

G6.1 Analysis of asbestos-containing material

Issued March 25, 2005; Editorial revision May 17, 2006; Preliminary Issue November 21, 2006; Retired consequential to February 1, 2012
Regulatory Amendment

G6.1-1 Definition of qualified person

Issued consequential to February 1, 2012 Regulatory Amendment; Revised May 25, 2016; Editorial Revision December 15, 2017

Regulatory excerpt

Section 6.1 of the *OHS Regulation* ("*Regulation*") includes the following definition:

"*qualified person*" means a person who

- (a) has knowledge of the management and control of asbestos hazards through education and training, and
- (b) has experience in the management and control of asbestos hazards.

Purpose of guideline

This guideline provides information to describe the competencies necessary in a qualified person for Part 6 - Asbestos of the *Regulation*, and provides contact information to assist an employer to locate a qualified person.

Competencies of a qualified person

Appropriate knowledge and experience in the management and control of asbestos hazards are the key competencies required of a qualified person under section 6.1 of the *Regulation*. It is not sufficient for a qualified person to simply demonstrate credentials that certain courses have been taken or certain experience has been obtained. The necessary knowledge and experience must be evident in the quality of the work undertaken. When evaluating the qualifications of a person who has prepared an asbestos inventory, risk assessment, work procedure, or work classification, the primary focus will be the quality and accuracy of the inventory, risk assessment, work procedure, and work classification rather than the person's credentials.

A deficient asbestos inventory, risk assessment, work procedure, or work classification may be an indication that the person selected was not qualified. When such situations arise, WorkSafeBC prevention officers will enquire what steps the employer took to assess the person's competencies as well as his/her credentials.

Credentials of a qualified person

In order to conduct inventory work under section 6.4, conduct risk assessments and activity classifications under section 6.6, or set out procedures under section 6.27, a qualified person must have the appropriate knowledge (through education and training) and experience in the management and control of asbestos hazards. For the purposes of sections 6.4, 6.6, and 6.27, appropriate credentials for qualified persons include the following:

- Certified industrial hygienist (CIH), registered occupational hygienist (ROH), certified safety professional (CSP), Canadian registered safety professional (CRSP), or professional engineer (P. Eng.), provided that the holders of these qualifications have experience in the recognition, evaluation, and control of asbestos hazards, or
- A combination of experience and education/training, as described in (a) and (b) below. Note that education and training, without extensive related experience, is not sufficient

(a) Extensive occupational health and safety experience within the asbestos abatement industry, as applicable to performing risk assessments, conducting inventories, and writing procedures for asbestos removal e.g.,

- Experience applying the principles of occupational hygiene
- Experience with specific elements or tasks related to asbestos abatement, such as the following:
 - Asbestos hazard identification and risk assessment
 - Preparation of asbestos work procedures
 - Collection of samples of materials suspected of containing asbestos
 - Collection of air samples during asbestos abatement projects
 - Preparation of inspection reports
 - Conduction of workplace inspections

AND

(b) Knowledge obtained through completion of education and training courses in asbestos consultation and abatement.

Employer due diligence

Employers are responsible for selecting qualified persons and must exercise due diligence in the selection of the qualified person. This includes a review of the person's knowledge and experience as well as his/her accredited credentials. Reliance on a person holding a certification or licence specified herein would normally be considered reasonable as long as the employer also verifies that the person has the requisite experience described above.

Contact with accrediting agencies

An accrediting agency will often maintain a website with contact information on accredited members. For example, the Canadian Registration Board of Occupational Hygienists maintains contact information on persons with an ROH designation and can be accessed at www.crboh.ca. A list of persons with a CIH designation can be found on the American Board of Industrial Hygiene website at www.abih.org. Lists of persons with CRSPs, which are issued by the Board of Canadian Registered Safety Professionals, are available at www.bcrsp.ca

G6.3 Exposure control plan for asbestos

Issued August 1, 1999

Section 6.3(1) of the *OHS Regulation* ("Regulation") states:

If a worker is or may be exposed to potentially harmful levels of asbestos, the employer must develop and implement an exposure control plan meeting the requirements of [section 5.54](#).

Situations in which workers may potentially be exposed to asbestos include active or anticipated disturbance of friable asbestos or asbestos-containing materials or generation of dust from non-friable, asbestos-containing materials. For further information regarding the requirements of an exposure control plan, consult [OHS Guideline G5.54-2, Elements of an Exposure Control Plan](#).

Some workplaces may already have an asbestos management program in place. Components of an asbestos management program include:

- coordination of subcontractors,
- identification, hazard assessment, purchasing policy,
- training,
- written procedures,
- transportation and waste disposal,
- health monitoring, and
- review of program

Some or all of these components may correspond to elements of an exposure control plan and may be accepted as complying with the required elements of an exposure control plan. Under [section 5.54\(2\)](#) of the *OHS Regulation*, the required elements of an exposure control plan are as follows: statement of purpose and responsibilities; risk identification, assessment and control; education and training; written work procedures, when required; hygiene facilities and decontamination procedures, when required; health monitoring, when required; and documentation.

The complexity of the exposure control plan will depend on such factors as the results of the risk assessment, the options available for asbestos abatement and control, whether these options are utilized, and the likelihood of actively disturbing asbestos and/or asbestos-containing materials.

Under [section 6.3\(2\)](#), a "properly trained person" must administer the overall exposure control plan. To comply with this requirement, the "properly trained person" should

- be familiar with the hazards and precautions required for handling and working around asbestos and asbestos-containing materials,
- be well versed in the components of the exposure control plan,
- be familiar with the factors used to assess risk associated with asbestos and asbestos-containing materials, such as friability, location, and damage to material,
- have received instruction and training in the administration of the exposure control plan from a health and safety professional with experience in the practice of occupational hygiene as it relates to asbestos management. Alternatively, the person may have completed a course from a widely recognized training program, which would impart equivalent information, methods, practices and procedures to the recipient, such as NIOSH or other similar training program.

G6.4 Inventory of asbestos-containing materials

Issued April 20, 2012; Revised December 14, 2012; Editorial Revision consequential to May 1, 2017 Regulatory Amendment

Regulatory excerpt

Section 6.1 of the *OHS Regulation* ("Regulation") defines asbestos-containing material as:

"asbestos-containing material" means the following:

(a) a manufactured article or other material, other than vermiculite insulation, that would be determined to contain at least 0.5% asbestos if tested in accordance with one of the following methods:

- (i) [Asbestos, Chrysotile by XRD, Method 9000](#) (Issue 2, dated August 15, 1994) in the NIOSH Manual of Analytical Methods, published by the United States National Institute for Occupational Safety and Health, Centre for Disease Control;
- (ii) [Asbestos \(bulk\) by PLM, Method 9002](#) (Issue 2, dated August 15, 1994) in the NIOSH Manual of Analytical Methods, published by the United States National Institute for Occupational Safety and Health, Centre for Disease Control;
- (iii) [Test Method for the Determination of Asbestos in Bulk Building Materials](#) (EPA/600/R-93/116, dated July 1993) published by

the United States Environmental Protection Agency;

(b) vermiculite insulation that would be determined to contain any asbestos if tested in accordance with the [Research Method for Sampling and Analysis of Fibrous Amphibole in Vermiculite Attic Insulation](#) (EPA/600/R-04/004, dated January 2004) published by the United States Environmental Protection Agency;

Section 6.4 of the *Regulation* states:

- (1) The employer and the owner must ensure that a qualified person
 - (a) collects representative samples of the materials in the workplace that the qualified person suspects contain asbestos
 - (b) determines whether each of the samples is asbestos-containing material in accordance with,
 - (i) in the case of a sample that is not vermiculite insulation, one of the methods set out in paragraph (a) (i) to (iii) of the definition of "asbestos-containing material" in section 6.1, and
 - (ii) in the case of a sample that is vermiculite insulation, the method set out in paragraph (b) of the definition of "asbestos-containing material" in section 6.1, and
 - (c) prepares an inventory of all asbestos-containing materials in the workplace that includes the following information:
 - (i) with respect to each representative sample collected under paragraph (a),
 - (A) the specific location of the sample,
 - (B) a description of the sample,
 - (C) whether the sample is asbestos-containing material as determined under paragraph (b),
 - (D) the method, set out in paragraph (a)(i) to (iii) or (b) of the definition of "asbestos-containing material" in section 6.1, used to determine if the sample is asbestos-containing material, and
 - (E) if the sample is determined to be asbestos-containing material, the type of asbestos, as determined under paragraph (b), and the percentage of the sample that is comprised of that asbestos;
 - (ii) with respect to each material that, under subsection (2), is treated under this Part as asbestos-containing material because it is inaccessible or not practicable to sample,
 - (A) the specific location of the material or, if the specific location is not known, the presumed location of the material,
 - (B) a description of the material, and
 - (C) how it is determined that the material is inaccessible or not practicable to sample;
 - (iii) the location of each of the asbestos-containing materials, including by using drawings, plans or specifications.
 - (2) If a qualified person suspects that a material in the workplace contains asbestos but determines that the material is inaccessible or not practicable to sample, the material must be treated under this Part as asbestos-containing material unless a qualified person, in accordance with subsection (1), determines that the material is not asbestos-containing material.
 - (3) The employer or the owner satisfies his or her obligations under subsection (1) if the employer or the owner ensures that an existing inventory of all asbestos-containing materials in the workplace meets the requirements of subsection (1).
 - (4) The employer and the owner must
 - (a) keep the inventory current, and
 - (b) make a record of any changes made to the inventory.
 - (5) The employer and the owner must provide each other with a copy of the inventory and record referred to in subsection (4) if the other does not already have a copy.
 - (6) The employer must ensure that a copy of the current version of the inventory is readily available at the workplace.
 - (7) The employer and the owner must retain
 - (a) the current version of the inventory until all the asbestos-containing materials are removed from the workplace, and
 - (b) the record referred to in subsection (4)(b).

Purpose of guideline

This guideline describes the effect of the definition of asbestos-containing material on an employer's workplace inventory, due to the changes that occurred in 2012.

Update of asbestos-containing materials' inventory

As of February 1, 2012, the definition of asbestos-containing material (ACM) for manufactured articles or other material, other than vermiculite insulation, includes materials that contain at least 0.5% asbestos, as determined by methods referenced in *Regulation* section 6.1. Vermiculite insulation containing any asbestos, as determined by the referenced method, is also asbestos-containing material.

As a result, some additional building materials and commercial products may need to be added to an employer's asbestos inventory and asbestos management program. The employer needs to update the inventory and management program to reflect the ACM definition. Suspect materials previously identified as containing <1% or trace amounts of asbestos need to be re-evaluated to either include them in the inventory or be analyzed to determine if they contain less than 0.5% asbestos.

The time frame for completing the update will depend on the number of buildings/locations surveyed and the overall size of the inventory. Large inventories may require a phased approach for re-evaluation and a longer time to complete. In this case, the employer should develop a plan for the update, in consultation with the joint occupational health and safety committee, and make it available for review if requested by a WorkSafeBC prevention officer.

In the absence of sampling results to the contrary, all suspected building materials must be considered asbestos-containing.

Vermiculite insulation containing any asbestos must be added to the asbestos inventory.

G6.5 Identification

Issued August 1, 1999; Editorial Revision consequential to May 1, 2017 Regulatory Amendment

Section 6.5 of the *OHS Regulation* ("*Regulation*") states:

The employer and the owner must ensure that all asbestos-containing materials present in the workplace are identified by signs, labels or, when these are not practicable, other effective means.

Purpose of guideline

The purpose of this guideline is to provide identification means for all asbestos-containing materials present in the workplace.

Identification means

Section 6.5 of the *Regulation* requires that the employer and the owner ensure that all asbestos-containing materials present in the workplace be identified by signs and labels. When the use of signs and labels is not practicable, "other effective means" may be used.

It may be impracticable to post signs and labels in situations where there are aesthetic concerns (such as in building lobbies or public areas) or where they might create an unreasonable level of concern amongst the general public. In these circumstances, "other effective means" could include colour or letter encryption coding, floor plan mapping, or signage placed behind access ways (provided that workers are not placed at risk upon entering the restricted areas).

Whatever the means of identification, it must be coupled with effective training and education of all affected workers. Refer to [section 6.11](#) (Instruction and training). The guiding principle should be that the less information that is presented on signs or labels, the more education and training that will be required to communicate the hazards of and precautions for handling and working around asbestos.

G6.6-1 Risk assessment

Issued August 1999; Revised June 4, 2009; Revised consequential to February 1, 2012 Regulatory Amendment; Editorial Revision consequential to May 1, 2017 Regulatory Amendment

Regulatory excerpt

Section 6.6 of the *OHS Regulation* ("*Regulation*") states:

- (1) The employer must ensure that a risk assessment is conducted by a qualified person on asbestos-containing material identified in the inventory referred to in section 6.4(1)(c) or (3), as applicable, with due regard for the condition of the material, its friability, accessibility and likelihood of damage, and the potential for fibre release and exposure of workers.
- (2) The employer must ensure that a risk assessment has been conducted by a qualified person before any demolition, alteration, or repair of machinery, equipment, or structures where asbestos-containing material may be disturbed.
- (3) Before a work activity that involves working with or in proximity to asbestos-containing material begins, the employer must ensure that a qualified person assesses the work activity and classifies it as a low risk work activity, a moderate risk work activity or a high risk work activity.

Purpose of guideline

The purpose of this guideline is to explain the two-stage process involved in an asbestos risk assessment. This guideline also provides information regarding the requirement to conduct a risk assessment prior to any demolition, alteration, or repair of machinery, equipment, or structures where asbestos-containing materials may be disturbed.

Requirement to conduct an asbestos risk assessment

As required by [section 6.4](#) of the *Regulation*, an inventory of all asbestos-containing materials must be prepared and kept current. Under section 6.6(1), a risk assessment must be conducted by a qualified person on asbestos-containing material identified in the inventory. Assessment of the risk to workers from asbestos materials either used or present in the workplace relies on a two-stage process. The goal of this process is to prioritize materials for abatement control and to assist in selecting appropriate control options.

Risk assessment process – stage 1

The first stage of an asbestos risk assessment involves evaluating parameters that are indicative of the likelihood of worker exposure. The following parameters most commonly looked at include:

Accessibility

How easily will the asbestos fibres become airborne because of architectural design, location, and occupant activities? Are the fibres

- Totally enclosed, such as behind a fixed ceiling? If so, there is a minimal risk of exposure.
- Inaccessible, such as beyond the reach of the public? If so, there is a low risk of exposure.
- Accessible in a low-activity area? If so, there is a moderate risk of exposure.
- Accessible in a high-activity area, such as a hallway or stairway? If so, there is a high risk of exposure.

Condition

- Based on a visual examination, what is the existing state of the material?
- Is the material in good condition, showing no apparent damage at all? If so, there is a minimal risk of exposure.
- Does the material have mild damage? If so, there is a low risk of exposure.
- Does the material have moderate damage? If so, there is a moderate risk of exposure.
- Does the material have severe damage? For example, are areas missing, hanging loose, or water-damaged? If so, there is a high risk of exposure.

Friability

- To what extent can the material be broken apart if a person or object makes contact with it?
- Is the material firmly bound? If so, it is not friable and there is a minimal risk of exposure.
- Is the material slightly friable? If so, there is a low risk of exposure.
- Is the material moderately friable? If so, there is a moderate risk of exposure.
- Does the material break apart easily? If so, it is very friable and there is a high risk of exposure.

Presence in return air plenum

- Is the asbestos-containing material present in the air moving system?

Percentage of asbestos

- What is the percentage of asbestos contained in the material?

Other parameters that may be examined include the extent of water damage and the exposed surface area of friable material, activity, and movement (such as air movement, building vibration from machinery or other sources, and activity levels of workers).

Risk assessment process – stage 2

During the second stage of the risk assessment process, each parameter is assigned a "score" to indicate the potential for exposure. These scores are then combined to derive an overall risk factor that is used to prioritize the control and abatement options to be implemented. Different approaches are used to assign scores to the parameters and to combine the scores into one overall risk factor.

Some examples are briefly described below.

- A numerical rating scale is used in a system developed by the U.S. Environmental Protection Agency (for example, "0" or "1" is assigned to parameters for which there is a low potential of exposure; "4" is assigned to those for which the potential of exposure is high). These scores are then combined using a mathematical formula. The range into which the overall score falls will determine what remedial action is recommended (for example, if the overall score is in the range of 5-9, then the recommended action is to review in two to three years).
- A numerical rating scale need not be used. For example, a different system is described in the Alberta Occupational Health and Safety publication [Alberta Asbestos Abatement Manual](#). In this publication, the need for control is determined by consulting a decision flowchart.

Risk assessment before demolition, alteration, or repair

Section 6.6(2) requires that a risk assessment be conducted "before any demolition, alteration, or repair of machinery, equipment, or structures where asbestos-containing material may be disturbed." This obligation is related to the requirements in [section 20.112](#) of the *Regulation* dealing

with hazardous materials on demolition or salvage of equipment, buildings, etc. before work begins. Refer to [OHS Guideline G20.112](#) for further information.

Further information

Further details about asbestos management are provided in the WorkSafeBC manual [Safe Work Practices for Handling Asbestos](#).

G6.6-2 Classification of risk

Issued August 1999; Revised June 4, 2009; Revised consequential to February 1, 2012 Regulatory Amendment; Editorial Revision consequential to May 1, 2017 Regulatory Amendment

Regulatory excerpt

Section 6.6 of the *OHS Regulation* ("*Regulation*") states:

- (1) The employer must ensure that a risk assessment is conducted by a qualified person on asbestos-containing material identified in the inventory referred to in section 6.4(1)(c) or (3), as applicable, with due regard for the condition of the material, its friability, accessibility and likelihood of damage, and the potential for fibre release and exposure of workers.
- (2) The employer must ensure that a risk assessment has been conducted by a qualified person before any demolition, alteration, or repair of machinery, equipment, or structures where asbestos-containing material may be disturbed.
- (3) Before a work activity that involves working with or in proximity to asbestos-containing material begins, the employer must ensure that a qualified person assesses the work activity and classifies it as a low risk work activity, a moderate risk work activity or a high risk work activity.

Section 6.1 of the *Regulation* states, in part:

"*low risk work activity*" means a work activity that involves working with or in proximity to asbestos-containing material if, at the time the work activity is being carried out, both of the following apply:

- (a) the asbestos-containing material is not being
 - (i) cut, sanded, drilled, broken, ground down or otherwise fragmented, or
 - (ii) disturbed such that the asbestos-containing material may release airborne asbestos fibre;
- (b) it is not necessary to use personal protective equipment or engineering controls in respect of that activity to prevent exposure of a worker to airborne asbestos fibre;

"*moderate risk work activity*" means a work activity, other than a high risk work activity, that involves working with or in proximity to asbestos-containing material if, at the time the work activity is being carried out, one or both of the following apply:

- (a) the asbestos-containing material is being
 - (i) cut, sanded, drilled, broken, ground down or otherwise fragmented, or
 - (ii) disturbed such that the asbestos-containing material may release airborne asbestos fibre;
- (b) it is necessary to use personal protective equipment or engineering controls, or both, in respect of that activity to prevent exposure of a worker to airborne asbestos fibre;

"*high risk work activity*" means a work activity that involves working with or in proximity to asbestos-containing material if a high level of control is necessary in respect of that activity to prevent exposure of a worker to airborne asbestos fibre;

Purpose of guideline

The purpose of this guideline is to provide information regarding the intent of the requirement in section 6.6(3) of the *Regulation* to classify work involving asbestos-containing material according to the level of risk to workers.

Classification of risk

Under section 6.6(3) of the *Regulation*, the employer must ensure that before the commencement of work involving asbestos-containing material, a qualified person assesses the work activity and classifies it as a low-, moderate- or high-risk activity. The intent of this requirement is to assess the likelihood of asbestos fibres being released during handling activities and to select appropriate work precautions, according to the level of the risk to workers.

Further details about asbestos management are provided in the WorkSafeBC manual [Safe Work Practices for Handling Asbestos](#).

G6.6-3 Qualifications

Issued August 1, 1999; Editorial Revision October 2004; Revised June 18, 2008; Retired consequential to February 1, 2012 Regulatory

Amendment

G6.7 Control of friable asbestos

Issued August 1999; Revised consequential to February 1, 2012 Regulatory Amendment

Regulatory excerpt

Section 6.7 of the *OHS Regulation* ("*Regulation*") states

The employer must ensure that all friable asbestos-containing materials in the workplace are

- (1) controlled by removal, enclosure or encapsulation so as to prevent the release of airborne asbestos fibre.
- (2) The employer must not allow any work that would disturb asbestos-containing material unless necessary precautions have been taken to protect workers.

Purpose of guideline

The purpose of this guideline is to provide guidance on abatement and control options, specifically for drop ceilings.

Control options

Abatement and control options should eliminate or reduce all moderate- and high-risk factors identified in the risk assessment required under [section 6.6](#). Drop ceilings are not an appropriate or effective system of permanently enclosing asbestos-containing materials as it does not eliminate access to the treated area and services are not likely to be removed to the outside of the ceiling system.

G6.8 Procedures for abatement of asbestos materials during house and building demolition/renovation

Issued July 5, 2002; Revised November 23, 2005; Editorial Revision January 1, 2009; Editorial Revision June 10, 2010; Revised consequential to February 1, 2012 Regulatory Amendment; Revised September 20, 2013; Revised April 30, 2015; Editorial Revision consequential to May 1, 2017 Regulatory Amendment

Regulatory excerpt

Section 6.8 (Procedures) of the *OHS Regulation* ("*Regulation*") states:

- (1) The employer must ensure that procedures for handling or using asbestos- containing material prevent or minimize the release of airborne asbestos fibres.
- (2) The employer must ensure that the procedures for control, handling or use of asbestos are in accordance with procedures acceptable to the Board.
- (3) The procedures must address
 - (a) containment of asbestos operations where applicable,
 - (b) control of the release of asbestos fibre,
 - (c) provision, use and maintenance of appropriate personal protective equipment and clothing,
 - (d) means for the decontamination of workers, and
 - (e) removal of asbestos waste and cleanup of asbestos waste material.
- (4) The procedures must provide a worker with task-specific work direction that addresses both hazards and necessary controls.

Purpose of guideline

In the past, a wide variety of building materials contained asbestos. During renovation or demolition of buildings and other structures constructed of such materials, workers and other persons may be at risk of harmful exposure to airborne asbestos if safe work procedures are not followed.

This guideline provides information to assist with the development of task-specific work procedures required by section 6.8 of the *Regulation* during the renovation or demolition of a house, building, or similar structure involving asbestos-containing material ("ACM"). It also provides information on some of the other requirements in the *Regulation* for asbestos control, particularly in [Part 6 \(Substance Specific Requirements — Asbestos\)](#) and [Part 20 \(Construction, Excavation and Demolition\)](#). Procedures meeting regulatory requirements and based on criteria and measures in the scenarios described in this guideline are acceptable to WorkSafeBC.

The requirements relating to asbestos in Part 6 apply to any workplace where a worker is or may be exposed to potentially hazardous levels of asbestos fibre including, but not limited to, the following:

- A workplace where ACM is present or is used
- An operation involving the abatement of ACM

The provisions of Part 6 are in addition to those in [Part 5 \(Chemical Agents and Biological Agents\)](#), which, among other things, establishes the exposure limit for asbestos and general measures for control.

Part 20 applies to any construction project as defined in Part 20, including demolition, alteration, and repair. Provisions in Part 20 on notice of project (NOP) and hazardous materials are particularly applicable to asbestos control.

This guideline should be used with the WorkSafeBC manual, [Safe Work Practices for Handling Asbestos](#), and other applicable [safety information on asbestos](#).

Preplanning and notice of project

Renovation and demolition work involving materials containing asbestos requires proper planning. A risk assessment for asbestos must be done before demolition or other work begins, as required by [sections 6.6](#) and [20.112](#) of the *Regulation*.

In addition, an NOP must be submitted, as required by [section 20.2.1\(1\)](#), before beginning any work that involves either of the following:

- A work activity that involves working with or in proximity to ACM that is moderate-risk work activity or a high-risk work activity, as defined in section 6.1
- The alteration, repair, dismantling, or demolition of all or part of a building or structure in which ACM has been processed, manufactured, or stored

All employers responsible for the work activity and either the owner or prime contractor must ensure that WorkSafeBC receives the NOP at least 48 hours before starting the project, not just the day before the project and less than 48 hours before work is due to begin. NOPs can be sent to WorkSafeBC either by [online form](#) on the WorkSafeBC website or by fax to 604-276-3247.

