object

FOOD/BAR SERVICES

RELATED TRADES

- Assistant cook
- Bartender
- Cook
- Server

RISKS	HEALTH EFFECTS
Constrained postures/Repetitive movements/Effort and force/Handling loads	<ul style="list-style-type: none"> • Musculoskeletal involvement
Prolonged standing	<ul style="list-style-type: none"> • Venous stasis
Contact with sensitizing foods (allergens) ¹	<ul style="list-style-type: none"> • Contact dermatitis • Rhinitis/asthma
Cleaning products Disinfectants	<ul style="list-style-type: none"> • Eye and upper respiratory tract irritation • Contact dermatitis • Rhinitis/asthma
Dishwashing Handling fruit and sweetened juices	<ul style="list-style-type: none"> • Hand and finger warts • Skin and nail fungus • Paronychia of the finger
Smoke from cooking meat (benzopyrene)	<ul style="list-style-type: none"> • Carcinogenic risk 1 (IARC)
Working under time constraints Client requirements Harassment	<ul style="list-style-type: none"> • Stress, anxiety • Depression
Irregular schedules/Night work	<ul style="list-style-type: none"> • Sleep problems • Mood disorders • Digestive problems • Carcinogenic risk 2A (IARC)
Noise	<ul style="list-style-type: none"> • Hearing loss
Extreme heat	<ul style="list-style-type: none"> • Fatigue • Heat stroke

¹ 1. Animal protein (meat, liver, fish, crustaceans, shellfish), plant protein (vegetables, fruits, spices, flour), enzymes and food additives (amylase, benzoic acid, etc.)

LEGEND



Key message




Details and additional information


FOOD PREPARATION AND PROCESSING

RELATED TRADES

- Butcher
- Food inspector
- Meat boner
- Slaughterhouse worker

See also [Maintenance/Cleaning/Laundry services](#)

 Don't overlook the importance of working in cold conditions and handling cold raw materials.

RISKS	HEALTH EFFECTS
Constrained postures/Repetitive movements/Effort and force/Handling loads/Working in the cold/Wearing gloves	<ul style="list-style-type: none"> • Musculoskeletal involvement
Added ingredients (prepared foods) 	<ul style="list-style-type: none"> • Rhinitis/asthma • Contact dermatitis
Infected poultry	<ul style="list-style-type: none"> • Salmonellosis • Campylobacter • Psittacosis
Various infection risks	<ul style="list-style-type: none"> • Warts • Salmonellosis • Dermatomycosis • Leptospirosis • Brucellosis
Noise	<ul style="list-style-type: none"> • Hearing loss


LEGEND



Key message



Details and additional information

 1. Use of ingredients in secondary food processing: additives, spices, fruits, animal proteins, seafood, crustaceans

FORESTRY: LOGGING AND SAWMILLS

RELATED TRADES

Logging

- Brush cutter
- Feller (lumberjack)
- Forestry engineer
- Forestry technician
- Mechanic or equipment repairman in mobile workshop
- Mechanized equipment operator
- Reforester (tree planter)
- Silviculture worker
- Tree pruner

Sawmills


- Lumber dryer operator
- Sawmill machine operator
- Sawyer
- Sharpener
- Wood classifier

 Exposure to whole-body and hand-arm vibration can be significant.

RISKS	HEALTH EFFECTS
Vibrating or percussive tools (hand-arm vibration)	• Vibration syndrome ¹
Heavy machinery (whole-body vibration)	• Lumbar spine problems
Constrained postures/Repetitive movements/Effort and force/Handling loads	• Musculoskeletal involvement
Noise	• Hearing loss
Exhaust (including diesel fumes and PAH)	• Lung, bladder cancer
Exposure to carbon monoxide (CO)	• Symptoms linked to chronic CO exposure or persistent symptoms following acute poisoning ²
Outdoor work	• Skin cancer (UV radiation) • Effects linked to extreme heat or cold
Wood dust ³	• Contact dermatitis • Rhinitis/asthma • Nasopharyngeal, ethmoid, sinus cancer
Metal dust (sharpener) ⁴	• Contact dermatitis • Rhinitis/asthma • Pulmonary fibrosis • Polycythemia (Cobalt) • Possibility of cardiomyopathy and altered thyroid function (Cobalt) • Systemic effects (lead) ⁵
Asbestos (lumber dryer)	• Asbestosis/pleural plaque • Lung cancer/mesothelioma
Allergy-causing plants (giant hogweed and poison ivy)	• Contact dermatitis • Phytodermatitis
Insect bites	• Allergic reaction • Lyme disease • West Nile virus
Animal bites Contact with bird droppings or animal feces Contaminated dust/Insect exoskeletons/ Animal hair	• Rhinitis/asthma • Allergic contact dermatitis • Zoonoses ⁶

LEGEND

 Key message

 Details and additional information

1. Possible effects: neurological, vascular (Raynaud), musculoskeletal
2. Digestive problems, chest pains, tiredness, memory and concentration problems, cardiovascular effects
3. Some sensitizing substances (allergens) are also found on tree bark
4. Cobalt, lead, other metals
5. Neurotoxic, nephrotoxic, hematotoxic, etc.
6. Rabies, tularaemia, histoplasmosis, etc.



FUNERAL SERVICES

RELATED TRADES

- Embalmer
- Funeral home worker
- Grave digger
- Medical examiner
- Pathologist

RISKS	HEALTH EFFECTS
Formaldehyde	<ul style="list-style-type: none"> • Eye irritation • Upper respiratory tract irritation • Rhinitis/asthma • Contact dermatitis • Nasopharyngeal cancer • Leukemia
Glutaraldehyde	<ul style="list-style-type: none"> • Upper respiratory tract irritation • Rhinitis/asthma • Contact dermatitis
Isopropanol/Methanol/Phenol	<ul style="list-style-type: none"> • Contact dermatitis • Upper respiratory tract irritation • Central nervous system injury
Bacteria/Viruses (body fluids)	<ul style="list-style-type: none"> • Hepatitis B • Hepatitis C and HIV ¹ • Tuberculosis
Constrained postures/Repetitive movements/Effort and force/Handling loads	<ul style="list-style-type: none"> • Musculoskeletal involvement

LEGEND



-  Key message
-  Details and additional information



¹ In case of injury caused by contaminated sharp objects

HAIR STYLING/AESTHETIC SERVICES

RELATED TRADES


- Beautician
- Hair colourist
- Hairdresser
- Manicurist
- Pedicurist


RISKS	HEALTH EFFECTS
<i>* Ask for the safety data sheets for the products used.</i>	
Sensitizing chemicals (allergens) 	<ul style="list-style-type: none"> • Rhinitis/asthma • Contact dermatitis
Irritating chemicals 	<ul style="list-style-type: none"> • Contact dermatitis • Upper and lower respiratory tract and mucous membranes irritation
Aromatic amines	<ul style="list-style-type: none"> • Bladder cancer
Constrained postures / Repetitive movements	<ul style="list-style-type: none"> • Musculoskeletal involvement
Prolonged standing	<ul style="list-style-type: none"> • Venous stasis

-  1. Can be found in shampoos, hair colouring, nickel-plated scissors, perfumes, essential oils, varnish lacquers, acrylates, wax rosin, etc.
-  2. Especially in hair bleach and perm products

