

2010/03/17-04

THE WORKERS' COMPENSATION BOARD OF BRITISH COLUMBIA
RESOLUTION OF THE BOARD OF DIRECTORS

**Re: Approval to Release to Public Hearing Proposed Amendments
to the Occupational Health and Safety Regulation
(BC Regulation 296/97, as amended)**

WHEREAS

Pursuant to section 225(1) of the *Workers Compensation Act* and amendments thereto ("Act"), the Workers' Compensation Board ("WCB") may make regulations it considers necessary or advisable in relation to occupational health and safety and occupational environment;

AND WHEREAS:

Pursuant to section 226(1)(a) of the *Act*, the WCB, before making a regulation, must give notice of the proposed regulation in the *BC Gazette* and in at least 3 newspapers, of which one must be published in the City of Victoria and one in the City of Vancouver;

AND WHEREAS:

Pursuant to section 226(1)(b) of the *Act*, the WCB, before making a regulation, must hold at least one public hearing on the proposed regulation;

AND WHEREAS:

The WCB has drafted proposed amendments to the Occupational Health and Safety Regulation ("OHSR"), as part of the ongoing regulation review process.

THE BOARD OF DIRECTORS RESOLVES THAT:

1. The proposed amendments to the OHSR set out in Attachments 1 to 14 be released to public hearing.

2. The Vice President, Policy and Research Division, is appointed to chair the public hearing and may designate additional members of the public hearing panel as necessary.
3. Public hearings on the proposed amendments will take place May-June 2010 in Cranbrook, Kelowna, Prince George, Victoria and Metro-Vancouver.
4. Notice of the proposed amendments will be published in the *BC Gazette*, the *Victoria Times Colonist*, the *Vancouver Sun*, the *Province* and in various local newspapers including in the cities of Cranbrook, Kelowna and Prince George.

Dated at Richmond, British Columbia, March 17, 2010.

By the Workers' Compensation Board

**DR. ROSLYN KUNIN, CM, ICD.D
CHAIR, BOARD OF DIRECTORS**

PROPOSED AMENDMENTS FOR PART 1: DEFINITIONS
IN THE OCCUPATIONAL HEALTH AND SAFETY REGULATION

PART 1: DEFINITIONS

1.1 In this Occupational Health and Safety Regulation:

"qualified registered professional"

means

- (a) a professional engineer or professional geoscientist, and
- (b) in relation to a forestry operation, a person referred to in paragraph (a) or a **registered** professional forester, **registered forest technologist** or holder of a special permit under the *Foresters Act*;

Explanatory Note

The Association of BC Forest Professionals has requested registered forest technologists be included in the definition of "qualified registered professional" to recognize the legislated right of a registered forest technologist to practice professional forestry under the *Foresters Act*. This proposed amendment is supported by the Association of Professional Engineers of BC.

For the purposes of the Occupational Health and Safety Regulation, this proposed change means a qualified registered professional will be a professional engineer or professional geoscientist registered or licensed to practice as defined in the *Engineers and Geoscientists Act*, or a professional forester, a registered forest technologist or a person holding a special permit to practice professional forestry as defined in the *Foresters Act*.

"Registered" is being inserted before "professional forester" in section 1.1 (b) at the request of the Association of BC Forest Professionals.

PROPOSED AMENDMENTS FOR PART 4: GENERAL CONDITIONS
IN THE OCCUPATIONAL HEALTH AND SAFETY REGULATION

PART 4: GENERAL CONDITIONS

WORKING ALONE OR IN ISOLATION

**Late night retail
safety
procedures and
requirements**

4.22.1 (1) In this section:

**“late night
hours”**

means any time between 10:00 p.m. **11:00 p.m.** and 6:00 a.m.;

Explanatory Notes:

It is proposed to amend the definition of late night hours to mean any time between 11 pm and 6 am. The purpose of this amendment is to harmonize the Occupational Health and Safety Regulation (“OHSR”) with the BC Liquor Control and Licensing Regulation, which specifies that licensee retail stores (i.e., private liquor stores) may remain open during the hours of 9 am and 11 pm. These businesses are not required to remain open until 11 pm, but the effect is that they cannot feasibly comply with the OHSR.

PROPOSED AMENDMENTS FOR PART 4: GENERAL CONDITIONS
IN THE OCCUPATIONAL HEALTH AND SAFETY REGULATION

PART 4: GENERAL CONDITIONS

BUILDINGS, STRUCTURES, EQUIPMENT AND SITE CONDITIONS

Snow avalanche assessment

4.1.1 (1) In this section:

“active avalanche safety program”

means a program for monitoring daily, or more frequently if conditions warrant, the weather, snow and avalanche conditions, determining temporal fluctuations of avalanche hazards and implementing safety measures, closures or other methods specified in the program to reduce avalanche risk that has not been mitigated through use of passive measures;

“avalanche”

means snow avalanche;

“avalanche risk assessment”

means an assessment, done in accordance with CAA guidelines, of the terrain in and surrounding a workplace to determine if any person working at the workplace is at risk from a snow avalanche;

“avalanche risk zone”

means a workplace or part of a workplace where an avalanche risk assessment determines that avalanches pose a risk to any person working at the workplace and risk control measures are required to make the area safe for work to be conducted;

“avalanche safety plan”

means a documented plan meeting CAA guidelines, specifying passive measures to mitigate or reduce the avalanche risk to any person working at the workplace and any active avalanche safety program necessary to monitor and manage any avalanche risk that has not been mitigated through use of passive measures;

“CAA guidelines”

means the Canadian Avalanche Association guidelines for risk determination, mapping and mitigation for snow avalanche risks as specified in the Guidelines for Snow Avalanche Risk Determination and Mapping in Canada and the Land Managers Guide to Snow Avalanche Hazards in Canada, published by the Canadian Avalanche Association in 2002;

“passive measures”

means the application of CAA guidelines and other relevant standards and practices in engineering, geoscience and forestry to worksite and facility planning, location, design and use to mitigate or reduce the risk from avalanches without reliance on an active avalanche safety program, and may include the design and construction of physical defenses against avalanches;

“qualified avalanche planner”

means a person

- ~~(a) who has training and experience in the development and implementation of active avalanche safety programs and is~~
- ~~(i) a professional member of the Canadian Avalanche Association,~~
 - ~~(ii) a certified guide and a member of the Association of Canadian Mountain Guides,~~
 - ~~(iii) a certified guide and a member of the Canadian Ski Guide Association, or~~
 - ~~(iv) a qualified registered professional, and~~

PROPOSED AMENDMENTS FOR PART 4: GENERAL CONDITIONS
IN THE OCCUPATIONAL HEALTH AND SAFETY REGULATION

- (b) ~~who, on and after September 1, 2011, meets the requirements of the CAA Recommended Minimum Training and Experience for Qualified Avalanche Planners published by the Canadian Avalanche Association in August 2008.~~

means either of the following:

(a) a qualified registered professional;

(b) a person who

(i) has training and experience in the development and implementation of active avalanche safety programs and is

(A) a professional member of the Canadian Avalanche Association,

(B) a certified guide and a member of the Association of Canadian Mountain Guides, or

(C) a certified guide and a member of the Canadian Ski Guide Association, and

(ii) on and after September 1, 2011, meets the requirements of the CAA Recommended Minimum Training and Experience for Qualified Avalanche Planners published by the Canadian Avalanche Association in August 2008.

- (2) Before work commences in a workplace where there is or may be a risk from an avalanche to a person working in the workplace, an avalanche risk assessment must be prepared as follows:
- (a) for workplaces involving buildings, construction, logging, transportation corridors or other work areas that will be occupied by any person working in the workplace on a permanent, seasonal or scheduled basis, by a qualified registered professional ~~and a qualified avalanche planner;~~
 - (b) for wilderness operations where any person working in the workplace undertakes short-duration activities in undeveloped terrain, by a qualified avalanche planner.
- (3) If an avalanche risk assessment conducted under subsection (2) identifies an avalanche risk zone, no work may be conducted in the avalanche risk zone at any time when snow conditions have the potential to create an avalanche unless an avalanche safety plan has been developed and implemented.
- (4) If any part of an avalanche safety plan
- (a) requires passive measures, that part must be prepared by a qualified registered professional, and
 - (b) requires an active avalanche safety program, that part must be prepared by a qualified avalanche planner.
- (5) If the avalanche safety plan required by subsection (3) includes an active avalanche safety program, a copy of that active avalanche safety program must be readily available to each person who administers or implements the avalanche safety program for the workplace.

PROPOSED AMENDMENTS FOR PART 4: GENERAL CONDITIONS
IN THE OCCUPATIONAL HEALTH AND SAFETY REGULATION

- (6) An avalanche safety plan must be reviewed to ensure that the plan is appropriate and relevant to the conditions and activities for the workplace as follows:
- (a) whenever there is a significant change to the workplace activities contemplated by the plan;
 - (b) whenever there is a significant change to the surface terrain or forest cover in or surrounding the workplace.
- (7) An active avalanche safety program must be reviewed to ensure that the program is appropriate and relevant to the conditions and activities for the workplace at least once every 60 months.
- (8) The review required under subsection (6) or (7) must have any passive measures reviewed by a qualified registered professional and any active avalanche safety program reviewed by a qualified avalanche planner, and following the review the avalanche safety plan must be amended as necessary by the person or persons who conducted the review.
- (9) On and after September 1, 2011, every active avalanche safety program approved before September 1, 2011 must have been prepared by, or reviewed and approved by,
- (a) a qualified registered professional, or**
 - (b) a qualified avalanche planner who is not a qualified registered professional but** meets the requirements of the CAA Recommended Minimum Training and Experience for Qualified Avalanche Planners published by the Canadian Avalanche Association in August 2008.
- (10) If an avalanche safety plan specifies procedures to be followed by persons working in an avalanche risk zone, each person working in the risk zone must be trained in, and comply with, any procedures applicable to that person's work.

PART 26: FORESTRY OPERATIONS AND SIMILAR ACTIVITIES

EQUIPMENT OPERATION

Landslides/ avalanches	26.18	<p>In a forestry operation where there may be a risk of a landslide or avalanche</p> <ul style="list-style-type: none">(a) the risk must be assessed in accordance with a standard acceptable to the Board,(b) if a risk is found to be present, written safe work procedures must be developed meeting the requirements of the standard, and(c) workers must be educated in the safe work procedures.
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Explanatory Note:

It is proposed to amend section 4.1.1 of the Occupational Health and Safety Regulation ("OHSR") by modifying the definition of "qualified avalanche planner". Assessing avalanche risk and developing an appropriate avalanche safety plan requires the application of engineering and geoscience principles. The proposed change will ensure qualified registered professionals (engineers, foresters, geoscientists and registered forest technologists) are not restricted by the OHSR from carrying out the full scope of their professional practice.

The proposed change will also ensure section 4.1.1 continues to recognize there are people who are not qualified registered professionals but have through their training and experience, the knowledge and skill to carry out the role of qualified avalanche planner. These people will be professional members of the Canadian Avalanche Association, or certified guides and members of either the Association of Canadian Mountain Guides or the Canadian Ski Guide Association. After September 1, 2011, such people will need to meet the requirements of the *CAA Recommended Minimum Training and Experience for Qualified Avalanche Planners* published by the Canadian Avalanche Association in August 2008.

This proposed amendment will provide increased flexibility to stakeholders in achieving compliance with section 4.1.1.

It is proposed to amend section 4.1.1(2) (a) through deletion of the reference to qualified avalanche planner. Since a qualified registered professional is required to be involved in the avalanche risk assessment for the workplaces specified in paragraph (a) it is redundant for the reference to qualified avalanche planner to be included. The qualified registered professional can coordinate the work and involve others with special expertise as necessary in preparing the avalanche risk assessment.

It is proposed to amend section 4.1.1(9) to make it compatible with the proposed new definition for qualified avalanche planner.

It is proposed to amend section 26.18 of the OHSR and the related marginal note by deleting the reference to avalanche as the requirements for avalanches are now covered in section 4.1.1 of the OHSR.

PROPOSED AMENDMENTS FOR PART 1: DEFINITIONS
IN THE OCCUPATIONAL HEALTH AND SAFETY REGULATION

PART 1: DEFINITIONS

1.1 In this Occupational Health and Safety Regulation:

"utility service" means a petroleum pipeline, sanitary sewer line, water line, steam line, or electrical cable;

Explanatory Note:

The purpose of the proposed amendment to section 4.18 is to clarify that the scope of section 4.18 is broader than the two utility services currently listed and to specify the main types of other utility services affected. But because examples of utility services also occur elsewhere in the Occupational Health and Safety Regulation ("OHSR") (in three sections of Part 20), a definition of "utility services" is therefore proposed for Part 1, Definitions, so that the entire list of utility services (or a subset of them) does not have to be repeated in each of the relevant sections of the OHSR.

The three main types of closed-system utility services included are potable water lines, energy lines (petroleum, steam, and electrical power), and sanitary sewer lines. These can be summarized as: Water, Energy, Sewer.

As a result of consultation on the "utility service" definition, "steam line" has been added and "gas and oil" has been changed to, simply, "petroleum" to account for the full range of refined and unrefined petroleum products in both gaseous and liquid states (eg. jet fuel). "Storm sewer line" has been removed from the list since it has been represented that unlike the other utility services listed, storm sewers are open systems, therefore they cannot be breached in the same sense, and there is no significant safety threat to workers from hits or damage to them. They often consist of open ditches or culverts. Similarly, signal/communication lines have been removed from the list as WorkSafeBC has determined that breaches to these lines do not represent an immediate threat to workers in the same way that breaches to the named utility services do.

PROPOSED AMENDMENTS FOR PART 4: GENERAL CONDITIONS
IN THE OCCUPATIONAL HEALTH AND SAFETY REGULATION

PART 4: GENERAL CONDITIONS

EMERGENCY PREPAREDNESS AND RESPONSE

**Notification of
utilities
utility service
providers**

4.18 ~~An employer whose work activities result in a hit or damage to a pipeline, buried electrical cable or other such utility must notify the owner of the utility without delay.~~ **If work activities conducted by or on behalf of an employer cause a utility service to be hit or damaged, the employer must notify the owner of the utility service without delay.**

Explanatory Note:

Section 4.18 of the Occupational Health and Safety Regulation currently requires that if a pipeline, buried electrical cable or other such utility service is hit or damaged, the owner of the utility service must be notified without delay. While it is generally understood by most stakeholders that they must notify the owner of an underground gas line or electrical power line when it is hit or damaged via ground disturbance such as excavation work, it is not clear that the obligation for reporting a hit or damage also extends to other utility services, and regardless of their physical location.

The purpose of the proposed amendment is to clarify that the scope of section 4.18 is broader than the two utility services currently listed and to specify what other utility services are also covered by this section. This broader scope requires a new definition of “*utility services*”, proposed to be included in Part 1, Definitions.

Worker safety will be improved by these amendments as the owner of the utility service, once notified, can respond in a timely fashion to ensure the hit or damage is properly assessed and repaired as necessary. This will ensure there is no further danger to the workers at the incident location or to other persons connected to, or supplied by, the utility service.

PROPOSED AMENDMENTS FOR PART 20: CONSTRUCTION, EXCAVATION AND DEMOLITION
IN THE OCCUPATIONAL HEALTH AND SAFETY REGULATION

PART 20: CONSTRUCTION, EXCAVATION AND DEMOLITION

EXCAVATIONS

- Underground utilities utility services** **20.79** (1) Before excavating or drilling with powered tools and equipment, the location of all underground utility services in the area must be accurately determined, and any danger to workers from the **those utility** services must be controlled.
- (2) Excavation or drilling work in proximity to an underground **utility** service must be undertaken in conformity with the requirements of the owner of the **that** utility service.
- (3) Pointed tools must not be used to probe for underground gas **petroleum** and electrical **utility** services.
- (4) Powered equipment used for excavating must be operated so as to avoid damage to underground utility services or danger to workers.