In some emergency circumstances such as flooded or fire-damaged buildings that contain or are suspected of containing ACM, immediate work may be necessary to prevent injury to workers or other persons, the risk of occupational disease or damage to property. In such cases, [section 20.2.1\(6\)](#) of the *Regulation* permits work to begin as long as an NOP is submitted to WorkSafeBC as soon as possible. Section 20.2.1(6) of the *Regulation* does not relieve the employer of the obligation to comply with any other requirement of the *Regulation*, including the obligation to conduct a pre-demolition risk assessment for asbestos. Work must be done safely.

Renovation and demolition scenarios

Ten common renovation and demolition scenarios are outlined in the Table "Guide for handling and removal of ACM during demolition and renovation." The scenarios range from removal of spray-on friable asbestos insulation within a structure to demolishing a structure using mechanical demolition equipment.

For each scenario, the Table provides information on the following five aspects of hazard control:

- The type of containment, from restricted access to partial or full containment
- Work area controls to minimize the generation of dust and to otherwise control it if present
- Personal protective equipment, particularly respiratory and body protection
- Personnel decontamination, ranging from simple wash-up to full shower provisions
- Site decontamination

The control measures outlined in the Table vary according to risk factors, and are intended to be consistent with the risk-based principles in the manual [Safe Work Practices for Handling Asbestos](#).

One of the risk factors in the Table deals with whether or not the structure will be reoccupied. "Reoccupancy" refers to a circumstance where one or more workers or other building occupants without appropriate personal protective equipment will be returning into the abatement area following the abatement work. Reoccupancy involves a higher level of risk and typically a more stringent standard of work area control and decontamination.

For most scenarios a "Comments" section is included to outline the differences in control measures where no reoccupancy is expected or to provide further technical information.

There are several precautions when using the Table.

1. **The Table does not include all possible scenarios.** [Sections 6.5](#) and [20.112](#) of the *Regulation* establish the employer's obligation to identify ACM at the work site. [Section 6.6](#) requires that a risk assessment be done of any identified ACM and before any demolition, alteration, or repair of machinery, equipment, or structures where asbestos may be disturbed. It also requires that the level of risk be established, which will typically be high or moderate risk for renovation and demolition work. The assessment of ACM must be done by a qualified person. Refer to [sections 6.6](#) and [6.1](#) of the *Regulation* and [G6.1-1 Definition of a qualified person](#) for information on qualifications.

Measures to identify and assess asbestos may reveal additional scenarios and types of ACM. For any scenario, [section 6.8](#) of the *Regulation* requires that proper procedures be in place.

2. **The measures in the Table are considered only to be a guide to the expected standard of protection.**

(a) There may be circumstances at a site where the assessment demonstrates a need to include additional or more stringent measures.

(b) There may also be situations where the qualified person determines that effective exposure control can be maintained without following all the measures listed in the Table. These situations could include the following:

- A small area of texture coat (no more than 2 or 3 square feet) must be removed from a ceiling to allow for repairs e.g., following a water leak
- Texture coat is removed by removing large intact sections of the drywall substrate using a saw equipped with local exhaust ventilation

For these situations, an employer needs to contact a WorkSafeBC prevention officer who, if satisfied by the risk assessment rationale, can accept the control measures (by accepting the procedures). When considering acceptability of the procedures, the prevention officer will consider factors such as the following:

- A written risk assessment that includes consideration of at least the following factors:
 - Friability
 - Amount of disturbance during the work activity
 - Adhesion to a substrate
 - Proximity to unprotected workers
 - Asbestos content (%)
 - Air monitoring data provided by the employer for equivalent situations
 - Size and duration of the project
 - The applicability of new or emerging asbestos abatement technology or techniques
 - Reoccupancy versus demolition
- Industry experience and compliance history of the contractor and supervisor
- Involvement of an independent third party consultant
- Matters required by section 6.8(3) of the *Regulation*

If the procedures are accepted, and prior to abatement work proceeding, the prevention officer will issue an inspection report which includes an acceptance of the work procedures for that project only.

(c) In all cases, it is necessary to ensure that the control measures properly protect workers from exposure to asbestos. Measures must be in compliance with the *Regulation*.

3. The Table does not cover all aspects of asbestos controls required by the *Regulation*.

Several examples are provided below.

- **Air monitoring:** Air monitoring must be done if a worker may be exposed to asbestos, and in certain high-risk circumstances specified in the *Regulation*.
- **Some procedures are prohibited:** Examples include pressure spraying to remove asbestos, and dry sweeping or using compressed air for cleanup. Procedures such as sanding of asbestos-contaminated flooring and similar surfaces should be avoided where possible, given the requirement in [section 6.8](#) of the *Regulation* to prevent or minimize the release of airborne asbestos. Any sanding is considered to be high risk and requires a corresponding high level of control.
- **Before starting work, all workers and supervisors must be properly trained:** Training is required on matters including the hazards of asbestos, the means of identifying asbestos-containing materials at the worksite, the correct use and maintenance of personal protective equipment, the operation of required engineering controls, and the site-specific work procedures to be followed. Workers must be properly supervised.

Table: Guide for handling and removal of asbestos-containing materials during demolition and renovation projects

Note: Explanations of the terms used in this Table are provided at the end of the guideline.

Work area designation and containment	Work area controls	Personal protective equipment <i>(Refer to Note 1 at the end of the Table)</i>	Personnel decontamination <i>(Refer to Note 2 at the end of the Table)</i>	Site decontamination comments and explanation <i>(Refer to Note 3 at the end of the Table)</i>
Scenario 1: Spray-on friable asbestos insulation or fire-proofing materials, with reoccupancy				
Full containment	Material saturation procedures designed to eliminate or reduce the release of dust before and during disturbance and handling of materials; and HEPA-equipped ventilation unit	Air supplied respirator; Protective clothing; and Laceless rubber boots or other appropriate footwear designed to be easily decontaminated	Full shower decontamination facility	Impervious waste containers; HEPA-equipped vacuum to ensure removal of all visible ACM (Wet wash-down also recommended); and Fibre sealant on exposed surfaces after cleaning

("negative-air" unit)

Comment:

If there will be no reoccupancy, the above measures apply except that partial containment is acceptable as a means of work area containment. Also, the recommendation for wet wash-down would not apply as part of site decontamination as long as decontamination methods ensure removal of all visible ACM.

Scenario 2: Asbestos-containing textured ceiling or wall removal, with reoccupancy

Full containment	Material saturation procedures designed to eliminate or reduce the release of dust before and during disturbance and handling of materials; and HEPA-equipped ventilation unit ("negative-air" unit)	Powered air-purifying respirator with NIOSH 100 Series filters; Protective clothing; and Laceless rubber boots or other appropriate footwear designed to be easily decontaminated	Full shower decontamination facility	Impervious waste containers; HEPA-equipped vacuum to ensure removal of all visible ACM (Wet wash-down also recommended); and Fibre sealant on exposed surfaces after cleaning
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Comment:

If there will be no reoccupancy, the above measures apply except that partial containment is acceptable as a means of work area containment. Also, the recommendation for wet-wash down would not apply as part of site decontamination as long as decontamination methods ensure removal of all visible ACM.

Scenario 3: Asbestos cement products, with reoccupancy

Designated work area	Material saturation procedures designed to eliminate or reduce the release of dust before and during disturbance and handling of materials; and Controlled manual procedures	Half-facepiece dual cartridge air purifying respirator with NIOSH 100 Series filters; Protective clothing; and Laceless rubber boots or other appropriate footwear designed to be easily decontaminated	Wash-up decontamination facilities	Impervious waste containers, or polyethylene-lined disposal bin; and HEPA-equipped vacuum to ensure removal of all visible ACM (Wet wash-down also recommended)
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Comment:

In some cases it may not be practicable to apply material saturation techniques. In such cases an alternative is to wet exposed surfaces of the ACM and mist the air during removal.

If there will be no reoccupancy then the above measures apply except that the recommendation for wet wash-down would not apply as part of site decontamination procedures, as long as decontamination methods ensure removal of all visible ACM.

Scenario 4: Asbestos-containing joint tape or paper on ductwork, with or without reoccupancy

Designated work area	Glove bag and material saturation procedures, or encapsulation (e.g., with duct tape) designed to eliminate or reduce the release of dust before and during disturbance and handling of materials; and HEPA-equipped vacuum	Half-facepiece dual cartridge air purifying respirator with NIOSH 100 Series filters; Protective clothing; and Laceless rubber boots or other appropriate footwear designed to be easily decontaminated	Wash-up decontamination facilities	Impervious waste containers; and HEPA-equipped vacuum to ensure removal of all visible ACM
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Scenario 5: Asbestos-containing filling compound on gypsum board, with reoccupancy

Partial containment; or Full containment (level of containment dependent on risk)	Material saturation procedures designed to eliminate or reduce the release of dust before and during disturbance and handling of materials; HEPA-equipped vacuum or ventilation unit ("negative-air" unit);	Half-facepiece dual cartridge air purifying respirator with NIOSH 100 Series filters; or powered air purifying respirator with NIOSH 100 Series filters; Protective clothing; and Laceless rubber boots or other appropriate footwear	Wash-up decontamination facilities; and HEPA-equipped vacuum	Impervious waste containers; and HEPA-equipped vacuum to ensure removal of all visible ACM (Wet wash-down also recommended)
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assessment)	Use of hand tools, (e.g., knives, hammers, crowbars); or power tools equipped with HEPA-filtered local exhaust ventilation; and Power tools equipped with HEPA-filtered local exhaust ventilation systems can only be used if supported by air monitoring results	designed to be easily decontaminated		
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Comment:
In some cases it may not be practicable to effectively apply material saturation techniques to joint filling material, for example, if water resistant paints or coatings had previously been applied to the material. In such cases an alternative is to wet exposed surfaces of ACM and mist the air during removal.

If there will be no reoccupancy then the above measures apply except that the recommendation for wet wash-down would not apply as part of site decontamination as long as decontamination methods ensure removal of all visible ACM.

Scenario 6: Vinyl asbestos floor tile or vinyl asbestos sheet flooring - with asbestos in the matrix of the flooring or adhesive, with reoccupancy

Partial containment	Material wetting procedures designed to eliminate or reduce the release of dust before and during disturbance and handling of materials; Use of hand tools (e.g., scrapers, knives); or power tools equipped with HEPA-filtered local exhaust ventilation; and Power tools equipped with HEPA-filtered local exhaust ventilation systems can only be used if supported by air monitoring results	Half-facepiece dual cartridge air purifying respirator with NIOSH 100 Series filters; Protective clothing; and Laceless rubber boots or other appropriate footwear designed to be easily decontaminated	Wash-up decontamination facilities	Impervious waste containers or Polyethylene-lined disposal bin; and HEPA-equipped vacuum to remove all visible ACM
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Comment:
During renovation work avoid sanding asbestos-contaminated surfaces wherever possible. In some cases it may not be practicable to effectively apply material saturation techniques. In such cases an alternative is to wet the exposed surfaces and mist the air during removal.

If there will be no reoccupancy then the above measures apply except that the use of a HEPA-equipped vacuum in site decontamination is not necessary as long as decontamination methods ensure removal of all visible ACM.

Scenario 7: Vinyl sheet flooring - with asbestos in backing or underlay, with reoccupancy

7a) Partial containment (small areas less than 10 square metres, approx. 100 square feet);	Material saturation procedures designed to eliminate or reduce the release of dust before and during disturbance and handling of materials; HEPA-equipped vacuum; and Use of hand tools only (e.g., scrapers, knives)	Half-facepiece dual cartridge air purifying respirator with NIOSH 100 Series filters; or powered air purifying respirator with NIOSH 100 Series filters; Protective clothing; and Laceless rubber boots or other appropriate footwear designed to be easily decontaminated	Wash-up decontamination facilities and HEPA-equipped vacuum	If the backing is difficult to remove or firmly adhered to the substrate, then full containment procedures must be used as per scenario 7b; Impervious waste containers; HEPA-equipped vacuum to ensure removal of all visible ACM (Wet wash-down also recommended); and Fibre sealant on exposed surfaces after cleaning
7b) Full containment (areas greater than	Material saturation procedures designed to eliminate or reduce the release of dust before and	Powered air purifying respirator with NIOSH 100 Series filters;	Full shower decontamination facility	Impervious waste containers; HEPA-equipped vacuum to ensure removal of all visible ACM (Wet

10 square metres, approx. 100 square feet);	during disturbance and handling of materials; HEPA-equipped ventilation unit ("negative-air" unit); Use of hand tools (e.g., scrapers, knives); or power tools equipped with HEPA-filtered local exhaust ventilation; and Power tools equipped with HEPA-filtered local exhaust ventilation systems can only be used if supported by air monitoring results	Protective clothing; and Laceless rubber boots or other appropriate footwear designed to be easily decontaminated	wash-down also recommended); and Fibre sealant on exposed surfaces after cleaning
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Comment:

Where feasible, remove vinyl flooring and subfloor as a unit, without de-lamination. If this is possible then application of fibre sealant is not necessary. Also, if procedures involve immediate application of a new flooring surface on top of the subfloor then sealant would not be needed. During renovation work avoid sanding asbestos contaminated surfaces wherever possible.

If there will be no reoccupancy then the above measures apply except that the recommendation for wet wash-down would not apply as part of site decontamination as long as decontamination methods ensure removal of all visible ACM.

Scenario 8: Loose-fill vermiculite attic or wall cavity insulation containing asbestos, with reoccupancy

Designated work area; Partial containment or Full containment (level of containment dependent on risk assessment)	HEPA-equipped vacuum suction system (e.g., Vec loader); Wetting of vermiculite and air misting if manual removal methods (e.g., scooping and bagging) are used; and For locations such as attics, maintain negative pressure to prevent fibre spread. Do not use compressed air to blow vermiculite	Powered air purifying respirator with NIOSH 100 Series filters if manual removal procedures are used in attics and similar spaces; Protective clothing; and Laceless rubber boots or other appropriate footwear designed to be easily decontaminated	Full shower decontamination facility if manual removal procedures are used in attics and similar spaces	Impervious waste containers for waste removal; HEPA-equipped vacuum to ensure removal of all visible ACM; and Fibre sealant on exposed surfaces after cleaning
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Comment:

Vermiculite itself does not contain asbestos. However, some vermiculite is contaminated with asbestos, typically tremolite or actinolite. Representative bulk sample collection and analysis of asbestos-contaminated vermiculite, by a qualified person, is needed to determine the type and amount of asbestos, and to establish any required safe work procedures for preventing harmful exposure.

For bulk sample collection, take samples from the top to bottom of the insulation. This is because any asbestos will likely be present in greater amounts at the bottom due to the settling out of asbestos fibers from the vermiculite particles. Sampling only the top of the vermiculite may result in a false negative analysis for asbestos.

While most vermiculite is likely to be found in attics and similar spaces, the product may also be found in locations such as hollow concrete block walls. In all cases, safe removal procedures are required. A heat stress assessment must be conducted if workers are or may be exposed to thermal conditions that could cause heat stress, for example, in enclosed attics.

If there will be no reoccupancy then the above measures apply except that site decontamination may not require the application of sealant. In such cases misting of surfaces may be an appropriate alternative. Also, the use of a HEPA-equipped vacuum may not be necessary in site decontamination as long as decontamination methods ensure removal of all visible ACM.

Scenario 9: ACM asphalt roofing materials, with or without reoccupancy

Designated work area; or Partial containment where required to prevent wind dispersion	Controlled manual procedures, or HEPA-filtered local exhaust ventilation on equipment	Half-facepiece dual cartridge air purifying respirator with NIOSH 100 Series filters; and Protective clothing	Wash-up decontamination facilities	Polyethylene-lined disposal bin; and Decontamination methods that will ensure the removal of all visible ACM
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Scenario 10: Using mechanical demolition equipment (for example, a backhoe) to demolish all or part of a house, building, or other structure in proximity to publicly accessible areas

Designated work area	Remove asbestos cement products and friable ACM; Presoak remaining non-friable ACM, and use water dust suppression (a residential watering hose would not typically provide sufficient water volume); and Monitor wind and control any potential for fibre spread offsite	Half-facepiece dual cartridge air-purifying respirator with NIOSH 100 Series filters; and Protective clothing for affected workers including equipment operators	Wash-up decontamination facilities	Polyethylene-lined disposal bin; and Decontamination methods that will ensure the removal of all visible ACM
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Comment:

In scenario 10, all friable ACM (for example, textured ceiling and wall material, and sprayed-on insulation or fireproofing) is to be removed before mechanical demolition of a structure. Containment of asbestos by enclosure or encapsulation is typically not an option. It is also appropriate to remove all asbestos cement products, which can become friable during demolition. Selective sorting of waste materials can significantly reduce the quantities of asbestos waste.

If the structure is in such a condition that it is dangerous to workers to undertake prior removal, the employer is expected to provide a risk assessment demonstrating such removal is unsafe and take necessary control measures that properly protect workers and others, including transportation and landfill personnel. Where the project involves removal of asbestos by means other than mechanical demolition equipment, then the applicable controls in scenarios 1-9 apply.

Notes to the Table

Note 1 — Personal protective equipment (PPE)

The equipment noted in the Table is for the protection against exposure to asbestos. Other hazards may also be present that require other PPE, for example, eyewear and hearing protection. One of the main issues in the selection of PPE for protection against asbestos is respiratory protection.

The selection of an appropriate respirator, including the facepiece, is based on the assurance that the maximum use concentration for that respirator is not exceeded (refer to [section 8.34](#) of the *Regulation*; [OHS Guideline G8.34-1](#)).

Single use or disposable respirators sometimes known as "dust masks" are not acceptable for any work with asbestos materials. The half-facepiece dual cartridge air purifying respirator with NIOSH 100 Series filters is the minimum standard and is noted for some scenarios. In other scenarios with higher levels of risk, powered air purifying respirators (PAPRs) with NIOSH 100 Series filters or air supplied respirators are required.

The guidance on respiratory protection in the Table is based on the understanding that effective measures are in place to control the release of airborne asbestos. If the risk posed in a scenario is higher than anticipated in the Table, a more stringent level of protection is required.

For example, if exposure to asbestos-containing dust is expected to be substantial during the removal of drywall filling compounds, or if the removal of asbestos cement products generates substantial dust because of the methods used or condition of the material, then PAPRs may be required in place of half-facepiece cartridge respirators. In all cases, the employer must ensure the level of risk is properly assessed, and that protective equipment addresses that risk.

In some cases the risk may be lower than presumed in the Table. For example, if a mechanical method such as a Vec loader is used to remove vermiculite from wall cavities, a half-facepiece dual cartridge air purifying respirator may be sufficient. A lesser standard of respiratory protection may also be permitted in some other cases, if supported by the on-site risk analysis and application of [section 8.34](#) of the *Regulation*. Risk depends on factors such as removal methods, extent of disturbance of material, and the amount and concentration of asbestos.

Note 2 — Personnel decontamination facilities

The expectations for these facilities are based on estimates of typical conditions. There may be some variation in required facilities depending on the level of risk. In some cases more substantial facilities may be required. Examples include procedures that involve extensive overhead work to remove ACM, and circumstances where substantial dust can be generated, such as when pulverizing non-friable ACM. The need for a full shower decontamination facility in several scenarios is due to the anticipated ACM contamination inside protective clothing. In some cases a full shower facility may not be necessary if the hazard is sufficiently controlled. An example is scenario 8, if HEPA-vacuuming is used to remove vermiculite from hollow concrete block walls.

Note 3 — Site decontamination measures

For most of the scenarios in the Table, HEPA-vacuuming is noted as the appropriate means of site decontamination. This is because of its effectiveness. Where removal involves wet methods, it is good practice to HEPA-vacuum the surface after it has dried. In some cases, wet wash-down is recommended as an additional measure, for increased assurance of protection.

All asbestos-containing and asbestos contaminated wastes generated are to be placed in impervious containers. The containers must be labeled as asbestos waste material. The employer must ensure that hazardous wastes are handled in compliance with the *Regulation* and the requirements of provincial and municipal authorities.

Explanation of terms used in the table

ACM (Asbestos-containing material)	<p>Section 6.1 of the <i>Regulation</i> states:</p> <p>(a) a manufactured article or other material, other than vermiculite insulation, that would be determined to contain at least 0.5% asbestos if tested in accordance with one of the following methods:</p> <p>(i) Asbestos, Chrysotile by XRD, Method 9000 (Issue 2, dated August 15, 1994) in the NIOSH Manual of Analytical Methods, published by the United States National Institute for Occupational Safety and Health, Center for Disease Control;</p> <p>(ii) Asbestos (bulk) by PLM, Method 9002 (Issue 2, dated August 15, 1994) in the NIOSH Manual of Analytical Methods, published by the United States National Institute for Occupational Safety and Health, Center for Disease Control;</p> <p>(iii) Test Method for the Determination of Asbestos in Bulk Building Materials (EPA/600/R-93/116, dated July 1993) published by the United States Environmental Protection Agency;</p> <p>(b) vermiculite insulation that would be determined to contain any asbestos if tested in accordance with the Research Method for Sampling and Analysis of Fibrous Amphibole in Vermiculite Attic Insulation (EPA/600/R-04/004, dated January 2004) published by the United States Environmental Protection Agency;</p> <p>The potential for such conditions must be assessed. Safe work procedures and other necessary controls must be implemented to ensure asbestos fibre concentrations are controlled to levels at or as low as reasonably achievable below the Exposure Limit as per section 5.57(2) of the <i>Regulation</i>.</p>
Asbestos cement products	Include asbestos cement shingles, roofing tiles, siding (transite panels), and pipe, as well as non-friable cementitious stucco and plaster materials.
Asbestos waste	Any waste material generated on a worksite which meets the criteria for special waste set out by the Ministry of Environment or which contains 0.5% or more by weight of asbestos as determined by the required analytical procedures (refer to ACM - "Asbestos-containing material" above).
Controlled manual procedures	Manual removal procedures that are designed to minimize or prevent breakage and disturbance of asbestos materials, and do not involve the use of powered equipment or power tools.
Designated work area	<p>A work area that includes the following measures:</p> <p>(a) The boundaries of the work area identified by barricades, fences, or similar means, with signs posted at all entrances to the work area indicating that asbestos abatement work is in progress, the hazards of asbestos exposure, and the precautions that are required for entering into the work area.</p> <p>(b) The work area cleared of all moveable objects, equipment, and materials that are not required during the work.</p> <p>(c) Polyethylene drop sheets placed on the floor of the work area beneath the asbestos materials that are being removed, and over objects and materials that cannot be removed from the work area.</p> <p>(d) All windows, doorways, and other openings including ducts and vents sealed to prevent the release of asbestos fibres into areas beyond the boundaries of the work area.</p> <p>(e) Access to an Asbestos Abatement Work Area restricted to trained, authorized, and supervised workers wearing appropriate respiratory protection and protective clothing.</p> <p>with due regard for the level of risk to workers of the employer and any other workers present at the workplace at which the employer's work is being carried out.</p>
Friable	<p>Section 6.1 provides, in reference to asbestos-containing material, that friable means material that is crumbled or powdered or can be crumbled or powdered by hand pressure.</p> <p>Note: Non-friable material, including asbestos cement products, can become friable as a result of deterioration,</p>

mechanical destruction, or abrasion forces.