In collaboration with IRSST

LEGEND

 Key message

 Details and additional information


HANDLING/STORAGE


RELATED TRADES

- Forklift truck driver
- Material handler
- Mover
- Storekeeper
- Warehouse worker

RISKS	HEALTH EFFECTS
Exhaust (including diesel fumes and PAH)	• Lung, bladder cancer
Exposure to carbon monoxide (CO)	• Symptoms linked to chronic CO exposure or persistent symptoms following acute poisoning ¹
<i>* Ask for the safety data sheets for the products used.</i>	
Chemicals handled or stored, in case of a spill	• Systemic effects ² • Contact dermatitis
Ammonia gas (refrigerated warehouses)	• Upper respiratory tract irritation • Asthma variant (RADS) ³
Nitrosamines (tire warehouses)	• Upper respiratory tract irritation • Cancers ⁴
Whole-body vibration (road vehicles/lift trucks)	• Lumbar spine problems
Constrained postures/Repetitive movements/Effort and force/Handling loads	• Musculoskeletal involvement

LEGEND

 Key message

 Details and additional information

1. Digestive problems, chest pains, tiredness, memory and concentration problems, cardiovascular effects
2. Neurotoxic, hepatotoxic, nephrotoxic, hematotoxic, carcinogenic or teratogenic, according to safety data sheets
3. Reactive Airways Dysfunction Syndrome (RADS) is typically associated with substantial exposure to a contaminant, but more and more asthma specialists consider it can also appear as a result of significant repeated exposure
4. Associated cancers: nasal cavity, lung, liver, kidney (according to Programme de santé sectoriel Transport et entreposage – [See Bibliography](#))

INDUSTRIAL MECHANICS



RELATED TRADES

- Industrial mechanic
See also [Construction](#)
- Maintenance worker
See also [Welding](#)
- Stationary machine mechanic
See also [Petrochemistry](#)
See also [Rubber industry](#)

RISKS	HEALTH EFFECTS
<i>*Ask for the safety data sheets for the products used.</i>	
Degreasers/Solvents	<ul style="list-style-type: none"> • Contact dermatitis • Upper respiratory tract irritation • Pancytopenia/leukemia (benzene) • Systemic effects ¹
Metal dust and fumes (machining, welding) ²	<ul style="list-style-type: none"> • Welder's fever (same as metal-fume fever) • Chronic bronchitis/emphysema • Granulomatous lung disease • Parkinsonism (manganese) • Siderosis • Cancers ³ • Rhinitis/asthma • Contact dermatitis • Systemic effects ⁴
Cutting oils and greases ⁵	<ul style="list-style-type: none"> • Contact dermatitis/acne • Upper respiratory tract irritation • Rhinitis/asthma • Hypersensitivity pneumonitis (allergic alveolitis) • Cancers ⁶
Silica ⁷	<ul style="list-style-type: none"> • Silicosis ⁸
Exhaust (including diesel fumes and PAH)	<ul style="list-style-type: none"> • Lung, bladder cancer
Exposure to carbon monoxide(CO)	<ul style="list-style-type: none"> • Symptoms linked to chronic CO exposure or persistent symptoms following acute poisoning ⁹
Noise	<ul style="list-style-type: none"> • Hearing loss • Overuse of voice
Vibrating or percussive tools (hand-arm vibration)	<ul style="list-style-type: none"> • Vibration syndrome ¹⁰
UV radiation (welding)	<ul style="list-style-type: none"> • Skin cancer • Melanoma of the eye • Cataracts
Constrained postures/Repetitive movements/Effort and force/Handling loads	<ul style="list-style-type: none"> • Musculoskeletal involvement
Irregular schedules/Night work/ Rotating shifts	<ul style="list-style-type: none"> • Sleep problems • Mood disorders • Digestive problems • Carcinogenic risk 2A (IARC)

In collaboration with IRSST

LEGEND

-  Key message
-  Details and additional information

1. Neurotoxic, hepatotoxic, nephrotoxic, hematotoxic, carcinogenic or teratogenic, according to safety data sheets
2. Cadmium, manganese, nickel, chrome. etc.
3. Lung cancer is the most common. Type of cancer varies depending on the metal
4. Neurotoxic, hepatotoxic, nephrotoxic, hematotoxic, depending on metals and welding techniques
5. May be contaminated with metals (cobalt), moulds, yeasts, bacteria, nitrosamines or PAH
6. Depending on type of product used, increased risk of cancer: skin, laryngeal, pancreatic, esophageal, rectal, bladder, etc.
7. Refractory ceramic dust
8. Increased risk of tuberculosis and lung cancer
9. Digestive problems, chest pains, tiredness, memory and concentration problems, cardiovascular effects
10. Possible effects: neurological, vascular (Raynaud), musculoskeletal

INPATIENT AND OUTPATIENT HEALTH SERVICES

RELATED TRADES

- Hygiene and cleanliness attendant
- Inhalation therapy technician
- Medical imaging and radiotherapy technician
- Nurse
- Nursing assistant
- Orderly

See also
[Laboratory/Research and development](#)

RISKS	HEALTH EFFECTS
Bacteria, viruses, parasites	<ul style="list-style-type: none"> • Hepatitis B • Hepatitis C and HIV ¹ • Tuberculosis • Pediculosis • Scabies • Gastroenteritis
Ionizing radiation	<ul style="list-style-type: none"> • Cancers ²
Cytostatic agents	<ul style="list-style-type: none"> • Cancers ³
Antiseptics	<ul style="list-style-type: none"> • Asthma/rhinitis • Contact dermatitis
Disinfectants	
Antibiotics	
Latex ⁴	<ul style="list-style-type: none"> • Asthma/rhinitis • Contact dermatitis
Ethylene oxide (sterilization)	<ul style="list-style-type: none"> • Skin, mucous membrane, respiratory tract irritation • Decreased sense of taste and smell • Motor and sensory neuropathy • Cataracts • Asthma/rhinitis • Contact dermatitis • Cancers ⁵ • Possible mutagenic, fetotoxic and fertility effects
Cleaning products containing ammonia, phenolic compounds, etc.	<ul style="list-style-type: none"> • Eye and upper respiratory tract irritation • Contact dermatitis • Rhinitis/asthma
Constrained postures/Effort and force/ Handling loads	<ul style="list-style-type: none"> • Musculoskeletal involvement
Irregular schedules/Night work/ Rotating shifts	<ul style="list-style-type: none"> • Sleep problems • Mood disorders • Digestive problems • Carcinogenic risk 2A (IARC)
Verbal/Physical assaults	<ul style="list-style-type: none"> • Anxiety • Post-traumatic stress • Depression
High mental workload	<ul style="list-style-type: none"> • Anxiety, stress • Burn-out, depression

1. In case of contact with blood or injury caused by contaminated sharp objects
2. Especially leukemia and lung cancer. Other possible types: thyroid, bladder, kidney, brain, etc.
3. Acute myeloid leukemia, bladder, lung
4. Most health workers don't wear latex gloves anymore. As a result, the risks of allergy caused by wearing gloves is lower.
5. Hematopoietic system, breast

LEGEND



Key message



Details and additional information


LABORATORY/RESEARCH AND DEVELOPMENT


RELATED TRADES


- Animal attendant
- Biochemist
- Biologist
- Chemist
- Forensic laboratory worker
- Laboratory technician
- Pharmaceutical sector worker
- Pharmacist
- Researcher





In collaboration with IRSST


LEGEND

 Key message

 Details and additional information

 There are many products used and materials handled that can have different types of effects. Therefore it is essential to get detailed information about the chemicals used.