DEMOLITION

- Disconnecting utility services** **20.113** Demolition must not proceed until all ~~electric, gas and other~~ **utility** services which may endanger a worker have been disconnected ~~as~~ **in the manner** required by the owner of the applicable utility **service**.

Explanatory Note:

It is proposed that sections 20.79 and 20.113 of the Occupational Health and Safety Regulation also require minor consequential amendments for clarity, consistency, completeness, and in order to align their language regarding utility services with that of sections 1.1 and 4.18.

For section 20.113 it was felt that a clarification in the language by adding "*in the manner required*" was necessary in order to emphasize not only that the owner of the utility service might require disconnection but might require it done according to a specific methodology sometimes required under other laws. For example, in the case of a natural gas pipeline, the pipeline downstream from the disconnection must be properly vented in order to discharge any natural gas from it, and this must be done according to the applicable regulations of the *Safety Standards Act*. The same is true for electrical cables. Similarly, a sewer line must be disconnected and properly vented so that sewer gas will not back up into the workplace.

**PROPOSED AMENDMENTS FOR PART 4: GENERAL CONDITIONS
IN THE OCCUPATIONAL HEALTH AND SAFETY REGULATION**

- (e) wooden guardrail posts must be at least 38 mm x 89 mm (2 in x 4 in nominal) lumber, and must be installed with the narrow dimension facing the open edge;
- (f) plastic or wire mesh fencing of adequate strength may be used in place of the **mid rail** midrail, but posts and top rails must comply with the requirements of this section and such fencing must be secured in place.

Handrails on stairways

- 4.62**
- (1) Stairs with more than 4 risers must have continuous handrails on
 - (a) any open side of the stairway,
 - (b) one side of enclosed stairways 112 cm (44 in) or less in width, and
 - (c) both sides of enclosed stairways over 112 cm (44 in) wide.
 - (2) The top of a handrail must be 76 cm to 92 cm (30 in to 36 in) above the stair tread, measured vertically from the nose of the tread, and the height must not vary on any flight or succession of flights of stairs.
 - (3) A handrail on an open side of a stairway must have a **mid rail** midrail located approximately midway between the top of the handrail and the nose of the stair tread.
 - (4) A handrail must be able to withstand a load of 1.3 kN (300 lbs) applied vertically or horizontally at any point along the handrail.

Explanatory Note:

It is proposed to amend the definition of “guardrail” in section 4.54 of the Occupational Health and Safety Regulation (“OHSR”) by replacing the term “intermediate rail” with the simpler and more commonly used term “mid rail”. The term “intermediate rail” is not used in sections 4.54 to 4.63; however, the term “midrail” is used in three places. It is proposed to amend sections 4.59(c), 4.58(f) and 4.62 to correct the spelling of this term to “mid rail”.

Section 4.58(4)(b) of the OHSR requires guardrails temporarily installed during construction, demolition or renovation of a work area not be made of fibre or wire rope without the prior approval of the Board.

The following table shows the number of requests for such approval processed by WorkSafeBC in the past few years.

Year	Section 4.58(4)(b)
2007	16
2008	9
2009	4
<i>Total</i>	29

Processing requests for prior approval under section 4.58(4)(b) requires resources from both external stakeholders and WorkSafeBC. Approval is usually granted once all the necessary information has been assembled by the applicant and received by WorkSafeBC. Getting all the necessary information assembled typically requires several exchanges between the applicant and WorkSafeBC.

**PROPOSED AMENDMENTS FOR PART 4: GENERAL CONDITIONS
IN THE OCCUPATIONAL HEALTH AND SAFETY REGULATION**

The construction industry is the main industry sector affected by the provisions of section 4.58(4)(b). An association representing many of the affected employers has requested the section be amended to allow a professional engineer to design or certify the installation and use of wire rope guardrails, and that the requirement for obtaining prior approval of the Board be deleted.

The process for handling requests for prior approval under section 4.58(4)(b) has matured to the point where the factors to be considered can be set out in a standard.

The proposed amendments for this section are an alternative way to achieve a safe and healthy workplace and are not intended to reduce worker health and safety. WorkSafeBC has, as part of its mandate under the *Workers Compensation Act*, the responsibility to establish reasonable standards for the health and safety of workers. Since temporary rope guardrail systems are being used, it is consistent with duties imposed on WorkSafeBC by the *Act* to establish in the OHSR the requirements for such rope guardrail systems. This will ensure stakeholders are aware of the minimum requirements for such systems and will maintain or improve worker safety.

It is proposed to amend section 4.58(4)(b) to eliminate the requirement for obtaining the prior approval of the Board and replace this with a requirement that guardrails made using fibre or wire rope, chain or other flexible materials, for the top rail or mid rail must meet the requirements of a new WorkSafeBC Standard. This standard will require the rope guardrails be installed and used in accordance with written instructions from a professional engineer. It will also require the employer ensure an inspection of the completed installation by a qualified person prior to the rope guardrail system being relied on as the fall protection system for the work area. This will place responsibility for planning, design, installation and use of such guardrails solely with the employer, prime contractor or owner, as applicable, and the professional engineer engaged to be responsible for the engineering aspects of each installation. WorkSafeBC involvement would continue through reviewing the status of compliance with section 4.58(4)(b) where guardrails of this type are observed to be in place during workplace inspections.

Note it is also proposed to add “maintenance” to the list of activities where guardrails may need to be temporarily installed to guard a fall hazard or to control entry due to some other hazard. For example in industrial operations, when a major piece or component of plant equipment is removed for servicing or replacement, often there is a need to provide guarding for the opening until such time as the piece or component is back in place.

WorkSafeBC has published *OHS Guideline G4.58(4)(b) Prior approval for wire rope guardrails* to assist an applicant (employer, prime contractor or owner) in the process for seeking prior approval under section 4.58(4)(b). If this proposed amendment is adopted, a new WorkSafeBC Standard will come into use. A draft of the proposed standard follows.

WorkSafeBC Standard 4.58
Guardrails made with rope rails
March 2010

1. Scope

- 1.1 This standard sets out the minimum requirements for the design and use of a guardrail system temporarily installed in a workplace and made using wire rope, fibre rope, chain or similar non-rigid materials for the top rail or mid rail of the guardrail system.
- 1.2 This standard does not apply to guardrails that are permanently installed in a workplace.

2. Definitions

- 2.1 In this standard, *guardrail* has the same meaning as the definition set out in section 4.54 of the Occupational Health and Safety Regulation (“OHSR”), which states a guardrail means a guard consisting of a top rail 102 cm to 112 cm (40 in. to 44 in.) above the work surface, and a mid rail located approximately midway between the underside of the top rail and the top of the toeboard, if one is provided, or the work surface if no toeboard is provided.
- 2.2 In this standard, *qualified* has the same meaning as the definition set out in Part 1 of the OHSR, which is being knowledgeable of the work, the hazards involved and the means to control the hazards, by reason of education, training, experience or a combination thereof.
- 2.3 In this standard, *rope* means a wire rope, synthetic fibre rope, chain or other non-rigid material having similar engineering properties that make it suitable for use as a material for the rails in a guardrail system.

3. Performance Requirements

- 3.1 Rope rails in a guardrail system must be able to withstand a load of 550 N (125 lb.) applied in any direction at any point on the rope rail.
- 3.2 A guardrail system using rope rails must be installed with sufficient setback from the open edge of the floor or work surface, floor opening or other hazard, such that when the rope rail is subjected to a horizontal load of 550 N (125 lb.) applied at any point the rope rail will not deflect past the open edge of the floor or work surface or to the other hazard.
- 3.3 Rope rails must be made of a material that will remain stable and functional having consideration of climatic conditions, exposure to high temperature sources, exposure to by-products of high temperature processes such as welding or cutting, or chemical exposures which might occur due to the location of the workplace where the guardrail system is to be installed and the work process that will be taking place around the guardrail system.
- 3.4 Rope rails must not be made of natural fibre rope or other material relying on natural fibre for tensile strength.

WorkSafeBC Standard 4.58
Guardrails made with rope rails
March 2010

4. Engineering Requirements

4.1 Rope rails forming part of a guardrail system must be installed and used in accordance with written instructions from a professional engineer.

4.2 The written instructions required by clause 4.1 for a guardrail system to be used at a specific workplace must include:

- (a) The seal and signature of the professional engineer providing the written instructions;
- (b) The address and location in the workplace where the rope guardrail system is to be used;
- (c) The name of the employer(s), prime contractor or owner for whom the written instructions were prepared;
- (d) A description or illustration for the configuration of the guardrail system;
- (e) Detail for the connection of the rope rails to any supports and anchors;
- (f) Detail on the size and grade of rope and all required rigging hardware to be used;
- (g) Detail for corner posts and points where rope terminations occur;
- (h) The maximum span permitted between supports;
- (i) The tension required in the rope and the means to achieve it;
- (j) The means for testing rope tension during inspections of the system.

4.3 The written instructions required by clause 4.1 for a guardrail system intended for use at a number of workplaces of similar design and construction must include:

- (a) The seal and signature of the professional engineer providing the written instructions;
- (b) A description of the type of structure where the rope guardrail system may be used;
- (c) The name of the employer(s), prime contractor or owner for whom the written instructions were prepared;
- (d) A description or illustration for the configuration of the guardrail system;
- (e) Detail for the connection of the rope rails to any supports and anchors;
- (f) Detail on the size and grade of rope and all required rigging hardware to be used;
- (g) Detail for corner posts and points where rope terminations occur;
- (h) The maximum span permitted between supports;
- (i) The tension required in the rope and the means to achieve it;
- (j) The means for testing rope tension during inspections of the system.

4.4 The written instructions required by clause 4.1 must be available at the workplace when the rope guardrail system is being installed and when the rope rails are in place.

5. Installation and Use Requirements

5.1 Workers involved in the installation, maintenance and removal of a rope guardrail system must use fall protection if required by Part 11 of the OHSR.

5.2 Rope rails meeting this standard are intended for use as guardrails and must not be used as a horizontal lifeline unless a professional engineer specifically authorizes such use and provides written instructions for such use.

WorkSafeBC Standard 4.58
Guardrails made with rope rails
March 2010

- 5.3 If the lack of visibility of rope guardrails may pose a hazard, high visibility coloured markers or flagging must be installed on the top rail at intervals not exceeding 2 m (6.5 ft.)
- 5.4 The employer must ensure a rope guardrail system is inspected by a qualified person, once installation of the system is complete and prior to the system being relied on as the fall protection system for the work area, to ensure the installation conforms to the engineer's written instructions.
- 5.5 The person conducting the inspection required by section 5.4 must, once satisfied the guardrail system is installed in conformance with the engineer's instructions, produce a written record of the inspection stating the guardrail system is properly installed and a copy of this record must be available at the workplace while the guardrail system is installed.
- 5.6 In addition to the inspection required by section 5.4, the employer must ensure a rope guardrail system is inspected by a qualified person at the start of each work shift to verify the rope tension meets the requirements of sections 3.1 and 3.2, and the guardrail system conforms to the engineer's instructions.
- 5.7 Whenever any deficiencies are found with the rope rails or the guardrail system, no work is to take place in the affected area until all deficiencies are corrected unless workers in the area are protected by an alternative fall protection means meeting the requirements of Part 11 of the OHSR.

6. Explanatory Materials

6.1 Configuration of a temporary rope guardrail system

Guardrail systems made with rope rails will typically contain a minimum of two ropes, with the rope for the mid rail installed approximately midway between the rope for the top rail and the floor or other surface on which a person is supported (or the top of the toeboard, if applicable). The wire rope size most commonly used is 10 mm (3/8 in.) in diameter. The synthetic fibre rope size most commonly used is 16 mm (5/8 in.) in diameter. Sufficient rope tension must be maintained in rope rails so the top rail is 102 cm to 112 cm (40 in. to 44 in.) above the work surface, and the mid rail is located approximately midway between the underside of the top rail and the top of the toeboard, if one is provided, or the work surface if no toeboard is provided. When a load of 550 N (125 lb.) is applied horizontally at any point along a rope rail, no part of the rope rail may deflect beyond a vertical plane intersecting the edge of the work surface. It should be noted that when a load is applied on the rope, the supports or posts may also deflect and such potential for deflection will need to be considered as contributing to the total deflection of the rope rail.

A rope guardrail system provides fall protection by preventing a person from inadvertently moving beyond the open edge of the work surface on which the person is supported. A rope guardrail system is not a horizontal lifeline and may not be used for such purposes unless it has been specifically designed by a professional engineer to serve that function. OHS Guideline G11.7 addresses the design and installation of temporary horizontal lifelines.

WorkSafeBC Standard 4.58
Guardrails made with rope rails
March 2010

6.2 Specified loads to be used for design calculations

Under sections 4.58(4) and 4.1 of the OHSR, temporary guardrails used during the construction, demolition, maintenance or renovation of a work area are required to be able to withstand a load of 550 N (125 lb.) applied horizontally or vertically. These are *specified* loads to which load factors are then applied in order to obtain the factored *design* loads. This is achieved using the Limit States Design (“LSD”) method in accordance with the applicable codes and standards. LSD is a method of engineering that is mandated by all Canadian Building Codes and design standards. The *National Building Code of Canada 2005* (“NBCC 2005”) sets forth the fundamental safety criterion that needs to be met in LSD:

$$\text{Factored Resistance} \geq \text{Effect of Factored Loads}$$

$$\phi R \geq \alpha (\text{Specified Loads})$$

The resistance factor (ϕ) is applied to a specified material property or to the resistance of a member, connection or structure to recognize the limit state under consideration, due to the variability of dimensions and material properties, workmanship, type of failure and uncertainty in the prediction of resistance. The load factor (α) is applied to the *specified* loads to recognize that loads higher than those anticipated may occur. It also takes into account the approximations used in the analysis of the effects these loads have on the structure.

Section 4.1.3 of the NBCC 2005 and the *British Columbia Building Code 2006* provide an outline of the LSD method and definitions of the various applicable factors. Following that method, the *specified* load of 550 N (125 lb.) would result in a factored *design* load of approximately 900 N (200 lb.)

6.3 Design calculations for posts and rails

Structural design calculations are considered separately for posts and rope rails. The load applied to a length of rope guardrail is considered as a concentrated load applied to the top rope at any point in any direction.

Posts:

Lateral loads that are applied to the top rope of a guardrail system produce the maximum bending moment on the posts if the post is installed to act as a vertical cantilevered member in resisting the lateral load applied to the rope rails or posts. A concentrated load applied laterally to the rope is distributed to the adjacent posts. An end post also needs to resist loads imposed at wire rope terminations.

Rope rails:

A concentrated load applied to the rope at any point and in any direction creates the maximum tension and deflection in the rope when applied at mid-span. The number of spans in a rope rail system between terminations of the rope depends on how terminations are configured.

A complete design for a rope guardrail system will include the design of connections to the existing structure to ensure that loads are effectively transferred to adequate points of support and anchorage. For posts at corners, and where rope terminations occur, sufficient bracing needs to be included.

PROPOSED AMENDMENTS FOR PART 8:
IN THE OCCUPATIONAL HEALTH AND SAFETY REGULATION

PART 8: PERSONAL PROTECTIVE CLOTHING AND EQUIPMENT

LIMB AND BODY PROTECTION

- Leg protection** **8.21** (1) Leg protective devices must be worn by a worker operating a chain saw if there is a danger of leg injury.
- (2) Leg protective devices **referred to in subsection (1)** must meet **or exceed**
- (a) the requirements **respecting the protective material coverage and stability set out in** *of WCB Standard, PPE 1-1997 Leg Protective Devices*, **and**
- (b) the cut-resistance test protocol of one of the following:
- (i) *WCB Standard, PPE 1-1997 Leg Protective Devices* (at a threshold chain speed of 18.3 metres per second or 3 600 feet per minute);
- (ii) *ASTM F 1414-04, Standard Test Method for Measurement of Cut Resistance to Chain Saw in Lower Body (Legs) Protective Clothing* (at a threshold chain speed of 16.8 metres per second or 3 300 feet per minute);
- (iii) *ISO 11393-2: 1999, Protective clothing for users of hand-held chain-saws - Part 2: Test methods and performance requirements for leg protectors* (at a Class 2 threshold chain speed of 24 metres per second or 4 724 feet per minute);
- (iv) *BS EN 381-5: 1995, Protective clothing for users of hand-held chain saws - Part 5: Requirements for leg protectors* (at a Class 2 threshold chain speed of 24 metres per second or 4 724 feet per minute).
- (3) Every leg protective device **referred to in subsection (1)** must have a label **that**
- (a) **is** permanently affixed to the outer surface of the device, **indicating the standard it meets**, **and**
- (b) **clearly indicates**
- (i) **the standards referred to in subsection (2) (a) and (b) that the leg protective device meets or exceeds,**
- (ii) **the associated threshold chain speed or Class referred to in subsection (2) (b) for the standard that the leg protective device meets or exceeds, and**
- (iii) **the name or trademark of the manufacturer of the leg protective device.**
- (4) The requirement to wear leg protective devices does not apply to a firefighter using a chain saw at the scene of a structural fire.