Full containment	<p>Involves all of the requirements of the "Designated Work Area," as well as the following:</p> <p>(a) Complete airtight isolation of the work area to prevent the escape of asbestos fibres by use of polyethylene sheeting (at least 0.15 mm (0.006 inch, or 6 mil) thickness and duct tape, or similar impermeable materials.</p> <p>(b) All floors, walls, and other surfaces in the work area covered with polyethylene sheeting of the same thickness sealed with tape.</p> <p>(c) The work area containment inspected and repaired as necessary on at least a daily basis, and otherwise as required, to ensure that an airtight seal is maintained during asbestos abatement work.</p>
Full shower decontamination facility	<p>The facility will include a physical connection to the containment, a shower facility and provision for the safe entry and exit of workers. It will also meet the applicable requirements of section 5.82(2) & (3) of the <i>Regulation</i>.</p>
HEPA filter	<p>High Efficiency Particulate Aerosol filter that is at least 99.97% efficient at collecting an aerosol particle 0.3 micrometer in size.</p>
HEPA-equipped local exhaust ventilation	<p>Local exhaust ventilation with HEPA filter used for the control of contaminants at the source; for example, a HEPA-equipped vacuum mounted on a power tool. Note the requirements of section 6.19 of the <i>Regulation</i> to assess and maintain filters.</p>
HEPA-equipped vacuum	<p>HEPA filter-equipped vacuum used for cleanup and decontamination procedures or for local exhaust ventilation where appropriate. Note the requirements of section 6.19 of the <i>Regulation</i> to assess and maintain filters.</p>
HEPA-equipped ventilation unit or ("negative-air" unit)	<p>Portable ventilation unit equipped with HEPA filtration used to ventilate a containment and create a slight negative-air pressure differential that ensures net air movement from outside the containment into it. This air movement reduces the risk of asbestos-contaminated air moving out of the containment. Note the requirements of section 6.19 of the <i>Regulation</i> to assess and maintain filters.</p>
Impervious waste container	<p>Any container designed and made of a material which will contain all asbestos waste and will prevent the release of asbestos wastes and fibre during transport to and disposal at an approved disposal site. Examples include double sealed polyethylene plastic bags, each with a nominal thickness of at least 6 mil, and fibre barrels. Procedures that use thinner plastic bags are not procedures acceptable to WorkSafeBC under section 6.8(2) or 6.27(2)(a) of the <i>Regulation</i>.</p> <p>The outside of the waste container must be labeled as asbestos-containing waste, as required by section 6.25 of the <i>Regulation</i>. Tight-fitting lids or other covers that seal the container must be used with rigid containers such as barrels and bins.</p> <p>Disposal site operators may require specific types of containers or may have restrictions on the type of containers they will accept.</p> <p>The requirement for double sealed plastic bags to be at least 6 mil is consistent with clause 40(2)(b)(i)(B) of the Environmental Management Act Hazardous Waste Regulation requirements for waste asbestos.</p>
Laceless rubber boots or other appropriate footwear	<p>Appropriate footwear will be in compliance with section 8.22 of the <i>Regulation</i>, which requires among other things that footwear be of a design, construction, and material appropriate to the protection required. Typically, wherever asbestos-containing dusts or debris are present, footwear is expected to be of a design that permits it to be easily decontaminated. Laceless rubber boots are an example of such a design.</p> <p>If other risks are present, such as slipping, uneven terrain, crushing potential, or puncture hazards then the footwear must address those issues. Footwear must not create hazards greater than those it is intended to protect against.</p>
Material saturation procedures	<p>Procedures that involve the sufficient wetting of asbestos-containing material before and during removal to eliminate or substantially control airborne dust. Note that amended water containing surfactants (wetting agents) increases the capability for effective dust control, and is to be used particularly in high-risk operations. The obligation to wet materials is found in section 6.22 of the <i>Regulation</i>, and applies whenever such procedures are practicable</p>
Mechanical demolition	<p>Demolition methods and practices in which heavy machinery and equipment is used to tear down buildings and structures safely by use of a systematic plan of demolition.</p>
Non-friable	<p>Following from the section 6.1 of the <i>Regulation</i> definition for friable, non-friable means material that is not crumbled or powdered nor can it be crumbled or powdered by hand pressure.</p> <p>This term is used to describe any asbestos-containing material that binds the fibre into the composition matrix in a</p>

manner that prevents the release of the fibre under normal daily usage conditions.

Normal daily usage conditions do not include situations such as installation, alteration, maintenance, or removal practices. For example, floor tile can be walked on without changing its classification as non-friable, but removal may generate friable asbestos wastes.

Partial containment	<p>Involves all of the requirements of the "Designated Work Area," as well as isolation of the work area using polyethylene sheeting and duct tape or other impermeable materials to seal openings such as windows, doorways, stairways, elevators, heating ducts, and vents.</p> <p>A partial containment will create an airtight work area that prevents the escape of asbestos fibres, without the complete draping of walls, floors, and ceilings as required by a full containment.</p>
Presoaking of non-friable ACM	<p>Presoaking of all non-friable ACM prior to mechanical demolition being done which may disturb the ACM, for example, by flooding asbestos-containing flooring material or other ACM.</p>
Protective clothing	<p>Clothing which is made of a material resistant to penetration by asbestos fibres, fits snugly at the neck, wrists, and ankles, and as necessary to protect against the risk covers the head and feet as well as the body.</p> <p>Disposable protective clothing is recommended. Reusable coveralls are to be cleaned and laundered as required by sections 6.30 and 6.31 of the <i>Regulation</i>. Protective clothing is to be immediately repaired or replaced if torn. Street clothes are not to be worn under protective clothing if work is conducted inside a containment or in circumstances that require the use of full shower decontamination facilities. Heat stress potential must be considered and properly addressed.</p>
Reoccupancy	<p>A circumstance where one or more workers or other building occupants will be returning into the abatement area following the abatement work.</p>
Stationary drop sheets	<p>Drop sheets taped in place to prevent lifting.</p>
Wash-up decontamination facilities	<p>Facilities for wash-up and decontamination, with provision for soap and water, changed regularly after use to ensure cleanliness.</p>
Water dust suppression	<p>Use of water for dust suppression, for example, area water spraying to suppress dust during mechanical demolition procedures.</p>

G6.9(3) Prohibitions - Pressure spraying

Issued July 23, 2014

Regulatory excerpt

Section 6.9(3) of the *OHS Regulation* ("*Regulation*") states:

Pressure spraying equipment of any type must not be used to remove asbestos insulation or other asbestos-containing material from buildings or structures.

Purpose of guideline

The purpose of this guideline is to provide clarification regarding the difference between wetting for the purpose of saturating asbestos-containing material (ACM) with water versus pressure spraying to remove ACM.

Pressure spraying

In the context of section 6.9(3) of the *Regulation*, pressure spraying equipment is any piece of equipment that sprays a liquid or water-ice with sufficient force that any ACM is removed from any surface. It does not refer to the application of water through misting or low pressure wetting procedures used to dampen ACM prior to removal.

While not inclusive, some of the reasons for the prohibition of pressure spraying to remove ACM include the following:

- Pressure spraying of ACM can result in increased contamination both inside and outside of abatement areas, as well as pose difficulties with the cleanup of contaminated water and slurry.
- Pressure spraying can produce large volumes of contaminated slurry and/or water that can be difficult to retain (can leak from the enclosure) and properly contain and remove from the site.
- Wet spray can degrade the seal along the edges of enclosures and force asbestos contamination outside of the enclosure into "clean" areas.
- Within abatement enclosures, asbestos contamination can be sprayed from the original source and forced into small areas that can be difficult to clean.

G6.10 Substitution

Regulatory excerpt

Section 6.10 of the *OHS Regulation* ("Regulation") states:

- (1) The employer must substitute material less hazardous than asbestos-containing material when practicable.
- (2) If such substitution is not practicable, the employer must document the reasons why less hazardous material cannot be substituted for asbestos-containing material, and make this documentation available to workers and to the joint committee or the worker health and safety representative, as applicable.

Section 5.55(2) of the *OHS Regulation* ("Regulation") states:

When selecting a suitable substitute, the employer must ensure that the hazards of the substitute are known, and that the risk to workers is reduced by its use.

Purpose of guideline

This guideline describes factors to consider when selecting a substitute for asbestos-containing material.

Selection of a substitute for asbestos-containing material

Section 6.10 of the *Regulation* requires that, when practicable, the employer must substitute asbestos-containing material with less hazardous material. In selecting a substitute, the requirements of section 5.55(2) of the *Regulation* apply. That is, the employer must ensure that the hazards of the substitute are known and that the risk to workers is reduced. In addition, the substitute should not create a significant hazard that the asbestos-containing product or material would otherwise abate or control. For example, some gaskets made of alternate material may blow out under certain conditions of use, thereby creating a safety hazard. OHS Guideline [G5.55 Type of Controls](#) contains a list of factors that should be considered when selecting a suitable substitute.

Designated Work Areas and containments

G6.12(2) Asbestos monitoring

Issued July 23, 2014; Revised April 30, 2015

Regulatory excerpt

Section 6.12(2) of the *OHS Regulation* ("Regulation") states:

- (2) During a high risk work activity, except where glove bags are used as the containment, the employer must sample for airborne asbestos fibre in
 - (a) areas outside of the containment but in its vicinity, at least daily if there are unprotected workers in the area,
 - (b) the clean room, at least daily during removal and cleanup operations, and
 - (c) contaminated areas inside the containment, as necessary during removal and cleanup to ensure that workers are adequately protected.

Section 5.53(4) of the *Regulation* states:

- (4) Workplace exposure monitoring and assessment must be conducted using occupational hygiene methods acceptable to the Board.

Purpose of guideline

The purpose of this guideline is to describe acceptable methods for keeping workers under observation when conducting airborne asbestos monitoring during high-risk work activities.

Sampling strategy

Section 5.53(4) of the *Regulation* requires workplace exposure monitoring and assessment to be conducted using occupational hygiene methods acceptable to WorkSafeBC. As stated in OHS Guideline [G5.53-4 Occupational hygiene methods acceptable to WorkSafeBC](#), WorkSafeBC accepts methods detailed in standard occupational hygiene references published by a number of agencies, including the National Institute for Occupational Safety and Health (NIOSH). Those acceptable methods include observing and sampling on the worker closest to the source of the hazardous material being generated, as this would be the worker presumed to have the highest exposure risk (refer to NIOSH's *Occupational Exposure Sampling Strategy Manual* for more information).

In order to properly monitor asbestos exposure during high-risk work activities, a technician will need to keep the worker under observation at all times. The technician may choose to enter and remain in the work area, or observe the worker from the outside. The technician will be educated and trained in the sampling methods used, and will not be the same person as the worker who is being monitored.

Entering the containment

If the technician chooses to enter the containment as a means of keeping the worker under observation, the technician must wear the same personal protective equipment and clothing that workers in the containment are required to wear. The technician must also follow the employer's decontamination and housekeeping procedures required under [section 6.8](#) of the *Regulation*.

Observation from outside of the containment

If the worker will be kept under observation from the outside of the containment, one option is to use viewing windows. In that case, the containment (including negative pressure containments) will need to include at least one viewing window. Each viewing window should be sufficiently large (a minimum of two feet by two feet is recommended) and be made of a material, such as transparent polyethylene, that will allow a clear view inside the containment.

Existing sealed windows can also serve as viewing windows provided they are clean, undamaged, and allow a clear view of the containment. In the case of large containments, there should be a sufficient number of viewing windows to allow a clear view of all areas of the containment where there are workers.

Another option for keeping the worker under observation from outside of the containment is to use a live video system. The system can either be wired (in which case wires should be properly sealed where they enter or leave the containment) or wireless. The employer must ensure that the worker closest to the source of the hazardous material being generated is accurately being monitored. Also the worker should be in view of the camera during the entire sampling period.

Sampling results

Whether the worker is observed from the inside or the outside of the containment, the name or job description of the worker should be recorded, as well as the activity the worker was undertaking during sampling. In addition, the technician is expected to provide an interpretation of the results (for example, those that are abnormally high or low).

G6.13 Authorized persons - Designated area

Issued August 1, 1999

Section 6.13(3) of the *OHS Regulation* provides that the employer must restrict entry into designated work areas to "authorized persons who are adequately protected against the level of risk within the designated work area."

In the context of this section, "authorized persons" are workers who are qualified to perform the work, have been designated by the employer as being permitted to do so, and are permitted to be present within the designated work area(s).

G6.16 High risk work

Issued August 1, 1999

For high risk work activities, section 6.16(2) of the *OHS Regulation* ("*Regulation*") provides that the employer must inspect a containment and a decontamination facility at least daily to ensure that their effectiveness is maintained. [Section 6.1](#) of the *Regulation* defines both high and low risk work activities.

Containment and decontamination facilities will be considered to be effective if they can be reasonably expected to confine asbestos materials and fibres within a contained and controlled area. In particular, the system should:

- be airtight in design (see [section 6.14](#)),
- be of substantial construction to support the anticipated stresses likely to be encountered in the course of work (see [section 4.2](#) of the *Regulation*), and
- utilize recognized design considerations common to the industry norms or follow reasonable parameters of control supported by occupational hygiene principles (e.g. good ventilation design, overlap of plastic poly sheet joints and water-resistant duct tape).

When evaluating compliance with this requirement, the system should be checked to see if it is under negative pressure. Smoke or air current tubes can be used for this purpose.

Additional information regarding procedures for removal or encapsulation of asbestos or asbestos-containing materials can be found in the WorkSafeBC publication [Safe Work Practices for Handling Asbestos](#).

Ventilation

G6.19 Ventilation – Filter testing

Issued August 1, 1999; Editorial Revision April 2005; Editorial Revision February 1, 2008; Revised August 28, 2015.

Regulatory excerpt

Section 6.19(1) of the *OHS Regulation* ("*Regulation*") states:

The employer must assess the effectiveness of HEPA filters by DOP (dioctyl phthalate) testing or similar means at least annually, after a HEPA filter is replaced in a vacuum cleaner or ventilation system, and before use in high risk work activity.

Section 6.1 of the *Regulation* includes the following definition:

"*high risk work activity*" means a work activity that involves working with or in proximity to asbestos-containing material if a high level of control is necessary in respect of that activity to prevent exposure of a worker to airborne asbestos fibre.

Section 1.1 of the *Regulation* includes the following definition:

"*HEPA*" means, in reference to air filtration, a high efficiency particulate air filter meeting the specifications of a nuclear grade filter, providing a 99.97% filtration efficiency at a 0.3 micrometre particle size.

Purpose of guideline

This guideline explains why it is necessary to assess HEPA filter effectiveness, describes how to assess effectiveness of a HEPA filter under section 6.19(1), and clarifies the requirement to test filters before use in a high risk work activity.

Purpose of HEPA filtration

HEPA-filtered negative-air units (referred to as *ventilation systems* in section 6.19(1)) operate to reduce air pressure within a work containment and decrease the concentration of airborne particulate. The slightly lower air pressure maintained within the containment will act to prevent the accidental release of contaminants if the containment seal is not completely effective or if the containment material is damaged (e.g., perforated or torn). In addition, the HEPA units will remove particulate from the air and reduce potential worker exposure.

HEPA-filtered vacuum cleaners (called HEPA vacuums) may act as both negative-air machines for very small containments and vacuum cleaners during abatement work. Unlike HEPA-filtered negative-air units (which usually discharge filtered air to the outdoors), HEPA vacuums discharge air into occupied work areas or buildings. HEPA vacuums used within a high risk work area may release significant concentrations of contaminants into the containment if the HEPA filtration systems are not working properly. HEPA vacuums used for glove bag work typically exhaust into a moderate risk work area, where the respiratory protection worn by workers may not be adequate protection if the HEPA filter leaks. It is very important that employers ensure effectiveness of HEPA filter units.

Assessing effectiveness of HEPA filters

The fan in a negative-air or HEPA-vacuum unit draws air through a sequence of filters (including a HEPA filter) at low static pressure. Effectiveness of collection relies on intact and well-sealed filters. Damage to a filter/seal can occur during transportation from the contractor's equipment storage facility to a worksite or from worksite to worksite. The filters can come loose in the unit housing, or a projectile (e.g., rock, nail, or screw) can penetrate the filter material. Annual testing of the units is necessary but insufficient to assure that the units are working properly.

Section 6.19(1) of the *Regulation* requires the employer to *assess the effectiveness* of the HEPA filter. HEPA filters will be considered to be effective if the filter can pass a visual inspection of the filter media and seal, as well as a filter testing protocol. The visual inspection is intended to identify any apparent damage and to examine the integrity of the seal in the filter frame. The filter testing protocol must use dioctyl phthalate (DOP) or similar means. Where the HEPA unit(s) are moved, handled, or transported in a manner that could compromise the integrity of the HEPA filter, the units need to be tested in situ prior to any disturbance of asbestos materials (see also below, "*Before use in high risk work activity*"). The methods used for testing should be consistent with the HEPA filter leak test requirements of *National Sanitation Foundation (NSF) Standard 49-2002, Class II (Laminar Flow) Biohazard Cabinetry*. These requirements are found in Annex F of the NSF standard. Other requirements for testing include the equipment manufacturer's instructions for operation and calibration of the test equipment.

It is recommended that the following information be clearly posted (e.g., an affixed label) on the equipment following the test:

- Model and serial number of the tested unit
- Testing agency
- Name of the tester
- Date of testing
- Nature of the test (e.g., DOP, PAO)
- Results of the test

The employer is also required under [section 4.3\(2\)](#) of the *Regulation* to maintain all HEPA filters in ventilation systems and HEPA vacuums in accordance with manufacturer's instructions, or as specified by a professional engineer, to ensure that they remain effective.

When must HEPA filters be tested?

Section 6.19(1) of the *Regulation* requires the employer to assess the effectiveness of HEPA filters by DOP (dioctyl phthalate) testing or similar means at least as follows:

- Annually
- After a HEPA filter is replaced in a vacuum cleaner or ventilation system
- Before use in high risk work activity

The references to annual and filter-replacement testing are self-explanatory. The reference to testing before use in high risk work activity may require some explanation.

Before use in high risk work activity

The following guidance can be used to help determine when to perform DOP (or similar) testing before use in a high risk work activity.

To ensure maximum effectiveness of the test, DOP (or similar) testing needs to be conducted once the unit has been installed on-site, immediately before use in high risk work activity (i.e., just before the negative-air unit or HEPA vacuum is used on each worksite). Only if this is not practicable due to reasons such as a lack of local availability of testing contractors, the employer may be able to rely on the comprehensive HEPA equipment maintenance program outlined below. The employer must have demonstrated that the HEPA equipment is maintained, stored, handled, and transported in accordance with an effective, comprehensive, and written maintenance program. This program needs to be supervised by a qualified person and should consist of the following:

The detailed reasons why DOP (or similar) testing is not practicable at every worksite immediately prior to use of the equipment.

A qualified person, usually employed by the abatement contractor, who is responsible for arranging necessary inspection and service of the HEPA equipment to minimize the potential for filter failure, and is responsible for maintaining all written records regarding the equipment. This individual requires adequate education and training to understand the hazards from asbestos, how HEPA-ventilation equipment functions and malfunctions, and the techniques required for cleaning, inspecting, repairing, and maintaining the equipment.

Written inventory of HEPA-filtration equipment, including model, age, location (on-site or in storage), when last DOP tested, etc.

Written procedures for the proper storage, transportation, handling, and use of HEPA- filtration equipment. These procedures must address the potential for damage during transport on bumpy roads, or drops (e.g., from the bed of a truck, from platforms, down stairs) or during installation. They must also include detailed instructions for changing of the filter and the criteria for filter change.

Written procedures for visual inspection of HEPA-filtration equipment, including inspection of the exterior case, HEPA filter, and pre-filter for physical damage (e.g., dents, scrapes, holes). Rejection criteria for the removal of damaged equipment from service should be included. Visual inspections need to be performed immediately before use at the abatement worksite.

Worker training on the inspection and transportation procedures, rejection criteria, and operation of the units.

Written records of the above worker training, equipment use (equipment log, including dates and locations of use), visual and DOP inspection results (for both passed and failed units), filter change and maintenance. These records need to be available to WorkSafeBC prevention officers upon request.

If the above criteria are fully met it would be considered reasonable for the abatement contractor to have DOP tested the HEPA-filtration equipment off-site, and then safely stored the equipment until needed at a high risk work site. The utilization of the above criteria is not intended to imply the suitability of using a single DOP (or similar) test for more than one high risk abatement worksite. Each piece of HEPA-filtration equipment must be tested before use in each high risk work activity. However, the use of the maintenance program outlined above, if fully implemented, could allow employers to safely extend their understanding of the term "before use."

If the type of criteria above have not been fully met, or if there is any incident that could affect the filter seal or integrity (e.g., unit is dropped or if the on-site visual inspection detects any anomalies), the requirement to assess the effectiveness of HEPA filters by DOP (or similar) testing before use in high risk work activity refers to testing at the high risk worksite immediately prior to use of the HEPA equipment.

Other Means of Controlling Exposure to Asbestos

G6.24-1 Friction materials

Issued August 1, 1999; Revised consequential to February 1, 2012 Regulatory Amendment

Regulatory excerpt

Section 6.24 of the *OHS Regulation* ("*Regulation*") states:

If automotive service procedures may involve friction material that is asbestos-containing material or dust arising from such material, the employer must ensure that the following control measures are implemented:

- (a) dry removal of friction material dust from automotive assemblies using compressed air, brushes, or other similar means is prohibited;
- (b) service work areas where friction material is handled are posted with signs to advise workers of the hazards and required precautions;
- (c) suitable work procedures are followed to minimize the generation of airborne dust;
- (d) a worker handling equipment or assemblies contaminated with dust from friction material, outside of a HEPA-filtered vacuum enclosure system, wears suitable personal protective equipment, including disposable coveralls and at least a HEPA-filtered dual cartridge half face respirator;
- (e) waste material that may be contaminated with asbestos is promptly collected and disposed of in accordance with applicable requirements;
- (f) contaminated tools, equipment and work surfaces are cleaned after work is completed.

Purpose of guideline

This guideline provides guidance regarding the application of this section of the *Regulation*.

Application of the requirements

Section 6.24 of the *Regulation* prescribes the control measures that an employer must implement in automotive service procedures involving asbestos-containing friction material or the dust arising from such material. This section applies primarily to the servicing of brakes and clutches involving (or potentially involving) asbestos-containing friction materials. For asbestos gaskets and muffler seals, other general duty requirements for controlling exposure to asbestos apply. Refer to relevant sections of [Part 6](#) of the *Regulation* for controlling exposure to asbestos, as well as the sections in [Part 5](#) on controlling exposure, ventilation, personal hygiene, and emergency washing facilities.

The term "may involve friction material that is asbestos-containing material" in section 6.24 is intended to address the uncertainty associated with determining where asbestos-containing friction materials are or have been used. The automotive service industry is not expected to test every material for the presence of asbestos. This would clearly be impracticable. However, in situations where it is unclear whether the friction material contains asbestos, the industry is expected to implement control measures to protect workers from being potentially exposed to asbestos.

G6.24-2 Dry removal of friction material dust

Issued August 1, 1999; Revised consequential to February 1, 2012 Regulatory Amendment

Regulatory excerpt

Section 6.24(a) of the *OHS Regulation* ("*Regulation*") states:

If automotive service procedures may involve friction material that is asbestos-containing material or dust arising from such material, the employer must ensure that the following control measures are implemented:

(a) dry removal of friction material dust from automotive assemblies using compressed air, brushes, or other similar means is prohibited;

Purpose of guideline

This guideline provides guidance regarding the dry removal of friction material dust.

Use of HEPA-filtered vacuum enclosure systems

Section 6.24(a) of the *Regulation* prohibits the dry removal of friction material dust from automotive assemblies using compressed air, brushes, or other similar means. This prohibition is intended to cover open shop procedures or methods of dry removal. It is not intended to prohibit the dry removal of friction material in HEPA-filtered vacuum enclosure systems. It is recognized that some systems specify the use of brushes and "controlled" compressed air within the enclosure systems. However, to ensure that the seal is not compromised, these systems must be used according to the manufacturer's instructions (see [section 4.3](#) of the *Regulation*). Further information regarding HEPA-filtered vacuum enclosure systems is provided in [G6.24-4 "HEPA-filtered vacuum enclosure systems."](#)

Examples of "other similar means" of dry removal include any practice, method, or procedure that is not designed to control the release and spread of dusts likely to contain asbestos fibre into areas where unprotected workers may be present.

G6.24-3 Suitable work procedures

Issued August 1, 1999; Revised consequential to February 1, 2012 Regulatory Amendment

Regulatory excerpt

Section 6.24(c) of the *OHS Regulation* ("*Regulation*") states:

If automotive service procedures may involve friction material that is asbestos-containing material or dust arising from such material, the employer must ensure that the following control measures are implemented:

(c) suitable work procedures are followed to minimize the generation of airborne dust;

Purpose of guideline

The purpose of this guideline is to provide examples of suitable work procedures if automotive service procedures may involve friction material that is asbestos-containing material or dust arising from such material.

Suitable work procedures

Section 6.24(c) of the *Regulation* requires suitable work procedures be followed to minimize the generation of airborne dust. NIOSH has published recommended procedures to minimize exposure to asbestos and asbestos-containing dust during servicing of motor vehicle brake and clutch assemblies.

Suitable work procedures would include the following:

- Negative pressure enclosure/HEPA vacuum system methods (see OHS Guideline [G6.24-4](#))
- Low pressure/wet cleaning methods
- Wet methods.

For further information, refer also to OSHA Regulations [Standard 1910.1001 Appendix F: "Work practices and engineering controls for automotive brake and clutch inspection, disassembly, repair and assembly."](#) This 1995 document is available on the OSHA website.