RISKS	HEALTH EFFECTS
<i>* Ask for the safety data sheets for the products used.</i>	
Sensitizing substances (allergens) 	<ul style="list-style-type: none"> • Rhinitis/asthma • Contact dermatitis
Irritating chemicals 	<ul style="list-style-type: none"> • Irritant effects • Systemic effects 
Bacteria, viruses, moulds, etc. (body fluids)	<ul style="list-style-type: none"> • Hepatitis B • Hepatitis C and HIV  • Tuberculosis • Meningitis
Constrained postures / Repetitive movements	<ul style="list-style-type: none"> • Musculoskeletal involvement

-  1. Pharmaceutical products, animal hair and some chemicals
- 2. Especially various types of solvents such as carbon tetrachloride and chloroform. There is a very low risk of silicosis when using silicagel in chromatography
- 3. Neurotoxic, hepatotoxic, nephrotoxic, hematotoxic, carcinogenic or teratogenic, according to safety data sheets
- 4. In case of injury caused by contaminated sharp objects

LEATHER AND FUR


RELATED TRADES


- Dyer
- Manufacturing attendant
- Tanner







See also [Clothing manufacturing and clothing maintenance](#)







In collaboration with IRSST

LEGEND

 Key message

 Details and additional information

RISKS	HEALTH EFFECTS
Leather dust/Animal hair	<ul style="list-style-type: none"> • Upper and lower respiratory tract irritation • Hypersensitivity pneumonitis (allergic alveolitis) • Rhinitis/asthma • Contact dermatitis • Nasosinus cancer
<i>* Ask for the safety data sheets for the products used.</i>	
Disinfectants 	<ul style="list-style-type: none"> • Upper respiratory tract irritation • Contact dermatitis
Tanning products 	<ul style="list-style-type: none"> • Upper and lower respiratory tract irritation • Rhinitis/asthma • Contact dermatitis • Cancers 
Finishing products 	<ul style="list-style-type: none"> • Upper and lower respiratory tract irritation • Rhinitis/asthma (colophony) • Contact dermatitis • Systemic effects  • Cancers 
Noise	<ul style="list-style-type: none"> • Hearing loss
Constrained postures/Repetitive movements/Effort and force/Handling loads	<ul style="list-style-type: none"> • Musculoskeletal involvement

-  1. Examples: chlorine, lime, caustic soda
-  2. Examples: chromium VI and aluminium salts, formaldehyde
-  3. Associated cancers: lung, nasopharyngeal and sinus, leukemia
-  4. Dyes, varnishes, glues, oils, resins, colourants, etc.
-  5. Neurotoxic, hepatotoxic, nephrotoxic, carcinogenic or teratogenic, according to safety data sheets
-  6. Depending on type of product used

MAINTENANCE/CLEANING/LAUNDRY SERVICES

RELATED TRADES

- Caretaker
- Hotel room attendant
- Maintenance worker (hotel, school, public building, office, home, etc.)
- Maintenance worker in industrial setting

See the area of activity concerned

 For maintenance workers in industrial settings, risks are also linked to the company's type of production.

RISKS	HEALTH EFFECTS
<i>* Ask for the safety data sheets for the products used.</i>	
Cleaning products containing ammonia, phenolic compounds, etc.	<ul style="list-style-type: none"> • Eye and upper respiratory tract irritation • Contact dermatitis • Rhinitis/asthma
Organic solvents (perchloroethylene, trichloroethylene, trichloroethane, etc.)	<ul style="list-style-type: none"> • Contact dermatitis • Upper respiratory tract irritation • Systemic effects ¹
Latex gloves	<ul style="list-style-type: none"> • Rhinitis/asthma • Contact dermatitis
Bacteria, viruses	<ul style="list-style-type: none"> • Hepatitis A • Hepatitis B • Hepatitis C and HIV ² • Infections: gastrointestinal, skin, nail, etc.
Moulds (heat and humidity)	<ul style="list-style-type: none"> • Rhinitis/asthma • Contact dermatitis • Rhinosinusitis • Hypersensitivity pneumonitis (allergic alveolitis) • Systemic effects, especially neuropsychological
Prolonged standing	<ul style="list-style-type: none"> • Venous stasis
Asbestos ³	<ul style="list-style-type: none"> • Asbestosis/pleural plaque • Lung cancer/mesothelioma
Constrained postures/Repetitive movements/Effort and force/Handling loads	<ul style="list-style-type: none"> • Musculoskeletal involvement
Irregular schedules/Night work/Rotating shifts	<ul style="list-style-type: none"> • Sleep problems • Mood disorders • Digestive problems • Carcinogenic risk 2A (IARC)

LEGEND



Key message



Details and additional information

1. Neurotoxic, hepatotoxic, nephrotoxic, hematotoxic, carcinogenic or teratogenic, according to safety data sheets
2. In case of injury caused by contaminated sharp objects
3. During maintenance of interior finishes and stripping of vinyl asbestos tile

METALLURGY (METAL TRANSFORMATION, REFINING AND MACHINING)

RELATED TRADES



- Boilermaker
[See also Construction](#)
[See also Petrochemy](#)
[See also Welding](#)
- Kiln attendant
- Machine operator
- Machinist
- Melter
- Metal reclaimer
- Mould maker
- Sheet metal worker
[See also Welding](#)
- Steelmaker
- Welder
[See also Welding](#)

 The array of risks encountered in this major industrial sector means the physician must be especially vigilant with these workers.

RISKS	HEALTH EFFECTS
*Ask what metals were used and specify the type of welding. **Ask for the safety data sheets for the products used.	
Metal dust and fumes ¹ (metal casting, machining, welding, etc.)	<ul style="list-style-type: none"> • Welder's/metal-fume fever • Chronic bronchitis/emphysema • Granulomatous lung disease • Parkinsonism (manganese) • Siderosis • Cancers ² • Rhinitis/asthma • Contact dermatitis • Systemic effects ³
Primers/Paints ⁴	<ul style="list-style-type: none"> • Rhinitis/asthma • Contact dermatitis • Upper respiratory tract irritation • Systemic effects ⁵
Degreasers/Solvents	<ul style="list-style-type: none"> • Contact dermatitis • Upper respiratory tract irritation • Pancytopenia/leukemia (benzene) • Systemic effects ⁵
Volatile coal-tar pitch (benzene soluble)	<ul style="list-style-type: none"> • Skin, lung cancer
Cutting oils and greases ⁶	<ul style="list-style-type: none"> • Contact dermatitis/acne • Upper respiratory tract irritation • Rhinitis/asthma • Hypersensitivity pneumonitis (allergic alveolitis) • Cancers ⁷
Beryllium	<ul style="list-style-type: none"> • Berylliosis • Lung cancer • Contact dermatitis
Silica	<ul style="list-style-type: none"> • Silicosis ⁸
PAH	<ul style="list-style-type: none"> • Lung, bladder cancer
Noise	<ul style="list-style-type: none"> • Hearing loss ⁹
UV radiation (welding)	<ul style="list-style-type: none"> • Skin cancer • Melanoma of the eye • Cataracts
Infrared radiation (IR) (molten metal)	<ul style="list-style-type: none"> • Cataracts
Ionizing radiation (quality control)	<ul style="list-style-type: none"> • Contact dermatitis • Leukemia • Lung cancer
Vibrating or percussive tools (hand-arm vibration)	<ul style="list-style-type: none"> • Vibration syndrome ¹⁰
Constrained postures/Repetitive movements/Effort and force/Handling loads	<ul style="list-style-type: none"> • Musculoskeletal involvement
Rotating shifts/Night work	<ul style="list-style-type: none"> • Sleep problems • Mood disorders • Digestive problems • Carcinogenic risk 2A (IARC)