**PROPOSED AMENDMENTS FOR PART 8:
IN THE OCCUPATIONAL HEALTH AND SAFETY REGULATION**

Explanatory Note:

Section 8.21(2) of the Occupational Health and Safety Regulation currently references one standard for leg protective devices, *WCB Standard PPE 1-1997 Leg Protective Devices* ("the Standard"). Compliance with the Standard requires cut-resistance testing in accordance with equipment and procedures specified in the Standard. There was one test facility able to perform these tests, and it has closed. The likelihood of another test facility opening up to test to the WCB Standard performance requirements is remote.

The WCB Standard was developed by WorkSafeBC in the 1970s because at that time there were no published standards for protective clothing for chain saw operators. The Standard was updated in the mid-1990s. There are now several other published, internationally recognized standards which facilitate testing and certification of this type of clothing, and which, despite their differing test methodologies (hence their different threshold chainspeeds) ensure equivalent (or better) cut-resistance protection to that provided by the WCB Standard. These other standards are from the American Society for Testing Materials, the International Standards Organization and the European Committee for Standardization. Therefore, section 8.21 has been reviewed to phase out industry's use of the cut-resistance testing aspect of the WCB Standard and to update the section to reflect the development of these internationally recognized testing standards.

The protective material coverage (length and width) and stability (i.e., effectively secured, shrinkage limit, unravelling/fraying prevention) requirements of the WCB Standard (as distinct from the cut-resistance testing aspect) sometimes exceed the coverage/stability requirements of the other standards, and so these requirements of the WCB Standard are proposed for retention in the OHSR [section 8.21(2)].

Regarding proposed section 8.21 (2)(b)(ii): WorkSafeBC's Engineering Department recommended an increase to 3,300 feet per minute (fpm) from the 3,000 fpm threshold chain speed (TCS) quoted within the ASTM 1414-04 Standard itself, as Engineering felt this increase was required for that Standard's test protocol to render adequately safe results. The TCS's listed in section 8.21 (2)(b) for the three other Standards' test protocols are felt to be adequate and originate from within the respective Standards themselves.

These changes will ensure manufacturers have options for performance testing, regular re-testing, and certification of their products, and will provide their customers with legal use of a broader choice of products. Stakeholders, including manufacturers, will not need to contact WorkSafeBC for clarification on product testing and acceptability. Worker safety will be maintained or enhanced.

PROPOSED AMENDMENTS FOR PART 4: GENERAL CONDITIONS
IN THE OCCUPATIONAL HEALTH AND SAFETY REGULATION

PART 4: GENERAL CONDITIONS

WORK AREA REQUIREMENTS

Cleaning with
compressed air

- 4.42 (1) Compressed air or steam must not be used for blowing dust, chips, or other substances from equipment, materials and structures if any person could be exposed to the jet, or to the material it expels or propels and an injury or health hazard due to fire, explosion or other cause is likely to result.
- (2) Subject to subsection (4) compressed air may not be used for blowing harmful or hazardous dusts or other harmful substances from clothing being worn by workers.
- (3) If clothing is to be cleaned before leaving the work area, suitable cleaning equipment must be used.
- (4) Compressed air may be used in specially designated areas for blowing dusts or other substances from clothing being worn by workers, provided that
- (a) the substances have an exposure limit greater than 1.0 mg/m³, as established by section 5.48,
 - (b) ~~appropriate respiratory and eye protection is worn, and~~ **appropriate respirators and eye protection are worn, and**
 - (c) the compressed air supply pressure is limited to a pressure of 70 kPa gauge (10 psig), or safety nozzles which have the same pressure limiting effect are used.

EXPLANATORY NOTE:

It is proposed that this section be amended to refer to “appropriate respiratory protection” as “appropriate respirators” for consistency of terms throughout the Occupational Health and Safety Regulation.

PROPOSED AMENDMENTS FOR PART 6: SUBSTANCE SPECIFIC REQUIREMENTS
IN THE OCCUPATIONAL HEALTH AND SAFETY REGULATION

PART 6: SUBSTANCE SPECIFIC REQUIREMENTS

Personal Protective Clothing and Equipment

- Respiratory protection** **6.29** (1) The employer must supply, and ensure that workers within a designated work area wear, ~~respiratory protection which is~~ **respirators which are** adequate for the anticipated level of exposure.
- (2) The employer must ensure that a single use respirator is not used for protection against asbestos.

LEAD

- Air monitoring in construction projects** **6.61** If there is a potential for hazardous exposure to airborne lead in a construction project, the employer must ensure that air monitoring is conducted
- (a) during the first shift of the construction project involving lead, and
(b) as necessary throughout the project to ensure that controls are effective and ~~respiratory protection is~~ **respirators are** adequate.

TOXIC PROCESS GASES

- Personal protective equipment** **6.127** (1) The employer must provide appropriate personal protective equipment and ensure that workers wear it.
- (2) A worker performing a hazardous work procedure on equipment or machinery where there is the risk of toxic process gas being released directly into the breathing zone, such as cylinder changing, system or line purging or draining, and leak detection and repair, must wear ~~appropriate respiratory protection~~ **an appropriate respirator**.

EXPLANATORY NOTE:

It is proposed that these sections be amended to refer to “respiratory protection” as “respirators” for consistency of terms throughout the Occupational Health and Safety Regulation.

PROPOSED AMENDMENTS FOR PART 8: PERSONAL PROTECTIVE CLOTHING AND EQUIPMENT
IN THE OCCUPATIONAL HEALTH AND SAFETY REGULATION

PART 8: PERSONAL PROTECTIVE CLOTHING AND EQUIPMENT

Definitions	8.1	<p>(1) In this Part:</p> <p><i>"flame resistant"</i> in reference to clothing, means made of a material that, due to its inherent properties or as a result of treatment by a flame retardant, will slow, terminate or prevent flaming combustion;</p> <p><i>"lifejacket"</i> means a device that, when worn correctly, provides a specified buoyancy that will turn the wearer face-up on entering the water, and will keep the wearer in this position;</p> <p><i>"no significant hazard of rollover"</i> means an area where there are no grades exceeding 10%, no operating areas with open edges, no open ramps, loading docks, ditches or similar hazards which might cause a rollover;</p> <p><i>"personal flotation device (PFD)"</i> means a device that, when worn correctly, provides a specified buoyancy to support a conscious person in an upright or backward leaning position, but is not designed to turn a person from a face-down to a face-up position in the water;</p> <p><i>"specific location"</i> means a yard, plant, or other clearly defined and limited area in which mobile equipment is operated, but does not include an entire municipality, district, transient forestry operation or construction site.</p> <p>(2) In this Part, "8-hour TWA limit", "ACGIH", "ceiling limit" and "short-term exposure limit" have the same meaning as in section 5.1.</p>
Program	8.5	<p>If personal protective equipment is required to protect against a chemical exposure or an oxygen deficient atmosphere the employer must implement an effective protective equipment program at the workplace which includes</p> <ul style="list-style-type: none"> (a) a statement of purpose and responsibilities, (b) written procedures for selection, use, inspection, cleaning, maintenance and storage of protective equipment, when required, (c) instruction and training in the correct use and maintenance of the equipment, (d) for respiratory equipment for respirators, medical assessment of respirator wearers, when required, (e) documentation when required, and (f) program review.
Annual review	8.6	<ul style="list-style-type: none"> (1) The personal protective equipment program must be reviewed annually by the employer in consultation with the joint committee or the worker health and safety representative, as applicable. (2) The annual review must <ul style="list-style-type: none"> (a) assess exposure control measures to ensure their continued effectiveness, (b) determine the need for further control, (c) ensure the adequacy of instruction, and

PROPOSED AMENDMENTS FOR PART 8: PERSONAL PROTECTIVE CLOTHING AND EQUIPMENT
IN THE OCCUPATIONAL HEALTH AND SAFETY REGULATION

- (d) for respiratory protection **for respirators**, assess the adequacy of exposure monitoring data and assess the need for further monitoring, and ensure the adequacy of the fit test program.

RESPIRATORY PROTECTION RESPIRATORS

When required	8.32	<p>The employer must provide appropriate respiratory protective equipment if a worker is or may be exposed to concentrations of an air contaminant in excess of an applicable exposure or excursion limit, or to an oxygen deficient atmosphere.</p> <p>If a worker is or might be exposed in a workplace to an air contaminant that exceeds</p> <p>(a) an 8-hour TWA limit, ceiling limit or short-term exposure limit set by ACGIH for the air contaminant,</p> <p>(b) a limit that is otherwise determined by the Board under section 5.48 for the air contaminant, or</p> <p>(c) a limit set by section 5.49 for the air contaminant,</p> <p>the employer must provide an appropriate respirator and ensure that the worker uses an appropriate respirator in accordance with section 8.34.</p>
When respirator required		
Selection	8.33	<p>(1) The employer, in consultation with the worker and the occupational health and safety committee, if any, or the worker health and safety representative, if any, must select appropriate respiratory protective equipment an appropriate respirator in accordance with CSA Standard CAN/CSA-Z94.4-93, <i>Selection, Use, and Care of Respirators</i>.</p> <p>(2) Only respiratory protective equipment a respirator which meets the requirements of a standard acceptable to the Board may be used for protection against airborne contaminants in the workplace.</p>
Protection factors	8.34	<p>A respirator must not be used for protection against concentrations of an air contaminant greater than the maximum use concentration, which is the concentration determined by multiplying the exposure limit for the air contaminant by the appropriate respirator protection factor selected from Table 8-1, or as otherwise determined by the Board.</p>
Maximum use concentration		
"established 8-hour TWA limit"		(1) In subsection (2):
"established ceiling limit"		<p>means the 8-hour TWA limit set by the Board for an air contaminant, or if the Board has not set an 8-hour TWA limit for an air contaminant, the TWA limit set by ACGIH for the air contaminant;</p> <p>means a ceiling limit set by the Board for an air contaminant, or if the Board has not set a ceiling limit for an air contaminant, the ceiling limit set by ACGIH for the air contaminant;</p>
"established short-term exposure limit"		<p>means the short-term exposure limit set by the Board for an air contaminant, or if the Board has not set a short-term exposure limit for an air contaminant, the short-term exposure limit set by ACGIH for the air contaminant.</p>
"maximum use concentration"		<p>(2) In subsection (3)</p> <p>means the concentration of an air contaminant calculated in one of the following ways:</p> <p>(a) if an established 8-hour TWA limit applies to the air contaminant to which a worker is or might be exposed, by multiplying</p>

PROPOSED AMENDMENTS FOR PART 8: PERSONAL PROTECTIVE CLOTHING AND EQUIPMENT
IN THE OCCUPATIONAL HEALTH AND SAFETY REGULATION

- (i) the established 8-hour TWA limit for the air contaminant, and
 - (ii) the protection factor set out in Table 8-1 that applies to the respirator type that the worker is using;
 - (b) if there is no established 8-hour TWA limit that applies to the air contaminant to which a worker is or might be exposed, by multiplying
 - (i) the established short-term exposure limit for that air contaminant, and
 - (ii) the protection factor set out in Table 8-1 that applies to the respirator type that the worker is using;
 - (c) if there is no established 8-hour TWA limit or short-term exposure limit that applies to the air contaminant to which a worker is or might be exposed, by multiplying
 - (i) the established ceiling limit for that air contaminant, and
 - (ii) the protection factor set out in Table 8-1 that applies to the respirator type that the worker is using.
- (3) The employer must ensure that a worker does not use a respirator for protection against a concentration of an air contaminant in the workplace that is greater than the maximum use concentration.
- (4) The protection factor of 1 000 set out in Table 8-1: Respirator protection factors for a hood or helmet facepiece, powered (PAPR), and equipped with a HEPA filter or a sorbent cartridge or canister or both a HEPA filter and a sorbent cartridge or canister applies only if an employer who uses or wishes to use that respirator type has evidence from the manufacturer that demonstrates that
 - (a) the manufacturer has tested that type of respirator, and
 - (b) those tests demonstrate that a respirator of that type has a protection factor of at least 1 000.
- (5) The protection factor of 25 set out in Table 8-1: Respirator protection factors for a hood or helmet facepiece, powered (PAPR), and equipped with a HEPA filter or a sorbent cartridge or canister or both a HEPA filter and a sorbent cartridge or canister applies if the conditions set out in subsection (4) are not met.

**PROPOSED AMENDMENTS FOR PART 8: PERSONAL PROTECTIVE CLOTHING AND EQUIPMENT
IN THE OCCUPATIONAL HEALTH AND SAFETY REGULATION**

Table 8-1: Respirator protection factors

Respirator type	Protection Factor
Air purifying	
Half facepiece, non-powered	10
Full facepiece, non-powered	50
Full facepiece, powered (PAPR), equipped with HEPA filters for exposure to asbestos	100
Full facepiece, powered (PAPR), equipped with HEPA filters and/or sorbent cartridge or canister for exposure to contaminants other than asbestos	1 000
Loose-fitting facepiece, powered (PAPR)	25
Hood or helmet facepiece, powered (PAPR), and equipped with a HEPA filter or a sorbent cartridge or canister or both a HEPA filter and a sorbent cartridge or canister, if section 8.34 (5) applies	25
Hood or helmet facepiece, powered (PAPR), and equipped with a HEPA filter or a sorbent cartridge or canister or both a HEPA filter and a sorbent cartridge or canister, if the conditions set out in section 8.34 (4) are met	1 000
Air supplying	
Airline - demand (negative pressure)	
Half facepiece	10
Full facepiece	50
Airline - continuous flow	
Loose-fitting facepiece/hoods	25
Half facepiece	50
Full facepiece	1 000
Helmet/hood	1 000
Airline - pressure demand (positive pressure)	
Half facepiece	50
Full facepiece	1 000
Full facepiece, with egress bottle	10 000
Self-contained breathing apparatus (SCBA)	
Demand (negative pressure)	50
Pressure demand (positive pressure)	10 000
Other factors such as warning properties, IDLH levels, and cartridge/canister limitations must also be taken into account when determining the maximum use concentration. Refer to the manufacturer's instructions and standards acceptable to the Board for further information.	

Explanatory Note:

The powered air-purifying helmet/hood respirator or "helmet/hood PAPR" is not a commonly used respirator. Currently, the helmet/hood PAPR is not listed in the Occupational Health and Safety

**PROPOSED AMENDMENTS FOR PART 8: PERSONAL PROTECTIVE CLOTHING AND EQUIPMENT
IN THE OCCUPATIONAL HEALTH AND SAFETY REGULATION**

Regulation (“OHSR”) in Table 8-1 for respirator protection factors (“PF”). Respirator PF is the anticipated level of respiratory protection that would be provided by a properly functioning respirator or class of respirators to properly fitted and trained users.¹ The higher the PF, the greater the anticipated level of respirator protection provided to the worker.

The purpose of the proposed amendment is to update Table 8-1 of section 8.34 by including the helmet/hood PAPR with an assigned PF of 1000. This proposed amendment will provide certainty and consistency for both employers and workers for the level of protection this device is designed to provide to workers.