G6.24-4 HEPA-filtered vacuum enclosure systems

Issued August 1, 1999

"HEPA-filtered vacuum enclosure systems" refer to any number of enclosure systems designed to effectively isolate brake assemblies inside a cabinet, which is continuously vented through a vacuum system. A HEPA-filtered vacuum enclosure system is acceptable if

- there is a tight-fitting collar or seal system, which provides a close fit around the brake assembly and wheel backing plate or rotor,
- an inward air flow through the system can be demonstrated,
- the vacuum filters have been tested as required under section [6.19](#) of the *OHS Regulation*,
- the manufacturers' instructions for the assembly, use, maintenance and repair of the system are followed, and
- workers are adequately instructed and trained in its use and operation.

Waste Handling and Disposal

G6.25 Sealed containers

Issued September 20, 2013

Regulatory excerpt

Section 6.25 of the *OHS Regulation* ("Regulation") states:

The employer must ensure that all asbestos waste and other waste contaminated with asbestos, including disposable protective clothing and cleanup equipment, is placed into sealed containers which are labelled as containing asbestos.

Purpose of guideline

This guideline provides guidance for selection of sealed containers for asbestos-containing waste materials.

Sealed containers

For the purposes of section 6.25, a sealed container is any container designed and made of a material which will contain all asbestos-containing waste and will prevent the release of asbestos waste and fibre during transport to and disposal at an approved disposal site. Examples include double sealed polyethylene plastic bags, each with a nominal thickness of at least 6 mil, and fibre barrels. Procedures that use thinner plastic bags are not procedures acceptable to WorkSafeBC under section 6.8(2) or 6.27(2)(a).

The outside of the waste container must be labelled as asbestos-containing waste, as required by section 6.25 of the *Regulation*. Tight-fitting lids or other covers that seal the container must be used with rigid containers such as barrels and bins.

Disposal site operators may require specific types of containers or may have restrictions on the type of containers they will accept.

The requirement for double sealed plastic bags to be at least 6 mil is consistent with clause 40(2)(b)(i)(B) of the *Environmental Management Act Hazardous Waste Regulation* requirements for asbestos-containing waste.

G6.27 Asbestos waste removal

Issued May 24, 2002; Editorial Revision October 2004; Editorial Revision October 26, 2011; Editorial Revision consequential to February 1, 2012 Regulatory Amendment

Regulatory excerpt

Section 6.27 of the *OHS Regulation* ("Regulation") states:

- (1) Before any work involving asbestos takes place, the employer must ensure that procedures for the safe removal of asbestos dust and debris from the work area are set out in writing by a qualified person.
 - (2) The written procedures must
 - (a) comply with the requirements set out in section 6.8,
 - (b) provide for removal of asbestos dust and debris from the work area
 - (i) while work is in progress, at intervals necessary to eliminate or minimize the risk of exposure,
 - (ii) at the end of each work shift, and
 - (iii) at the completion of work involving asbestos, and
 - (c) consider the nature of the asbestos dust and debris to be removed and provide specific direction regarding which of the following

removal methods, or combination of the following removal methods, is most appropriate for safe removal of that asbestos dust and debris in relation to each of the times set out in paragraph (b) (i), (ii) and (iii);

- (i) using a vacuum cleaner, or similar device, that is equipped with a HEPA-filtered exhaust;
 - (ii) wiping surfaces with a damp cloth or sponge to remove residual amounts of asbestos dust and debris;
 - (iii) wet sweeping or wet mopping to remove larger amounts of asbestos dust and debris;
 - (iv) using a shovel or similar device to place larger amounts of dampened asbestos debris into the sealed container required by section 6.25;
 - (v) using another method that is acceptable to the Board.
- (3) The employer must ensure that
- (a) every worker who is engaged in asbestos dust and debris removal at the work area is adequately instructed and trained in the written procedures of the qualified person under this section, and
 - (b) the written procedures of the qualified person are followed.

Purpose of guideline

The purpose of this guideline is to provide guidance for situations where an employer wishes to use removal methods other than those listed in the *Regulation*.

Removal methods

When the *Regulation* refers to asbestos waste removal, this activity is expected to be carried out only in a controlled environment such as a designated work area or a containment area as described by [section 6.13](#), with workers wearing the appropriate personal protective equipment.

Note that practices such as dry sweeping or dry dusting, blowing with compressed air, and washing with high-pressure water, are not acceptable means for asbestos waste cleanup and removal.

If employers wish to use removal methods other than those specified in section 6.27(2), they are to send their request to OHS Practice and Engineering Support department of WorkSafeBC for consideration. Only methods specified in section 6.27 or approved by OHS Practice and Engineering Support prior to the commencement of work may be used.

Further information on safe work practices for asbestos is provided in the WorkSafeBC publication [Safe Work Practices for Handling Asbestos](#) (BK27).

Personal Protective Clothing and Equipment

G6.31 Contaminated personal protective clothing - Information to laundry workers

Issued August 1, 1999

Section 6.31 of the *OHS Regulation* states:

The employer must ensure that workers who launder clothing contaminated with asbestos are informed of the hazards of asbestos and the precautions required for handling the clothing.

Under section [5.82\(1\)\(b\)](#) of the *OHS Regulation*, the employer is responsible for laundering protective clothing contaminated with asbestos (see OHS Guideline [G5.82](#)). However, before protective clothing contaminated with asbestos can be sent to an acceptable laundry facility, the employer must, under section [6.30\(5\)](#) of the *OHS Regulation*, ensure that it is cleaned with a vacuum cleaner, equipped with a HEPA-filtered exhaust, and placed in a water-soluble plastic bag. This plastic bag must be sealed and labelled. A commercial laundry or linen service would be considered an "acceptable" laundry facility if they are capable of handling contaminated laundry.

The requirements of sections [12.157](#) and [12.158](#) of the *OHS Regulation* also apply.

Documentation

G6.32 Documentation - types of records

Issued August 1, 1999; Retired consequential to February 1, 2012 Regulatory Amendment

G6.70 Pesticides — Definitions

Issued August 1999; Revised March 31, 2010

Regulatory excerpt

Section 6.70 of the *OHS Regulation* ("Regulation") states in part:

"slightly toxic", "moderately toxic" or "very toxic" means, in reference to a pesticide, one containing active ingredients which have acute mammalian toxicities determined by an authority acceptable to the Board, expressed as the Lethal Dose 50% (LD₅₀) by oral or dermal routes of entry as follows:

Category	Oral LD ₅₀	Dermal LD ₅₀
Very toxic	0-50 mg/kg	0-200 mg/kg
Moderately toxic	over 50-500 mg/kg	over 200-1000 mg/kg
Slightly toxic	over 500 mg/kg	over 1000 mg/kg

and where the lowest LD₅₀ by the oral or dermal route of entry determines the category of the pesticide, and if the LD₅₀ is reported as a range, the lowest reported LD₅₀ is used.

Purpose of guideline

The purpose of this guideline is to list authorities acceptable to WorkSafeBC for determining acute mammalian toxicities.

Acceptable authorities

Section 6.70 of the *Regulation* defines certain terms relating to toxicity, including the terms: "slightly toxic," "moderately toxic," and "very toxic." These terms relate to a pesticide "containing active ingredients which have acute mammalian toxicities determined by an authority acceptable to WorkSafeBC, expressed as the Lethal Dose 50% (LD₅₀) by oral or dermal routes of entry..."

Acceptable authorities for determining acute toxicities for classifying pesticides are the BC Ministry of Environment and the Pest Management Regulatory Agency (PMRA) of Health Canada.

Table 4 in the WorkSafeBC publication [Standard Practices for Pesticide Applicators](#) shows acute toxicity ratings for pesticides. The Oral LD₅₀s in Table 4 are based on information from the *Handbook for Pesticide Applicators and Dispensers*, BC Ministry of Environment (2005), and from the Pest Management Regulatory Agency of Health Canada.

Although toxicity is defined by reference to active ingredients, this does not mean that other ingredients can be ignored. The employer will have to consider all ingredients in fulfilling the general requirements under [section 5.2](#) of the *Regulation*, as well as the requirements for controlling exposure under sections [5.48 to 5.59](#).

G6.74 Good practices for applying pesticides

Issued September 21, 2012

Regulatory excerpt

Section 6.74 of the *OHS Regulation* ("Regulation") states:

The employer must ensure that a pesticide for use in the workplace is used in accordance with the requirements stated on the label and with good application practice.

Purpose of guideline

This guideline lists some sources of good application practice for pesticides.

Good application Practice

For information on pesticide application practices refer to the following:

- [Standard Practices for Pesticide Applicators, BK35](#) published by WorkSafeBC
- [Handbook for Pesticide Applicators And Dispensers](#), published by the BC Ministry of Environment
- BC [Integrated Pest Management Act](#) and [regulations](#) under it
- [Pest Control Products Act \(Canada\)](#) and [regulations](#) under it

For information on antisapstain application practices refer also to the following:

- [Recommendations for the Design and Operation of Wood Preservation Facilities](#), published by Environment Canada

G6.75 Safety data sheets (SDS)

Issued August 1999; Editorial Revision consequential to August 4, 2015 Regulatory Amendment

Regulatory excerpt

Section 6.75 of the *OHS Regulation* ("Regulation") states:

The employer must make readily available to workers an SDS or its written equivalent for all pesticides used at the workplace.

Purpose of guideline

The purpose of this guideline is to set out the minimum information that an SDS written equivalent should contain.

Regulatory requirements

For all pesticides used at the workplace, section 6.75 of the *Regulation* requires the employer to make an SDS or its written equivalent readily available to workers. Because pesticides are covered by other legislation, pesticides are exempt from WHMIS requirements for labels and SDS. However, pesticides cannot be sold or used in Canada unless registered by Health Canada, a requirement of the federal *Pest Control Products Act*. Health Canada advises registrants to make an SDS available.

Written equivalent

At a minimum, the "written equivalent" of an SDS should contain the following:

- Trade name (such as the manufacturer or selling agent's name for the product)
- Use (for example herbicide, insecticide) and classification (permit-restricted, restricted, commercial, domestic or exempted)
- Registration number
- Product identification number (PIN)
- Formulation or net content, indicating total pesticide formulation
- Guarantee which identifies the active ingredient and concentration
- Directions for pesticide use (where to be used and rates of application)
- Precautionary symbol (such as toxic, flammable, explosive or corrosive)
- Precautions to be taken during use to prevent worker exposure and environmental contamination
- First aid requirements
- Toxicological information
- Disposal requirements
- Name and address of the pesticide manufacturer or selling agent

G6.77 Mixing, loading, and applying pesticides — Qualifications

Issued August 1, 1999; Revised consequential to February 1, 2012 Regulatory Amendment

Regulatory excerpt

Section 6.77 of the *OHS Regulation* ("*Regulation*") states:

(1) The employer must ensure that a worker or applicator who mixes, loads or applies a moderately or very toxic pesticide for use in a workplace or who cleans or maintains equipment used in the operations

(a) is 16 years of age or over, and

(b) holds a valid pesticide applicator certificate issued under the *Integrated Pest Management Act*.

(2) Subsection (1) (b) does not apply to the use of biocides and slimicides in pulp and paper operations, or to antisapstain materials.

(3) Workers involved in training for the purposes of obtaining a valid pesticide applicator certificate who are directly supervised by a qualified person are exempt from the requirement of subsection (1) (b) during the training period.

Purpose of guideline

The purpose of this guideline is to clarify the meaning of the term "qualified person" as in section 6.77 of the *Regulation*.

"Qualified person" under section 6.77(3)

Under section 6.77(3), workers who are being trained to obtain a valid pesticide applicator certificate are exempt from section 6.77(1)(b) for the duration of the training period, provided they are directly supervised by a "qualified person" as defined by [section 1.1](#) of the *Regulation*.

"Qualified person" in the context of this section means a person who

- Meets the requirements of sections 6.77(1)(a) and (b)
- Is responsible for the proper instruction of the trainees, as well as ensuring their work is performed without undue risk
- Will be in compliance with section 46 of the *Integrated Pest Management Regulation*.
- This section requires that the supervisor executes each of the following:
 - Be present when the service is provided (in the *Pesticide Control Act Regulation*, "service" means a service involving the use of pesticides)
 - Either perform the use of the pesticides himself/herself, or supervise no more than four uncertified assistants at one time
 - Must not be more than 500m from and maintain continuous visual or auditory contact with the uncertified assistants.

Note

Services involving restricted, commercial, or domestic pesticides require the applicator to possess a certificate. Services involving permit-restricted pesticides require the applicator to possess a valid restricted permit (such as for 1-time usage).

G6.79 Health protection — manner acceptable to WorkSafeBC

Issued August 1999; Editorial Revision June 8, 2011

Regulatory excerpt

Section 6.79 of the *OHS Regulation* ("Regulation") states:

Where, in the opinion of the Board, it is necessary to provide health monitoring for workers exposed to pesticides, employers and workers must participate as required by the Board, and records must be maintained in a manner acceptable to the Board.

Purpose of guideline

The purpose of this guideline is to establish the manner acceptable to WorkSafeBC under which records must be maintained.

Record keeping

Where WorkSafeBC deems it necessary that health monitoring be provided for workers exposed to pesticides, section 6.79 of the *Regulation* requires that employers and workers participate in such programs, as required by WorkSafeBC. Records of the health monitoring program must be maintained in a manner acceptable to WorkSafeBC.

As prescribed by section [5.54\(2\)\(f\)](#) of the *Regulation*, health monitoring may be a required element of an exposure control plan. Health monitoring is discussed in OHS Guideline [G5.54-5](#). Health monitoring records maintained in accordance with the guidance in OHS Guideline [G5.54-5](#) and in keeping with the instructions of an occupational health physician or nurse are acceptable to WorkSafeBC.

Records may not be kept in any other manner without the written acceptance of WorkSafeBC. The OHS Practice and Engineering Support department is the contact for acceptance of alternative record keeping methods.

G6.80 Rescue

Issued August 1, 1999

Section 6.80 of the *OHS Regulation* ("Regulation") states:

If a worker applies a moderately or very toxic pesticide in a greenhouse or similar enclosed space and the worker may be incapacitated during the application, the work must be done in such a manner that a rescue can be effected by another worker equipped and able to do so.

OHS Guideline [G6.85](#) discusses what is an "enclosed space".

The requirements of [Part 32 \(evacuation and rescue\)](#), as well as sections [4.13 to 4.18 Emergency preparedness and response](#) and sections [5.97 to 5.102](#), also apply. In accordance with sections 4.13 and 32.1, the employer must conduct a risk assessment to determine the need for rescue when pesticides are applied in enclosures. Workers designated to provide rescue must be adequately trained and equipped, as per sections [32.2 and 32.3](#).

During the application of pesticide in an enclosure provision for rescue will likely be required when:

- required on the label or by available hazard information,
- very and moderately toxic pesticides are applied,
- the pesticide can be absorbed through the skin (this is a factor for exposure to organophosphate, carbamate, dithiocarbamate, organochlorine, nitrophenol pesticides),
- the formulation consists of emulsifiable concentrates and wettable powders that increase the potential for skin contact,
- the formulation consists of fogs, fine dusts, wettable powders, or gas or vapour fumigants that increase the potential for inhalation,
- high pressure spraying that produces fine particles and increased drift is used,
- there is the potential for accidental spillage, rupturing of containers or equipment failure due to worn pipe couplings, hose lines or hose connections,
- ventilation of an enclosure during pesticide application is not possible or is inadequate,
- there is frequent body contact with treated surfaces because of limited space,
- there is the potential for failure of a respiratory protective device due to improper facial seal, cartridge breakthrough, or disruption of the apparatus providing breathing air to a respirator facepiece,
- a worker could potentially be overcome by thermal stress as a result of wearing protective clothing, or
- there is the possibility of entrapment or engulfment.

G6.82 Fixed stations

Issued August 1999; Revised February 11, 2004

Section 6.82 of the *OHS Regulation* lists the required features of a fixed pesticide mixing, loading or application station. When required by the Board under section 6.82(c), the fixed station must have a closed system for mixing, loading or transferring pesticides.

Closed pesticide mixing systems are recommended under the following conditions:

- when required on the pesticide labels or by available hazard information,
- if the pesticide can be absorbed through the skin (this is a factor for exposure to organophosphate, carbamate, dithiocarbamate, organochlorine or nitrophenol pesticides),
- when very toxic and moderately toxic pesticide formulations (see section [6.70](#) for the definitions of "very toxic" and "moderately toxic" pesticides) that are easily inhalable are handled (for example from exposure to dusts, fogs, gas fumigants and wettable powders in their dry form),
- when emulsifiable pesticide concentrates are diluted with volatile diluents,
- when volatile liquid pesticides are handled in poorly ventilated enclosures,
- if the pesticide is a designated substance, or if the pesticide formulation contains an "inert" or "adjuvant" substance that is designated. Designated substances are identified under section [5.57\(1\)](#) and in the Table of Exposure Limits for Chemical and Biological Substances (see OHS Guideline [G5.48-1](#)) by any of the following notations, abbreviations, or endnotes:
 - ACGIH A1 or A2, or IARC 1, 2A, or 2B carcinogen,
 - reproductive critical effect,
 - sensitization critical effect, or SEN notation, or
 - L endnote.

G6.83 Equipment — Mobile equipment

Issued August 1999

Section 6.83(a) of the *OHS Regulation* requires mobile pesticide application equipment with a tank having a capacity of 200 litres or more to have a device that indicates the fluid level in the tank. This requirement applies to equipment sold for first use after January 1, 1999 in non-agricultural operations. It does not apply to agricultural operations.

There is a similar requirement for a fluid level indicator on mobile pesticide application equipment in section 36(a) of the Regulations for Agricultural Operations. However, this requirement applies to all equipment sold for first use after December 31, 1993.

G6.84 Safe application practice

Issued August 1999; Editorial Revision July 15, 2019

Regulatory excerpt

Section 6.84 of the *OHS Regulation* ("*Regulation*") states:

- (1) The employer must ensure that a pesticide is applied in a manner that controls the risk of adverse health effect or injury to any person.
- (2) Before a pesticide is applied, the employer must ensure that all workers in the area that is to be treated and who are not required for the application of pesticides are moved to a safe location.
- (3) If practicable, the employer must schedule a pesticide application in a building for a time when the building is unoccupied.

Purpose of guideline

This guideline provides further explanation for section 6.84(3) of the *OHS Regulation* where it requires that, where practicable, the employer schedule a pesticide application in a building for a time when the building is unoccupied.

Pesticide application should be conducted in unoccupied areas following termination of work such as in the evenings, and during weekends and holidays. Advance precautions, such as moving or storing personal items or protecting office surfaces, should be taken. For assistance in scheduling pesticide application in buildings, the employer should refer to municipal, regional and district legislation and bylaws, as well as pesticide labels and available hazard information.

Under [section 6.76](#) of the *Regulation*, the employer must inform workers or occupants of the intent to use the pesticide, the hazards associated with its use, and any precautions required during the application. In addition, the employer should advise workers or building occupants of the application schedule, as well as the relevant re-entry intervals.

Areas adjacent to a building section where a pesticide is applied may be occupied if the following occurs:

- The pesticide label and available hazard information permit this practice
- A hazard assessment by a qualified applicator considers it safe
- The occupied area is protected from the pesticide application by physical barriers or other effective means
- The ventilation system in the application area is isolated from the central HVAC system
- Signs are posted outside the treatment area to restrict access
- The 're-entry interval' is of sufficient duration to ensure occupants and other building areas do not become contaminated with pesticide residue

G6.85 Posting warning signs

Issued August 1999

Section 6.85 of the *OHS Regulation* ("*Regulation*") provides the requirements for posting warning signs. If a pesticide is applied in an enclosed space, section 6.85(b) requires that all entrances to the space be secured to prevent unauthorized persons from entering.

An "enclosed space" is not the same as "confined space" covered by [Part 9](#) of the *Regulation*. An "enclosed space" is one that is completely or partially enclosed, and may or may not be intended for continuous human occupancy. It should have a safe means of entry and exit, and be large enough and so configured that a worker can enter to perform the assigned work. Examples are fumigation chambers, green houses, warehouses and office buildings.

G6.86 Design of warning signs

Issued August 1999

Section 6.86 of the *OHS Regulation* requires warning signs be "of a design, construction and durability to be clearly identifiable for the prescribed posting period, and must provide information in a manner that can be readily understood by workers."

The "prescribed posting period" in this section refers to the "restricted entry interval." It does not refer to the "days-to-harvest interval." This interval, which is intended to protect consumers, represents the time that must elapse between pesticide application and crop harvest to allow pesticide residue to fall below a specific tolerance level. The restricted entry interval, on the other hand, is intended to protect workers. It represents the time that must elapse after the pesticide is applied, before an unprotected worker is permitted to enter the treated workplace (or portion of the workplace). Restricted entry intervals are addressed under section 6.89 (see OHS Guideline [G6.89](#)).

G6.89 Restricted entry intervals

Issued August 1999; Revised February 11, 2004; Revised April 9, 2019

Regulatory excerpt

Section 6.89 of the *OHS Regulation* ("*Regulation*") states:

- (1) Except where entry is permitted by section 6.90 or 6.91, the employer must ensure that a person does not enter a workplace or portion of a workplace where a pesticide has been applied, until the restricted entry interval has elapsed.
- (2) The length of the restricted entry interval required by subsection (1) is a minimum of
 - (a) 24 hours for a pesticide which is classified as slightly toxic,
 - (b) 48 hours for a pesticide which is classified as moderately or very toxic, and for any mixture in which a moderately or very toxic pesticide is present, or
 - (c) the interval specified on a pesticide label if that interval is longer than the interval determined in paragraphs (a) or (b).

Purpose of the guidelines

The purpose of the guideline is to provide an overview of restricted entry intervals and their use in protecting workers.

Unless entry is permitted under sections 6.90 or 6.91, section 6.89(1) of the *Regulation* ("*Regulation*") requires the employer to ensure that no one enters a workplace or portion of a workplace where a pesticide has been applied, until the restricted entry interval has elapsed. Section 6.89(2) of the *Regulation* provides the minimum length of the restricted entry interval for slightly toxic, moderately toxic, and very toxic pesticides (refer to [section 6.70](#) for definitions).

The term "restricted entry interval" is defined in section 6.70 of the *Regulation*. Entry to 'restricted entry' areas by unprotected, unauthorized workers is prohibited during the restricted entry interval because of the hazards associated with entering a field, building, or structure that has been sprayed with certain pesticides or fumigants. Entry into 'restricted entry' areas by authorized protected workers may be permitted under certain circumstances. One such circumstance is when the restricted entry interval stated on the pesticide label is shorter than those prescribed under section 6.89 of the *Regulation*. Refer to OHS Guideline [G6.90](#) for guidance on this situation.

In some situations, the interval time may not be long enough to eliminate the potential for harm to some workers. For example, certain people can get skin allergies from pesticides such as pyrethrum and formaldehyde, which are identified as substances exhibiting a sensitization effect in the Table of Exposure Limits for Chemical and Biological Substances (refer to OHS Guideline [G5.48-1](#)). In those cases, additional measures may be necessary to protect worker health and safety, following expiry of the restricted entry interval. These may include, but are not limited to, an exposure control plan, in accordance with sections 5.57(2) and (3) of the *Regulation*, and implementation of control measures, in accordance with section 5.55 of the *Regulation*. For further information, refer to OHS Guidelines [G5.54-1](#), [G5.54-2](#), [G5.54-3](#), [G5.55](#), and [G5.57](#).

Any posted warning signs should be removed within 5 days of the expiry date of the restricted entry interval. An exception to this would be if allergenic pesticides were involved, provided that the signage indicates this.

G6.90 Authorization to enter - Restricted entry intervals on pesticide labels

Regulatory excerpt

Section 6.90 of the *OHS Regulation* ("*Regulation*") states:

- (1) If, before the expiry of the restricted entry interval, the employer authorizes a worker to enter a field, building or structure in which a pesticide has been applied the employer must ensure that
 - (a) the hazards to workers have been assessed by a qualified person,
 - (b) the worker is provided with and wears the proper personal protective clothing and equipment required by this Regulation, and
 - (c) the worker follows proper procedures.
- (2) If the employer authorizes a worker to enter a building or structure in which a pesticide has been applied, the employer must ensure that
 - (a) where practicable, the treated area of the building is ventilated and the atmosphere has been tested or otherwise evaluated by a qualified person and declared safe to enter, and
 - (b) if a worker may be incapacitated after re-entry, provision has been made for rescue in a manner that meet the requirements of section 6.80.

Purpose of guideline

The purpose of this guideline is to set out the competencies of the qualified person who will perform the hazard assessment under section 6.90 of the *Regulation* when the employer authorizes a worker to enter a treated area. It also describes some specific situations of when workers may enter a treated area prior to the expiry of the restricted area interval (REI) prescribed in section 6.89(2) of the *Regulation*.