In collaboration with IRSST

LEGEND

-  Key message
-  Details and additional information

- ¹ Cadmium, manganese, nickel, copper, chrome, cobalt, lead, iron, zinc, steel, etc.
- ² Lung cancer is the most common. Type of cancer varies depending on the metal
- ³ Neurotoxic, hepatotoxic, nephrotoxic, hematotoxic, depending on metals and welding techniques
- ⁴ Can contain amines, colophony and isocyanates
- ⁵ Neurotoxic, hepatotoxic, nephrotoxic, hematotoxic, carcinogenic or teratogenic, according to safety data sheets
- ⁶ May be contaminated with metals (cobalt), moulds, yeasts, bacteria, nitrosamines and PAH
- ⁷ Depending on type of product used, increased risk of cancer: skin, laryngeal, pancreatic, esophageal, rectal, bladder, etc.
- ⁸ Increased risk of tuberculosis and lung cancer
- ⁹ Synergistic effects during exposure to lead or certain solvents, in noisy settings
- ¹⁰ Possible effects: neurological, vascular (Raynaud), musculoskeletal

MINES AND QUARRIES: EXTRACTION

RELATED TRADES

- Drill operator
- Dynamiter
- Engineer
- Heavy equipment operator
- Heavy vehicle driver
- Interior finisher
- Laborer
- Miner
- Plant maintenance attendant
- Technologist

RISKS	HEALTH EFFECTS
Asbestos ¹	<ul style="list-style-type: none"> • Asbestosis/pleural plaque • Lung cancer/mesothelioma
Silica	<ul style="list-style-type: none"> • Silicosis ²
<i>* Ask for the safety data sheets for the products used.</i>	
Mineral and metal dust ³	<ul style="list-style-type: none"> • Chronic bronchitis/emphysema • Granulomatous lung disease • Parkinsonism (manganese) • Siderosis • Cancers ⁴ • Rhinitis/asthma • Contact dermatitis • Systemic effects ⁵
Radon (especially uranium mines)	<ul style="list-style-type: none"> • Lung cancer
Exhaust (including diesel fumes and PAH)	<ul style="list-style-type: none"> • Lung, bladder cancer
Exposure to carbon monoxide (CO)	<ul style="list-style-type: none"> • Symptoms linked to chronic CO exposure or persistent symptoms following acute poisoning ⁶
Noise	<ul style="list-style-type: none"> • Hearing loss
Vibrating or percussive tools (hand-arm vibration)	<ul style="list-style-type: none"> • Vibration syndrome ⁷
Heavy machinery (whole-body vibration)	<ul style="list-style-type: none"> • Lumbar spine problems
Constrained postures/Repetitive movements/Effort and force/Handling loads	<ul style="list-style-type: none"> • Musculoskeletal involvement
Outdoor work	<ul style="list-style-type: none"> • Skin cancer (UV radiation) • Effects linked to extreme heat or cold

In collaboration with IRSST

LEGEND



Key message




Details and additional information


1. Individuals who have worked in asbestos mines and mills
2. Increased risk of tuberculosis and lung cancer
3. For example: gold, iron, nickel, cobalt, copper, niobium, titanium, zinc, arsenic, beryllium, chrome, mercury and lead, depending on the agent involved
4. Lung cancer is the most common. Type of cancer varies depending on the metal or mineral ore.
5. Neurotoxic, hepatotoxic, nephrotoxic, hematotoxic, depending on the metal or mineral ore, according to safety data sheets
6. Digestive problems, chest pains, tiredness, memory and concentration problems, cardiovascular effects
7. Possible effects: neurological, vascular (Raynaud), musculoskeletal

OFFICE WORK/PUBLIC ADMINISTRATION

RELATED TRADES


- Administrative assistant
- Executive employee
- Manager
- Office worker
- Research officer


RISKS	HEALTH EFFECTS
Poor air quality 	<ul style="list-style-type: none"> • Rhinosinusitis • Asthma • Contact dermatitis • Eye and upper respiratory tract irritation
Constrained postures / Repetitive movements	<ul style="list-style-type: none"> • Musculoskeletal involvement
Prolonged sitting	<ul style="list-style-type: none"> • Venous stasis
Work on video display terminals (VDT)	<ul style="list-style-type: none"> • Visual disorders • Musculoskeletal involvement

 1. CO₂ accumulation, presence of volatile organic compounds (VOC), dust, mites, moulds, ozone, etc.

In collaboration with IRSST

LEGEND

 Key message

 Details
and additional
information

PAINTING

RELATED TRADES

- Painter in building (interior, exterior)
- Painter in workshop
- Plasterer

See also [Construction](#)

RISKS	HEALTH EFFECTS
<i>* Ask for the safety data sheets for the products used.</i>	
Primers/Paints/Varnishes ¹	<ul style="list-style-type: none"> • Rhinitis/asthma • Contact dermatitis • Systemic effects ²
Pigments ³	<ul style="list-style-type: none"> • Upper respiratory tract irritation • Rhinitis/asthma • Contact dermatitis • Cancer ⁴
Epoxy resin ⁵	<ul style="list-style-type: none"> • Contact dermatitis
Degreasers/Solvents Stripping compounds	<ul style="list-style-type: none"> • Contact dermatitis • Upper respiratory tract irritation • Pancytopenia/leukemia (benzene) • Systemic effects ²
Lead ⁶	<ul style="list-style-type: none"> • Systemic effects ⁷
Asbestos ⁸	<ul style="list-style-type: none"> • Asbestosis/pleural plaque • Lung cancer/mesothelioma
Silica ⁹	<ul style="list-style-type: none"> • Silicosis ¹⁰
Outdoor work	<ul style="list-style-type: none"> • Skin cancer (UV radiation) • Effects linked to extreme heat or cold
Noise	<ul style="list-style-type: none"> • Hearing loss
Vibrating or percussive tools (hand-arm vibration)	<ul style="list-style-type: none"> • Vibration syndrome ¹¹
Constrained postures/Repetitive movements/Effort and force/Handling loads	<ul style="list-style-type: none"> • Musculoskeletal involvement

1. Can contain isocyanates and formaldehyde
2. Neurotoxic, hepatotoxic, nephrotoxic, hematotoxic, carcinogenic or teratogenic, according to safety data sheets
3. Can contain metals, including chrome, cadmium, nickel, cobalt, mercury and titanium
4. Lung cancer is the most common. Type of cancer varies depending on the metal
5. Often used in electronic components
6. Stripping of structures coated with lead-containing paint
7. Neurotoxic, nephrotoxic, hematotoxic, etc.
8. Some older coverings (pre-1975) can contain asbestos
9. Can be found in drywall compound or plaster of Paris. Also when sandblasting
10. Increased risk of tuberculosis and lung cancer
11. Possible effects: neurological, vascular (Raynaud), musculoskeletal

In collaboration with IRSST

LEGEND



Key message



Details
and additional
information

PETROCHEMY

RELATED TRADES

- Boilermaker
[See also Construction](#)
[See also Welding](#)
- Chemist
[See also Rubber industry](#)
- Industrial pipefitter
[See also Plumbing](#)
- Operator – fertilizer manufacturing
- Refinery operator
- Stationary machine mechanic
[See also Industrial mechanics](#)
- Technician
- Welder
[See also Welding](#)

In collaboration with IRSST

LEGEND



Key message



Details and additional information



Operators' work shifts sometimes last 12 hours, leading to proportionately lower standards regarding exposure to chemical contaminants and noise.