A powered air-purifying respirator or PAPR works by filtering ambient air through approved air-purifying filters/cartridges by a battery-operated motor and blows the filtered air into the facepiece. The facepiece type determines whether the PAPR is considered “loose-fitting” or “helmet/hood” type. According to the CSA Z94.4-02 Standard, a loose-fitting facepiece is the portion of a respirator that forms a partial seal with the face, does not cover the neck and shoulders, and may or may not offer head and/or eye protection. On the other hand, a hood/helmet facepiece completely covers the head and neck, may cover a portion of the shoulders, and may offer head and/or eye protection. By design, the hood/helmet facepiece PAPR has a higher anticipated level of respiratory protection than the loose-fitting facepiece PAPR and has similar level of protection as a full-facepiece PAPR.



Loose-fitting facepiece²



Helmet facepiece²

As stated in the current wording of section 8.34 of the OHSR, the employer has the obligation to calculate the maximum use concentration (“MUC”) for a respirator type in order to assess that a worker will be adequately protected when wearing the respirator. The MUC is calculated by multiplying the applicable respirator protection factor for that respirator type as determined by Table 8-1 and the occupational exposure limit of the substance. Recently, a user of the helmet/hood PAPR asked WorkSafeBC about the PF for this type of respirator. Without the PF, users of the helmet/hood PAPR will not be able to calculate the MUC.

The proposed protection factor for the helmet/hood PAPR is consistent with Canadian Standards Association (“CSA”) Standard Z94.4-02, the American National Standards Institute (“ANSI”), and the US Occupational Safety and Health Administration (“OSHA”) as summarized in the table below:

Respirator Protection Factor for Hood/Helmet PAPR

CSA Z94.4-02	ANSI Z88.2-1992	US OSHA
1000	1000	1000

Canadian jurisdictions that have adopted the CSA Z94.4 standard for respiratory protection have also assigned a protection factor of 1000 to the helmet/hood PAPR.

¹ CSA Standard Z94.4-02 Selection, Use and Care of Respirators

² Examples of loose-fitting and helmet facepieces: courtesy of 3M Canada

**PROPOSED AMENDMENTS FOR PART 8: PERSONAL PROTECTIVE CLOTHING AND EQUIPMENT
IN THE OCCUPATIONAL HEALTH AND SAFETY REGULATION**

In 2006, US OSHA completed a comprehensive review of the respiratory protection factors, including the helmet/hood PAPRs.³ OSHA concluded that the helmet/hood PAPRs will be assigned a PF of 1000 if certain conditions are met. OSHA's caveat reads:

The employer must have evidence provided by the respiratory manufacturer that testing of these respirators demonstrates performance at a level of protection of 1000 or greater to receive an APF of 1000. This level of performance can best be demonstrated by performing a WPF or SWPF study or equivalent testing. Absent such testing, all other PAPRs with helmets/hoods are to be treated as loose-fitting facepiece respirators and receive an APF of 25.

WorkSafeBC agrees that the conditions set by OSHA, to distinguish loose-fitting PAPRs from helmet/hood PAPRs, confirm the anticipated respirator performance. Reputable respirator manufacturers routinely conduct workplace protection factor ("WPF") or simulated workplace protection factor ("SWPF") studies. Therefore, the requirement for employers to obtain published evidence of respirator performance from the manufacturer should be easily attainable. An accompanying guideline will be developed to explain what type of evidence would meet the conditions of the proposed section 8.34 (4).

The proposed amendment to section 8.32 is meant to clarify the intent of the proposed wording in section 8.34, but does not change the intent of the original regulatory language. The proposed wording of 8.32 and 8.34 clarifies the two sources of occupational exposure limits for substances WorkSafeBC currently enforces— exposure limits set by American Conference of Governmental Industrial Hygienists ("ACGIH") and exposure limits that are otherwise determined by the Board (listed in Prevention Policy R5.48-1).

The proposed wording of section 8.32 imposes a duty on employers and workers to restrict the use of certain respirators in the proposed wording of section 8.34. Also, the original wording in section 8.32 was clarified to mean all 3 types of exposure limits (8-hour TWA, STEL, and Ceiling Limits) as well as exposure limits set by the Board in policy.

The original wording of section 8.32 included oxygen deficient atmosphere but it was determined that sections 8.2 and 8.35 cover the obligation of employers to provide and workers to use a specific type of respirator under those conditions. Also, maximum use concentration calculations are not to be used to determine adequacy of respirators for use in oxygen deficient atmospheres since there is no exposure limit for oxygen. The proposed wording of section 8.32 is intended to afford the same level of protection to workers as the current wording.

The proposed amendment to section 8.34 is meant to clarify how the maximum use concentration is calculated. Currently, the pertinent instructions are located in the guideline for that part, but it was decided that these instructions should be brought into the regulations for clarity. The intent of 8.34 has not changed, other than to add the protection factor requirements for the hood/helmet PAPRs.

For consistency and clarity, the terms "respiratory protection" and "respiratory equipment" were amended throughout the OHSR to mean the same as "respirators". As consequential amendments, word changes to sections 4.42 (4), 6.29, 6.61, 6.127, 8.5, 8.6, 8.33, 9.29, 12.111 (2), 12.124, 12.135, 23.83(2), and 31.19 are proposed.

³ "Assigned Protection Factors: Final Rule", Federal Register 71:164 (Aug 24, 2006)

PROPOSED AMENDMENTS FOR PART 9: CONFINED SPACES
IN THE OCCUPATIONAL HEALTH AND SAFETY REGULATION

PART 9: CONFINED SPACES

CLEANING, PURGING, VENTING AND INERTING

- Inerting** **9.29** (1) The employer must notify the Board in writing, and submit a copy of the proposed work procedures, at least 7 days before a worker enters a confined space which has been inerted.
- (2) The employer must follow any additional precautions that are prescribed by the Board after review of the notification.
- (3) If a confined space has been inerted
- (a) all entry precautions for high hazard atmospheres must be followed, except the requirement for continuous ventilation,
 - (b) every worker entering the confined space must be equipped with ~~supplied-air respiratory protection~~ **a supplied-air respirator** meeting the requirements of Part 8 (Personal Protective Clothing and Equipment),
 - (c) all ignition sources must be controlled, and
 - (d) the atmosphere inside the confined space must remain inerted while workers are inside.
- (4) Subsection (1) does not apply to entry for the purpose of performing emergency rescue duties.

EXPLANATORY NOTE:

It is proposed that this section be amended to refer to “respiratory protection” as “respirators” for consistency of terms throughout the Occupational Health and Safety Regulation.

PROPOSED AMENDMENTS FOR PART 12: TOOLS, MACHINERY AND EQUIPMENT
IN THE OCCUPATIONAL HEALTH AND SAFETY REGULATION

PART 12: TOOLS, MACHINERY AND EQUIPMENT

ABRASIVE BLASTING AND HIGH PRESSURE WASHING

Personal protective equipment

- 12.111** (1) A nozzle or jetting gun operator must wear personal protective clothing and equipment on the body, hands, arms, legs and feet, including the metatarsal area, made of canvas, leather or other material which will protect the worker's skin from injury in the event of contact with the flow from the nozzle.
- (2) Unless the process is isolated from the operator in a separate cabinet, ~~suitable respiratory protective equipment~~ **a suitable respirator** must be provided and worn whenever abrasive blasting or a similar operation is conducted.

WELDING, CUTTING AND ALLIED PROCESSES

Respiratory protection

- 12.124** ~~Respiratory protective equipment~~ **A respirator** must be provided and worn if an effective means of natural, mechanical or local exhaust ventilation is not practicable
- (a) during short duration welding, burning or similar operations, and
(b) during emergency work.

PAINTING, COATING AND WORK WITH PLASTICS AND RESINS

Respiratory protection

- 12.135** Each worker who is or may be exposed to an airborne contaminant generated by a spray operation involving a sensitizing agent referred to in section 5.57(1) must be provided with and wear ~~air-supplied respiratory protection~~ **a supplied-air respirator**.

EXPLANATORY NOTE:

It is proposed that these sections be amended to refer to "respiratory protective equipment" as a "respirator" for consistency of terms throughout the Occupational Health and Safety Regulation.

PROPOSED AMENDMENTS FOR PART 23: OIL AND GAS
IN THE OCCUPATIONAL HEALTH AND SAFETY REGULATION

PART 23: OIL AND GAS

CLEANING AND REPAIRING TANKS OR VESSELS

**Safety
harnesses**

- 23.83** (1) If it is not practicable for a worker entering a confined space to use a lifeline due to internal piping or other obstructions, the worker must wear a full body harness.
- (2) If a lifeline is not used, 2 workers must be equipped with ~~respiratory protective equipment~~ **respirators** and capable of effecting a rescue if required, and stationed immediately outside the entrance to the confined space.

EXPLANATORY NOTE:

It is proposed that section 23.83(2) be amended to refer to respiratory protective equipment as a "respirator" for consistency of terms throughout the Occupational Health and Safety Regulation.

DRAFT

PROPOSED AMENDMENTS FOR PART 31: FIREFIGHTING
IN THE OCCUPATIONAL HEALTH AND SAFETY REGULATION

PART 31: FIREFIGHTING

RESPIRATORY PROTECTION ~~RESPIRATORS~~

General **31.19** Firefighters who may be exposed to an oxygen deficient atmosphere or to harmful concentrations of air contaminants must wear a self-contained breathing apparatus of a positive pressure type having a rated minimum duration of 30 minutes.

EXPLANATORY NOTE:

It is proposed that the title for this section be amended to refer to respiratory protection as "respirators" for consistency of terms throughout the Occupational Health and Safety Regulation.

DRAFT

PROPOSED AMENDMENTS FOR PART 9: CONFINED SPACES
IN THE OCCUPATIONAL HEALTH AND SAFETY REGULATION

PART 9: CONFINED SPACES

- | | | |
|------------------------------------------------|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Isolation | 9.18 | <p>(1) Except as provided in subsection (2), before a worker enters a confined space, adjacent piping which contains or has contained a harmful substance must be controlled by</p> <p style="margin-left: 20px;">(a) disconnecting, blanking or blinding, or equivalent engineered system, or</p> <p style="margin-left: 20px;">(b) if the adjacent piping contains a harmful substance that is not a gas or a vapour, nor a liquid of sufficient volatility to produce a hazardous concentration of an air contaminant in the discharge of the piping, a double block and bleed system.</p> <p>(2) If adjacent piping contains or has contained a substance that is hazardous only because of its pressure, temperature or quantity, before a worker enters the space, the pressure must be controlled</p> <p style="margin-left: 20px;">(a) to meet the requirements of subsection (1);</p> <p style="margin-left: 20px;">(b) provided there is no other pressure source or head pressure, by de-energizing and locking out the pressure source and depressurizing the line, or</p> <p style="margin-left: 20px;">(c) by other effective means.</p> <p>(3) Repealed.</p> <p>(4) Except when used in an acceptable double block and bleed system, the closing of one or more valves in a line is not an acceptable means of isolation.</p> <p>(5) Isolation of a confined space from gases found in a gravity flow municipal or domestic sanitary or storm sewer system may be accomplished by a p trap, provided that</p> <p style="margin-left: 20px;">(a) the integrity of the trap is ensured immediately upon entry, and</p> <p style="margin-left: 20px;">(b) the atmosphere is continuously monitored and shown to contain clean respirable air.</p> |
| Exemptions | 9.18.1 | <p>(1) In this section:</p> <p style="margin-left: 20px;">— includes valve and meter chambers and pressure reducing stations;</p> <p style="margin-left: 20px;">— includes conduits, pipes, penstocks, power generating chambers, valves and related structures located within storage, diversion or other dams.</p> <p>(2) Section 9.18 (4) does not apply to water piping that is part of a public water supply system if the piping and associated equipment is designed, constructed, maintained and certified by a professional engineer to American Water Works Association standards.</p> <p>(3) Section 9.18 (4) does not apply to a dam water passageway if the structures of the passageway, including a gate valve or other flow control device, are certified by a professional engineer as being safe for workers to enter to perform the intended work.</p> |
| Control or Isolation of adjacent piping | 9.18 | <p>(1) Before a worker enters a confined space where adjacent piping contains a harmful substance that is</p> <p style="margin-left: 20px;">(a) a liquid with sufficient volatility to produce a hazardous concentration of an air contaminant, or</p> <p style="margin-left: 20px;">(b) a gas or vapour,</p> |

PROPOSED AMENDMENTS FOR PART 9: CONFINED SPACES
IN THE OCCUPATIONAL HEALTH AND SAFETY REGULATION

the harmful substance in the adjacent piping must be controlled by disconnecting the adjacent piping, or isolating the adjacent piping by blanks or blinds that meet the requirements of section 9.20.

- (2) Subject to subsection (3), before a worker enters a confined space where adjacent piping contains a harmful substance that is neither
- (a) a liquid with sufficient volatility to produce a hazardous concentration of an air contaminant, nor
 - (b) a gas or vapour,

the harmful substance in the adjacent piping must be controlled by disconnecting the adjacent piping or isolating the adjacent piping by blanks or blinds that meet the requirements of section 9.20 or by a double block and bleed system that meets the requirements of section 9.21.

- (3) Before a worker enters a confined space where adjacent piping contains a substance that is harmful only because of the temperature, pressure or quantity of the substance, the harmful substance must
- (a) be controlled by disconnecting the adjacent piping or isolating the adjacent piping by blanks or blinds that meet the requirements of section 9.20 or by a double block and bleed system that meets the requirements of section 9.21,
 - (b) if there is no head pressure in the adjacent piping, be controlled by de-energizing and locking out each pressure source for the adjacent piping and depressurizing the adjacent piping, or
 - (c) be controlled by isolating the adjacent piping in a manner that a professional engineer has certified will make the confined space safe for a worker to carry out the intended work.

- (4) Where a confined space is

- (a) subject to the ingress of gases from a gravity-flow municipal or domestic sanitary sewer system or storm sewer system, and
- (b) protected from the ingress of gases by a p-trap,

a worker may enter the confined space only if the atmosphere of the confined space has been tested immediately before entry and the test results confirm that the confined space contains clean respirable air.

- (5) If a worker enters a confined space of the type referred to in subsection (4), the following must be undertaken:
- (a) the operational integrity of the p-trap must be confirmed immediately on the entry of the worker;
 - (b) while the worker is inside the confined space, the atmosphere of the confined space must be continuously monitored and confirmed to contain clean respirable air.

PROPOSED AMENDMENTS FOR PART 9: CONFINED SPACES
IN THE OCCUPATIONAL HEALTH AND SAFETY REGULATION

**Alternate
procedures
Alternative
measures of
control or
isolation of
adjacent
piping**

- 9.22** (1) ~~If isolation using the measures specified in section 9.18 is not practicable, the employer may implement alternate measures acceptable to the Board.~~

Section 9.18 does not apply if

(a) a measure specified in section 9.18 to control or isolate substances contained in adjacent piping from a confined space is not practicable, and

(b) the employer implements alternative measures of control or isolation that are acceptable to the Board.

- (2) All workers affected by measures implemented under subsection (1) must be informed of the measures taken and instructed in any applicable work procedures.

Explanatory Note:

Currently, section 9.22 (1) states that if isolation using the measures specified in section 9.18 is not practicable, the employer may implement alternate measures acceptable to WorkSafeBC. Employers must obtain approval from WorkSafeBC before implementing alternate measures.

The exemptions described in section 9.18.1 are intended to be included in section 9.22 (1). Therefore, the alternative methods set out in section 9.18.1 do not require approval from WorkSafeBC. However, this is not clear in the current wording of section 9.22 (1).

The purpose of these proposed amendments is to clarify the requirements of acceptable isolation methods that do not require approval from WorkSafeBC. This includes some confined spaces found in the public water supply systems and dam water passageways where it may be necessary to control the hazards by a single flow control device, such as a valve or a gate.