Section 6.89(2) of the *Regulation* prescribes the minimum REIs for pesticides depending on their toxicity. A "restricted entry interval," as defined in section 6.70 of the *Regulation*, is the length of time representing a period of precaution that must elapse after the application of a pesticide, before an unprotected worker may be authorized to enter the treated portion of a field, building, or structure to which the pesticide has been applied. The intent of an REI is to provide a period of time after a pesticide has been applied, during which restrictions on entry are in effect to protect workers from potential exposure to hazardous levels of pesticide residue. However, entry into restricted entry areas is permitted in certain situations and may be necessary under special circumstances as long as the requirements of section 6.90 of the *Regulation* have been met.

When the REI on a pesticide label is shorter than the REI prescribed in section 6.89 of the *Regulation*

One of these circumstances could be when an employer authorizes a worker to enter a field, building, or structure in which a pesticide has been applied before the expiry of the REI prescribed by section 6.89 of the *Regulation*, but the REI on the pesticide label regulated by the Pest Management Regulatory Agency (PMRA) of Health Canada has lapsed. For example, according to section 6.89 of the *Regulation*, the REI for a pesticide containing the active ingredient glufosinate (such as in Ignite®) is 24 hours based on its toxicity category - slightly toxic. However, the REI on a pesticide label of a specific formulation containing glufosinate may state 12 hours.

The prescribed REIs stated in section 6.89(2) of the *Regulation* were established prior to the PMRA adding REIs to labels based on the outcome of its occupational exposure risk assessments and were based on general toxicological parameters, such as LD₅₀. Currently, the individualized REIs prescribed by PMRA on pesticide labels are based on a more recent toxicological database, an understanding of the exposure scenarios, and a robust modern risk-assessment process.

If a conventional chemical pesticide has no REI on the label, the employer would be required to follow the prescribed REIs in section 6.89 of the *Regulation* based on its toxicity classification.

For non-conventional pesticides, such as microbial pesticides, pheromones, and biopesticides, an REI may not be expressed as a time interval on the label if the toxicity profile of these products are low and if health risks for post-application workers are not a concern. Instead, the pesticide label may contain other re-entry instructions. For example, a biofungicide, Regalia® Maxx, states re-entry instructions as "do not re-enter or allow entry into treated areas until the spray is dried." In these cases, workers may enter the treated area if the conditions on the label and section 6.90 of the *Regulation* have been met.

Qualified person

Under section 6.90(1)(a) of the *Regulation*, entry into restricted entry areas requires that the hazards to workers have been assessed by a qualified person, the worker is provided with and wears appropriate personal protective equipment and clothing, and the worker follows proper procedures.

In order to be considered *qualified*, a person must be knowledgeable of the work, the hazards involved, and the means to control the hazards by reason of education, training, experience, or a combination thereof, as defined in section 1.1 of the *Regulation*. The qualified person who performs the hazard assessment under section 6.90(1)(a) of the *Regulation* will need to be able to read, understand, and implement all information and instructions provided on the pesticide label. This includes the hazards involved with entering the area where the pesticide has been applied, first aid, required PPE, and re-entry procedures. A person with a valid pesticide applicator certificate will typically meet this requirement.

When authorizing entry into treated areas for other circumstances

Other than the situation described previously, the employer should only authorize a worker to enter treated areas prior to the expiry of the REI on the pesticide label for emergencies or other special circumstances. The instructions on the label must be followed for the activities permitted during the specified time and any precautions to be taken, such as prohibiting certain hand labour activities and limiting the duration of time permitted for the entry.

In addition to ensuring that a qualified person performs a hazard assessment, the employer must ensure the worker is provided with and wears appropriate personal protective equipment and clothing, and the worker follows proper procedures. The employer should ensure the following:

- The pesticide label or available hazard information permits entry during the restricted time interval prescribed by section 6.89 of the *Regulation*
- For conventional chemical pesticides, entry into the treated area is at least 4 hours after the pesticide application, whenever possible
- Between 4 - 12 hours after pesticide application, entry by workers other than the certified applicator should be avoided if REI on the label has not lapsed
- Criteria listed on the pesticide label or available hazard information for preventing dermal and inhalation exposure are being met
- Criteria listed on the pesticide label or available hazard information for providing ventilation are being met, if any
- If the worker could become incapacitated after re-entry, provision for rescue has been made in accordance with section 6.90(2)(b) of the *Regulation*

G6.91 Exemptions

Issued August 1999

Provided that the conditions of section 6.91(1)(a) to (e) are met, section 6.91 of the *OHS Regulation* ("*Regulation*") exempts structural pesticide applicators from the requirements of sections [6.85 to 6.90](#). This section applies to the application of small quantities of

- slightly toxic pesticides, when "applied in a manner that minimizes the release of aerosols and residues on work surfaces", or
- moderately toxic pesticides, when "safely applied in restricted exposure applications such as crack and crevice treatments."

This exemption does not apply to very toxic pesticides or fumigants.

Under section 6.91(c), safe work procedures must be used. These procedures must include applicable restricted entry intervals stated on pesticide labels or provided by an authority acceptable to WorkSafeBC. Section [6.70](#) of the *Regulation* defines the term "restricted entry interval." Minimum lengths are specified in section 6.89. The Ministry of Environment, Lands and Parks is considered to be an authority acceptable to WorkSafeBC.

G6.95 Personal hygiene — Wash and shower facilities

Issued August 1999; Revised February 11, 2004

Section 6.95 of the *OHS Regulation* ("*Regulation*") requires the employer to supply and maintain adequate wash facilities. This section applies to all workers who

- mix, load or apply pesticides,
- handle concentrates or wet-treated lumber,
- clean, maintain or handle equipment, materials or surfaces contaminated with pesticide residues, or
- enter fields where pesticides have been applied and where contact with pesticide residues may contaminate protective clothing and body areas.

If there is the risk of body contamination, shower facilities must be provided in accordance with section [5.82](#) of the *Regulation*. Heated shower facilities are required under section [5.82\(2\)](#) if the work process is "high hazard". The following may be helpful in determining whether an operation involving pesticides is high hazard, and, therefore, whether heated shower facilities need to be considered.

- **Mixers and loaders** are at risk of contacting a pesticide through spills or splashing and through contact with contaminated equipment. The hazard of being splashed with a pesticide is higher during open mixing. The potential for skin contact increases with pesticide formulations that use emulsifiable concentrates and wettable powders.
- **Applicators** are at risk of contacting a pesticide as it is being sprayed and while the pesticide remains airborne. Spray pressures in excess of 200-275 kPa (30 psi) for herbicides and 500-2100 kPa (75-300 psi) for insecticides and fungicides generate fine spray particles that remain airborne for long periods and increase the potential for skin contact. Body areas may also become contaminated with pesticide through contact with surfaces of equipment and plants.
- Body contact with pesticides by applicators may increase during application in poorly ventilated enclosures. Depending on the application, inadequate ventilation may exist when cross-sectional velocity is less than
 - 15.24 metres/min (50 feet/minute) outdoors,
 - 30.48 metres/min (100 feet/minute) through an area of less than 14 square metres (150 square feet), or
 - 15.24 metres/min (50 feet/minute) through an area of greater than 14 square metres (150 square feet).

High hazard activities include:

- **Any mixing (open or closed) or applying of pesticides that can be absorbed through the skin.** (Substances that can contribute to exposure by skin absorption are identified in the Table of Exposure Limits for Chemical and Biological Substances with the designation "SKIN". Refer to OHS Guideline [G5.48-1](#) for the table and to [G5.52](#) for further information on the "SKIN" notation.) This may include any work involving organophosphorus, carbamate, dithiocarbamate, organochlorine, and nitrophenol pesticides.
- **Any open mixing or applying in an enclosure of pesticides that can irritate the skin.** This includes phenoxy, benzonitrile, bipyridine, organonitrogen and inorganic pesticides and fumigants.
- **Any open mixing or applying in an enclosure of corrosive pesticides.**

Because a worker's eyes or skin may be exposed to harmful or corrosive materials or other materials which may burn or irritate, the employer must also consider the requirements for emergency washing facilities provided under sections [5.85 to 5.96](#) of the *Regulation*. Further information on these requirements is found in the operating instructions on emergency washing facilities.

G6.96 Worker cleanup

Issued August 1999; Editorial Revision April 6, 2020

Section 6.96 of the *OHS Regulation* ("*Regulation*") requires that a worker immediately cleanse any body area contaminated with pesticide.

To evaluate compliance with this requirement, consider whether the employer

- has fulfilled the responsibility to adequately train and instruct workers in the required procedures (The development and implementation of safe work procedures is required under [section 6.78](#) of the *Regulation*. Training and instruction of workers is required under [section 21](#) of the *Workers Compensation Act.*),
- provided an acceptable level of supervision to ensure that established safe work procedures are followed, and
- used disciplinary action to further discourage the use of unacceptable work procedures, where necessary.

To determine if the employer has met his responsibilities for training, ask the worker the following questions:

- Do you work with pesticides?
- What precautions are required to prevent or minimize exposure?
- What do you do to remove pesticides from your skin or clothing?
- Where are the wash and/or shower facilities?
- Are there any consequences of not following safe work procedures or of not cleansing any body area contaminated with pesticide?

G6.103 Antispain applications — Substitution

Issued August 1999

Section 6.103 of the *OHS Regulation* requires an employer investigate antispain materials and, wherever practicable, substitute an alternative material for a material in use, if the hazards of the substitute are known and the risk to the workers is reduced.

Refer to [OHS Guideline G5.55](#) for a list of factors that should be considered when selecting a suitable substitute. For pesticides, a suitable substitute may have one or more of the following characteristics: low toxicity, low vapor pressure of the active ingredient or diluent, water-based or chlorinated (as opposed to a volatile organic) diluent, is pre-mixed and requires no preparation, and/or does not persist in the environment.

To demonstrate compliance with this requirement, the employer should

- provide documentation indicating whether or not substitutes are available,
- specify the criteria used to identify a suitable antispain agent, and
- specify why a substitute is not suitable for their application purposes.

G6.116-1 Definition of "enclosure"

Issued August 1, 1999; Editorial Revision May 2005

Section 6.116 of the *OHS Regulation* ("*Regulation*") defines enclosure to mean "a room, cabinet or separation designed to contain equipment, machinery and vessels and to isolate accidental releases of toxic gas." This definition is distinct from that of "confined space," which is provided in [section 9.1](#) of the *Regulation*. The requirements for enclosures are found under [section 6.122](#) of the *Regulation*. See OHS Guideline G6.122.

G6.116-2 Definition of "toxic process gas"

Issued May 25, 2005; Editorial Revision consequential to August 4, 2015 Regulatory Amendment

Regulatory excerpt

Section 6.116 of the *OHS Regulation* ("*Regulation*") states, in part:

"toxic process gas" means a gas which

(a) meets the HPR Health Hazard Class - Acute Toxicity, Categories 1, 2 and 3 or the categories set out in the following table:

HPR Health Hazard Classes	Hazard categories						
Skin corrosion/irritation		1A	1B	1C	2		
Serious eye damage/irritation	1					2A	2B
Respiratory or skin sensitization		1A	1B				
Mutagenicity		1A	1B		2		
Carcinogenicity		1A	1B		2		
Reproductive toxicity		1A	1B		2		
Specific organ toxicity (repeated exposure)	1				2		

and

(b) is used for purposes of

- (i) an industrial process in which a precursor is changed into a product,
- (ii) refrigeration by means of a piped installation, or
- (iii) treatment of materials, for example, in a disinfection system.

Purpose of this guideline

This guideline is intended to clarify the application of the definition of "toxic process gas."

Basic explanation of the definition of toxic process gas

To be considered a toxic process gas in Part 6 of the *Regulation*, the gas and the nature of its use must meet the criteria in paragraphs (a) and (b) of the definition.

Paragraph (a) refers to the gas meeting certain WHMIS toxicity criteria. To be considered a toxic process gas, the gas must also be used in a manner described in paragraph (b) of the definition. Ammonia used in refrigeration systems; chlorine, ethylene oxide, or ozone used in disinfection systems; and chlorine dioxide in pulping systems are examples of toxic process gases.

G6.118 Risk assessment

Issued August 1999

Section 6.118 of the *OHS Regulation* requires a risk assessment for toxic process gases. The general factors that must be considered when performing a risk assessment are provided in OHS Guideline [G5.54-3](#).

G6.122-2 Exhaust ventilation

Issued August 1999

Section 6.122(b) of the *OHS Regulation* ("*Regulation*") requires that an enclosure be provided with exhaust ventilation to ensure an effective inward flow of air at all times. In the context of this section, "at all times" means at all times that the system is in normal operation. However, the system must be designed to exhaust discharging toxic process gases directly to the outdoors in a safe manner. See section [6.124](#) of the *Regulation* and OHS Guideline [G6.124](#).

It is not necessary for employers to install high volume ventilation systems to comply with this section. So long as the system maintains adequate negative pressure, the employer will be in compliance. Officers can use smoke tubes to evaluate whether the system is under negative pressure. The requirements for ventilation systems are provided in section [6.124](#) of the *Regulation*. Refer to the standard practice manual for the toxic process gas of interest, including ammonia, ozone and ethylene oxide.

G6.122-3 Access and egress

Issued August 1999

The enclosure must be provided with a safe means of entry and exit, in accordance with section 6.122(c) of the *OHS Regulation*. Depending on the size of the enclosure, it may be necessary to have more than one door. Building design criteria, including the required number of doors, are listed in Standard Practice Manuals, published by WorkSafeBC. Refer to the standard practice manual for the toxic process gas of interest,

including ammonia, ozone and ethylene oxide.

G6.122-4 Authorized personnel

Issued August 1999

Section 6.122(d) requires the employer designate the enclosure as a restricted work area, with entry limited to authorized personnel. In the context of this section, "authorized personnel" are workers who are qualified to perform the work, have been designated by the employer as being permitted to do so, and are required to be present within the designated work area(s).

G6.123 Testing

Issued August 1999

Before authorized workers are permitted to enter an enclosure, they must be provided with a safe means to check and test conditions inside an enclosure, in accordance with section [6.123](#) of the *OHS Regulation*. For the definition of "authorized workers," refer to OHS Guideline [G6.122-4](#).

Section 6.128(1) requires the employer to install continuous monitoring systems that "...effectively determine work conditions within the restricted access area," where practicable.

G6.124 Ventilation

Issued August 1999

Section 6.124(a) of the *OHS Regulation* ("*Regulation*") requires the employer ensure that "ventilation systems are designed to exhaust toxic process gases directly to the outdoors in a safe manner." Care must be taken to avoid discharging toxic process gases into adjacent occupied areas such as work areas, evacuation routes, schools, private homes, or shopping areas. The risk assessment conducted under section 6.118 of the *Regulation* may help to identify the most appropriate location for putting the discharge.

When evaluating compliance with this section, the following factors should be considered:

- whether the ductwork is under negative pressure (to prevent leaks),
- the location of the exhaust fan and stack heights,
- the proximity of the system to heating, ventilation and air conditioning intakes, and
- the potential for other occupied areas to be contaminated by the discharge.

The requirements of sections [5.60 to 5.71](#) of the *Regulation* for industrial ventilation also apply. Contaminated exhaust air discharged to the outdoor air is subject to the requirements of the BC Ministry of Environment, Lands and Parks. Ambient air quality standards are to be considered when determining the applicable limit that will be applied to the discharge air stream. For a summary of federal and provincial ambient air standards, refer to OHS Guideline [G5.70](#). For additional information, contact the appropriate authority in your region. For assistance, contact the BC Ministry of Environment. In the Lower Mainland, contact the Pollution Prevention, Industrial & Air Discharge Section; outside the Lower Mainland, contact the Environmental Protection Branch.

G6.127 Personal protective equipment

Issued August 1999

Section 6.127(3) of the *OHS Regulation* states:

A worker entering a restricted access enclosure must wear or carry an escape respirator.

The requirements for emergency escape respirators are provided in section [8.36](#) of the *Regulation*.

[Section 6.120\(1\)](#) of the *Regulation* requires that the employer prepare written work procedures. These work procedures should identify those circumstances where a worker will require an escape respirator as a condition of entry to the enclosure. Under [section 6.128](#), the employer must install continuous monitoring systems, where practicable. Workers can assure that it is safe to enter a restricted access enclosure by reading the monitor. The requirements for testing an enclosure are provided under [section 6.123](#).

Under [section 6.122\(d\)](#), only authorized personnel can enter a restricted access enclosure. Refer to OHS Guideline [G6.122-4](#) for discussion of "authorized personnel".

G6.34-1 Exposure control plan

Issued August 1999; Editorial Revision July 2004; Editorial Revision February 2, 2006; Revised February 1, 2008; Editorial Revision to include February 1, 2011 regulatory amendment; Editorial revision April 9, 2019

Regulatory excerpt

Section 6.34(1) of the *OHS Regulation ("Regulation")* states:

- (1) If a worker has or may have occupational exposure, the employer must develop and implement an exposure control plan, based on the precautionary principle, that meets the requirements of section 5.54 and that includes the following:
- (a) a risk assessment conducted by a qualified person to determine if there is a potential for occupational exposure by any route of transmission;
 - (b) a list of all work activities for which there is a potential for occupational exposure;
 - (c) engineering controls and administrative controls to eliminate or minimize the potential for occupational exposure;
 - (d) standard or routine infection control precautions and transmission-based precautions for all work activities that have been identified as having a potential for occupational exposure, including
 - (i) housekeeping practices designed to keep the workplace clean and free from spills, splashes or other accidental contamination,
 - (ii) work procedures to ensure that contaminated laundry is isolated, bagged and handled as little as possible, and
 - (iii) work procedures to ensure that laboratory or other samples containing a biological agent designated as a hazardous substance in section 5.1.1 are handled in accordance with the *Laboratory Biosafety Guidelines 3rd edition, 2004*, issued by the Public Health Agency of Canada;
 - (e) a description of personal protective equipment designed to eliminate or minimize occupational exposure;
 - (f) a program to inform workers about the contents of the exposure control plan and to provide them with adequate education, training and supervision to work safely with, and in proximity to, a biological agent designated as a hazardous substance in section 5.1.1;
 - (g) a record of all training and education provided to workers in the program described in paragraph (f);
 - (h) a record of all workers who have been exposed, while performing work activities, to a biological agent designated as a hazardous substance in section 5.1.1.

Purpose of guideline

The purpose of this guideline is to provide some examples of workplaces which are likely to require an exposure control plan (ECP).

Occupational exposure

The requirement to develop and implement an ECP applies to all workplaces where a worker has or may have occupational exposure. "Occupational exposure," as defined in [section 6.33](#) of the *Regulation*, is the reasonably anticipated contact with a biological agent, that is designated as a hazardous substance in [section 5.1.1](#) of the *Regulation*, resulting from the performance of a worker's duties.

Most health care workers, lab workers, emergency responders, fire fighters and occupational first aid attendants in general industry, are likely to have occupational exposure.

In addition, some non-health-related or other occupations in high-risk areas may also have such exposure. These include some janitorial or custodial staff in hospitality industries, public utility or municipal workers with outside jobs, and social service agency workers.

Some workplaces in which workers typically have occupational exposure include, but are not limited to those listed below.

Partial list of workplaces which are likely to require an exposure control plan

- Physicians' offices
- Medical and dental laboratories
- Hospitals
- Hemodialysis centers
- Blood and tissue banks
- Nursing homes
- Home health care
- Fire and rescue
- Ambulance services
- Funeral homes and crematories
- Commercial laundries serving health care and public safety institutions
- Schools
- Workers employed in the woods involving potential exposure to ticks and Lyme Disease
- Workers who may have exposure to hantavirus when
- Dental offices
- Medical & dental equipment repair
- Outpatient facilities (including renal dialysis clinics and cancer treatment centers)
- Drug treatment centers
- Research labs
- Residential care facilities
- Hospices
- Law enforcement
- Correctional institutions
- Health clinics in industrial facilities
- Personnel services
- Removal of regulated waste or sewage
- Workers in agriculture where there is potential exposure to mouldy hay, or who are exposed to zoonotic diseases (for example, brucellosis)

handling rodents or cleaning up dust contaminated with rodent urine and feces

Elements of an ECP are listed in [section 5.54](#) and section 6.34(1) of the *Regulation*. Required elements of an ECP will depend on the circumstances of the workplace and the outcome of the risk identification required by section 6.34(1)(a) of the *Regulation*.

Work procedures for a biological agent designated as a hazardous substance in section 5.1.1 of the *Regulation* must be in accordance with the manual titled [Laboratory Biosafety Guidelines 3rd edition, 2004](#), issued by the Public Health Agency of Canada.

G6.34-2 Risk assessment, engineering and administrative controls, and personal protective equipment

Formerly issued as G6.35, G6.36(1), and G6.36(2); Issued as G6.34-2 February 1, 2008. (Note: Former G6.34-2 on pandemic influenza has been renumbered as G6.34-6.)

Regulatory excerpt

Section 6.34(1) of the *OHS Regulation* ("*Regulation*") states:

(1) If a worker has or may have occupational exposure, the employer must develop and implement an exposure control plan, based on the precautionary principle, that meets the requirements of section 5.54 and that includes the following:

(a) a risk assessment conducted by a qualified person to determine if there is a potential for occupational exposure by any route of transmission;

(b) a list of all work activities for which there is a potential for occupational exposure;

(c) engineering controls and administrative controls to eliminate or minimize the potential for occupational exposure;

And section 6.34(1)(e) of the *Regulation* states:

(1) If a worker has or may have occupational exposure, the employer must develop and implement an exposure control plan, based on the precautionary principle, that meets the requirements of section 5.54 and that includes the following:

...

(e) a description of personal protective equipment designed to eliminate or minimize occupational exposure;

And section 5.55(3) of the *Regulation* states:

(3) The use of personal protective equipment as the primary means to control exposure is permitted only when

(a) substitution, or engineering or administrative controls are not practicable, or

(b) additional protection is required because engineering or administrative controls are insufficient to reduce exposure below the applicable exposure limits, or

(c) the exposure results from temporary or emergency conditions only.

Purpose of guideline

The purpose of this guideline is to provide information on what should be included in a risk assessment required under 6.34(1)(a), and discuss ways to control risks using engineering and administrative controls under section 6.34(1)(c). The guideline also discusses appropriate personal protective equipment (PPE) under section 6.34(1)(e).

Risk assessment

The objective of the risk assessment is to determine the jobs, tasks, and procedures for which occupational exposure is anticipated and to evaluate the likelihood that such exposure would occur. The factors to be considered will be dictated by the circumstances of the workplace and the type of biological agents designated as hazardous substances that workers are potentially exposed to.

A qualified person is required to conduct the risk assessment. A qualified person may be a medical or non-medical professional. This could include infection control practitioners, registered nurses, and physicians, occupational hygienists, microbiologists, or other individuals with specialized training in the area of biological agents designated as a hazardous substance under [section 5.1.1](#) of the *Regulation*.

As part of the risk assessment, the job classifications should be reviewed within the workplace and categorized according to those jobs in which all workers have occupational exposure and those jobs in which some of the workers have occupational exposure. Where all workers have occupational exposure, such as scrub room nurses, clinical dental hygienists, and paramedics, it is not necessary to list individual work tasks, as long as it is made clear that all work activities have such exposure. Where only some workers have exposure, the specific tasks and procedures causing exposure need to be listed. All first aid attendants are considered to have occupational exposure.

When evaluating the potential for exposure, as well as the risk associated with exposure, the following sources of information should be

considered:

- History of firm, including first aid records and accident/incident investigation reports
- WorkSafeBC claims records and statistics
- History of similar industries, similar exposure conditions, history of other firms in the same geographical area, and industries dealing with the same client group
- Information from other jurisdictions or agencies, such as Occupational Safety and Health Administration (OSHA) or National Institute for Occupational Safety and Health (NIOSH).

The potential for occupational exposure must be evaluated without regard to the availability or use of personal protective clothing and equipment. That is, the risk to an unprotected worker must be assessed.

If there is a question regarding the potential for exposure one should

- Determine whether the worksite requires an exposure control plan (refer to [OHS Guideline G6.34-1](#))
- Consult the employers' risk assessment to determine if the occupation or task has been identified
- Evaluate the risk of occupational exposure. If necessary, contact the WorkSafeBC occupational health physicians for assistance
- If there is a risk of occupational exposure, determine whether the risk has been minimized with any of the following:
 - Engineering controls
 - Administrative controls
 - PPE
 - Adequate training and supervision of the workers

Engineering controls

Section 6.34(1)(c) requires an employer to use either engineering controls or administrative controls to eliminate or minimize the potential for occupational exposure. Part 1 of the *Regulation* defines "engineering controls" as follows:

the physical arrangement, design or alteration of workstations, equipment, materials, production facilities or other aspects of the physical work environment, for the purpose of controlling risk.

