Biohazardous materials in the workplace

OHS information for employers and workers

This bulletin introduces biohazardous materials in the workplace and the requirements in Part 35 of the Occupational Health and Safety (OHS) Code.

KEY INFORMATION

- Biohazardous materials are a type of biological hazard.
- Workers in many occupations can be exposed to biohazardous materials.
- If exposure cannot be eliminated, employers must introduce controls to minimize risk.
- Part 35 of the OHS Code sets out requirements for biohazardous materials.

About biohazardous materials

OHS CODE – PART 1, SECTION 1

"**Biohazardous material"** means a pathogenic organism, including a bloodborne pathogen, that, because of its known or reasonably believed ability to cause disease in humans, would be classified as Risk Group 2, 3, or 4 under the *Human Pathogens and Toxins Act* (Canada), or any material contaminated with such an organism.

Biohazardous materials may cause diseases if they enter the body. Risk Groups 2, 3 and 4 of the *Human Pathogens and Toxins Act* (Canada) list specific harmful microorganisms (viruses, bacteria, protozoa, prions and some fungi).

Biohazardous materials become a workplace hazard when the nature of the job or work environment may expose workers to a pathogenic organism (also called a pathogen).

Many of the diseases caused by biohazardous materials can be infectious. Infectious diseases pose an additional risk because they can spread through a workplace through various transmission routes.

Exposure and transmission

- Communicable diseases spread from person to person.
- Zoonotic diseases pass from animals to humans.

These pathways are not mutually exclusive. Zoonotic diseases can become communicable between people.

Transmission describes the way a pathogen travels to a new host. Understanding transmission routes is critical to breaking the chain of infection and controlling biohazardous materials in the workplace.

Contact transmission

Contact transmission can be direct or indirect.

- Direct contact occurs when a person touches infected skin, blood or other bodily fluids.
- Indirect contact occurs when a person touches a contaminated surface and then transfers the pathogen to their eyes, nose, mouth or broken skin.

Respiratory transmission

Respiratory transmission occurs when infectious respiratory particles released by an infected person are inhaled or deposited directly onto the eyes, nose or mouth of another person. These particles can range in size from droplets, sprays and splashes to smaller aerosols. Aerosols can stay suspended in air for longer periods than larger particles.

Vector-borne transmission

Vectors are organisms, such as mosquitoes, ticks or fleas, that carry and transmit infectious pathogens. When a vector bites, scratches or stings a person, it can pass on disease.

Percutaneous transmission

Percutaneous transmission happens through the skin. Common examples are needlestick injuries, cuts, lacerations and puncture wounds from objects that may carry blood or other potentially infectious material.

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Vehicle-borne transmission

Pathogens can be carried in a non-living material such as food or water. People can be exposed when they consume contaminated food or water or come into contact with contaminated water during activities such as swimming.

Table 1 provides examples of disease pathways that are known or possible in Alberta. **This is not a complete list.** Employers must identify and assess all biohazardous materials at their work site.

TABLE 1: DISEASE AND PATHWAY EXAMPLES

Biohazardous material	Associated diseases	Transmission category
influenza virus	influenza (flu)	communicable, may be zoonotic
measles virus	measles	communicable
Lyssavirus (in infected animal saliva)	rabies	zoonotic
Campylobacter bacteria	campylobacteriosis	zoonotic
West Nile virus	West Nile virus infection	zoonotic
prion from bovine spongiform encephalopathy (BSE) infected cattle	Creutzfeldt-Jakob disease	zoonotic

KNOW WHAT IS PRESENT AROUND YOU

Reliable information about infectious diseases is available from the Alberta government and the Public Health Agency of Canada. See the For more information section.

Occupational risks

People can work directly with known pathogens as part of their job (for example in laboratories or biotechnology industries) or be exposed to biohazardous materials if they work in environments where pathogens naturally exist.