RISKS	HEALTH EFFECTS
* Ask for the safety data sheets for the products used.	
Substances linked to the refining process ¹	<ul style="list-style-type: none"> • Systemic effects ² • Cancers ³ • Rhinitis/asthma • Contact dermatitis
Hydrogen sulfide	<ul style="list-style-type: none"> • Keratoconjunctivitis • Upper and lower respiratory tract irritation • Pulmonary oedema • Neuropsychiatric disorders
Bitumen/Asphalt/Tar	<ul style="list-style-type: none"> • Contact dermatitis • Skin, lung cancer
Mineral oils and greases	<ul style="list-style-type: none"> • Contact dermatitis • Acne • Skin cancer
Thermal degradation products (including PAH)	<ul style="list-style-type: none"> • Upper respiratory tract irritation • Lung, bladder cancer
Asbestos in pipe thermal insulation	<ul style="list-style-type: none"> • Asbestosis/pleural plaque • Lung cancer/mesothelioma
Noise	<ul style="list-style-type: none"> • Hearing loss
Vibrating or percussive tools (hand-arm vibration)	<ul style="list-style-type: none"> • Vibration syndrome ⁴
Constrained postures/Repetitive movements/Effort and force/Handling loads	<ul style="list-style-type: none"> • Musculoskeletal involvement
Irregular schedules/Night work/Rotating shifts	<ul style="list-style-type: none"> • Sleep problems • Mood disorders • Digestive problems • Carcinogenic risk 2A (IARC)



1. Solvents, aromatic amines, phenols, ketones, benzene, gasoline, kerosene, butadiene, etc.
2. Neurotoxic, hepatotoxic, nephrotoxic, hematotoxic, carcinogenic or teratogenic, according to safety data sheets
3. Depends on the nature of the substance involved
4. Possible effects: neurological, vascular (Raynaud), musculoskeletal

PLASTICS PROCESSES/PLASTICS PROCESSING

RELATED TRADES



- Composite sector worker (bathtub, shower, pool, marine industry, auto, truck or airplane parts, etc.)
- Plastics sector worker (PVC window, Plexiglas, packaging, soft drink bottle, skate wheel, tent, etc.)

RISKS	HEALTH EFFECTS
* Ask for the safety data sheets for the products used.	
Chemicals used in manufacturing, including hardeners and catalysts (isocyanates)	<ul style="list-style-type: none"> • Contact dermatitis • Rhinitis/asthma • Hypersensitivity pneumonitis (allergic alveolitis) • Systemic effects ¹
Plastic dust ²	<ul style="list-style-type: none"> • Contact dermatitis • Systemic effects ¹
Formaldehyde and other aldehydes (thermal degradation products)	<ul style="list-style-type: none"> • Eye irritation • Upper respiratory tract irritation • Rhinitis/asthma • Contact dermatitis • Nasopharyngeal cancer • Leukemia
Lead	<ul style="list-style-type: none"> • Systemic effects ³
Cadmium	<ul style="list-style-type: none"> • Chronic bronchitis/emphysema • Rhinitis/asthma • Lung, kidney, prostate cancer • Renal damage
Phtalates	<ul style="list-style-type: none"> • Endocrine disruption
Solvents, including styrene, dichloromethane	<ul style="list-style-type: none"> • Contact dermatitis • Upper respiratory tract irritation • Systemic effects ¹
Thermal degradation products ⁴	<ul style="list-style-type: none"> • Upper respiratory tract irritation • Contact dermatitis • Rhinitis/asthma
Noise	<ul style="list-style-type: none"> • Hearing loss ⁵
Vibrating or percussive tools (hand-arm vibration)	<ul style="list-style-type: none"> • Vibration syndrome ⁶
Constrained postures/Repetitive movements/Effort and force/Handling loads	<ul style="list-style-type: none"> • Musculoskeletal involvement

1. Neurotoxic, hepatotoxic, nephrotoxic, hematotoxic, carcinogenic or teratogenic, according to safety data sheets
2. Especially phenolic, urethane and polyester resins
3. Neurotoxic, nephrotoxic, hematotoxic, etc.
4. Especially phenol, hydrochloric acid, epoxy, ammonia, fluorinated hydrocarbon
5. Synergistic effects during exposure to certain solvents, including styrene, in noisy settings
6. Possible effects: neurological, vascular (Raynaud), musculoskeletal

In collaboration with IRSST


LEGEND

-  Key message
-  Details and additional information

PLUMBING

RELATED TRADES

- Boiler attendant
- Heating specialist
- Insulator
[See also Construction](#)
- Pipefitter
[See also Petrochemistry](#)
[See also Construction](#)
- Plumber

 **For lead, don't dismiss the importance of the digestive tract.**

RISKS	HEALTH EFFECTS
<i>* Ask for the safety data sheets for the products used.</i>	
Degreasers/Solvents	<ul style="list-style-type: none"> • Contact dermatitis • Upper respiratory tract irritation
Glues	<ul style="list-style-type: none"> • Systemic effects ¹
Asbestos ²	<ul style="list-style-type: none"> • Asbestosis/pleural plaque • Lung cancer/mesothelioma
Silica ³	<ul style="list-style-type: none"> • Silicosis ⁴
Lead	<ul style="list-style-type: none"> • Systemic effects ⁵
Vibrating or percussive tools (hand-arm vibration)	<ul style="list-style-type: none"> • Vibration syndrome ⁶
Bacteria/Viruses	<ul style="list-style-type: none"> • Hepatitis A • Hepatitis B • Hepatitis C and HIV ⁷ • Leptospirosis • Infections: gastrointestinal, skin, nail, etc. • Tetanus
Bioaerosols ⁸ ⁹	<ul style="list-style-type: none"> • Rhinitis/asthma/bronchitis • Hypersensitivity pneumonitis (allergic alveolitis) • Gastrointestinal symptoms • Eye, skin and mucous membrane irritation • Headaches, fatigue • Organic dust toxic syndrome (ODTS) = influenza-like illness with cough and dyspnea
Constrained postures/Repetitive movements/Effort and force/Handling loads	<ul style="list-style-type: none"> • Musculoskeletal involvement

1. Neurotoxic, hepatotoxic, nephrotoxic, hematotoxic, carcinogenic or teratogenic, according to safety data sheets
2. Especially in renovation of buildings built before 1990
3. When sawing concrete pipe or floor
4. Increased risk of tuberculosis and lung cancer
5. Neurotoxic, nephrotoxic, hematotoxic, etc.
6. Possible effects: neurological, vascular (Raynaud), musculoskeletal
7. In case of injury caused by contaminated sharp objects

8. Bioaerosols: "...bacteria, moulds, protozoa (amoeba), viruses, dust mites (acarina), endotoxins, as well as other components of the bacterial cell membrane, fungal toxins (mycotoxins), antigens and microbial volatile organic compounds," in Dangers et risques associés aux bioaérosols et agents infectieux dans les systèmes d'égouts, la collecte des déchets, les matières recyclables et le compostage (PII Risques biologiques) – [See Bibliography](#)
9. Through inhalation of bioaerosols or dust containing bacteria or viruses.