Engineering controls for occupational exposure include, but are not limited to

- Safety-engineered needles (e.g. syringes that include a needle retraction mechanism or other type of integral needle guard mechanism)
- Blunt tip sutures
- Needleless devices (devices that do not use a needle for the collection of body fluids, administration of medication or fluids, or any other procedures with potential exposure to a bloodborne pathogen; e.g. needleless intravenous connectors)
- Retracting lancets
- Automatic re-sheathing of disposable scalpels
- Puncture-resistant containers for sharps (sharps include anything that might produce a puncture wound that would expose a worker to blood or other potentially infectious material, such as broken glass, scalpels, contaminated ends of orthodontia wire, and suture needles)
- Splatter guards
- Biological safety cabinets
- Mechanical pipetting systems
- Negative pressure isolation, which is an isolation and ventilation control for biological agents that are transmitted via the airborne route and that pose an inhalation hazard. This involves isolating infectious patients in an isolation room under negative pressure through an independent air supply and exhaust system for the isolated area/room
- Triage stations - isolating medical staff from potentially infectious persons requiring medical attention through installation of protective barriers

Engineering controls must be properly selected, used, inspected, maintained, and replaced as needed to ensure their effectiveness. Selected engineering controls must eliminate or minimize the risk of an exposure incident. [Section 4.3](#) requires that each tool be selected, used, and operated in accordance with the manufacturer's instructions (if available), safe work practices, and the requirements of the *Regulation*.

For other engineering controls necessary in the laboratory, see sections [30.12 \(Biological safety cabinets\)](#), [30.13 \(Centrifuges\)](#), [30.16 \(Transport of containers\)](#), and [30.17 \(Personal protection\)](#) of the *Regulation*. For ventilation of isolation rooms refer to sections [4.72 to 4.78](#).

Administrative controls

Section 6.34(1)(c) requires an employer to use either engineering controls or administrative controls to eliminate or minimize the potential for occupational exposure. Part 1 of the *Regulation* defines "administrative controls" as follows:

the provision, use and scheduling of work activities and resources in the workplace, including planning, organizing, staffing and coordinating, for the purposes of controlling risk.

Administrative controls for occupational exposure include, but are not limited to

- Adopting general infection control measures
- Washing hands with a suitable, non-abrasive cleansing agent and running water immediately after removal of gloves and as soon as possible after skin contact with blood or other potentially infectious material

- Disposing of contaminated needles immediately after use in a readily available sharps container specifically designed for such use
- Applying the "hands-free" method of passing scalpels during a surgical procedure, such as using a small hand tray to transfer scalpels and other sharps to and from the surgeon's hand
- Placing contaminated reusable sharps in containers that are puncture-resistant and leak-proof, such as stainless steel trays
- Using tongs or other suitable means, such as a dust pan and disposable brush, to pick up broken glass contaminated with blood
- Prohibiting the bending, manual recapping, or removing of contaminated needles
- Preventing the storage of food and/or drink in refrigerators or other locations where biological agents designated as hazardous substances under section 5.1.1 are present
- Keeping the number of workers potentially exposed to a biological agent to a minimum
- Restriction of visitors
- Restricting contact between workers and potentially infectious persons during an epidemic or pandemic outbreak - refer to OHS [G6.34-6](#)
- Limiting and controlling patient transportation/transfers
- Isolating infectious persons once hospitalized
- Medical surveillance for persons entering a medical facility
- Quarantining exposed staff
- Worker education and training, including drills

Personal protective equipment

The *Regulation* does not dictate what kind of PPE should be used for a given circumstance. This decision rests with each employer and must be based on the specific exposure circumstances in the workplace. The results of the risk assessment required under section 6.34(1)(a) and [Part 8](#) of the *Regulation* can help the employer to determine appropriate levels of protection. Under [section 8.4](#), the workplace evaluation to determine appropriate PPE must be done, where practicable, in consultation with the occupational health and safety committee or the health and safety representative, as applicable and with the worker who will use the equipment.

Workers must use appropriate PPE to prevent occupational exposure. Appropriate PPE may include, but is not limited to gloves, gowns, lab coats, coveralls, booties, face shields, eye protection, and respirators. For airborne or aerosolized occupational exposure, a NIOSH-approved, particulate respirator may be required.

Appropriate PPE for occupational first aid attendants includes an approved particulate face piece respirator and latex or other waterproof gloves to prevent accidental contact with blood or body fluids.

To evaluate compliance, the following questions should be considered:

- Under normal conditions and time of use, does the PPE prevent a biological agent designated as a hazardous substance under section 5.1.1 from
 - Passing through a worker's work clothes, street clothes, undergarments?
 - Reaching an employee's skin, eyes, nose, mouth, or other mucous membranes?
 - Being inhaled into the respiratory tract?
- Has the PPE been selected and used in accordance with the manufacturer's instructions and recognized standards? Does it provide effective protection? See [section 8.3\(1\)\(a\)](#) of the *Regulation*
- Does the PPE in itself create a hazard to the wearer? See section 8.3(1)(b)
- Does the PPE cause allergenic or other adverse health effects? See [section 8.2\(3\)](#)

Some workers may be allergic to natural rubber latex gloves. The WorkSafeBC pamphlet, [Dealing with Latex Allergies at Work](#), should be consulted for more information and used as a resource by workers exposed to natural rubber latex products. The Laboratory Centre for Disease Control (a branch of Health Canada) considers disposable, good quality, non-latex gloves made of vinyl, nitrile, neoprene, copolymer, and polyethylene to be adequate barriers to bloodborne pathogens.

Additional resources

For additional information on the prevention of occupational exposure, refer to the WorkSafeBC website <https://www.worksafebc.com/en/health-safety/industries/health-care-social-services> or <https://www.worksafebc.com/en/health-safety/injuries-diseases/infectious-diseases> (e.g. this site contains information on common injuries and illnesses in the health care industry and a booklet entitled [Controlling Exposure: Protecting Workers from Infectious Disease](#)).

G6.34-3 Housekeeping and laundry practices

Formerly Issued as G6.36(3) and G6.36(4); Issued as G6.34-3 February 1, 2008

Regulatory excerpt

Section 6.34(1) of the *OHS Regulation* ("*Regulation*") states:

(1) If a worker has or may have occupational exposure, the employer must develop and implement an exposure control plan, based on the precautionary principle, that meets the requirements of section 5.54 and that includes the following:

...

(d) standard or routine infection control precautions and transmission-based precautions for all work activities that have been

identified as having a potential for occupational exposure, including

- (i) housekeeping practices designed to keep the workplace clean and free from spills, splashes or other accidental contamination,
- (ii) work procedures to ensure that contaminated laundry is isolated, bagged and handled as little as possible, and

Purpose of guideline

The purpose of this guideline is to provide information on housekeeping and laundry practices.

Housekeeping practices

The requirements of section 6.34(1)(d)(i) of the *Regulation* apply to a broad range of fixed and non-fixed workplaces, including labs, operating rooms, accident scenes, ambulances, and refrigerated blood transfer vehicles.

To keep the workplace clean and sanitary, the employer must develop and implement appropriate methods of decontamination. This would include details on

- Location within the facility (indoor vs. outdoor)
- Type of surfaces to be cleaned
- Size of the spill (for example, gross, splatter, smear) or type of organism present
- Tasks or procedures to be performed, including
 - What kind of sterilant or disinfectant is to be used
 - How much should be used
 - How often it should be applied

Decontamination is the use of physical or chemical means to remove viable microorganisms from surfaces or materials. Three methods are available: sanitization, disinfection, and sterilization.

Sanitization: Reduces microbial contamination to levels judged safe by public health authorities.

Disinfection: Destroys specific infectious microorganisms. There are three levels of disinfection.

- **High:** Destroys all forms of microbial life except high numbers of bacterial spores
- **Intermediate:** Destroys *Mycobacterium tuberculosis*, vegetative bacteria, most viruses, and most fungi. It does not kill bacterial spores
- **Low:** Destroys most bacteria, some viruses, some fungi, but not *Mycobacterium tuberculosis* or bacterial spores

A high level of disinfection should be used for items that contact mucous membranes during use but do not usually penetrate normally sterile areas of the body. Intermediate and low level disinfection should be used for items that contact only intact skin during routine use.

Sterilization: Destroys all forms of microbial life including high numbers of bacterial spores. This method of decontamination should be used for items that routinely penetrate the skin or mucous membranes, enter normally sterile areas of the body or come into direct contact with recirculating body fluids, such as blood.

When used at recommended dilutions, chemical germicides approved for use as "hospital disinfectants" that are capable of killing *Mycobacterium tuberculosis* can be used to decontaminate spills of blood and other body fluids. Workers must ensure the recommended disinfectant is used according to the manufacturer's instructions. The frequency with which housekeeping practices are performed will vary depending on the nature of the spill and the type of organism and may be

- Immediate (for example, blood spilled on laboratory bench)
- After specific procedures involving patient care (for example, surgical operation)
- At the end of the work shift (for example, routine department cleaning)

Laundry

Section 6.34(1)(d)(ii) of the *Regulation*, requires worker exposure to contaminated laundry be prevented by isolating the laundry and minimizing manual handling. This section applies to all contaminated laundry whether provided by the employer or personal laundry (such as contaminated work clothes).

The material will be considered as "isolated" if laundry is

- Effectively bagged or containerized at the location of use
- Not sorted or rinsed in the location of use
- Handled as little as possible

When contaminated laundry is wet and there is a reasonable likelihood of soak-through or leakage, the laundry should be placed and transported in other leak-resistant bags or containers.

Bags and other containers containing laundry contaminated with a biological agent designated as a hazardous substance in [section 5.1.1](#) must be labelled according to section 6.37(1).

Where laundry contaminated with a biological agent designated as a hazardous substance in section 5.1.1 is sent for processing to a laundry or dry

cleaning facility, the employer sending the articles (the supplier) and the employer receiving the articles (the operator) must follow the requirements of sections [12.157](#) and [12.158](#) of the *Regulation*.

G6.34-4 Program to inform workers of the exposure control plan

Formerly Issued as G6.38; Issued as G6.34-4 February 1, 2008; Editorial Revision April 6, 2020

Regulatory excerpt

Section 6.34(1)(f) of the *OHS Regulation* ("Regulation") states:

(1) If a worker has or may have occupational exposure, the employer must develop and implement an exposure control plan, based on the precautionary principle, that meets the requirements of section 5.54 and that includes the following:

...

(f) a program to inform workers about the contents of the exposure control plan and to provide them with adequate education, training and supervision to work safely with, and in proximity to, a biological agent designated as a hazardous substance in section 5.1.1;

Purpose of the guideline

The purpose of this guideline is to provide information on what should be included in a program to inform workers about the exposure control plan, required under section 6.34(1)(f). This guideline updates content from former G6.38 *Education and training* following amendments to the *Regulation*.

Program to inform workers about the exposure control plan (ECP)

Section 6.34(1)(f) of the *Regulation* requires the employer to inform workers about the contents of the ECP and to provide them with adequate education and training to work safely with and in proximity to a biological agent designated as a hazardous substance in [section 5.1.1](#).

This section applies to any worker (including part-time, full-time, temporary, and casual) who has or may have occupational exposure. No worker with potential occupational exposure is exempt from this section. The instruction requirement for lab workers who handle biohazardous materials is covered under [section 30.14](#) of the *Regulation*.

Education and training must be provided before a worker begins work with or in proximity to a biological agent designated as a hazardous substance in section 5.1.1. Specifically, training needs to be given when a worker is initially assigned to the task and when changes are made that affect a worker's occupational exposure, such as when a task is modified or new procedures are being instituted. Education and training is an element of an ECP, as required by [section 5.54\(2\)](#). To comply with the requirements of section 5.54(3) of the *Regulation*, the employer must review the ECP at least annually and update it as necessary. Consequently, the employer may need to provide refresher training annually or whenever the ECP is updated.

Education and training material must be appropriate to the educational level, literacy, and language of workers. The content will generally include discussion and explanation of the following items:

- Applicable sections of the *Regulation* - applicable sections include section [3.19\(1\)](#); sections [5.2](#), [5.54](#), and [5.55](#); sections [6.33 to 6.41](#); sections [8.2](#) and [8.3](#); sections [12.157](#) and [12.158](#); [Part 30](#)
- Applicable sections of the *Workers Compensation Act* - including [section 69](#) on incidents that must be investigated
- Definition of a biological agent designated as a hazardous substance in section 5.1.1
- Occupational exposure
 - How it occurs, such as modes of transmission
 - How to identify tasks and other activities, such as routine and emergency spills, that may involve worker exposure to a biological agent designated as a hazardous substance in section 5.1.1
 - Effects of exposure
 - What to do in the event of exposure, such as emergency procedures to be followed, and post-exposure treatment
- Use and limitations of control measures to prevent or minimize exposure
 - Engineering controls
 - Work practice, or administrative, controls
 - Personal protective equipment (PPE). This element should address selection, care, use, storage, limitations, maintenance, inspection, decontamination, and availability of PPE
- Employers ECP and where to access it
- Required labels and identification for a biological agent designated as a hazardous substance in section 5.1.1
 - When necessary, information on the vaccines required under [section 6.40](#) of the *Regulation*

The training session should also include the opportunity for an interactive question and answer period.

The person providing the education and training must have knowledge about a biological agent designated as a hazardous substance in section 5.1.1, particularly in the context of workplace exposure and control. Trainers may be medical or non-medical professionals. Medical professionals could include infection control practitioners, registered nurses, and physicians. Non-medical professionals could include occupational hygienists or other individuals with specialized training in the area of biological agents designated as a hazardous substance in section 5.1.1. In some

workplaces, such as medical and dental offices, the employer, who is often a physician, may do the training, provided he or she is familiar with exposure control measures.

To evaluate compliance with this section, it needs to be verified that education and training was provided before a worker was placed in a position where occupational exposure may occur. A WorkSafeBC prevention officer should, by observation and interviews, determine if workers work safely with and in proximity to a biological agent designated as a hazardous substance in section 5.1.1. Informed workers can be identified by their ability to answer the following questions:

- Do you work with biological agents designated as a hazardous substance? If so, what are they?
- What precautions are required for preventing exposure?
- What do you do in case of an emergency?
- Where would you go for further information?

G6.34-5 Record keeping requirements

Formerly Issued as G6.41-2 and G6.41-3; Issued as G6.34-5 February 1, 2008; Editorial Revision April 6, 2020

Regulatory excerpt

Section 6.34(1) of the *OHS Regulation* ("Regulation") states:

(1) If a worker has or may have occupational exposure, the employer must develop and implement an exposure control plan, based on the precautionary principle, that meets the requirements of section 5.54 and that includes the following:

...

(g) a record of all training and education provided to workers in the program described in paragraph (f);

(h) a record of all workers who have been exposed, while performing work activities, to a biological agent designated as a hazardous substance in section 5.1.1.

Purpose of the guideline

The purpose of this guideline is to provide information on what should be included in a record of training and a record of exposure referred to in section 6.34(1)(g) and (h) of the *Regulation*. This guideline consolidates and updates content from former G6.41-2 *Records of exposure* and G6.41-3 *Records of training* following amendments to the *Regulation*.

Records of training

The intent of section 6.34(1)(g) of the *Regulation* is to provide a way to document compliance, to determine who attended each training session and, when necessary, to assess the adequacy of the training. Accurate and sufficiently detailed records of education and training should be maintained by the employer and should include

- Date(s) of training
- Content or a summary of the training sessions
- Type of education and training (for example classroom, video, interactive, or on-the-job)
- Names and qualifications of those conducting the training
- Names, job titles, and work locations (departments) of workers attending the sessions

Education and training records should be kept for at least three years after the training session. Unlike medical records, training records are not confidential and can be inspected and copied as required by a WorkSafeBC prevention officer.

Records of exposure

Under section 6.34(1)(h), employers must keep a record of all workers who have been exposed to a biological agent designated as a hazardous substance under [section 5.1.1](#). Incidents of occupational exposure may be documented in the following ways:

- Accident/incident reports (such as an incident report regarding a needlestick injury)
- First aid treatment records - see [section 3.19](#) of the *Regulation*
- Medical records (including documentation of post-exposure medical evaluation, treatment, and counselling, as well as records of hepatitis B and other vaccinations)
- Inspection reports of documented exposures
- Claim forms
- Worker complaints
- Results of the risk assessment performed in compliance with [section 6.35](#)
- Records required as part of the exposure control plan, as per [section 6.34](#), regarding risk identification, assessment, and control

The employer must ensure that records are kept as required. A physician usually maintains such records (some large firms may have their own on-site occupational physician). Worker medical records are to be kept confidential and not disclosed or reported without the worker's written consent to any person within or outside the workplace except as required by law.

Records of vaccination and other exposure records should be kept for the period of employment plus 10 years or such earlier time if the employer

ceases to do business. (Note that [section 3.19\(2\)](#) of the *Regulation* specifies that the first aid record of an injury or illness must be kept for at least three years. First aid records are distinct from records of occupational exposure [section 6.34\(1\)\(h\)](#).)

Under section 75 of the *Workers Compensation Act*, a WorkSafeBC prevention officer has the authority to inspect and inquire with respect to health and safety matters at any workplace and may make inquiries and inspect documents considered necessary. Sections [3.19\(3\)](#), [\(4\)](#), and [\(5\)](#) of the *Regulation* specify the conditions for access to first aid records and maintaining their confidentiality. A prevention officer should consult with a WorkSafeBC occupational health physician before any worker medical records are requested. Prevention officers must protect the confidentiality of such records or any other personal medical information received.

G6.34-6 Exposure control plan - Pandemic influenza

Issued February 8, 2007 as G6.34-2; Revised February 1, 2008 and renumbered as G6.34-6; Revised April 27, 2009; Editorial Revision to include February 1, 2011 regulatory amendment; Editorial revision April 9, 2019; Editorial Revision April 6, 2020

For some time, health authorities have advised of the possibility of an influenza pandemic arising from a mutated strain of a virus currently found primarily in birds (technically referred to as the H5N1 virus). WorkSafeBC has issued this guideline to assist with workplace planning in the event of such an influenza pandemic. It addresses the expectations for exposure control plans to protect workers from possible exposure to such a virus in B.C. workplaces.

The guideline has been developed following consideration of recent documents adopted by agencies such as the U.S. Center for Disease Control and the World Health Organization. Also, it is intended to be consistent with the primary themes of the SARS Commission Report by Justice A. Campbell (January 2007), and with the report on the role of personal protective equipment on influenza transmission issued by the Council of Canadian Academies (December 2007).

This guideline was initially issued in February 2007 in consultation with workplace stakeholders and following a period of consultation with other parties. It was revised, primarily to reflect regulatory amendments that became effective on February 1, 2008 following public hearings. As is the case with other guidelines, it may be revised from time to time based on evolving evidence on the nature of the virus and appropriate means of control.

Regulatory excerpt

Section 6.34(1) (Exposure control plan) of the *OHS Regulation* ("*Regulation*") states:

- (1) If a worker has or may have occupational exposure, the employer must develop and implement an exposure control plan, based on the precautionary principle, that meets the requirements of section 5.54 and that includes the following:
 - (a) a risk assessment conducted by a qualified person to determine if there is a potential for occupational exposure by any route of transmission;
 - (b) a list of all work activities for which there is a potential for occupational exposure;
 - (c) engineering controls and administrative controls to eliminate or minimize the potential for occupational exposure;
 - (d) standard or routine infection control precautions and transmission-based precautions for all work activities that have been identified as having a potential for occupational exposure, including
 - (i) housekeeping practices designed to keep the workplace clean and free from spills, splashes or other accidental contamination,
 - (ii) work procedures to ensure that contaminated laundry is isolated, bagged and handled as little as possible, and
 - (iii) work procedures to ensure that laboratory or other samples containing a biological agent designated as a hazardous substance in section 5.1.1 are handled in accordance with the *Laboratory Biosafety Guidelines 3rd edition, 2004*, issued by the Public Health Agency of Canada;
 - (e) a description of personal protective equipment designed to eliminate or minimize occupational exposure;
 - (f) a program to inform workers about the contents of the exposure control plan and to provide them with adequate education, training and supervision to work safely with, and in proximity to, a biological agent designated as a hazardous substance in section 5.1.1;
 - (g) a record of all training and education provided to workers in the program described in paragraph (f);
 - (h) a record of all workers who have been exposed, while performing work activities, to a biological agent designated as a hazardous substance in section 5.1.1.

Section 5.54 (Exposure control plan) states:

- (1) An exposure control plan must be implemented when
 - (a) exposure monitoring under section 5.53(3) indicates that a worker is or may be exposed to an air contaminant in excess of 50%

of its exposure limit,

(b) measurement is not possible at 50% of the applicable exposure limit, or

(c) otherwise required by this Regulation.

(2) The exposure control plan must incorporate the following elements:

(a) a statement of purpose and responsibilities;

(b) risk identification, assessment and control;

(c) education and training;

(d) written work procedures, when required;

(e) hygiene facilities and decontamination procedures, when required;

(f) health monitoring, when required;

(g) documentation, when required.

(3) The plan must be reviewed at least annually and updated as necessary by the employer, in consultation with the joint committee or the worker health and safety representative, as applicable.

Purpose of guideline

The purpose of this guideline is to discuss the application of the *Regulation* to the protection of workers in the event of an influenza pandemic. It provides background information on regulatory context, the nature of pandemic influenza, routes of transmission, and adverse health effects.

It also provides information on exposure control plans in the workplace, and guidance on specific types of controls, including engineering measures, work procedures, and personal protective equipment.

The guideline does not specifically address issues related to the health of the public and any medical procedures used for the treatment of patients, which are within the mandate of public health and medical authorities. Internet locations for accessing further information on pandemic planning, whether for the workplace or the community, are provided at the end of this guideline.

Regulatory context

Sections 6.34 and 5.54 of the *Regulation* are basic requirements that apply in the circumstances of a pandemic influenza. However, they operate in the context of other requirements.

For example, the OHS provisions of the *Workers Compensation Act* ("Act") and [Part 3](#) of the *Regulation* address issues such as employer and worker responsibilities, occupational health and safety programs, correction of unsafe conditions, undue risk, and the procedures related to any work refusals. The general requirements for chemical and biological safety in [Part 5](#) of the *Regulation* help round out the framework.

What is pandemic influenza?

Pandemics are worldwide outbreaks of disease such as influenza. Three outbreaks of pandemic influenza (as opposed to seasonal influenza) occurred in the 20th century: 1918 (Spanish influenza), 1957 (Asian influenza), and 1968 (Hong Kong influenza). One outbreak of pandemic influenza (2009 H1N1 influenza) has occurred thus far in the 21st century.

Predicting the impact of an influenza pandemic on people is difficult until the time the actual outbreak occurs. Some pandemics have had a relatively minor impact, usually affecting the very old and young, and immuno-compromised persons. Others such as the Spanish influenza pandemic have involved exceptionally high morbidity and death among normally healthy persons. The concern with a pandemic based on a virus such as the H1N1 or H5N1 variety is the possibility of a new and highly virulent form of the virus for which the general population has no immunity, capable of effective person-to-person transmission, and causing high morbidity and mortality.

The World Health Organization (WHO), Health Canada, and in British Columbia, the BC Centre for Disease Control (BCCDC), have recommended that all jurisdictions and workplaces develop influenza pandemic preparedness plans to reduce the potential for adverse effects arising from a pandemic. The WHO has advised that there is a risk of pandemic influenza that could cause widespread illness and death in humans.

Seasonal, pandemic, and avian influenzas can be differentiated as follows:

- Seasonal influenza - A disease caused by influenza viruses carried and spread among humans, typically on a seasonal basis.
- Pandemic influenza - A disease caused by a new strain (or subtype) of influenza virus that quickly spreads among humans worldwide because humans have little or no pre-existing immunity against it.
- Avian (Bird) influenza - A disease caused by influenza viruses carried and spread among birds. There are some cases where the virus has been transmitted from birds to humans.

There are a number of phases that a pandemic is likely to go through, as shown in the following Table.