Piping associated with dams and their isolation present a unique situation for the utilities that operate them when considering the appropriateness of isolation measures before permitting entry of workers to the confined space such as the water passageways associated with a dam. In most cases, engineering and occupational health & safety staff employed by the utility have a high level of expertise to develop safe measures of isolation for confined spaces within these workplaces. Hence, it is not necessary for these utilities to seek approval from WorkSafeBC for isolating adjacent piping for section 9.18.1 exempted confined spaces. The section mandates that the employer obtain engineering certification for the isolation of adjacent piping to ensure the isolation method is effective for workers to safely enter the part of the dam water passageway that is a confined space. A similar situation exists for entry into a part of the public water supply systems that is a confined space such as valve and meter stations.

In preparing for an amendment to section 9.22, it was thought prudent to review section 9.18 as well with the intent of incorporating section 9.18.1 into section 9.18. Furthermore, due to the complexity and highly technical nature of section 9.18 and associated sections (section 9.20, Blanks and blinds, and section 9.21, Double block and bleed), revisions are proposed to help bring clarity and facilitate a better understanding of the stated requirements relating to the isolation or control of adjacent piping.

Proposed amendments to section 9.18 have resulted in a re-organization of the five subsections into five new and revised subsections. The proposed amendments are as follows:

- Current section 9.18.1 is proposed to be rescinded with its requirements incorporated into a new subsection 9.18 (3) (c), as described in more detail below.

**PROPOSED AMENDMENTS FOR PART 9: CONFINED SPACES
IN THE OCCUPATIONAL HEALTH AND SAFETY REGULATION**

- The contents of current subsections (1) to (2) have been re-arranged into 3 subsections based on the level of hazard posed by the hazardous nature of the contents of the piping running through or in close proximity to the confined space, as described in more detail below.
- Proposed amendments – new subsection 9.18 (1):
 - Harmful substances of greatest concern are those that are in a gas or vapour form or those harmful substances in solid or liquid form which are capable of releasing a harmful gas or vapour into the confined space;
 - This level of hazard and isolation of piping requires a high level of control, with isolation being limited to disconnecting, blanking or blinding of adjacent piping;
 - Blanks and blinds must meet the requirements of section 9.20;
 - The current reference to “equivalent engineering system” has been removed; section 9.22 will apply for other alternative measures of isolation involving these hazardous substances.
- Proposed amendments – new subsection 9.18 (2):
 - Harmful substances that are not in gas or vapour form and not capable of releasing a harmful gas or vapour from the liquid or solid state it is in, and which thereby pose a lower risk to workers than substances of subsection (1), can be controlled by using one of the three methods as stated: through disconnection, isolating the adjacent piping by blanks or blinds or by a double block and bleed system meeting the requirements of 9.21.
- Proposed amendments – new subsection 9.18 (3):
 - This subsection covers substances that are harmful only because of the temperature, pressure, or quantity of the substance and that are not classified as harmful by its toxic, irritant or other harmful properties.
 - Some substances that fulfill the conditions in the proposed subsection (2) may also fulfill the conditions of this section.
 - These substances – which include water – when present in adjacent piping can be controlled or isolated following the measures prescribed in the proposed subsections (1) or (2) or by de-energizing and locking out each pressure source (such as an electric pump and associated valve) and further de-pressurizing of the piping such that there is no residual head or other pressure within the piping or by the option in subsection (c).
 - Subsection (c) is added as a new proposal as result of the consultation to streamline the requirements. It was identified that the exemption currently provided in 9.18.1 to public water supply system and dam water passageway may apply to other workplaces with similar confined space configurations. The new proposed subsection (3)(c) is added to broaden the exemption to other situations to provide employers the flexibility to implement other effective isolation methods in controlling the hazards of the substances. Should another method be utilized other than those mentioned in subsections (3)(a) and (b), a professional engineer must certify that the isolation method makes the confined space safe for workers to enter to perform the work. This subsection replaces the current subsection (2)(c) phrase “by other effective means”.
 - Since the confined space conditions under the current exemption 9.18.1 is a subset of the confined spaces under the proposed subsection (3), it is logical to merge the two sections to avoid confusion by duplication. The current prohibition of using one or more valves except when used in a double block and bleed has been deleted to allow isolation measures using a single valve as long as the professional engineer has certified that the isolation of the adjacent piping is safe for workers to enter the confined space to carry out the work.
 - This proposed subsection will continue to permit public water supply systems and dam water passageways to be isolated and/or controlled by a single valve, where necessary, as long as the professional engineer has certified that the isolation methods have adequately controlled the hazards associated with the substances in the adjacent piping.

**PROPOSED AMENDMENTS FOR PART 9: CONFINED SPACES
IN THE OCCUPATIONAL HEALTH AND SAFETY REGULATION**

If this requirement is complied with, employers do not have to obtain an approval from WorkSafeBC.

- The current requirements of section 9.18.1 already involve a professional engineer. Also the involvement of a professional engineer is likely to be required during the application to WorkSafeBC for alternate procedures through section 9.22. Therefore, the requirement for a professional engineer should not add any additional burden to employers in these situations.
- The subsections (4) to (7) from the public consultation version of the proposed amendments were removed because the requirements would be duplication of the new proposed subsection (3)(c). Also, there were issues with the use of the term “established engineering principles”.
- Proposed amendments – new subsections 9.18 (4) and 9.18 (5):
 - The contents of current subsection 9.18 (5), which covers a confined space that is subject to the ingress of gases from a gravity-flow municipal or domestic sanitary sewer or storm sewer system, and where a p-trap is used as a measure of isolation, has been revised for clarity.
 - It has been clarified that before a worker is permitted to enter the confined space covered by this subsection, the air quality must be tested prior to allowing entry.
 - Once it is assured that the space contains clean respirable air (a defined term per section 9.1) the next step is to ensure that the p-trap is operating properly (i.e., filled with water) so that no hazardous gases or vapours can enter the confined space from the sewer system.
 - It is clarified that it is the air of the confined space that needs to be continuously monitored to ensure clean respirable air is present.
- Proposed amendments – section 9.22:
 - Section 9.22 is revised to clarify that if measures specified in section 9.18 – which includes all the proposed provisions covered by subsections (1) to (5) – to isolate substances contained in adjacent piping from a confined space – are not practicable, the employer can consider alternative measures of isolation. These alternative measures of isolation require approval from WorkSafeBC before they can be implemented.
 - The term “alternate” is replaced by the term “alternative”, which is the appropriate term. “Alternate”, by definition, means to switch between two choices; while “alternative” means there are two or more possible choices.

PROPOSED AMENDMENTS FOR PART 12: TOOLS, MACHINERY AND EQUIPMENT
IN THE OCCUPATIONAL HEALTH AND SAFETY REGULATION

PART 12: TOOLS, MACHINERY AND EQUIPMENT

AUTOMOTIVE LIFTS AND OTHER VEHICLE SUPPORTS

Swing arm restraint	12.80.2	<p>(1) If an automotive lift has swing arms, a swing arm pivot restraint system must be used.</p> <p>(2) The swing arm pivot restraint system must incorporate a means to prevent unintentional removal or disengagement.</p> <p>(1) An automotive lift that has swing arms must have swing arm pivot restraints if</p> <p>(a) no part of the rigid superstructure is under the raised vehicle, or</p> <p>(b) the lift has 2 or more superstructures and the clearance between the rigid parts of the superstructures on each side of the vehicle is 1.3 m (51 in.) or more.</p> <p>(2) Swing arm pivot restraints required under subsection (1) must be designed and maintained to prevent unintentional removal or disengagement of the swing arm pivot restraints when a vehicle is being supported by the automotive lift.</p>
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Explanatory Note:

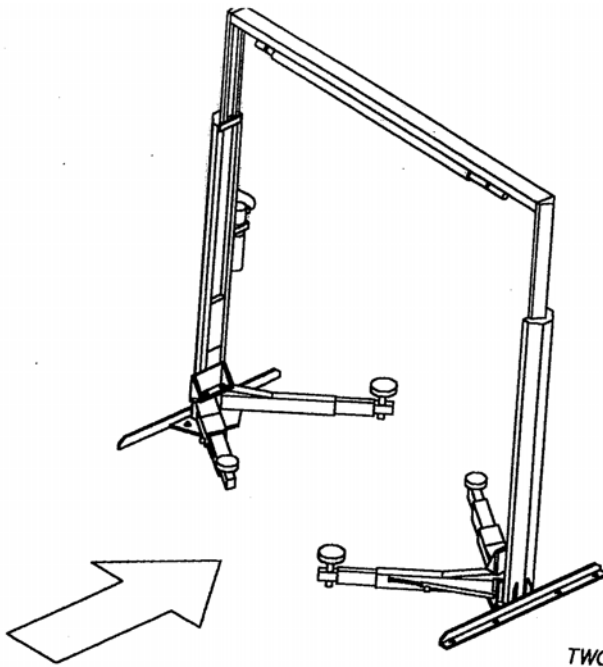
Section 12.80.2 of the Occupational Health and Safety Regulation (“OSHR”) requires all automotive lifts with swing arms to have swing arm restraints. This is different from the requirements in the equipment safety standard specified in section 12.74 of the OHSR that this equipment is required to meet. This is causing confusion in the industry. The intent of the section is to require swing arm restraints only for equipment styles as specified in the referenced safety standard, which is for lifts that do not have all or part of the rigid superstructure of the lift under the vehicle while the vehicle is supported on the lift.

The *ANSI Standard ANSI/ALI ALCTV-1998, American National Standard for Automotive Lifts – Safety Requirements for Construction, Testing and Validation*, defines “superstructure” as “the vehicle support structure that is connected to the lifting means.” The superstructure will have rigid components and may have adjustable components. The rigid superstructure means the part of the superstructure that is connected to the lifting means and has no adjustable parts. The adjustable superstructure means components such as swing arms or telescoping members that are positioned by the lift user to allow the lift contact points to engage the appropriate lifting points for the vehicle.

The proposed amendment changes the wording of section 12.80.2 to limit the scope of the requirement for swing arm pivot restraints to equipment types as specified in the applicable equipment safety standard. This change is driven by a lack of clarity in the regulatory wording, and is an issue for suppliers of automotive hoists and for employers who use this type of equipment.

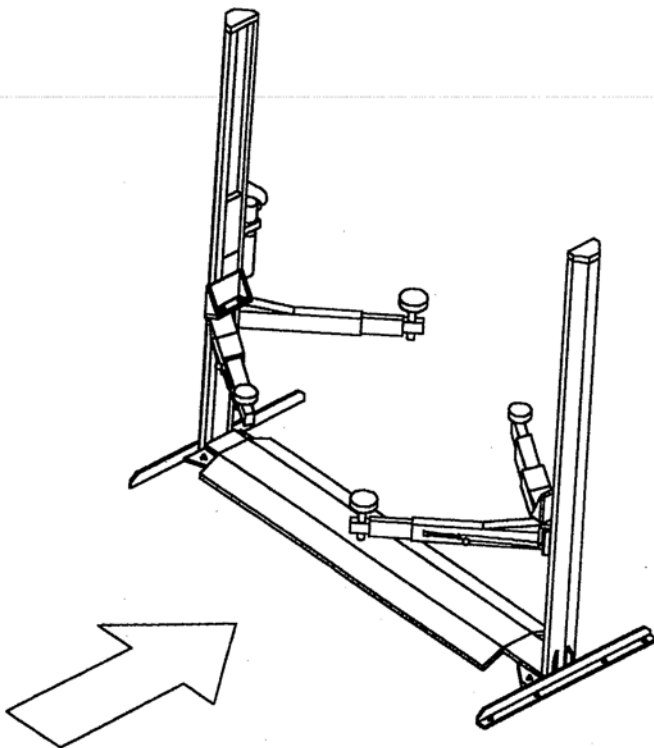
PROPOSED AMENDMENTS FOR PART 12: TOOLS, MACHINERY AND EQUIPMENT
IN THE OCCUPATIONAL HEALTH AND SAFETY REGULATION

The following 3 illustrations from *ANSI Standard ANSI/ALI ALCTV-1998 American National Standard for Automotive Lifts – Safety Requirements for Construction, Testing and Validation* show lift configurations which typically require swing arm pivot restraint devices.