LEGEND



Key message



Details and additional information

POLICE/SECURITY SERVICES

RELATED TRADES

- Military service member
- Police officer
- Security guard

RISKS	HEALTH EFFECTS
Irregular schedules/Night work/ Continuously rotating shifts ¹	<ul style="list-style-type: none"> • Sleep problems • Mood disorders • Digestive problems • Carcinogenic risk 2A (IARC)
Constrained postures/Effort and force/ Wearing heavy equipment (gun belt and bullet-proof vest)	<ul style="list-style-type: none"> • Musculoskeletal involvement
Prolonged sitting or standing	<ul style="list-style-type: none"> • Venous stasis
Dangerous and unpredictable situations/ Catastrophes	<ul style="list-style-type: none"> • Post-traumatic stress • Depression
Bacteria/Viruses (body fluids)	<ul style="list-style-type: none"> • Hepatitis B • Hepatitis C and HIV ² • Tuberculosis
Noise (firearms instructor)	<ul style="list-style-type: none"> • Hearing loss
Exposure to extreme temperatures ³	<ul style="list-style-type: none"> • Effects linked to extreme heat or cold
Combustion smoke (various materials) when assignments concern fires (investigation, perimeter control)	<ul style="list-style-type: none"> • Upper respiratory tract irritation
Various dangerous chemicals (solvents) or drugs, during searches or arrests	<ul style="list-style-type: none"> • Effects depend on the nature of the products and drugs involved

1. Recuperating from the harmful effects linked to rotating shifts takes longer as a worker gets older
2. In case of contact with blood or injury caused by contaminated sharp objects
3. Extreme heat linked to wearing a uniform (including a bullet-proof vest) and to certain tasks such as being assigned to traffic or crowd control. Extreme cold when assigned outdoors in winter

LEGEND



Key message



Details
and additional
information



PRINTING/GRAPHIC COMMUNICATIONS


RELATED TRADES







- Machine operator
- Press operator
- Printer
- Technician


In collaboration with IRSST

LEGEND

-  Key message
-  Details and additional information

 Nowadays, lead is rarely used in printing.

RISKS	HEALTH EFFECTS
<i>* Ask for the safety data sheets for the products used.</i>	
Inks 	<ul style="list-style-type: none"> • Upper respiratory tract irritation • Rhinitis/asthma • Contact dermatitis • Systemic effects 
Solvents, volatile organic compounds and glues	<ul style="list-style-type: none"> • Contact dermatitis • Upper respiratory tract irritation • Systemic effects 
Ozone 	<ul style="list-style-type: none"> • Upper and lower respiratory tract irritation
Noise	<ul style="list-style-type: none"> • Hearing loss 
UV and infrared radiation 	<ul style="list-style-type: none"> • Skin cancer • Cataracts
Constrained postures/Repetitive movements/Effort and force/Handling loads	<ul style="list-style-type: none"> • Musculoskeletal involvement
Irregular schedules/Night work/Rotating shifts	<ul style="list-style-type: none"> • Sleep problems • Mood disorders • Digestive problems • Carcinogenic risk 2A (IARC)

-  1. Can contain resins, acrylates, colouring pigments (carbon black, metallic salts, aromatic amines derivatives, heavy metals, chrome VI, etc.
- 2. Neurotoxic, hepatotoxic, nephrotoxic, hematotoxic, carcinogenic or teratogenic, according to safety data sheets
- 3. Generated when using UV
- 4. Synergistic effects during exposure to lead or certain solvents, in noisy settings
- 5. Used for ink fixing

RETAIL: FOOD AND OTHER GOODS

RELATED TRADES

- Cashier
- Display designer
- Salesperson

See also [Food preparation and processing](#)

RISKS	HEALTH EFFECTS
Constrained postures/Repetitive movements/Handling loads	<ul style="list-style-type: none"> • Musculoskeletal involvement
Prolonged standing	<ul style="list-style-type: none"> • Venous stasis
Irregular schedules/Evening and night work/ Rotating shifts	<ul style="list-style-type: none"> • Sleep problems • Mood disorders • Digestive problems • Carcinogenic risk 2A (IARC)
Pressure to sell (commission pay)	<ul style="list-style-type: none"> • Anxiety, stress • Burn-out, depression
Robberies	<ul style="list-style-type: none"> • Anxiety
Verbal/Physical assaults	<ul style="list-style-type: none"> • Post-traumatic stress • Depression
Contact with coins (nickel)	<ul style="list-style-type: none"> • Contact dermatitis
Cold (cold room)	<ul style="list-style-type: none"> • Raynaud's syndrome
Cleaning products	<ul style="list-style-type: none"> • Eye and upper respiratory tract irritation • Contact dermatitis • Asthma/rhinitis

LEGEND



Key message








Details and additional information


RUBBER INDUSTRY

RELATED TRADES

- Chemist
[See also *Petrochemistry*](#)
- Machine operator
- Stationary machine mechanic
[See also *Industrial mechanics*](#)
- Technician
- Tire specialist


 The rubber processing industry is wide-ranging and includes manufacturing of a variety of objects: Tires, flexible hoses, belts, coatings, boots and gloves, gaskets, etc.


RISKS	HEALTH EFFECTS
Latex	<ul style="list-style-type: none"> • Rhinitis/asthma • Contact dermatitis
<i>* Ask for the safety data sheets for the products used.</i>	
Synthetic rubber-related substances 	<ul style="list-style-type: none"> • Upper respiratory tract irritation • Rhinitis/asthma • Contact dermatitis • Cancer 
Products linked to production of any type of rubber, including nitrosamines 	<ul style="list-style-type: none"> • Rhinitis/asthma • Contact dermatitis • Cancers 
Phthalates	<ul style="list-style-type: none"> • Endocrine disruption
Thermal degradation products (including PAH)	<ul style="list-style-type: none"> • Upper respiratory tract irritation • Lung, bladder cancer
Noise	<ul style="list-style-type: none"> • Hearing loss
Constrained postures/Repetitive movements/Effort and force/Handling loads	<ul style="list-style-type: none"> • Musculoskeletal involvement
Rotating shifts/Night work	<ul style="list-style-type: none"> • Sleep problems • Mood disorders • Digestive problems • Carcinogenic risk 2A (IARC)

-  1. Butadiene, butyl, nitrile, neoprene, carbon black dust, etc.
2. Solvents (including benzene, styrene, toluene diisocyanate), oil mist, organic compounds, cadmium, formaldehyde, vulcanizing accelerators (firing smoke), etc.
3. Cancers recognized as related by IARC: stomach, lung, bladder, leukemia, lymphoma; cancers possibly related: laryngeal, esophageal, prostate

In collaboration with IRSST

LEGEND


 Key message




 Details and additional information


SCHOOL/DAYCARE CENTER

RELATED TRADES

- Daycare worker
- Educator
- Teacher

 Risks vary by type of clientele.