Table 1: Pandemic influenza phases (adapted from the *WHO global Pandemic Influenza Preparedness and Response 2009 guidance document*)

Phase	Characteristics
Phase 1 - Pre-Pandemic	No animal influenza virus circulating among animals has been reported to cause infection in humans.
Phase 2 - Pre-Pandemic	An animal influenza virus is known to have caused infection in humans and is therefore considered a specific potential pandemic threat.
Phase 3 - Pandemic Alert	An animal or human-animal influenza virus has caused sporadic cases or small clusters of disease in people, but has not resulted in human-to-human transmission sufficient to sustain community-level outbreaks.
Phase 4 - Pandemic Alert	Human-to-human transmission of an animal or human-animal influenza virus able to sustain community level outbreaks has been verified.
Phase 5 - Pandemic Alert	The same identified virus has caused sustained community level outbreaks in two or more countries in one World Health Organization region. ¹
Phase 6 - Pandemic	In addition to the criteria defined in Phase 5, the same virus has caused sustained community level outbreaks in at least one other country in another WHO region.
Post-Peak Period	Levels of pandemic influenza in most countries have dropped below peak levels.
Possible New Wave	Level of pandemic influenza activity in most countries is rising again.
Post-Pandemic Period	Levels of influenza activity have returned to levels seen for seasonal influenza in most countries.

¹World Health Organization regions can be found at <http://www.who.int/about/regions/en/>.

What are the symptoms of pandemic influenza?

The effects of a future pandemic influenza are expected to be much more severe than for seasonal influenza, due to a lack of immunity to the virus. Seasonal influenza affects people to varying degrees, with symptoms including headache, fever, fatigue, sore throat, and runny nose. In some cases, secondary infections such as pneumonia may develop. Symptoms of pandemic influenza are likely to include high fever (higher than 38 degrees Celsius), chest pain, and difficulty breathing.

In its materials on pandemic influenza, the BCCDC advises influenza is communicable for 24 hours before onset of symptoms, and 3-5 days afterwards (but may be longer in some children and some adults).

How can pandemic influenza be spread?

Pandemic influenza would be spread in the same way that seasonal influenza is spread, typically by exposure to ill persons or contact with surfaces that an infected person has handled or touched.

Exposure to a pandemic influenza virus may occur in a variety of ways such as the following:

- Breathing airborne droplets or particles containing influenza viruses (generated, for example, from coughing, sneezing, and aerosol-generating medical procedures used with infected patients)
- Infectious droplets (from a coughing or sneezing infected person) landing in the eye or onto the mucosa (moist inner surface) of the nose or mouth
- Shaking hands with an infected person or touching a surface contaminated with the virus followed by touching one's eyes, nose, or mouth
- Sharing food items or utensils with an infected person

Is there a vaccine or a treatment for pandemic influenza?

At present, there is no vaccine for the prevention of a future pandemic influenza. It is only possible to develop a vaccine after the actual pandemic influenza virus has been identified. In addition, it typically requires 4-6 months to produce a new influenza vaccine.

Antiviral drugs (that slow down or kill the virus) have been shown to be beneficial against seasonal influenza. However, their effectiveness against a pandemic influenza virus is not known. There is evidence that some of these products can reduce or stop influenza viruses from spreading throughout the body and improve the prospects of survival.

What is "occupational exposure" to pandemic influenza?

"Occupational exposure," as defined in [section 6.33](#) of the *Regulation*, is the reasonably anticipated contact with a biological agent that is

designated as a hazardous substance, resulting from the performance of a worker's duties. A pandemic virus is likely to be a hazardous substance under section 5.1.1 of the *Regulation*.

The possibility of contact varies depending on the specific organism and its route of transmission. For a virus causing pandemic influenza, contact resulting from the performance of a worker's duties may occur, for example, when caring for, or having other close contact with a person who has pandemic influenza. Examples of workplaces where contact may occur include hospitals, community care facilities, group homes, private homes, and ambulances.

What do you need in an exposure control plan (ECP)?

An ECP is a plan for preventing harmful exposure of workers to a pandemic influenza virus in the workplace.

Section 6.34 of the *Regulation* requires that if a worker has or may have occupational exposure, then an exposure control plan must be developed and implemented, based on the precautionary principle.

The precautionary principle, as defined in section 6.33 of the *Regulation*, means adopting provisional precautions covering all routes of transmission, based on a higher level of protection when the identity, causation, or routes of transmission of the biological agent designated as a hazardous substance have not been established. *The use of this principle was one of the key recommendations of the Justice Campbell SARS Commission Report released in January 2007. The Commission recommended that in any future infectious disease crisis including pandemic influenza, the precautionary principle should guide the development, implementation, and monitoring of the means of protecting workers. In practical terms, the application of the precautionary principle to the protection of workers in an influenza pandemic will mean that in some cases respirators meeting an N95 standard or equivalent will need to be worn.*

The ECP must incorporate the applicable elements outlined in section 5.54 of the *Regulation*, and be consistent with the provisions listed in section 6.34. In many workplaces of lower risk, the ECP may involve relatively few types of protective measures, such as provision and use of hand washing facilities and use of cough/sneeze etiquette. More extensive measures will be required for protection of workers in higher risk circumstances, such as health care personnel involved in direct patient care, emergency response personnel, and first aid attendants.

Elements of the ECP

An ECP will need to incorporate the following elements, as specified in section 5.54 of the *Regulation*:

- A statement of purpose and responsibilities
- Risk identification, assessment, and control
- Education and training
- Written work procedures, when required
- Hygiene facilities and decontamination procedures, when required
- Health monitoring, when required
- Documentation, when required

Section 5.54(3) of the *Regulation* requires that the ECP be reviewed at least annually and updated as necessary by the employer, in consultation with the joint OHS committee or worker health and safety representative, as applicable. To assist with communication and understanding, it is recommended the employer consult with workplace parties in the initial development of the ECP.

The elements of the ECP are discussed below.

1. **Statement of purpose and responsibilities:** While individual workplaces may state the purpose of this ECP in different ways, an underlying purpose of the ECP is to prevent harmful exposure of workers to a pandemic influenza virus in the workplace. Assignment of responsibilities for implementation of the ECP in a small workplace is likely to be straightforward, typically involving one person. In a larger workplace, there may be some division of responsibilities for implementing aspects of the ECP.
2. **Risk identification and assessment:** The extent of control measures included in the ECP will depend on the level of risk to worker health and safety. Thus a key step in assembling the exposure control plan is the proper identification and assessment of risk.

Section 6.34(b) of the *Regulation* requires that the risk assessment be conducted by a qualified person to determine the potential for occupational exposure by any route of transmission. Under [section 1.1](#) of the *Regulation* "qualified" means being knowledgeable of the work, the hazards involved, and the means to control the hazards, by means of education, training, experience, or a combination.

Risk identification and assessment for exposure to the pandemic influenza virus should be based on factors such as routes of transmission, work activities, and workers who may be at risk.

a. Routes of transmission by which the virus can infect a worker: In the case of pandemic influenza it is anticipated there will be three primary routes of transmission, all of which need to be controlled. Based on the use of traditional terminology, the routes are as follows:

- *Airborne transmission:* Airborne (inhalable) particles can be generated from coughs and sneezes. They can also be generated from some medical procedures such as endotracheal intubation, bronchoscopy, nebulizer treatment, or airway suctioning.

Both coughs and sneezes produce large droplets and smaller airborne particles. The smaller particles remain suspended in air for longer periods, and can be inhaled. In addition, large droplets can evaporate quickly to form inhalable particles. As the distance from the person coughing or sneezing increases, the risk of infection from airborne exposure is reduced, but can still be a concern in smaller, enclosed areas, especially where there is limited ventilation. As the number of infected people in a room increases, all things

equal, the risk of infection can increase.

- *Droplet transmission:* Large droplets may be generated by an infected person through coughing or sneezing, and also through medical procedures such as cough induction. Droplets travel a short distance through the air and can be deposited on inanimate surfaces, or in the eyes, nose, or mouth.
- *Contact transmission, both direct and indirect:* Direct contact involves direct skin-to-skin contact, such as when a worker performs patient care or emergency response activity that requires direct personal contact (such as turning or bathing a patient). Indirect contact involves a worker's contact with a contaminated intermediate object such as a contaminated table top, door knob, or a computer keyboard used by an infected worker and then touching the eyes, nose, or mouth. Contact transmission is important to consider because influenza viruses can persist for minutes on hands and hours on surfaces.

Note: The above discussion is based on the use of traditional terminology to describe routes of transmission. While the terms have general utility, it should be noted that a report of the Council of Canadian Academies report titled "[Influenza Transmission and the Role of Personal Protective Respiratory Equipment: an Assessment of the Evidence](#)" issued in December 2007 advises that it may be useful to update terminology. For example, the report notes that the diameter of a particle determines its ability to enter the respiratory tract. It advises that particles/droplets with diameters up to 100 µm (0.1 mm) can be inhaled, terming these as "inhalable particles." Particles larger than 100 µm are considered non-inhalable, and are termed "ballistic particles." The report also concludes that the current weight of evidence suggests that transmission of influenza by inhalation is more probable than by indirect contact.

b. Work activities that may result in exposure: The potential for workplace exposure will vary from sector to sector, and will also depend on work activities in a sector. For example, in the health care sector, direct patient care involves a higher potential for exposure to the virus than activities which involve work at a distance, such as delivery of supplies, or maintenance in areas where patients are not present. In the former case, all routes of transmission are possible; in the latter, the routes are more likely to be restricted to avenues such as indirect contact.

Note: Section 6.34(b) of the *Regulation* requires that a list be assembled of all work activities for which there is a potential for occupational exposure.

c. Identification of the workers at risk of exposure: Appropriate protective measures will vary according to the kinds of activities the workers perform and the relationship of those activities to routes of transmission and proximity to sources of infection.

3. **Risk control:** The required controls may range from simple hand washing and cough/sneeze etiquette, to more extensive measures requiring administrative and engineering controls as well as personal protective equipment (PPE). Control measures need to address all possible routes of transmission. Exposure controls must meet the requirements of sections 6.34(c), (d), and (e) of the *Regulation*.

Engineering and administrative controls: Section 6.34(c) requires engineering and administrative controls to eliminate or minimize the potential for occupational exposure. An example of an engineering control in a hospital could include a well-ventilated isolation room with a directed airflow that ensures the safety of workers. An example of an employer's administrative work practice control is a policy of encouraging sick workers to remain at home. Work practices would also include the procedures established in the workplace to eliminate or minimize the potential for exposure. Such work practices may be substantial in higher-risk workplaces (refer to [Table 2](#)).

Standard precautions: Section 6.34(d) requires the implementation of both standard infection control and transmission-based precautions, to address issues such as housekeeping practices to keep the workplace free from accidental contamination, as well as measures to ensure safety when handling laundry or samples of biological agents. Ensuring the workplace is free from accidental contamination is a fundamental measure for protection against the pandemic influenza virus. Procedures for safety with laundry or diagnostic samples will be needed where applicable, for example, in health care facilities that provide such services.

Personal protective equipment (PPE): Section [6.34\(e\)](#) requires a description of PPE designed to eliminate or minimize occupational exposure. Depending on the circumstances of risk and the effectiveness of other controls, required PPE may include respirators, gloves, gowns, goggles, surgical masks, and face shields. The proper donning, fit checking, doffing, and disposal of the PPE and training in these practices must also be considered. Requirements for PPE are also found in [Part 8 \(Personal protective clothing and equipment\)](#) of the *Regulation*. [Table 2](#) at the end of this guideline provides information on basic measures related to personal hygiene and PPE for several types of work circumstances.

4. **Education and training:** Under section 6.34(f) of the *Regulation*, the employer must ensure that workers are informed about the content of the ECP and provided with adequate education, training, and supervision to work safely with, and in proximity to, the pandemic influenza virus. Information provided should ensure an understanding of the means of transmission of the virus and applicable control measures. Information on the use of PPE should include instruction on the means of donning and doffing the equipment.

Supervisors need to ensure that instruction has been provided to workers in procedures, and that procedures are followed, including the use of PPE. Where PPE is required, supervisors need to lead by example.

5. **Written procedures, hygiene and decontamination facilities, health monitoring, and documentation:** Section 5.54 of the *Regulation* requires these elements of the ECP where necessary to protect workers. In the event of a pandemic influenza, the expectations are as follows:

Written procedures would be required if the complexity of the procedure and risks involved, or the size of the workplace merit instructions being written. For example, written procedures might be required for a hospital isolation ward, but not in a small workplace of low risk as long as worker education and training addresses basic issues of worker protection.

Hygiene facilities to permit proper hand washing whenever needed are a basic expectation under all ECPs. **Decontamination procedures** will be needed in some higher-risk workplaces, for example, when cleaning reusable personal protective equipment such as gowns, aprons, face shields, and goggles.

In all workplaces workers should be **monitored** for possible symptoms of pandemic influenza. If a worker develops symptoms, appropriate measures should be taken to minimize exposure of other workers, and the worker should be referred to the appropriate medical authority.

Sections 6.34(g) and (h) of the *Regulation* establish requirements for **documentation** of worker training and education, and of exposure to the virus when performing work activities. It is expected that documentation of the job positions that would involve exposure to the pandemic influenza virus coupled with the identity of workers who are in those positions will meet the intent of the requirement for records of worker exposure.

Where to get more information

Both WorkSafeBC and various public health authorities have web sites with further information on infectious diseases, pandemic planning, and protection from exposure.

- WorkSafeBC - worksafebc.com
- The BC Centre for Disease Control - bccdc.ca
- The Public Health Agency of Canada - phac-aspc.gc.ca
- The World Health Organization - who.int
- The U.S. Centers for Disease Control - cdc.gov

Table 2: Personal protective measures for pandemic influenza

This Table provides basic information for personal protection of workers in some but not all types of work situations.¹ **A risk analysis will need to be done in all cases**, including those covered by this Table, to ensure that control measures properly protect workers. The Table focuses on PPE and personal hygiene, but does not address work procedures or engineering controls, which also need to be considered in the exposure control plan.

	Low risk: Workers who typically have no contact with pandemic influenza-infected persons²	Moderate risk: Workers who may be exposed to infected persons from time to time in relatively large, well ventilated workspaces³	High risk: Workers who may have contact with infected patients, or with infected persons in small, poorly ventilated workspaces⁴
Hand hygiene	Yes (washing with plain or antimicrobial soap and water; or use of hand wipes that contain effective disinfectant)	Yes (washing with plain or antimicrobial soap and water; or use of hand wipes that contain effective disinfectant)	Yes (washing with plain or antimicrobial soap and water; or use of hand wipes that contain effective disinfectant)
Disposable gloves	Not required	Not required (unless handling contaminated objects on a regular basis)	Yes in some cases- e.g., when working directly with pandemic influenza patients
Apron, Gown, or similar body protection	Not required	Not required	Yes in some cases- e.g., when working directly with pandemic influenza patients
Eye protection - Goggles or Face shield	Not required	Not required	Yes in some cases- e.g., when working directly with pandemic influenza patients
Airway Protection - respirators	Not required	Not required (unless likely to be exposed to coughing and sneezing)	Yes (minimum N95 respirator or equivalent)

1. For example, lab work is an activity not covered by the Table. Lab workers will require appropriate hand, body, and eye protection when handling specimens that are or may be contaminated with the pandemic influenza virus. Also, approved respiratory protection would be required where there may be exposure to contaminated aerosols.
2. This category would typically apply to workers who do not have contact with the public, for example, in locations such as production facilities or administrative clerical areas.
3. This category would typically include workers who routinely deal with the public, some of whom may be infected with the pandemic influenza virus, in circumstances where typically the contact is of a short duration, and the workspace is relatively large and well ventilated. Examples include cashiers, tellers, receptionists, and sales persons. Protective measures may be required if workers handle, on a regular basis, objects that may be contaminated (e.g., money, paperwork, or ticket stubs), or are exposed to coughing or sneezing.

4. High-risk activities typically involve workers (e.g., health care, first aid, and emergency response) who treat patients with pandemic influenza, or who do other work in isolation wards, rooms, or home settings where such patients are present. They may also include other circumstances where there is extensive contact with the public in small enclosed areas where ventilation is poor.

G6.36(1.1) Safety engineered needles

Issued January 1, 2007; Editorial Revision October 2, 2007; Editorial Revision February 1, 2008; Editorial Revision April 6, 2020

Regulatory excerpt

Section 6.36(1.1) of the *OHS Regulation ("Regulation")* states:

- (1.1) On and after January 1, 2008, a needleless device or safety-engineered hollow bore needle must be used for the following procedures performed to care for or treat a person:
 - (a) withdrawal of body fluids;
 - (b) accessing a vein or artery;
 - (c) administration of medications or fluids;
 - (d) any other procedure involving the potential for an exposure to accidental parenteral contact for which a needleless system or safety-engineered hollow bore needle system is available.

Purpose of guideline

This guideline explains the implementation period under section 6.36(1.1) and provides some examples of workplaces where the s. 6.36 requirements apply.

Implementation period

The requirements of sub-section 1.1 as well as the requirements in sub-sections 1.3, 1.4, 1.5, and 1.6 that apply to subsection 1.1, are effective on and after January 1, 2008, to provide sufficient time for employers to commit funds, adopt safety-engineered devices, change workplace policy and practices, and educate and train workers.

Definition of "workplace"

Section 13 of the *Workers Compensation Act* defines a workplace as any place where a worker is or is likely to be engaged in any work and includes any vessel, vehicle, or mobile equipment used by a worker in work. Some examples of workplaces where section 6.36(1.1) may apply include, but are not limited to

- Hospitals
- Ambulances
- Homecare sites where a community health nurse visits
- Blood collection clinics
- Correctional institutes
- Dental offices
- Medical and dental laboratories
- Health clinics, including those located in industrial facilities
- Outpatient facilities (including renal dialysis clinics and cancer treatment centers)
- Hemodialysis centers
- Drug treatment centers
- Blood banks
- Hospices
- Residential care facilities
- Assisted living residences
- Physicians' offices
- Naturopaths' offices
- Acupuncture clinics
- Tattoo parlours

G6.36(1.3) Not clinically appropriate

Issued October 2, 2007; Editorial Revision February 1, 2008; Revised March 7, 2011; Revised May 17, 2012

Regulatory excerpt

Sections 6.36(1.1) to (1.3) of the *OHS Regulation ("Regulation")* state:

- (1.1) On and after January 1, 2008, a needleless device or safety-engineered hollow bore needle must be used for the following procedures performed to care for or treat a person:

- (a) withdrawal of body fluids;
- (b) accessing a vein or artery;
- (c) administration of medications or fluids;
- (d) any other procedure involving the potential for an exposure to accidental parenteral contact for which a needleless system or safety-engineered hollow bore needle system is available.

(1.2) On and after October 1, 2008, any medical sharp used to care for or treat a person must be a safety engineered medical sharp.

(1.3) Subsections (1.1) and (1.2) do not apply if

- (a) use of the required device, needle or sharp is not clinically appropriate in the particular circumstances, or
- (b) the required device, needle or sharp is not available in commercial markets.

And section 6.36(1.6) of the *Regulation* states:

Safe work procedures and practices relating to the use of a safety-engineered hollow bore needles and safety-engineered medical sharps must be developed and implemented before use of these devices.

And section 6.33 of the *Regulation* states:

"*medical sharp*" means a needle device, scalpel, lancet, or any other medical device that can reasonably be expected to make parenteral contact;

"*safety-engineered medical sharp*" means a medical sharp with a built-in safety feature or mechanism that eliminates or minimizes the risk of accidental parenteral contact while or after the sharp is used;

And section 6.34(1)(c) of the *Regulation* states:

5.54 and that includes the following:

...

- (c) engineering controls and administrative controls to eliminate or minimize the potential for occupational exposure

Purpose of guideline

The purpose of this guideline is to clarify the meaning of the term "not clinically appropriate", and the application of this exemption under section 6.36(1.3) of the *Regulation*.

Not clinically appropriate

Under section 6.36(1.3) of the *Regulation*, the requirement to use a safety-engineered medical sharp under section 6.36(1.1) does not apply if the sharp is not clinically appropriate for a specific step in a medical or dental procedure.

Factors to be considered

A safety-engineered medical sharp is considered not clinically appropriate if the use of that device will unreasonably compromise patient safety or the success of a specific medical or dental procedure. For example, the safety-engineered mechanism may in some instances restrict:

- a device (e.g. scalpel) from reaching a tight space (e.g. nasal cavity, ear canal, or a deep cavity, such as a hip joint); or
- a clinician's line of sight.

The use of a safety-engineered medical sharp may necessitate the modification of steps of a medical procedure. This does not necessarily mean that the use of a safety-engineered medical sharp will compromise patient safety or the success of a specific medical or dental procedure. It may be clinically appropriate to use a safety-engineered medical sharp even though its use requires modification of procedural steps.

If a specific safety-engineered medical sharp is determined to be not clinically appropriate for a particular step in a procedure, all other commercially available safety-engineered medical sharps for that specific step in the procedure need to be assessed for clinical appropriateness.

Making a determination

The employer's determination of whether the use of a safety-engineered medical sharp is not clinically appropriate should include persons who are knowledgeable of:

- performing the procedure in question;
- assessments by others performing the procedure in question; and
- the safety-engineered medical sharps that are commercially available and their applicability to the procedure.

The employer should document the reasons why the use of a safety-engineered medical sharp required under section 6.36(1.1) of the *Regulation* is not clinically appropriate. The documented reasons should, at a minimum, include the following information:

- the safety-engineered medical sharp(s) assessed;
- the non-safety-engineered medical sharp currently used;
- the part of the procedure where the use of a safety-engineered medical sharp has been deemed to be not clinically appropriate;
- the reason(s) why the safety-engineered medical sharp would compromise patient safety or the success of a specific medical or dental procedure;
- additional safe work procedures used to minimize the risk of injury to workers (if appropriate);
- the name(s) of the person(s) who approved the use of the non-safety-engineered medical sharp; and
- the date of decision.

This documentation should be readily available to workers who procure, prepare and use medical sharps.

Periodic review

The approval to use a non-safety-engineered medical sharp should be reviewed when new technology becomes commercially available, and at least annually.

In situ determinations

Following a determination that a safety-engineered medical sharp is clinically appropriate for a particular medical or dental procedure, there may be individual cases where the use of the safety-engineered medical sharp is not clinically appropriate.

In these unique cases, the person making that determination should document that situation, including the medical procedure, the safety-engineered medical sharp, and reasons why the safety-engineered medical sharp would compromise patient safety or the success of the specific medical or dental procedure. The documentation should be included as part of the periodic review of determinations about the use of non-safety-engineered medical sharps.

Safe work practice controls

The use of safety-engineered medical sharps is only one part of the employer's overall exposure control plan. Section 6.34(1)(c) of the *Regulation* requires that engineering controls and work practice controls be established to eliminate or minimize the potential for occupational exposure.

For further information on other engineering and work practice controls that may be appropriate for use under section 6.34(1)(c), refer to OHS Guideline [G6.34-2 Risk assessment, engineering and administrative controls, and personal protective equipment](#).

G6.36(1.4) and (1.5) Highest level of protection

Issued October 2, 2007; Editorial Revision February 1, 2008; Editorial Revision April 6, 2020

Regulatory excerpt

Sections 6.36(1.4) and 6.36(1.5) of the *OHS Regulation* ("*Regulation*") state:

(1.4) If more than one type of safety-engineered hollow bore needle or safety-engineered medical sharp is available in commercial markets, the needle or sharp that provides the highest level of protection from accidental parenteral contact must be used.

(1.5) For purposes of subsection (1.4), an employer must make a determination of the highest level of protection available based on information provided by manufacturers, independent testing agencies, objective product evaluation, or other reliable sources.

Regulation section 6.33 includes the following definitions:

"medical sharp" means a needle device, scalpel, lancet, or any other medical device that can reasonably be expected to make parenteral contact;

"parenteral contact" means piercing of mucous membranes or the skin;

"safety-engineered medical sharp" means a medical sharp with a built-in safety feature or mechanism that eliminates or minimizes the risk of accidental parenteral contact while or after the sharp is used;

Purpose of guideline

The purpose of this guideline is to discuss the requirements and considerations for selecting safety-engineered medical sharps (SEMS), including safety-engineered hollow bore needles, that provide workers the highest level of protection. The guideline also highlights some of the obligations of suppliers of these devices.

Considerations for "highest level of protection"

SEMS with similar or different engineering controls may provide comparable levels of protection. However, where evidence suggests that one device provides a higher level of protection than another in a particular circumstance, the employer is required to select the SEMS affording the highest level.

To determine which SEMS provides the highest level of protection, consideration should be given to

- Evidence that other devices would reduce accidental contact in that workplace and for that task more effectively
- Consideration and review of the different types of engineering controls that are commercially available for the relevant devices

- Information provided by manufacturers, independent testing agencies, "objective product evaluation" (see below), or other reliable sources, as specified in section 6.36(1.5)
- Conducting a periodic review to ensure that the devices selected are appropriate based on the most current scientific knowledge of protection from sharps injuries. For example, a review may identify technological developments that may eliminate or reduce exposure to a biological agent designated as a hazardous substance under [section 5.1.1](#), as well as any new information on the efficacy of the selected devices.