A-1

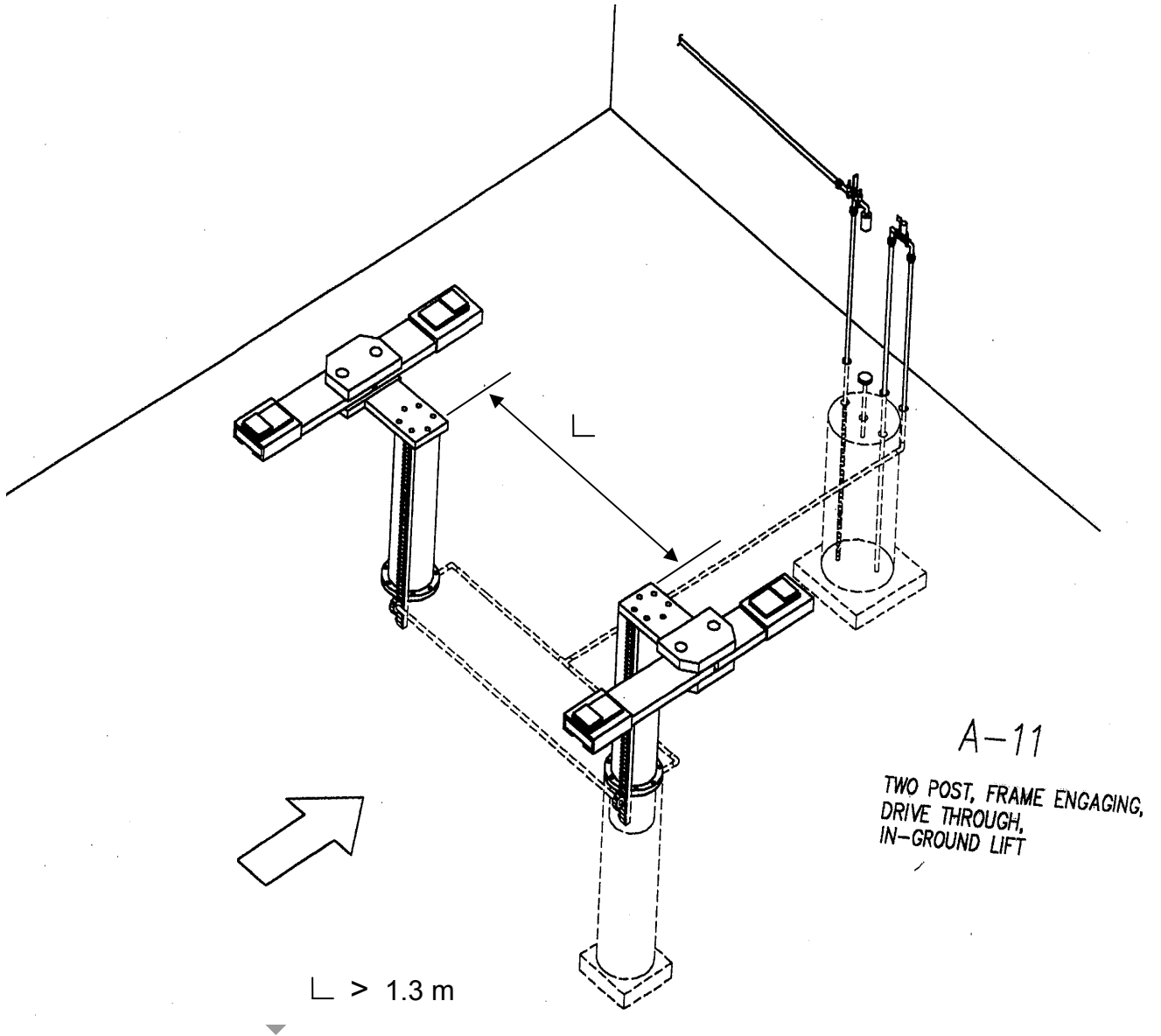
TWO POST, FRAME ENGAGING,
CLEAR FLOOR, SURFACE
MOUNTED LIFT



A-2

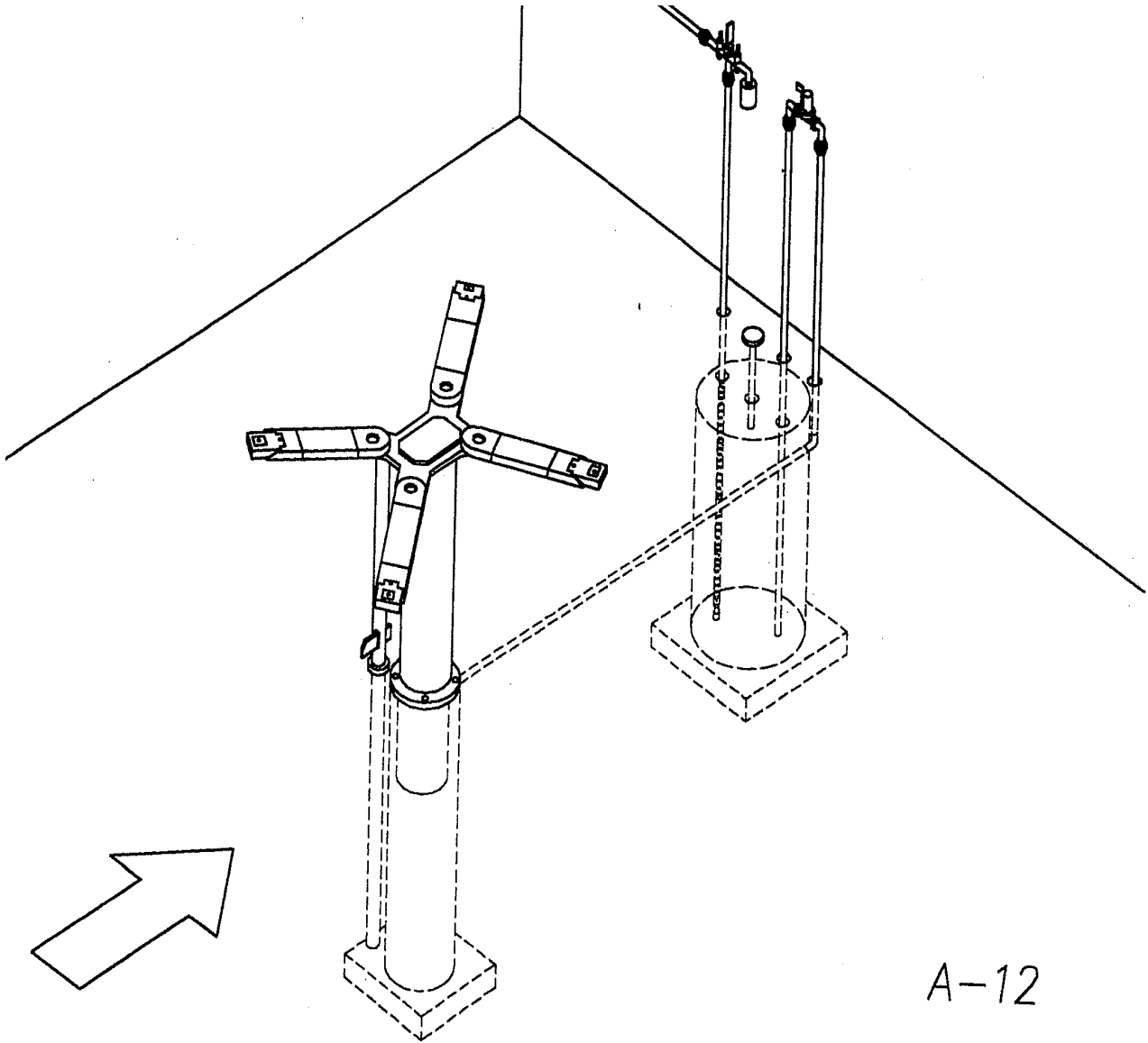
TWO POST, FRAME ENGAGING,
DRIVE OVER, SURFACE
MOUNTED LIFT

PROPOSED AMENDMENTS FOR PART 12: TOOLS, MACHINERY AND EQUIPMENT
IN THE OCCUPATIONAL HEALTH AND SAFETY REGULATION



PROPOSED AMENDMENTS FOR PART 12: TOOLS, MACHINERY AND EQUIPMENT
IN THE OCCUPATIONAL HEALTH AND SAFETY REGULATION

The following illustration from *ANSI Standard ANSI/ALI ALCTV-1998 American National Standard for Automotive Lifts – Safety Requirements for Construction, Testing and Validation* shows a lift configuration which typically **does not** require swing arm pivot restraint devices.



A-12

SINGLE POST, FRAME ENGAGING,
IN-GROUND LIFT

PROPOSED AMENDMENTS FOR PART 13: LADDERS, SCAFFOLDS AND TEMPORARY WORK PLATFORMS
IN THE OCCUPATIONAL HEALTH AND SAFETY REGULATION

PART 13: LADDERS, SCAFFOLDS AND TEMPORARY WORK PLATFORMS

DIVISION 5 – MOVABLE WORK PLATFORMS

Work procedures in high risk situations	13.32	<p>A swing stage, boatswain's chair and portable powered platform must not be used without prior permission of the Board if</p> <p>Before a swing stage, boatswain's chair or portable powered platform is used in any of the following circumstances, a professional engineer must have certified in writing that the swing stage, boatswain's chair or portable powered platform, as the case may be, meets the requirements of CSA Standard CAN/CSA Z271-98 (R2003) Safety Code for Suspended Elevating Platforms and CSA Standard CAN/CSA Z91-02 (R2008) Health and Safety Code for Suspended Equipment Operations:</p> <ul style="list-style-type: none"> (a) one work platform will be used above or below any portion of another work platform, (b) a deck or planking will be used to span a gap between two independent work platforms, (c) the work platform will exceed 10 m (32 ft) in length, or (d) the suspension height will exceed 91 m (300 ft).
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Explanatory Note:

Section 13.32 of the Occupational Health and Safety Regulation ("OSHR") requires the employer, prime contractor or owner, as applicable, obtain prior permission of the Board before using a swing stage, boatswain's chair or portable powered platform in any one of the four circumstances outlined in that section. The following table shows the number of requests for prior permission processed in the past few years.

Year	Section 13.32(a)-(d)
2007	21
2008	21
2009	25
<i>Total</i>	<i>67</i>

Processing requests for prior permission under section 13.32 requires resources from both external stakeholders and WorkSafeBC. The handling of these requests is complex, and typically requires several exchanges between the applicant and WorkSafeBC before all the information necessary to make a decision on whether or not to grant permission has been assembled by the applicant and received by WorkSafeBC. WorkSafeBC has published *OHS Guideline G13.32 Prior permission – Platform use in high risk situations* to assist employers and engineers in the process of seeking prior permission under section 13.32. The requirements are covered by CSA Standards and do require involvement of a professional engineer for certain engineering aspects.

The construction industry is one of the main industry sectors affected by the provisions of section 13.32. An association representing many of the affected employers in this sector has requested the section be amended to allow a professional engineer to design or certify the installation and use of this type of equipment in these high risk situations, and that the requirement for obtaining prior permission from the Board be deleted.

The proposed amendments for this section are an alternative way to achieve a safe and healthy workplace and are not intended to reduce worker health and safety. WorkSafeBC has, as part of its mandate under the *Workers Compensation Act*, the responsibility to establish reasonable standards

**PROPOSED AMENDMENTS FOR PART 13: LADDERS, SCAFFOLDS AND TEMPORARY WORK PLATFORMS
IN THE OCCUPATIONAL HEALTH AND SAFETY REGULATION**

for the health and safety of workers. Since the use of suspended equipment in the specified high risk circumstances is permitted, it is consistent with duties imposed on WorkSafeBC by the *Act* to establish in the OHSR the requirements for such use. This will ensure stakeholders are aware of the minimum requirements for the use of such equipment and will maintain or improve worker safety.

It is proposed to amend section 13.32 to eliminate the requirement for obtaining prior permission of the Board and replace this with a requirement for the employer who wants to use this type of equipment in the specified circumstances to get a professional engineer to certify the equipment and use meets the requirements of the applicable CSA standards prior to use of the equipment. This will place the responsibility for planning, design, installation and use of swing stages, boatswain's chairs and portable powered platforms in the high risk situations described in section 13.32 clearly with the employer, prime contractor or owner, as applicable, and the professional engineer engaged to be responsible for engineering aspects required for the equipment and installation. The engineering aspects include designing or specifying the platform, hoists, suspension lines and all rigging hardware, the rigging plan and the roof plan detailing the support system for the suspension lines and the anchors for tie-back lines and lifelines. The employer would have prime responsibility for training of workers and the work plan.

DRAFT

PROPOSED AMENDMENTS FOR PART 15: RIGGING
IN THE OCCUPATIONAL HEALTH AND SAFETY REGULATION

PART 15: RIGGING

GENERAL REQUIREMENTS

Design factors

15.6

- (1) The design factors based on breaking strengths for rigging components must be at least equal to the values given in Table 15-1, except as otherwise specified in this Regulation.

Table 15-1: Minimum Design Factors for Rigging

Item	Component	Minimum design factor
1	Nylon fibre rope sling	5
2	Polyester rope sling	5
3	Polypropylene rope sling	5
4	Alloy steel chain sling	4
5	Wire rope sling	5
6	Metal mesh sling	5
7	Synthetic web sling	5
8	Synthetic roundsling	5
9	Chain fittings	4
10	Wire rope sling fittings	5
11	Other fittings	as specified by manufacturer
12	Non-rotating wire rope	as specified by manufacturer but not less than 5
13	Conventional wire rope	5

- (2) The design factors specified by subsection (1) may be reduced for a dedicated rigging assembly designed and certified by a professional engineer for a specific lift, but the dedicated assembly must be re-rated according to the requirements of subsection (1) for continued use.
- (3) The design factor for any rigging assembly used to support workers must be at least 10.

**PROPOSED AMENDMENTS FOR PART 15: RIGGING
IN THE OCCUPATIONAL HEALTH AND SAFETY REGULATION**

GENERAL REQUIREMENTS

- Wedge socket connections** **15.9** If a wedge socket is used as a wire rope termination, the dead end of the rope must be secured to prevent release of the wedge or rope slippage at the socket.

Table 15-1: Design factors for rigging

Component	Design factor
Nylon fibre rope sling	9
Polyester rope sling	9
Polypropylene rope sling	6
Alloy steel chain sling	4
Wire rope sling	5
Metal mesh sling	5
Synthetic web sling	5
Chain fittings	4
Wire rope sling fittings	5
Other fittings	as specified by manufacturer
Nonrotating wire rope	as specified by manufacturer but not less than 5
Conventional wire rope	5

SLINGS

- Standards** **15.30** Unless otherwise required by this Regulation, wire rope, alloy steel chain, metal mesh, synthetic fibre rope, **synthetic roundslings** and synthetic fibre web slings must meet the requirements of *ASME B30.9-1990, Slings*. **ASME B30.9-2006 Slings.**

Explanatory Note:

Section 15.30 of the Occupational Health and Safety Regulation ("OHSR") states that unless otherwise required by the Regulation, wire rope, alloy steel chain, metal mesh, synthetic fibre rope and synthetic fibre web slings must meet the requirements of *ASME B30.9-1990 Slings* ("the 1990 standard"). Since 1990, this standard has been considerably revised. Significant changes really started in 1997 and further revisions followed in 1998, 2000, 2003 and 2006. Hence, the 1990 standard has now been superseded by the *ASME B30.9-2006* ("the 2006 standard") which excludes natural fibre rope and includes synthetic roundslings. Natural fibre rope is rarely used for slings anymore while synthetic roundslings are often used.

It is therefore proposed to replace the reference to the 1990 standard in section 15.30 with a reference to the 2006 standard, and to add synthetic roundslings to the rigging components identified in section 15.30 as well as to Table 15-1.

**PROPOSED AMENDMENTS FOR PART 15: RIGGING
IN THE OCCUPATIONAL HEALTH AND SAFETY REGULATION**

The design factors for nylon, polyester and polypropylene slings are lower in the 2006 standard than they are in the 1990 standard. However, the 2006 standard includes other requirements that compensate for the lowered design factors (e.g., synthetic fibre rope construction can be 8 strand plaited or hollow braided, not just 3 strand construction; and identification, proof testing, and daily inspection are all now required where they were not in 1990). Therefore the proposed change to the design factors in Table 15-1 will continue to ensure an acceptable standard of safety. Slings that are designed, fabricated, inspected and used according to the 2006 standard are safe for use.

These proposed changes would ensure manufacturers have a recognized, up to date standard for design, fabrication, proof testing and possible certification of their products. It will also provide their customers with a recognized standard for operating practices, inspection, removal and repair of legal products. Stakeholders, including manufacturers, will not need to contact WorkSafeBC for clarification on product testing and acceptability.

Further, although Table 15-1 is referenced directly by section 15.6 (and indirectly by section 15.30), it is currently placed within section 15.9. For ease of reference, it is proposed to move Table 15-1 within section 15.6 (1).

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PROPOSED AMENDMENTS FOR PART 16: MOBILE EQUIPMENT
IN THE OCCUPATIONAL HEALTH AND SAFETY REGULATION

PART 16: MOBILE EQUIPMENT

GENERAL REQUIREMENTS

**Warning
signal device
– backup
alarm**

- 16.8** (1) ~~Mobile equipment in which the operator cannot directly or by mirror or other effective device see immediately behind the machine must have an automatic audible warning device which~~
- (a) ~~activates whenever the equipment controls are positioned to move the equipment in reverse, and~~
- (b) ~~if practicable, is audible above the ambient noise level.~~

If an operator of mobile equipment cannot directly or by a mirror or other effective device see immediately behind the mobile equipment, the mobile equipment must not be used unless the mobile equipment has an audio warning device that

- (a) **provides a signal to people in the vicinity that, if practicable, is audible above the ambient noise level in the workplace where the equipment is being used, and**
- (b) **is activated automatically when the equipment controls are positioned to move the equipment in reverse.**

**Warning
signal device
– extended
component**

- 16.8.1** (1) **If mobile equipment is used to collect, transport or compact waste material, recyclable material or both, the mobile equipment must have a visual or audio warning device that**
- (a) **provides a signal to the operator of the mobile equipment when a lifting mechanism, top door cover, body, tilt frame or tailgate component of the mobile equipment is extended in a manner that**
- (i) **is likely to contact an overhead obstruction when the mobile equipment is in use, or**
- (ii) **creates a hazardous condition, and**
- (b) **meets the requirements of subsection (2) or (3), whichever is applicable.**
- (2) **If a visual warning device is provided under subsection (1), the visual warning signal from the device must display within the operator's field of vision when the operator is using the mobile equipment.**
- (3) **If an audio warning device is provided under subsection (1), the audio warning signal from the device must make a distinct sound that is audible to the operator above the ambient noise level when the operator is using the mobile equipment.**

Explanatory Note:

There have been a number of incidents investigated by WorkSafeBC in the past five years where mobile waste and recyclable materials collection equipment has contacted overhead obstructions, including overhead wiring, because the vehicle was being driven with some part of its equipment in a raised position. One of these occurrences resulted in a fatality. In these incidents, the operator appears to have been unaware the vehicle was travelling with some part of the equipment raised above a safe position. There is a safety standard for this type of equipment that requires warning signals be provided in the operator's cab to indicate a part of the equipment is in a raised position. In the incidents investigated, the equipment did not have such warning devices or the devices were not functioning.

PROPOSED AMENDMENTS FOR PART 16: MOBILE EQUIPMENT
IN THE OCCUPATIONAL HEALTH AND SAFETY REGULATION

It is proposed to add a new section to Part 16, Mobile Equipment in the Occupational Health and Safety Regulation to require mobile waste and recyclable materials collection, transportation and compaction equipment have a visual or audio warning signal device that meets the requirements of clause 7.2.14.1, Warning signals in *ANSI Standard Z245.1-1999 Mobile Wastes and Recyclable Material Collection, Transportation, and Compaction Equipment—Safety Requirements*. This clause states “A visual or audible warning signal or both, shall be provided in the cab to indicate when lifting mechanisms, top door covers, body, tilt frame, or tailgate are extended above the minimum overhead clearance requirements, or which would create a hazardous driving condition during transit. Visual devices, when used, shall be located within the drivers scan. Audible warnings, when used, shall be distinct.”