Table 2 provides some examples of occupational transmission routes and related diseases. **This is not a complete list.**

TABLE 2: EXAMPLES OF OCCUPATIONAL RISK FROM BIOHAZARDOUS MATERIALS

Occupation and sample transmission routes	Sample potential diseases
Healthcare, first responders • Contact, droplet, aerosols (from patients) • Sharps injuries	Communicable and pandemic diseases such as hepatitis B, hepatitis C, HIV, tuberculosis
Animal-related occupations, outdoor work • Contact (contaminated dust, droppings) • Vector-borne (bites, saliva)	Zoonotic diseases including hantavirus infections, rabies, Lyme disease, West Nile disease, leptospirosis, avian influenza, Q fever, tularemia, anthrax, brucellosis, campylobacteriosis
Waste and wastewater management, plumbing work • Droplet, vehicle-borne (waste or waterborne pathogens)	Gastrointestinal and respiratory infections such as those caused by E. coli, salmonella, Legionella
Laboratories • Contact, droplet, air- or vehicle-borne (specimens, cultures, spills) • Vector-borne (lab animals)	Potential diseases depend on the scope of a laboratory's work but can include zoonotic or communicable diseases
Food processing and manufacturing and preparation • Contact, vehicle-borne (raw meat, contaminated plants) • Aerosols (contaminated organic dusts)	Campylobacteriosis, E. coli infection, hepatitis A, listeriosis, salmonellosis, shigellosis, toxoplasmosis, viral gastroenteritis, avian influenza, Q fever
Construction • Contact with contaminated soil, building material, airborne dust • Sharps injuries, cuts, lacerations	Tetanus, histoplasmosis, aspergillosis, blastomycosis, leptospirosis, hantavirus diseases
Occupations requiring travel • Contact, droplet, aerosol • Vector-borne • Vehicle-borne (food, water)	Regional diseases not typically seen in Alberta such as malaria and Zika virus disease

Part 35 of the OHS Code

Part 35 of the OHS Code sets out requirements that are specific to biohazardous materials. Here is an introduction to the sections in Part 35.

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Limited exposure

OHS CODE – PART 35, SECTION 529
An employer must ensure that worker exposure to biohazardous materials is kept as low as reasonably practicable.

In many work sites, exposure to biohazardous materials can go unnoticed because:

- The hazard may be hard to detect. For example, a surface may look clean, or a worker may not notice a small splash, cut or airborne exposure.
- The exposure is not part of the main job activity.
- Health effects can be mild, delayed or difficult to trace back to the work site.

When assessing worker exposure to a biohazardous material, employers should consider factors such as:

- Where the material is or may be on the work site.
- Which workers may be exposed.
- The duration and frequency of exposure.
- Possible transmission routes.
- The likelihood and severity of harm.

Exposure control

Section 525.1 of the OHS Code states that employers must control worker exposure to biohazardous materials according to Section 9 of the code. This means you must do a hazard assessment under Part 2 of the code.

KNOW THE RULES
The employer's hazard assessment determines what controls are required. In all cases, additional rules apply to hazard identification, assessment and control. Learn more about these in the Hazard assessment and control handbook for Alberta employers and workers.

The hierarchy of controls

Section 9 of the OHS Code sets out the hierarchy of controls that employers must follow. In brief, employers must eliminate a hazard wherever they can. When elimination isn't reasonably practicable, employers must follow the hierarchy of controls below (moving down the list if a given option won't control the hazard or isn't reasonably practicable).

1. Engineering controls isolate people from a hazard, at the source. For example, ventilation, physical barriers, dust suppression or containment systems or safety engineered devices.
2. Administrative controls change the way work is performed. Examples include safe work policies and procedures and worker training.
3. Personal protective equipment (PPE) controls the hazard at the worker. Examples include eye protection, respirators, facemasks and gloves.
4. If a hazard can't be controlled by one method, an employer may use a combination of controls.

Policies and procedures

Section 528 of the OHS Code requires an employer to:

- Establish policy and procedures for storing, handling, using and disposing of biohazardous materials.
- Ensure workers are informed of the health hazards associated with exposure to biohazardous materials.

The best practices section includes general information that may help employers develop some policies and procedures. However, there are many biohazardous materials that require specialized policies and procedures. These must be addressed by the employer on a case-by-case basis.

Post exposure management

OHS CODE – PART 35, SECTION 530
An employer must establish policies and procedures for the post exposure management of workers exposed to biohazardous material.