Note: Review of exposure control plans

- [Section 6.34](#) requires the employer to develop and implement an exposure control plan (ECP) meeting the requirements of [section 5.54](#) if a worker has or may have occupational exposure.
- Section 5.54(3) requires the employer to review the ECP at least annually and update the ECP as necessary in consultation with the joint health and safety committee or the worker's health and safety representative as applicable.
- Section 5.54(2)(b) requires that the ECP incorporates the element of risk control, which includes the selection of devices under section 6.36(1.5) where applicable.

Objective product evaluation

Section 6.36(1.5) allows an employer to make a determination of the highest level of protection available based on an objective product evaluation. An objective product evaluation should enable the employer to assess the extent to which the SEMS eliminates or minimizes the risk of parenteral contact while or after the device is used. An objective product evaluation should assess the factors that are relevant to determining the effectiveness of SEMS and be applicable to the groups of devices and procedures under consideration. Anecdotal evidence alone is not sufficient to determine that a device provides the highest level of protection.

The following are examples of criteria for employers to consider when using an objective product evaluation to determine which SEMS provide the highest level of protection:

- The device includes built-in protection of the needle or other sharp
- The user can easily tell whether the safety feature is activated
- The device performs reliably
- The device is easy to use and is self-evident
- The safety feature is in effect before disposal and remains in effect after disposal

Sample evaluation forms for safety engineered needles and IV systems were developed through the training for Development of Innovative Control Technologies (TDICT) Project and are available at <http://www.osha.gov/>. Type in the search term "TDICT" and click on the document noted as the [2001 -- 11/27/2001 CPL 02-02-069 \[CPL-2-2-69\] - Enforcement Procedures for the Occupational Exposure to Bloodborne Pathogens](#).

Consideration of both "highest level of protection" and "clinically appropriate"

Section 6.36(1.3) recognizes that the use of SEMS affording the highest level of protection to a worker may not be clinically appropriate for certain clinical situations.

Consider the following example where an employer is initially considering three SEMS for use in a procedure:

	What level of protection from accidental parenteral contact does the SEMS provide the worker?	Is the SEMS clinically appropriate for the procedure in question?
SEMS #1	High	No
SEMS #2	Medium	Yes
SEMS #3	Low	Yes

In this case, although SEMS #1 may provide the highest level of protection to the worker, it has been determined that it is not clinically appropriate to use it in the procedure in question. Therefore, for the purposes of section 6.36(1.4), SEMS #2 must be used because it provides the highest level of protection among those SEMS that are commercially available and clinically appropriate to use in the procedure in question.

Suppliers' OHS obligations and highest level of protection

[Section 26](#) of the *Workers Compensation Act* ("Act") places obligations on suppliers. For example, section 26 requires that every supplier must

Ensure that any tool, equipment, machine, or device, or any biological, chemical, or physical agent, supplied by the supplier is safe when used in accordance with the directions provided by the supplier and complies with the OHS provisions and the regulations

Provide directions respecting the safe use of any tool, equipment, machine, or device, or any biological, chemical, or physical agent, that is obtained from the supplier to be used at a workplace by workers

For example, if a supplier fails to provide directions respecting the safe use of SEMS, then the supplier is in contravention of section 26. In this case, even if the SEMS could potentially provide the highest level of protection, the workers may not receive the highest level of protection because they are without adequate directions from the supplier.

Health Canada is the federal regulator that administers the [Medical Devices Regulations](#), issued under the [Food and Drugs Act](#). The [Medical Devices Regulations](#) apply to the sale and advertising for sale of a medical device and the importation of a medical device for sale or use on

individuals. Under the [Medical Devices Regulations](#), manufacturers have obligations regarding the safety and effectiveness of the devices. Manufacturer's compliance with this regulation alone does not guarantee that the use of the device provides the highest level of protection in general or in particular circumstances.

G6.40 Medical evaluation

Issued August 1999; Revised February 1, 2008

Regulatory excerpt

Section 6.40 of the *OHS Regulation ("Regulation")* states:

If a worker may have been exposed to the human immunodeficiency virus (HIV), hepatitis B virus or any other biological agent designated as a hazardous substance in section 5.1.1, the employer must advise the worker to seek immediate medical evaluation.

Purpose of guideline

The purpose of this guideline is to provide suggested management protocol in the event a worker is exposed to HIV, hepatitis B, or other biological agent designated as a hazardous substance under [section 5.1.1](#). The guideline also provides information about the confidentiality of test results.

Management protocol

In the event that a worker has been, or may have been, exposed to HIV, hepatitis B, or any other biological agent designated as a hazardous substance in section 5.1.1, the management protocol typically will include immediate first aid, reporting, and documentation of the incident, followed by medical assessment at a hospital emergency department as soon as possible. The times in which a worker should receive a medical assessment for various types of occupational exposure should be included in the exposure control plan under section 6.34(1). For HIV, for example, this would be preferably within two hours of the incident.

Confidentiality

Medical personnel need informed consent in writing before blood tests are taken and before results regarding either the source or the exposed worker can be released. Blood tests include those for HIV, hepatitis B and C, and/or liver function status. Because all results are confidential, a WorkSafeBC prevention officer must respect the confidentiality of any information received in this regard from any source.

G6.42 Cytotoxic drugs - Definition

Issued August 1, 1999; Editorial Revision October 2004

Section 6.42 of the *OHS Regulation ("Regulation")* defines a cytotoxic drug as:

an agent that possesses a specific destructive action on certain cells or that may be genotoxic, oncogenic, mutagenic, teratogenic, or hazardous to cells in any way and includes most anti-cancer drugs.

A number of drugs used in health care settings (e.g., hospitals, physician's offices, home healthcare agencies) may pose a risk to workers through acute or chronic occupational exposure. The degree of risk is dependent on the inherent toxicity of the drug, as well as the extent of exposure. Workers may be exposed via inhalation of dusts or aerosols, absorption through the skin, and ingestion (e.g., as a result of contact with contaminated food). Compliance with the personal hygiene requirements (sections [5.82 to 5.84](#)) should eliminate ingestion as a source of exposure.

Specific tasks that increase the potential for exposure due to splattering, spraying or aerosolization include, but may not be limited to:

- withdrawal of needles from drug vials,
- transfer of drugs from one container to another using syringes, needles or filter straws,
- breaking ampules open, and
- expulsion of air from drug-filled syringes.

The American Society of Hospital Pharmacists (ASHP) considers a drug to be hazardous if it:

- is genotoxic,
- is carcinogenic,
- is teratogenic (a substance that is capable of causing physical defects in a developing embryo) or impairs fertility, or
- causes serious organ or other toxic manifestations at low doses in experimental animals or treated patients.

Some common drugs that meet these criteria are listed below.

Altretamine	Dactinomycin	Leuprolide	Streptozocin
Aminoglutethimide	Daunorubicin	Levamisole	Tamoxifen
Azathioprine	Diethylstilbestrol	Lomustine	Testolactone
L-Asparaginase	Doxorubicin	Mechlorethamine	Thioguanine

Bleomycin	Estradiol	Medroxy-progesterone	Thiotepa
Busulfan	Estramustine	Megestrol	Uracil Mustard
Carboplatin	Ethinyl Estradiol	Melphalan	Vidarabine
Carmustine	Etoposide	Mercaptopurine	Vinblastine
Chlorambucil	Floxuridine	Methotrexate	Vincristine
Chloramphenicol	Fluorouracil	Mitomycin	Zidovudine
Chlorotianisene	Flutamide	Mitotane	
Chlorozotocin	Ganciclovir	Mitoxantrone	
Cyclosporin	Hydroxyurea	Nafarelin	
Cisplatin	Idarubicin	Pipobroman	
Cyclo-phosphamide	Ifosfamide	Plicamycin	
Cytarabine	Interferon-A	Procarbazine	
Dacarbazine	Isotretinoin	Ribavirin	

For drugs not included on this list, professional judgement by personnel trained in pharmacology and/or toxicology is needed to designate a drug as cytotoxic. The primary factors to be considered are as follows:

- Is the drug designated an antineoplastic agent in the American Hospital Formulary Service Drug Information? (An agent is antineoplastic if it inhibits or prevents the development of tumours.)
- Does the manufacturer suggest the use of special isolation techniques in its handling, administration or disposal?
- Is the drug known to be a human mutagen, carcinogen, teratogen or reproductive toxicant? (An agent is mutagenic if it is capable of inducing genetic mutation.)
- Is the drug known to be carcinogenic or teratogenic in animals? (A drug known to be mutagenic in multiple bacterial systems or animals should also be considered cytotoxic.) or,
- Is the drug known to be acutely toxic to an organ system?

For further information, consult a WorkSafeBC occupational health physician.

G6.43 Cytotoxic drug - Exposure control plan

Issued August 1, 1999

Where a worker is or may be occupationally exposed to a cytotoxic drug, section 6.43 of the *OHS Regulation* requires that the employer implement an exposure control plan meeting the requirements of section 5.54 of the Regulation.

In the context of this section, "occupational exposure" refers to reasonably anticipated harmful contact with cytotoxic drugs that may result from the performance of a worker's regular or assigned job duties. This definition covers situations where a worker may be exposed via a needlestick injury or absorption through the skin.

For further information on the required elements of an exposure control plan, refer to OHG Guideline [G5.54-2](#).

G6.53(1) Biological safety cabinets (BSCs)

Issued August 1, 1999; Editorial revision May 17, 2006

Section 6.53(1) (Preparation and administration) of the *OHS Regulation* ("Regulation") states:

All mixing, preparation and priming of administration sets with a cytotoxic drug must be performed in one centralized area in a specially designated Class II Type B biological safety cabinet that

- (a) is exhausted to the outside atmosphere in a manner that prevents recirculation into any work area,
- (b) has exhaust and ventilation systems that remain in operation for a sufficient period of time to ensure that no contaminants escape from the biological safety cabinet into the workplace, and
- (c) is equipped with a continuous monitoring device to permit confirmation of adequate airflow and cabinet performance.

Purpose of guideline

This guideline provides information on BSCs, including some design differences with equipment such as fume hoods, and a key design feature of Class II, Type B cabinets.

Fume hoods and BSCs

Fume hoods, "clean benches" and other laminar flow devices, such as horizontal flow cabinets that direct the air toward the operator, are not the

same as biological safety cabinets. A Class II biological safety cabinet is a ventilated cabinet designed to afford a combination of worker, product, and environmental protection. A downward, laminar flow of filtered air is supplied vertically to the cabinet. As well, air flows into the cabinet through the front opening. Contaminated air is first filtered and then exhausted to the outside atmosphere through a dedicated, sealed exhaust duct. Both supply and exhaust air is filtered using high efficiency particulate air (HEPA) filters.

Class II, Type B BSCs

Class II, Type B cabinets are "total exhaust." That is, they do not recirculate exhaust air to the work area. Only Class II Type B BSCs are acceptable for the handling of cytotoxic drugs. Class III cabinets would also be acceptable, but are not a specific requirement of the *Regulation*.

The certification requirements of sections 30.12(2) and 30.12(3) for biological safety cabinets also apply. For further detail, consult OHS Guideline [G30.12](#).

G6.53(2) Safe work procedures

Issued May 17, 2006

Regulatory excerpt

Section 6.53(2) of the *OHS Regulation* ("Regulation") states:

The administration of cytotoxic drugs must be done by following safe work procedures.

Purpose of guideline

This guideline outlines a set of work procedures considered safe for the administration of cytotoxic drugs.

The administration of cytotoxic drugs to patients is a step that follows the mixing, preparation, and initial priming of administration sets. An administration set includes a syringe, IV set, or other device used for the delivery of cytotoxic drugs via injection. The administration of cytotoxic drugs may take place in a formal health care setting, or at distance, for example, in a patient's home.

Safe work procedures

The following work procedures are considered safe practices for the administration of cytotoxic drugs:

- Administer cytotoxic drugs by using protective medical devices such as needle-less and closed systems, and techniques such as priming of intravenous (IV) tubing by pharmacy personnel inside a Class II Type B biological safety cabinet or priming in-line with non-drug solutions.
- Ensure the availability of an appropriate spill kit at or near the administration area.
- Wear personal protective equipment, including double gloves, goggles, and protective gowns, for all activities associated with drug administration, such as opening the outer bag, assembling the delivery system, delivering the drug to the patient, and disposing of all equipment used to administer drugs.
- Attach drug administration sets to the IV bag, and prime them before adding the drug to the bag.
- Never remove tubing from an IV bag containing a cytotoxic drug.
- Do not disconnect tubing at other points in the system until the tubing has been thoroughly flushed.
- Remove the IV bag and tubing intact when possible.
- Place disposable items directly in a waste container used for cytotoxic drugs and close the lid. Note: requirements for waste containers are found in section [6.57](#) of the *Regulation*.
- Remove outer gloves and gowns for disposal in the waste container for cytotoxic drugs at the site of drug administration. It is also considered to be safe practice to bag the gloves and gowns before placing them in the waste container, to double bag cytotoxic drug wastes, removing inner gloves after doing so, and to consider double bagging contaminated equipment.
- Wash hands with soap and water before leaving the drug administration site.

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G6.111 Control of rock dust

Issued August 1, 1999; Revised February 11, 2004; Retired consequential to May 1, 2017 Regulatory Amendment

G6.112.4(2) Exception to monitoring requirements - Objective air monitoring data, the silica control tool, and associated record-keeping

Issued consequential to May 1, 2017 Regulatory Amendment

Regulatory excerpt

Section 6.112.4 of the *OHS Regulation* ("Regulation") states, in part:

- (2) Despite section 6.112.3, an employer is not required to monitor the exposure of workers to RCS dust if a qualified person determines that
 - (a) existing control measures are effective in keeping worker exposure as low as reasonably achievable below the exposure limit, and
 - (b) the employer
 - (i) has previously monitored for RCS dust exposure during equivalent work operations and there is no reason to believe that the results of the previous monitoring would not continue to apply, or

(ii) has objective air monitoring data that was collected during equivalent work operations through industry surveys or peer-reviewed or scientific studies that use sampling and analytical methods referred to in section 6.112.3(2).

(3) An employer must keep, for at least 10 years, a record documenting the following, as applicable:

(a) the previous monitoring data used for the purpose of subsection (2)(b)(i);

(b) the source of the objective air monitoring data, and the data itself, referred to in subsection (2)(b)(ii).

Purpose of guideline

This guideline provides an example of how to comply with the requirement to rely on objective air monitoring data for silica levels, and for retention of the associated records.

Objective monitoring data

Section 6.112.4(2)(b)(ii) describes an exception to the requirement for an employer to perform workplace air monitoring if a qualified person has determined that the employer has objective air monitoring data. The data must have been collected as follows:

- During equivalent work operations through industry surveys or peer-reviewed or scientific studies
- Using sampling and analytical methods referred to in section 6.112.3(2)

Equivalent work operations are activities that closely match the silica processes, types of materials, work practices, control measures, and environmental conditions that are present in the employer's current work operations.

The BC Construction Safety Alliance has developed an [online silica control tool](#). The tool relies on scientific studies and research data collected from many jurisdictions around the world by the UBC School of Population and Public Health at the Faculty of Medicine.

If a qualified person verifies that the employer's work operations and activities are equivalent to those described in the silica control tool, then the employer will have relied on appropriate objective monitoring data and will be in compliance with the intent of section 6.112.3.

In order for section 6.112.4(2) to be satisfied, a qualified person must have also determined that the control measures are effective in keeping worker exposures as low as reasonably achievable below the exposure limit. If the risk assessment and the exposure control plan are properly completed by a qualified person, this requirement for effectiveness will be satisfied.

Employers are not required to follow the example of compliance described in this guideline. An employer can choose to perform air monitoring as per section 6.112.3 or can rely on previous monitoring under section 6.112.4(2)(b)(i).

Record keeping

Section 6.112.4(3)(b) of the *Regulation* specifies that the source of the objective exposure monitoring data, and the data itself, be kept for at least ten years. When an employer appropriately uses the online silica control tool published by the BC Construction Safety Alliance, the employer should retain the created exposure control plan summary for ten years. This will satisfy the employer's obligation under section 6.112.4(3)(b).

Note that there are further requirements for an exposure control plan prescribed in section 6.112.1 of the *Regulation*. This guideline focuses on the use and retention of objective monitoring data.

G6.113 Rock drills

Issued August 1, 1999; Revised February 11, 2004; Editorial Revision consequential to May 1, 2017 Regulatory Amendment

Regulatory excerpt

Section 6.113 of the *OHS Regulation* ("*Regulation*") states:

A rock drill, other than a manually-powered rock drill, must be equipped with a dust suppression system, acceptable to the Board, that

(a) uses water jet, spray, or other equally effective means to suppress drilling dust effectively, and

(b) operates whenever the drill is in use.

Purpose of guideline

This guideline describes how an employer can check for compliance.

Dust suppression

Under section 6.113 of the *Regulation*, rock drills must be equipped with a dust suppression system that is acceptable to WorkSafeBC. This requirement for a dust suppression system does not apply to manually powered rock drills.

To determine if an effective dust suppression system is available, the employer should consult with an equipment supplier. A system will be considered to be "effective" if it maintains dust levels at or below the exposure limits listed in the Table of Exposure Limits for Chemical and Biological Substances (see OHS Guideline [G5.48-1](#)).

Personal exposure monitoring may be required to ensure that worker exposure to designated substances (e.g., crystalline silica) is maintained as low as reasonably achievable below the exposure limit.

G6.60 Lead - Exposure control plan

Issued August 1, 1999; Editorial Amendment October 2004; Editorial revision consequential to May 1, 2017 Regulatory Amendment

Regulatory excerpt

Section 6.60 of the *OHS Regulation* ("*Regulation*") states:

- (1) If a risk assessment indicates that a worker is or may be exposed to lead dust, fumes or mist, the employer must
 - (a) ensure that a qualified person develops an exposure control plan meeting the requirements of section 5.54 and subsection (3) of this section, and
 - (b) implement the exposure control plan.

Purpose of guideline

This guideline provides some explanation of when an exposure control plan is required for lead dust, fumes or mist.

Determining whether an exposure control plan is required

Section 6.60 of the *Regulation* requires the employer to develop and implement an exposure control plan meeting the requirements of section 5.54 and 5.57(2) of the *Regulation* if a worker is or may be exposed to lead. The International Agency for Research on Cancer (IARC) has categorized inorganic lead as group 2A (probably carcinogenic to humans). Inorganic lead is a designated substance under section 5.57 of the *Regulation*.

This requirement for an exposure control plan is primarily intended to address exposure from two routes of entry — inhalation and ingestion. Exposure to lead via inhalation can be quantitatively assessed in the field by air sampling and this monitoring is useful in the determination of control measures. Refer to section 6.61 of the *Regulation*.

Exposure to lead via ingestion can be assessed in the field by inspection and surface sampling. Items that should be evaluated include, but may not be limited to, the following:

- Housekeeping procedures
- Location of lunchrooms in relation to production areas
- Personal hygiene and habits of workers (such as use of washing facilities, change of clothing, nail biting, and smoking),
- Effectiveness of local exhaust ventilation
- Cleanliness of personal protective equipment

There are no WorkSafeBC regulatory limits for lead on surfaces. However, other jurisdictions have developed acceptable levels for lead on various surfaces and these levels can be useful in helping determine whether a worker is or may be exposed to lead. A summary of these values can be found in the WorkSafeBC publication [Safe Work Practices for Handling Lead](#).

Further information on the elements of an exposure control plan can be found in the OHS Guidelines for section 5.54 of the *Regulation* and in *Safe Work Practices for Handling Lead*.

G6.61.1 Exception to monitoring requirements - Objective air monitoring data and associated record-keeping

Issued consequential to May 1, 2017 Regulatory Amendment

Regulatory excerpt

Section 6.61.1 of the *OHS Regulation* ("*Regulation*") states, in part:

- (2) Despite section 6.61, an employer is not required to monitor the concentration of airborne lead if a qualified person determines that
 - (a) existing control measures are effective in keeping worker exposure as low as reasonably achievable below the exposure limit, and
 - (b) the employer
 - (i) has previously monitored for airborne concentrations of lead during equivalent work operations and there is no reason to believe that the results of the previous monitoring would not continue to apply, or
 - (ii) has objective air monitoring data that was collected during equivalent work operations through industry surveys or peer-reviewed or scientific studies that use sampling and analytical methods, referred to in section 6.61(2).
- (3) An employer must keep, for at least 10 years, a record documenting the following, as applicable:

- (a) the previous monitoring data used for the purpose of subsection (2)(b)(i);
- (b) the source of the objective air monitoring data, and the data itself, referred to in subsection (2)(b)(ii).

Section 6.61(2) of the "*Regulation*" states:

- (2) Acceptable sampling and analytical methods for the purpose of subsection (1) are as follows:
 - (a) a method detailed in a standard occupational hygiene reference published by
 - (i) the National Institute for Occupational Safety and Health, or
 - (ii) the Occupational Safety and Health Administration;
 - (b) another method acceptable to the Board.

Purpose of guideline

This guideline provides an example of how to comply with the requirement to rely on objective air monitoring data for airborne lead, and the necessary retention of associated records.

Objective monitoring data

Section 6.61.1(2) describes an exception to the requirement for an employer to perform workplace air monitoring if a qualified person has determined that the employer has objective air monitoring data. The data must have been collected

- During equivalent work operations through industry surveys or peer-reviewed or scientific studies
- Using sampling and analytical methods referred to in section 6.61(2)

Equivalent work operations are activities that closely match the lead processes, types of materials, products or coatings, work practices, control measures, and environmental conditions that are present in the employer's current work operations.

WorkSafeBC has published recommended control measures and personal protective equipment (PPE) for work activities involving lead in paints and other coatings. These measures and PPE are specified in Part 3 of the WorkSafeBC publication [Safe Work Practices for Handling Lead](#). The control measures and PPE are based on objective monitoring data from reliable scientific sources; this is further explained in the WorkSafeBC publication.

If a qualified person verifies that the employer's work operations and activities are equivalent to those described in Part 3 of *Safe Work Practices for Handling Lead*, then the employer will have relied on appropriate objective monitoring data and will be in compliance with the intent of section 6.61.

In order for section 6.61.1(2) to be satisfied, a qualified person must have also determined that the control measures are effective in keeping worker exposures as low as reasonably achievable below the exposure limit. If the risk assessment and the exposure control plan are properly completed by a qualified person, this requirement for effectiveness will be satisfied.

Note that the control measures and PPE described in Part 3 of the publication are only for paints and other coatings and do not apply to work activities involving other lead-containing materials.

Employers are not required to follow the example of compliance described in this guideline. An employer can choose to perform air monitoring as per section 6.61, can rely on previous monitoring under section 6.61.1(2)(b)(i), or can use other objective air monitoring data as described in section 6.61.1(2)(b)(ii).

Record keeping

Section 6.61.1(3) of the Regulation specifies that the source of the objective exposure monitoring data, and the data itself, must be kept for at least ten years. When a qualified person has made the necessary determinations under section 6.61.1 relying on the WorkSafeBC publication *Safe Work Practices for Handling Lead* as the source of objective monitoring data, this information should be documented and retained for ten years. This will satisfy the employer's obligation under section 6.61.1(3)(b).

G6.67 Health protection

Issued August 1, 1999

Section 6.67 of the *OHS Regulation* ("*Regulation*") states:

The employer must develop and implement an effective health protection program, in a manner acceptable to the Board, if a worker is exposed to potentially hazardous levels of lead.

As prescribed by section [5.54\(2\)\(f\)](#) of the *Regulation*, health monitoring may be a required element of an exposure control plan. Health monitoring is discussed in OHS Guideline [G5.54-5](#). The general model described in this Guideline should be used to develop the program required under section 6.67.

Issued August 1, 1999; Editorial Revision October 26, 2011

Regulatory excerpt

Section 6.68 of the *OHS Regulation* ("*Regulation*") states:

The employer must

- (a) maintain records of risk assessments, worker exposures and worker training, and
- (b) ensure that health monitoring records are maintained in a manner acceptable to the Board.

Purpose of guideline

The purpose of this guideline is to establish the manner acceptable to WorkSafeBC for maintaining health monitoring records.

Record keeping

Section 6.68 of the *Regulation* requires that the employer maintain records of risk assessments, worker exposures, worker training, and health monitoring. Health monitoring records maintained in keeping with the guidance in OHS Guideline [G5.54-5](#) and in keeping with the instructions of an occupational health physician or nurse are acceptable to WorkSafeBC.

If the employer wishes to keep records in any other manner, they are to send their request to the OHS Practice and Engineering Support department for consideration.

No other manner may be used until written acceptance has been given by that department.