For the purposes of proposed new section 16.8.1, “using the equipment” is intended to include driving the equipment when transiting between pickup points and to and from drop off, dump and depot locations.

Proposed section 16.8.1 would not apply to a dump truck or similar vehicle with a cargo box fixed to the vehicle chassis and having a tilt hoist to allow end dumping of the contents of the box. The tilt hoist mechanism for such equipment is not a “tilt frame” as it is not used for handling different containers.

Proposed section 16.8.1 is not intended to apply to mobile equipment such as a fork lift or front end loader being used at a dump, drop off site or depot. While such equipment has a “lifting mechanism” to raise and lower the forks or bucket of the equipment, it does not have a lifting mechanism, top door cover, body, tilt frame or tailgate as defined and contemplated in the ANSI Standard.

It is proposed to amend the marginal note for section 16.8 to include reference to its focus as a requirement for a backup alarm, and to amend the provision to improve clarity.

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PROPOSED AMENDMENTS FOR PART 19: ELECTRICAL SAFETY
IN THE OCCUPATIONAL HEALTH AND SAFETY REGULATION

PART 19: ELECTRICAL SAFETY

Definitions 19.1 In this Part:

"approved" as applied to electrical equipment, means that the equipment meets the requirements of the *Electrical Safety Regulation Act*;

"electrical worker" means a person who meets the requirements of the *Electrical Safety Regulation Act* for installing, altering or maintaining electrical equipment;

"exposed", as applied to electrical equipment or conductors, means that the conductor or a part of the equipment is

- (a) electrically connected to a source of voltage difference or electrically charged to have a voltage different from that of earth,
- (b) not guarded or insulated in an approved manner, and
- (c) in a location where a person or any tool, equipment or material the person is touching or using might come closer than a safe distance away from the conductor or part;

Ground fault circuit interrupters 19.15 (1) When used outdoors or in a wet or damp location, portable electrical equipment, including temporary lighting, must be protected by an approved ground fault circuit interrupter of the class A type installed at the receptacle or on the circuit at the panel, unless another acceptable means of protection is provided.

(2) A ground fault circuit interrupter must not be used in place of grounding except as permitted by the *Electrical Safety Regulation Act* and the regulations made under it.

WORKING CLOSE TO ENERGIZED HIGH VOLTAGE EQUIPMENT AND CONDUCTORS

MINIMUM SEPARATION DISTANCE TO BE MAINTAINED FROM ENERGIZED HIGH VOLTAGE ELECTRICAL EQUIPMENT AND CONDUCTORS

Minimum clearance 19.24 (1) The employer must ensure that at least the minimum applicable distance specified in Table 19-1 is maintained between exposed, energized high voltage electrical equipment and conductors and any worker, work, tool, machine, equipment or material, unless otherwise permitted by this Part.

(2) The employer must accurately determine the voltage of any energized electrical equipment or conductor and the minimum distance from it required by subsection (1).

Informing workers about high voltage electrical equipment and conductors

Before a person starts work close to high voltage electrical equipment or conductors that are exposed or that might become exposed during work at a workplace, the person must be informed of

- (a) the existence, location and voltage of the high voltage electrical equipment and conductors, and
- (b) the work arrangements and procedures to be followed to ensure compliance with this Part.

PROPOSED AMENDMENTS FOR PART 19: ELECTRICAL SAFETY
IN THE OCCUPATIONAL HEALTH AND SAFETY REGULATION

Minimum approach distance when working close to exposed electrical equipment and conductors

19.24.1

Subject to section 19.24.2 or unless otherwise permitted by this Part, if exposed electrical equipment or conductors at a workplace have a voltage within a range set out in column 1 of Table 19-1A, the following must remain at least the distance from the exposed electrical equipment and conductors that is set out in column 2 opposite that range of voltage:

- (a) a person working at the workplace;
- (b) a tool, machine, material, or equipment at the workplace.

Table 19-1: General limits of approach

Table 19-1A

Column 1 Voltage	Column 2 Minimum distance Minimum approach distance for working close to exposed electrical equipment or conductors	
Phase to phase	Metres	Feet
Over 750 V to 75 kV	3	10
Over 75 kV to 250 kV	4.5	15
Over 250 kV to 550 kV	6	20

Minimum clearance distance when passing under exposed electrical equipment and conductors

19.24.2

(1) This section applies in the circumstances where a person working at a workplace is moving or is involved in moving equipment under exposed electrical equipment or conductors and is not performing any work other than work related to moving the equipment.

(2) Unless otherwise permitted by this Part, in the circumstances set out in subsection (1), if exposed electrical equipment or conductors have a voltage within a range set out in column 1 of Table 19-1B, the following must maintain at least the clearance distance from the exposed electrical equipment and conductors that is set out in column 2 opposite that range of voltage:

- (a) a person moving or involved in moving the equipment under the exposed electrical equipment or conductor;
- (b) the equipment that a person referred to in paragraph (a) is moving;
- (c) the load carried by the equipment referred to in paragraph (b).

Table 19-1B

Column 1 Voltage	Column 2 Minimum clearance distance for passing under exposed electrical equipment or conductors	
Phase to phase	Metres	Feet
Over 750 V to 75 kV	2	6.5
Over 75 kV to 250 kV	3	10
Over 250 kV to 550 kV	4	13

**PROPOSED AMENDMENTS FOR PART 19: ELECTRICAL SAFETY
IN THE OCCUPATIONAL HEALTH AND SAFETY REGULATION**

Assurance in writing	19.25	(1) If the minimum distance in Table 19-1 Table 19-1A cannot be maintained because of the circumstances of work or the inadvertent movement of persons or equipment, an assurance in writing on a form acceptable to the Board and signed by a representative of the owner of the power system, must be obtained.
Assurance not practicable	19.26	(1) If exposed high voltage electrical equipment and conductors cannot be isolated, rerouted or guarded, work must not be done within the minimum distance in Table 19-1 Table 19-1A until approval is obtained from the Board and the following precautions are taken: <ul style="list-style-type: none"> (a) the area within which equipment or materials are to be moved must be barricaded and supervised to restrict entry only to those workers necessarily engaged in the work; (b) a safety watcher must be designated; (c) a positive means must be provided for the safety watcher to give a clear, understandable stop signal to workers in the area, and the watcher must give the stop signal by no other means.
Authorization by owner	19.29	Qualified workers and workers under their direct supervision may work within the minimum distances to energized high voltage electrical equipment and conductors, as specified in Table 19-1 Table 19-1A and Table 19-2, when authorized by the owner of the power system and using work procedures acceptable to the Board.
TREE PRUNING AND FALLING NEAR ENERGIZED CONDUCTORS		
Preliminary inspection	19.30	(1) Before commencing tree pruning or falling close to energized high voltage overhead conductors, the worksite must be inspected by a qualified person, authorized by the owner of the power system, to identify any hazardous areas, including situations where any part of a tree to be pruned or felled is within the applicable minimum distance from an energized conductor as specified in Table 19-1 Table 19-1A , or may fall within that distance.
Qualifications	19.32	Tree pruning or falling within the minimum distances in Table 19-1 Table 19-1A from overhead energized high voltage conductors must be carried out by a worker authorized by the owner of the power system to do such work.
Site crew requirements	19.33	Tree pruning or falling is not permitted within the minimum distances in Table 19-1 Table 19-1A from overhead high voltage energized conductors, unless <ul style="list-style-type: none"> (a) a certified utility arborist or a qualified electrical worker is present at the site and directing the work, and (b) at least one additional qualified person, trained in appropriate emergency rescue procedures, is present.

PROPOSED AMENDMENTS FOR PART 19: ELECTRICAL SAFETY
IN THE OCCUPATIONAL HEALTH AND SAFETY REGULATION**Explanatory Note:**

It is proposed to amend section 19.1 Definitions (for “approved” and “electrical worker”) and section 19.15(2) Ground fault circuit interrupters of the Occupational Health and Safety Regulation (“OHSR”) to update the reference to the *Electrical Safety Act* to reference the *Electrical Safety Regulation*. The creation of the *Safety Standards Act* resulted in the repeal of the *Electrical Safety Act* and the establishment of the *Electrical Safety Regulation*.

It is proposed to add to section 19.1 of the OHSR a definition for “exposed” to provide clarity for the term as used in Part 19 of the OHSR. The definition proposed for “exposed” is similar to the definition for this term provided and used in the Canadian Electrical Code and other CSA standards.

“Exposed” means the parts of electrical equipment or conductors that are energized or current-carrying can be inadvertently touched or approached nearer than a safe distance. Electrical equipment and conductors are normally energized through connection to a source of voltage such as the “electric grid”, a generator, or a battery. A source of voltage could also be a charged capacitor that is part of the electrical equipment.

Energized parts of electrical equipment and conductors within reach of people in the normal course of activity are generally guarded against inadvertent contact by approved enclosures such as cover plates, cabinets and conduits installed in conformance with the applicable provisions of the electrical code and enabling bylaws. Where conductors are not enclosed in a wall or conduit, the conductors are required to be enclosed in an insulating covering, which is the case for the cords for portable electric tools and appliances and for extension cords. High voltage electrical equipment might also be guarded by placing the equipment in secure compounds (fenced and gated), such as for an electrical system substation. For electrical equipment and conductors that are suitably guarded or insulated, tools or vandalism would be needed to get inadvertent access to the energized parts, or to expose them.

Energized electrical equipment and conductors that are part of a high voltage transmission or distribution system are considered to be safe (not exposed) when placed appropriately out of reach of people going about their normal day to day activities. For example, such systems commonly support conductors and transformers up on towers or utility poles so they cannot be approached closer than a safe distance by people during normal day to day activity. If work activities will not cause workers or the tools, equipment or materials the workers are handling or using to “reach up” closer than a safe distance towards the overhead high voltage equipment or conductors, such equipment and conductors can be considered not to be exposed, and the employer need take no further action. However, if a worker will undertake activities requiring elevation above normal walking surfaces, the safe distance provided by putting the energized equipment and conductors up in the air through use of towers or utility poles is compromised, and the employer must ensure the limits of approach stipulated in Part 19 are maintained. Such work may involve a worker going “upwards” directly through use of access equipment such as a ladder, scaffold, or an elevating work platform, or indirectly through use of reach equipment with components that are raised to do a task, such as a lift truck, excavator, crane, boom truck, or concrete placing boom. In addition, if a worker’s “reach” is extended overhead or laterally through the use of tools or when manually handling materials, the limits of approach in Part 19 must be maintained for such tools and materials.

Section 19.24 and Table 19-1 in the OHSR set out the minimum distance that must be maintained between exposed, energized high voltage electrical equipment and conductors and any worker, tool, machine, equipment or material. A number of exceptions are permitted by other sections in Part 19 of the OHSR that are applicable to workers with special training and following work procedures acceptable to the Board. The application of section 19.24 to circumstances where vehicles and mobile equipment are being driven along haul roads or across workplaces and pass under overhead high voltage transmission or distribution lines has become an issue.

Power system owners design overhead transmission and distribution lines so the height of the conductors above grade or ground level, including above road surfaces, meets or exceeds the requirements of *CSA Standard C22.3 No. 1-06 Overhead Systems*. This CSA Standard is a nationally recognized industry standard for determining the minimum clearance. Power system owner’s design

**PROPOSED AMENDMENTS FOR PART 19: ELECTRICAL SAFETY
IN THE OCCUPATIONAL HEALTH AND SAFETY REGULATION**

standards typically exceed the minimum clearances of the CSA Standard. Power system design standards work well for public roads where there are regulations that establish maximum allowable load heights. Vehicles and mobile equipment that conform to the legal load height are considered to be safe from electrical hazard from the power system when travelling on the road and crossing under overhead powerlines (or conductors.) In these circumstances the separation between the top of the vehicle or its load and the conductors should conform to Table 19-1.

On an industrial site or on resource roads, the maximum vehicle load height or the height of mobile equipment is often greater than permitted on public roads. Clearance between such equipment and overhead high voltage powerlines is less well controlled and can result in the top of a load or a part of the mobile equipment coming within the limits of approach specified in section 19.24 and Table 19-1 when the equipment is travelling along the road. WorkSafeBC has been asked what provisions should apply in such cases. For example, a recent inquiry to WorkSafeBC concerned loaded log trucks passing under a 230 kV overhead electrical transmission line that crossed the haul road. In this case the loaded log trucks had load heights of up to 24 feet. The minimum vertical clearance to the transmission line conductors above the road surface was designed by the owner of the line to be 29 feet, in conformance with their design standards for the “standard” maximum legal load height for a vehicle on a public road. For compliance with section 19.24 and Table 19-1, the height of the transmission line would need to be 39 feet above the road surface. The road owner, the road user and the owner of the transmission line were trying to determine what clearance was needed, and who should pay for any adjustments needed to ensure that clearance was maintained.

The minimum approach distances specified in section 19.24 and Table 19-1 are intended to protect workers undertaking work activities in proximity to exposed, energized high voltage electrical equipment and conductors. The distances specified keep workers well clear of the electrical hazard area and allow for inadvertent or unintended minor movement by the worker, or tools or materials the worker is handling, towards the electrical equipment and conductors (into the electrical hazard zone.) However, when a vehicle or mobile equipment is just being driven along a road, the driver and any other person riding in the cab of the equipment is generally not likely to change the height of the vehicle or equipment, or its load, that will result in an unexpected movement of the equipment or load closer to the overhead powerlines than the safe zone provided by the planned separation between the conductors and the highest point of the vehicle or equipment, or the load. Thus it is proposed the approach distances specified in section 19.24 and Table 19-1 can be reduced and still provide for adequate safety when a worker is “just driving” a vehicle or mobile equipment and passing under the power lines. It is also intended the reduced distances would apply to equipment based on marine craft when such equipment is passing under power lines.

It is proposed to amend section 19.24 to establish appropriate minimum clearance distances for equipment passing under overhead electrical equipment and conductors.

Proposed new section 19.24 will set out the general obligation for the employer, prime contractor or owner to determine if high voltage electrical equipment or conductors are present in the workplace, and if so, if any of the equipment or conductors are exposed, or might become exposed to people carrying out work as work progresses. If so, the employer must ensure people carrying out the work are informed of the hazard and of the work arrangements and procedures to be followed to do the work safely and in compliance with Part 19.

Proposed new section 19.24.1 will set out the minimum distance that must be maintained between people working at the work place, their tools, equipment and materials, and any exposed (which by definition is energized) high voltage electrical equipment and conductors when work is taking place close to such electrical equipment or conductors. Such activity has generally been referred to as “working in proximity”. The amendment proposes to use the phrasing “work close to”.

Proposed new section 19.24.1 is essentially the existing section 19.24(1) and establishes the general limit of approach and applies unless proposed section 19.24.2 or one of the exceptions in other sections in Part 19 permits otherwise. The exceptions in other sections in Part 19 allow different and closer limits of approach for qualified electrical workers or specially trained workers following appropriate safe work procedures acceptable to the Board.

**PROPOSED AMENDMENTS FOR PART 19: ELECTRICAL SAFETY
IN THE OCCUPATIONAL HEALTH AND SAFETY REGULATION**

Proposed new section 19.24.2(1) is an exception to section 19.24.1 applicable when equipment is passing under an overhead powerline, provided the person driving or otherwise controlling the equipment is not doing any work other than driving or controlling the passage of the equipment. The proposed exception, set out in new section 19.24.2(2), provides that the minimum clearance between any part of the equipment, or its load, and the exposed high voltage electrical equipment and conductors overhead must be at least the distance in proposed new Table 19-1B, unless the exceptions in other sections in Part 19 apply. Once again, these other exceptions are the closer limits of approach allowed for qualified electrical workers or specially trained workers following appropriate safe work procedures acceptable to the Board.