RISKS	HEALTH EFFECTS
Poor air quality 	<ul style="list-style-type: none"> • Eye and upper respiratory tract irritation • Headaches, fatigue
Moulds	<ul style="list-style-type: none"> • Rhinitis/asthma • Contact dermatitis • Rhinosinusitis • Hypersensitivity pneumonitis (allergic alveolitis) • Neuropsychological effects
Bacteria, viruses (biological fluids, including urine) 	<ul style="list-style-type: none"> • Teratogenic effects 
Parasitic disease	<ul style="list-style-type: none"> • Pediculosis
Constrained postures / Handling loads	<ul style="list-style-type: none"> • Musculoskeletal involvement
Prolonged standing	<ul style="list-style-type: none"> • Venous stasis
Overuse of voice	<ul style="list-style-type: none"> • Dysphonia • Vocal cord nodules
Noise	<ul style="list-style-type: none"> • Hearing loss
Violence, threats, intimidation, etc.	<ul style="list-style-type: none"> • Stress, burnout, depression

-  1. CO₂ accumulation, presence of volatile organic compounds (VOC), etc.
 2. Especially for childcare workers, elementary school teachers and daycare educators
 3. Depending on the agent: rubivirus (rubella), cytomegalovirus, parvovirus B19 (fifth disease), etc.

LEGEND



Key message



Details
and additional
information

SEAFISHERIES

RELATED TRADES

- Aquaculturist
- Commercial fisherman
- Marine farmer

RISKS	HEALTH EFFECTS
Exhaust (including diesel fumes and PAH)	<ul style="list-style-type: none"> • Lung, bladder cancer
Exposure to carbon monoxide (CO)	<ul style="list-style-type: none"> • Symptoms linked to chronic CO exposure or persistent symptoms following acute poisoning ¹
Outdoor work	<ul style="list-style-type: none"> • Skin cancer (UV radiation) • Effects linked to extreme heat or cold
Noise	<ul style="list-style-type: none"> • Hearing loss
Constrained postures/Repetitive movements/Effort and force/Handling loads	<ul style="list-style-type: none"> • Musculoskeletal involvement
Mycobacterium marinum infection (fish tank granuloma)	<ul style="list-style-type: none"> • Dermatitis, granuloma on exposed skin, especially upper limbs
Irregular schedules/Night work	<ul style="list-style-type: none"> • Sleep problems • Mood disorders • Digestive problems • Carcinogenic risk 2A (IARC)

LEGEND



Key message



Details
and additional
information



1. Digestive problems, chest pains, tiredness, memory and concentration problems, cardiovascular effects

TRANSPORT (ROAD, RAIL, MARITIME) – MERCHANDISE/PASSENGERS

RELATED TRADES

- Bus driver
- Controller
- Deckhand
- Delivery person
- Diesel mechanic
See also [Automotive services](#)
- Engine room crew member
- Heavy vehicle driver
- Locomotive engineer
- Metro operator
- Navigation officer
- Railway carman
- Railway track maintenance technician
- Ship mechanic
See also [Industrial mechanics](#)
- Taxi driver
- Train conductor
- Trucker
- Yard foreman

RISKS	HEALTH EFFECTS
Exhaust (including diesel fumes and PAH)	• Lung, bladder cancer
Exposure to carbon monoxide (CO)	• Symptoms linked to chronic CO exposure or persistent symptoms following acute poisoning ¹
<i>* Ask for the safety data sheets for the products used.</i>	
Degreasers/Solvents	• Contact dermatitis • Upper respiratory tract irritation • Systemic effects ²
Mineral oils and greases	• Contact dermatitis • Acne
Whole-body vibration (road vehicles and other vehicles)	• Lumbar spine problems
Outdoor work	• Skin cancer (UV radiation)
Noise	• Hearing loss ³
Constrained postures/Repetitive movements/Effort and force/Handling loads	• Musculoskeletal involvement
Prolonged sitting	• Venous stasis
Irregular schedules/Night work ⁴	• Sleep problems • Mood disorders • Digestive problems • Carcinogenic risk 2A (IARC)
Sustained vigilance	• Fatigue • Stress

LEGEND



Key message



Details and additional information

1. Digestive problems, chest pains, tiredness, memory and concentration problems, cardiovascular effects
2. Neurotoxic, hepatotoxic, nephrotoxic, hematotoxic, carcinogenic or teratogenic, according to safety data sheets
3. For truck drivers, sometimes single-sided or more pronounced in the left ear
4. Long work hours

WASTE MANAGEMENT

RELATED TRADES

- Composting facility attendant and Forklift truck driver
- Garbage collector
- Incineration facility attendant
- Recycling collection attendant
- Recycling facility attendant and Forklift truck driver
- Sewer-pipe cleaner/ Sewage works attendant
- Wastewater treatment plant operator/Technician


 Risks vary depending on type of waste handled. Hazardous waste management entails risks specific to the substance involved.

RISKS	HEALTH EFFECTS
Exhaust (including diesel fumes and PAH)	• Lung, bladder cancer
Exposure to carbon monoxide (CO)	• Symptoms linked to chronic CO exposure or persistent symptoms following acute poisoning ¹
Hydrogen sulfide (biogas)	• Keratoconjunctivitis • Upper and lower respiratory tract irritation • Pulmonary oedema • Neuropsychiatric disorders
Bioaerosols ²	• Rhinitis/asthma/bronchitis • Hypersensitivity pneumonitis (allergic alveolitis) • Gastrointestinal symptoms • Eye, skin and mucous membrane irritation • Headaches, fatigue • Organic dust toxic syndrome (ODTS) = influenza-like illness with cough and dyspnea
Bacteria/Viruses ³	• Hepatitis A • Hepatitis B • Hepatitis C and HIV ⁴ • Leptospirosis • Infections: gastrointestinal, skin, nail, etc. • Tetanus
Ammonia (when adding lime to sewage sludge)	• Upper respiratory tract irritation
Noise	• Hearing loss
Whole-body vibration (road vehicles and forklift trucks)	• Lumbar spine problems
Outdoor work	• Skin cancer (UV radiation) • Effects linked to extreme heat or cold
Constrained postures/Repetitive movements/Effort and force/Handling loads	• Musculoskeletal involvement
Irregular schedules/Night work	• Sleep problems • Mood disorders • Digestive problems • Carcinogenic risk 2A (IARC)

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LEGEND

 Key message


 Details and additional information









1. Digestive problems, chest pains, tiredness, memory and concentration problems, cardiovascular effects
2. Bioaerosols: "...bacteria, moulds, protozoa (amoeba), viruses, dust mites (acarina), endotoxins, as well as other components of the bacterial cell membrane, fungal toxins (mycotoxins), antigens and microbial volatile organic compounds," in Dangers et risques associés aux bioaérosols et agents infectieux dans les systèmes d'égouts, la collecte des déchets, les matières recyclables et le compostage (PII Risques biologiques) – [See Bibliography](#)
3. Through inhalation of bioaerosols or dust containing bacteria or viruses
4. In case of injury caused by contaminated sharp objects

WELDING

RELATED TRADES

- Boilermaker
[See also Construction](#)
[See also Petrochemistry](#)
[See also Metallurgy](#)
- Iron worker
[See also Construction](#)
- Sheet metal worker
[See also Metallurgy](#)
- Welder
[See also Aerospace](#)
[See also Construction](#)
[See also Metallurgy](#)
[See also Petrochemistry](#)

 There is a broad variety of welding techniques and metals, as well as types of electrodes used in electric arc welding. The risks depend on those factors as well as welding technique and welder' experience.