Post exposure management procedures may be included as part of an emergency response plan. They must specify the actions required after a worker has been exposed to biohazardous material. These may include providing first aid, reporting the incident, seeking medical assessment and arranging follow-up care.

Sharps

Needle-sticks from medical devices are a common route of occupational exposure for bloodborne

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pathogens. Sections 525.2 and 527 of the code set out requirements that are specific to medical sharps and waste needles, respectively. Consult these sections of the OHS Code directly if they apply at your work site.

Section 526 requires an employer to provide, and workers to use, a sharps container.

The sharps container must be located close to the sharps, have a clearly defined fill line and be sturdy enough to resist puncture under normal use.

Best practices in controlling infectious diseases

Best practices can be an important part of controlling biohazardous materials in the workplace.

Note that best practices continuously evolve and improve. Make sure that you have current advice from expert sources in choosing what practices you follow.

Best practices support compliance with applicable occupational health and safety requirements, such as the requirements discussed in this bulletin, or those that relate to PPE or ventilation.

Cleaning and disinfection

Cleaning
Cleaning physically removes visible contaminants, dust, dirt and organic material from surfaces using water, detergent and friction.

Approach cleaning methodically. Depending on the circumstances, this can mean cleaning from high to low or from clean to dirty.

Disinfection
Using chemical disinfectants after cleaning can eliminate most pathogenic microorganisms.

User tips:

- Use disinfectants approved by Health Canada, ensuring they are suitable for the intended surfaces and pathogens.
- As with cleaning, disinfect in a methodical way to prevent cross contamination of surfaces.

Hand hygiene

Hand hygiene is one of the most critical measures in infection prevention and control. It includes:

- Handwashing: wash hands thoroughly with soap and water when visibly soiled or contaminated, including after using the restroom, handling bodily fluids or touching animals.
- Use of alcohol-based hand rubs: when hands aren't visibly soiled or contaminated, use an alcohol-based hand rub for hand cleansing, as it is effective against many bacteria and viruses.
  - Alcohol-based hand rubs may not be effective against all biological hazards, including some spore-forming organisms and viruses.

Precautionary principles

Workers should stay home when they are sick. Employers can support workers to stay home by enacting supportive policies around sick leave and facilitating remote work arrangements if a worker is well enough to work remotely and opts to do so.

Vaccination and immunization

Vaccinations either prevent infection or reduce the severity and length of symptoms.

On-site immunization clinics can make vaccination more convenient for workers who choose to be vaccinated.

More information is available on Primary Care Alberta's Immunization and vaccines web page.

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Contact us

OHS Contact Centre

Alberta toll-free
- 1-866-415-8690

Edmonton region
- 780-415-8690

Deaf or hard of hearing (TTY)
- 1-800-232-7215 (Alberta toll-free)
- 780-427-9999 (Edmonton region)

Notify OHS of health and safety concerns

alberta.ca/file-complaint-online

Call the OHS Contact Centre if you have concerns that involve immediate danger to a person on a work site.

Report a workplace incident to OHS

alberta.ca/ohs-complaints-incidents

Website

alberta.ca/ohs

Let us know what you think!

To provide feedback on this publication, visit ohs-pubstore.labour.alberta.ca/bh024 and select "Give resource feedback". For more OHS resources, visit the OHS Resource Portal.

For more information

Break the chain of infection (PTC008)
ohs-pubstore.labour.alberta.ca/ptc008

Disease prevention and surveillance
alberta.ca/disease-prevention-surveillance

Hazard assessment and control (BP018)
ohs-pubstore.labour.alberta.ca/bp018

Immunization and vaccines
myhealth.alberta.ca/topic/immunization

Infectious diseases
canada.ca/en/public-health/services/infectious-diseases.html

Legal terms 101: "Reasonably practicable" (LGT001)
https://ohs-pubstore.labour.alberta.ca/lgt001

Public Health Agency of Canada e-PATHogen Database
health.canada.ca/en/epathogen

Respiratory viruses: selecting respirators and masks (PPE009)
ohs-pubstore.labour.alberta.ca/ppe009

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