The minimum clearance distances proposed for Table 19-1B are based on consideration of the applicable standards published by the Institute of Electrical and Electronics Engineers and recommendations from two of the major electrical utility companies in BC.

Proposed section 19.24.2 will generally apply to vehicles hauling oversize loads on industrial sites or along haul roads. For example, "off-highway" log hauling trucks generally have loads higher than trucks hauling on public roads, and the employer or prime contractor will need to know and control the maximum load height for such "off-highway" log trucks as necessary to ensure the clearance specified in Table 19-1B is maintained. Similarly, when equipment such as a log loader or feller/buncher is being driven from one work location to another, the employer will need to ensure the height of the equipment in the configuration being used when driving or travelling the equipment will allow it to pass under any overhead high voltage conductors by at least the clearance specified in Table 19-1B.

The height of heaped loads on earth or rock hauling trucks or barges also needs to be known and controlled to ensure the top of such loads can pass under any overhead high voltage conductors by at least the clearance specified in Table 19-1B. When a truck box is raised to dump or spread material, the driver is doing more than just driving the vehicle and the minimum approach distances in Table 19-1A apply.

It is expected that road maintenance vehicles, such as road graders and trucks rigged up for snow plowing, salting/sanding or dust suppression operations will have overall heights that ensure clearance to the limits in Table 19-1A during grading, plowing or salting/sanding/spraying operations. A worker grading a surface, or plowing snow, salting/sanding or spraying water or other road treatment on a surface is considered to be doing more than "just driving" the vehicle or equipment.

The proposed amendments to section 19.24 would result in Table 19-1 being renumbered as Table 19-1A. Sections 19.25(1), 19.26(1), 19.29, 19.30(1), 19.32, and 19.33 of the OHSR reference Table 19-1. It is proposed that these sections would be amended to reference Table 19-1A.

PROPOSED AMENDMENTS FOR PART 5: CHEMICAL AGENTS AND BIOLOGICAL AGENTS
IN THE OCCUPATIONAL HEALTH AND SAFETY REGULATION

PART 5: CHEMICAL AGENTS AND BIOLOGICAL AGENTS

Designation as hazardous substances	5.1.1	For the purposes of sections 5.2 and 6.33 to 6.40, 5.2, 6.33 to 6.40, and Part 30 , the following biological agents are designated as hazardous substances: <ul style="list-style-type: none"> (a) a liquid or solid material that is contaminated with a prion, virus, bacterium, fungus or other biological agent that has a classification given by the World Health Organization or Health Canada the Public Health Agency of Canada, as amended from time to time, as a Risk Group 2, 3 or 4 human pathogen that causes an adverse health effect; (b) a biological toxin that causes an adverse health effect.
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Explanatory Note:

The purpose of the proposed amendment to section 5.1.1 is to ensure consistency with the proposed revisions to Part 30. The current wording in section 5.1.1 designates certain biological agents as hazardous substances since not all biological agents are harmful to humans. Since the term “biological agent” will replace the term “biohazardous”, the amended sections must be cited in 5.1.1 for stakeholders to know which biological agents the regulation is intended for.

It is proposed that the reference to the “World Health Organization” be deleted and “Health Canada” changed to “the Public Health Agency of Canada”. The Public Health Agency of Canada (“PHAC”) is the agency responsible for the protection of public and worker health and safety related to infectious human pathogens. Through legislative changes made about 5 years ago, Health Canada has deferred all biosecurity and biosafety matters to PHAC. The World Health Organization (“WHO”) does not classify human pathogens into their respective risk groups. Each country is required to set their own classification system of risk groups for human pathogens and PHAC is the agency responsible for Canada. Currently, the list of known human pathogens and their risk groups are listed in the federal *Human Pathogens and Toxins Act* – Schedules 1 to 5. It was decided that the proposed wording will not include the *Act* so that the definition of hazardous substance can apply to new human pathogens that have not been added to the schedules but has been classified by PHAC.

PROPOSED AMENDMENTS FOR PART 6: SUBSTANCE SPECIFIC REQUIREMENTS
IN THE OCCUPATIONAL HEALTH AND SAFETY REGULATION

PART 6: SUBSTANCE SPECIFIC REQUIREMENTS

BIOLOGICAL AGENTS

Exposure control plan	6.34	<p>(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:</p> <ul style="list-style-type: none"> (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 <ul style="list-style-type: none"> (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 <i>Laboratory Biosafety Manual</i> issued by the World Health Organization, as amended from time to time, and the <i>Laboratory Biosafety Guidelines</i> issued by Health Canada the <i>Laboratory Biosafety Guidelines</i> issued by the Public Health Agency of Canada, as amended from time to time; (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.
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Explanatory Note:

The proposed amendment to section 6.34 (1)(d)(iii) is consequential to the proposed amendment to section 30.26. The Public Health Agency of Canada (“PHAC”) is the agency responsible for biosafety concerns in Canada, including protecting workers and the public from infectious diseases caused by biological agents. Through legislative changes made about 5 years ago, Health Canada has deferred all biosecurity and biosafety matters to PHAC.

The reference to the *Laboratory Biosafety Manual* issued by the World Health Organization is removed to align the OHSR with the current PHAC practices. The manual issued by PHAC is the primary document that all labs in Canada conform to and not the WHO manual. Also, potential future conflicts and discrepancies will be avoided by referring to one document.

PROPOSED AMENDMENTS FOR PART 30: LABORATORIES
IN THE OCCUPATIONAL HEALTH AND SAFETY REGULATION

PART 30: LABORATORIES

Definition	30.1	In this Part,
<i>“biological agent”</i>		means a biological agent designated as a hazardous substance under section 5.1.1.
Application	30.1 30.1.1	This Part applies to rooms, buildings or areas in buildings equipped with apparatus, equipment, chemicals or test animals and used for research, quality control, performance of tests, experiments or measurements, photographic development, or the preparation of drugs or other products in the natural sciences.

Explanatory Note:

In order to update the term “biohazardous” to “biological agent” in few sections of Part 30, a definition of biological agent was included in Part 30 to assist stakeholders understand which biological agent the regulation is referring to. Since the hazardous biological agents were designated in section 5.1.1, this section was cited in the definition.

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**PROPOSED AMENDMENTS FOR PART 30: LABORATORIES
IN THE OCCUPATIONAL HEALTH AND SAFETY REGULATION**

PART 30: LABORATORIES

GENERAL REQUIREMENTS

Biological safety cabinets

- 30.12** (1) The limitations of a biological safety cabinet must be clearly posted on the unit and followed by workers.
- (2) Biological safety cabinets must be certified by a qualified person at least annually and before use after
- (a) initial installation,
 - (b) change of the HEPA (high efficiency particulate air) filter,
 - (c) moving of the unit, and
 - (d) any repair or maintenance that could affect the seal of the HEPA filter.
- (3) Certification procedures used for compliance with subsection (2) must meet the requirements of the *National Sanitation Foundation (NSF) Standard 49-2002, Class II (Laminar Flow) Biohazard Cabinetry*, and a record of the results must be maintained.
- (4) Recirculation of exhaust air into a workspace from a biological safety cabinet is not permitted where volatile toxic materials or flammable liquids or gases are used in the cabinet, or where volatile radioactive materials are used in amounts that exceed the exemption quantity specified by the Canadian Nuclear Safety Commission.
- (5) Repealed. [B.C. Reg. 319/2007.]
- (6) ~~Biological safety cabinets used for handling a biological agent that is designated as a hazardous substance in section 5.1.1 must be operated and ventilated in accordance with the *Laboratory Biosafety Manual* issued by the World Health Organization, as amended from time to time, and the *Laboratory Biosafety Guidelines* issued by Health Canada, as amended from time to time.~~

Biological safety cabinets used for handling a biological agent must be operated and ventilated in accordance with the *Laboratory Biosafety Guidelines* issued by the Public Health Agency of Canada, as amended from time to time.

Explanatory Note:

The proposed amendment to section 30.12 (6) is consequential to the proposed amendment to section 30.26. The Public Health Agency of Canada ("PHAC") is the agency responsible for biosecurity and biosafety concerns in Canada, including protecting workers and the public from infectious diseases caused by biological agents. Through legislative changes made about 5 years ago, Health Canada has deferred all biosecurity and biosafety matters to PHAC.

The reference to the *Laboratory Biosafety Manual* issued by the World Health Organization is removed to align the OHSR with the current PHAC practices. The manual issued by PHAC is the primary document that all labs in Canada conform to and not the WHO manual. Also, potential future conflicts and discrepancies will be avoided by referring to one document.

PROPOSED AMENDMENTS FOR PART 30: LABORATORIES
IN THE OCCUPATIONAL HEALTH AND SAFETY REGULATION

PART 30: LABORATORIES

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| Centrifuges | 30.13 | <p>(1) Centrifuge loads must be balanced by sample distribution.</p> <p>(2) Aerosol-proof safety heads or cups or other equally effective means to prevent exposure of workers must be used where biohazardous aerosols an aerosol containing a biological agent may be generated, where carcinogens are present or where radioactive samples pose a hazard to workers.</p> <p>(3) Unless exempted by <i>CSA Standard C22.2 No. 151-M1986 Laboratory Equipment</i>, or other standard acceptable to the Board, centrifuge doors must be interlocked to prevent workers accessing spinning rotors.</p> <p>(4) The interlock required by subsection (3) must prevent the door from opening while the rotor is spinning or cause the rotor to brake if the door is opened, or another equally effective means must be used to prevent a worker from accessing the spinning rotor.</p> <p>(5) Equipment purchased before April 15, 1998 is exempt from the application of subsection (3) until January 1, 2001.</p> <p>(6) Repealed. [B.C. Reg. 312/2003.]</p> <p>(7) Rotors must be stored in a manner which will prevent them from being damaged.</p> |
| Procedures | 30.14 | <p>Written safe work procedures must be prepared for hazardous operations, including work methods involving hazardous chemicals, spill response, and handling of biohazardous materials a material that contains a biological agent, and workers must be adequately instructed in and follow the procedures.</p> |
| Permitted quantities | 30.15 | <p>Only the minimum necessary amounts of combustible, flammable, corrosive, toxic, biohazardous or highly reactive substances may be kept in the working area of the laboratory.</p> <p>Only the minimum necessary amount of biological agents and substances that are combustible, flammable, corrosive, toxic or highly reactive may be kept in the working area of the laboratory.</p> |
| Transport of containers | 30.16 | <p>The transport of containers of flammable, corrosive, toxic, biohazardous or highly reactive substances or highly reactive substances or biological agents through a laboratory must be done in a manner that will not pose a danger of damage to the containers.</p> |
| Personal protection | 30.17 | <p>(1) Protective laboratory clothing used in laboratories where toxic, radioactive or biohazardous substances are handled must not be worn outside the work area and must not be stored in a manner or location whereby workers may be exposed to the hazardous substances.</p> <p>A worker must wear protective laboratory clothing in a laboratory where a toxic or radioactive substance or a biological agent is handled.</p> <p>(1.1) Protective laboratory clothing worn in circumstances referred to in subsection (1) must not</p> <p>(a) be worn outside an area where a worker is required to wear the protective clothing, and</p> <p>(b) be stored in a manner or location that might expose a worker to a hazardous substance.</p> |

**PROPOSED AMENDMENTS FOR PART 30: LABORATORIES
IN THE OCCUPATIONAL HEALTH AND SAFETY REGULATION**

- (2) Smoking, eating or drinking is not permitted in any laboratory area.
 - (3) Food for consumption must not be kept in the laboratory, and laboratory glassware, vessels and containers must not be used to prepare or store food or beverages for consumption.
 - (4) Substances must not be pipetted by mouth.
 - (5) If hazardous chemicals or materials are handled, all affected workers must receive instruction and training in the proper handling and disposal of such materials.
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Explanatory Note:

The amendments to sections 30.13 (2), 30.14, 30.15, 30.16, and 30.17 are proposed to update the term “biohazardous” to “biological agent”. The term was changed during the 2007 amendments to Parts 5 and 6, but these sections were not amended at the time.

From the feedback received from stakeholders, Part 30.17 has been slightly reworded to clarify the intended requirement.

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PROPOSED AMENDMENTS FOR PART 30: LABORATORIES
IN THE OCCUPATIONAL HEALTH AND SAFETY REGULATION

PART 30: LABORATORIES

SPECIFIC SUBSTANCES AND PROCEDURES

- Biohazardous materials** **30.26** (1) Adequate facilities must be readily available for personal decontamination of workers who come in contact with ~~biohazardous materials~~ **a biological agent.**
- Biological agents and human pathogens** (2) Work procedures which may generate aerosols containing ~~biohazardous materials~~ **a biological agent** must be performed only under controlled conditions designed to minimize creation of the aerosols and prevent worker exposure to them.
- (3) For Risk Group 2 ~~micro-organisms~~ **human pathogens**, sealed centrifuge safety heads, rotors or trunnion cups must be opened within a fume hood or biological safety cabinet unless there is a means of visually determining, by use of clear safety caps or other effective means, that no breakage or leaking has occurred.
- (4) For Risk Group 3 ~~micro-organisms~~ **human pathogens**, sealed centrifuge safety heads, rotors or trunnion cups must be loaded and unloaded within a biological safety cabinet.
- (5) ~~Work involving Risk Group 4 micro-organisms must be done as required by Health Canada Laboratory Biosafety Guidelines—2nd edition (1996)~~ **Work involving Risk Group 4 human pathogens must be done as required by the *Laboratory Biosafety Guidelines* issued by the Public Health Agency of Canada, as amended from time to time.**
- (6) In this section,**
- “Risk Group 2 human pathogens” mean the human pathogens that are classified by the Public Health Agency of Canada as Risk Group 2 human pathogens;**
- “Risk Group 3 human pathogens” mean the human pathogens that are classified by the Public Health Agency of Canada as Risk Group 3 human pathogens;**
- “Risk Group 4 human pathogens” mean the human pathogens that are classified by the Public Health Agency of Canada as Risk Group 4 human pathogens.**

Explanatory Note:

Section 30.26 of the Occupational Health and Safety Regulation (“OHSR”) covering “biohazardous materials” makes reference to an out-of-date edition of the Health Canada’s *Laboratory Biosafety Guidelines*. The second edition dated 1996 has been superseded by the 3rd edition published 2004. As well, various sections of Part 30 refer to the term “biohazardous materials or substances” which was replaced with the term “biological agents” during the 2007 amendments made to Parts 5 and 6.

The purpose of the proposed amendments is to ensure that terminology used in section 30.26 is consistent with those of Parts 5 and 6 relating to biological agents and that the current edition of the *Laboratory Biosafety Guidelines* published by the Public Health Agency of Canada – “PHAC” – (not Health Canada as currently indicated) are properly referenced.

It is proposed that section 30.26 be amended by replacing the term “biohazardous materials” with “biological agents” for consistency and clarity. Also, the proposed amendment to section 30.26 (5) now refers to the most current version of the PHAC laboratory biosafety manual. Sections

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30.26 (3) to (6) refer to the risk groups given to human pathogens by PHAC so the term “micro-organisms” is proposed to be changed to “human pathogens” to keep consistency of terms used in the OHSR.

WorkSafeBC is aware of the federal *Human Pathogens and Toxins Act* that recently passed on June 23, 2009. The federal government has passed this Act in order to reduce the risks from accidental or deliberate release of human pathogens and to better protect the health and safety of the public. This Act contains prohibitions and requirements relating to the full range of laboratory activities that will likely affect the health and safety requirements in laboratories. It will be premature to amend the sections on laboratory requirements in the OHSR until the new program and regulatory framework are developed. WorkSafeBC will keep apprised of the implementation of this Act and how it may affect the laboratory requirements in the current OHSR.

The word “biohazardous” used in other sections 30.13(2), 30.14, 30.15, 30.16, 30.17(1), and 30.19 (5) is proposed to be changed to “biological agents” for consistency of terms.

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