RISKS	HEALTH EFFECTS
<p><i>*Ask what metals were used and specify the type of welding.</i> <i>**Ask for the safety data sheets for the products used.</i></p>	
<p>Metal fumes (oxides) </p> <p>Flux fumes</p> <p>Products resulting from thermal decomposition of surface coatings (isocyanate, formaldehyde, phosgene, etc.)</p> <p>Ozone produced by UV</p>	<ul style="list-style-type: none"> Welder's fever (same as metal-fume fever) Upper respiratory tract irritation Chronic bronchitis/emphysema Granulomatous lung disease Parkinsonism (manganese) Siderosis Cancers  Rhinitis/asthma Contact dermatitis Increased susceptibility to pneumococcal infections  Systemic effects 
<p>Degreasers, cleaning products, solvents and their thermal decomposition products</p>	<ul style="list-style-type: none"> Contact dermatitis Upper respiratory tract irritation Systemic effects 
<p>Beryllium</p>	<ul style="list-style-type: none"> Berylliosis Contact dermatitis Lung cancer
<p>Noise</p>	<ul style="list-style-type: none"> Hearing loss 
<p>UV radiation </p>	<ul style="list-style-type: none"> Welder's flash Skin cancer Melanoma of the eye Cataracts
<p>Vibrating or percussive tools (hand-arm vibration)</p>	<ul style="list-style-type: none"> Vibration syndrome 
<p>Constrained postures/Repetitive movements/Effort and force/Handling loads</p>	<ul style="list-style-type: none"> Musculoskeletal involvement

- Cadmium, manganese, nickel, copper, chrome, cobalt, iron, zinc, steel, aluminium, molybdenum, etc.
- Lung cancer is the most common. Type of cancer varies depending on the metal
- Smokers and people aged 50 and over are at greater risk; therefore, consider pneumococcal vaccination for this group. Many countries recommend Pneu-P-23 vaccine for smokers. In England, it is recommended to vaccinate welders who are 50 and over. In Québec, pneumococcal vaccine is free under certain conditions (see Québec's immunization protocol, sections on Pneu-P and Pneu-C). In other cases, a medical prescription is required.
- Neurotoxic, hepatotoxic, nephrotoxic, hematotoxic, depending on metals and welding techniques
- Neurotoxic, hepatotoxic, nephrotoxic, hematotoxic, carcinogenic or teratogenic, according to safety data sheets
- Synergistic effects during exposure to lead or certain solvents, in noisy settings
- Laser cutting, flame cutting, arc welding, plasma welding
- Possible effects: neurological, vascular (Raynaud), musculoskeletal

LEGEND



Key message



Details and additional information

WOOD PROCESSING (PULP AND PAPER/BOARD MANUFACTURING)

RELATED TRADES

- Insulator
[See *Plumbing*](#)
- Machine operator
- Mechanic
[See *Industrial mechanics*](#)
- Technologist
- Welder
[See *Welding*](#)
- Wood and woodchip
lumberyard attendant

RISKS	HEALTH EFFECTS
<i>* Ask for the safety data sheets for the products used.</i>	
Chlorine and chlorine compounds	<ul style="list-style-type: none"> • Upper and lower respiratory tract irritation • Chronic obstructive pulmonary disease • Asthma variant (RADS) ¹
Sulfur compounds	<ul style="list-style-type: none"> • Eye irritation • Respiratory and cardiovascular effects
Volatile organochlorine compounds	<ul style="list-style-type: none"> • Possible risk of cancer ²
Fungicides/Insecticides	<ul style="list-style-type: none"> • Contact dermatitis • Systemic effects ³
Asbestos ⁴	<ul style="list-style-type: none"> • Asbestosis/pleural plaque • Lung cancer/mesothelioma
Formaldehyde ⁵	<ul style="list-style-type: none"> • Eye irritation • Upper respiratory tract irritation • Rhinitis/asthma • Contact dermatitis • Nasopharyngeal cancer, leukemia
Wood dust/Tree bark	<ul style="list-style-type: none"> • Contact dermatitis • Rhinitis/asthma • Nasopharyngeal, ethmoid, sinus cancer
Constrained postures/Repetitive movements/Effort and force/Handling loads	<ul style="list-style-type: none"> • Musculoskeletal involvement
Noise	<ul style="list-style-type: none"> • Hearing loss
Rotating shifts/Night work	<ul style="list-style-type: none"> • Sleep problems • Mood disorders • Digestive problems • Carcinogenic risk 2A (IARC)

1. Reactive Airways Dysfunction Syndrome (RADS) is typically associated with substantial exposure to a contaminant, but more and more asthma specialists consider it can also appear as a result of significant repeated exposure
2. Associated cancers: liver, non-Hodgkins lymphoma, esophageal
3. Neurotoxic, hepatotoxic, nephrotoxic, hematotoxic, carcinogenic or teratogenic, according to safety data sheets
4. Found in equipment insulation (exposure during maintenance) and possible contaminant in talc used in manufacturing
5. Often found in glue used to make MDF, OBS, plywood boards

LEGEND



Key message







Details
and additional
information

WOODEN OBJECTS MANUFACTURING AND WOODWORK



RELATED TRADES


- Cabinetmaker
- Carpenter
- Joiner
- Technologist
- Wood engineer

 **The finer the dust, the more it penetrates into the respiratory system.**

RISKS	HEALTH EFFECTS
Wood dust 	<ul style="list-style-type: none"> • Rhinitis/asthma • Contact dermatitis • Nasopharyngeal, ethmoid, sinus cancer
<i>* Ask for the safety data sheets for the products used.</i>	
Varnishes/Glues Solvents	<ul style="list-style-type: none"> • Rhinitis/asthma • Contact dermatitis • Upper respiratory tract irritation • Systemic effects 
Noise	<ul style="list-style-type: none"> • Hearing loss
Vibrating or percussive tools (hand-arm vibration)	<ul style="list-style-type: none"> • Vibration syndrome 
Constrained postures/ Repetitive movements/Effort and force/ Handling loads	<ul style="list-style-type: none"> • Musculoskeletal involvement

LEGEND

-  Key message
-  Details and additional information

-  1. Glue used in pressed wood can contain formaldehyde
- 2. Neurotoxic, hepatotoxic, nephrotoxic, hematotoxic, carcinogenic or teratogenic, according to safety data sheets
- 3. Possible effects: neurological, vascular (Raynaud), musculoskeletal

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