Machine Guarding – Know the Laws of Your Province

OHS laws require employers to implement measures to safeguard workers from machine hazards. In addition to fatalities and gruesome injuries, failure to comply with these requirements may result in a shutdown order or a massive penalty. Where reasonably practicable, employers are required to install machine guards that physically block workers from accessing the zone of danger. However, OHS regulations vary in terms of:

- Which kinds of machine guards are required;
- Which standards machine guards must meet;
- How machine guards must be designed, constructed and installed; and
- When machine guards may be removed to perform work on the machine they're guarding.

Here are the machine guarding requirements in each part of Canada. Go to the OHS Insider website for a complete Machine Guarding Compliance Game Plan.

Machine Guarding Requirements Across Canada

FEDERAL

Construction & Design: Every machine that has exposed moving,

rotating, electrically charged or hot parts or that processes, transports or handles material that constitutes a hazard to an employee must be equipped with a machine guard that, if feasible, isn't removable and that's constructed, installed and maintained so as to: (a) prevent the employee or any part of their body from coming into contact with the parts or material; (b) prevent access by the employee to the area of exposure to the hazard during the operation of the machine; or (c) make the machine inoperative if the employee or any part of their clothing is in or near a part of the machine that's likely to cause injury (*COHS Regs*., Sec. 13.13)

Use, Operation, Repair & Maintenance: 1. Machine guards must be operated, maintained and repaired by a qualified person; 2. No person may use or operate a machine that has a machine guard installed unless the machine guard is in its proper position; 3. If it's necessary to remove a machine guard from a machine to perform repair or maintenance work on the machine, no person may perform the repair or maintenance work unless the machine has been locked out in accordance with a written lock out procedure provided by the employer; and 4. If it's not feasible to lock out the machine, the work may be performed if: (a) the person performing the work follows written instructions provided by the employer that ensures that any hazard to that person is not significantly greater than it would be if the machine had been locked out; and (b) the person performing the work: (i) obtains a written authorization from the employer each time the work is performed (a copy of which the employer keeps readily available to persons who perform repair and maintenance work on the machine), and (ii) performs the work under the direct supervision of a qualified person (*COHS Regs*., Secs. 13.14 to 13.17)

ALBERTA

1. Employer must install “a positive means to prevent the activation of equipment” if: (a) a worker is required to feed material into the machine, or (b) a part of the worker’s body is within the danger zone of the machine (*OHS Code*, Sec. 366); 2. Employer must ensure that an operational control on equipment: (a) is designed, located or protected to prevent unintentional activation, and (b) if appropriate, is suitably identified to indicate the nature or function of the control (*OHS Code*, Sec. 368); and 3. *OHS Code* doesn’t include design requirements for safeguards but previous *Explanation Guide* (which has officially been superseded) stated that all safeguards should: (a) prevent a worker’s hands, arms and any other part of the body from making contact with dangerous moving parts; (b) be secure—workers shouldn’t be able to easily remove or tamper with the safeguard; (c) protect moving parts from the entry of falling objects, such as tools and materials; (d) create no new hazards of their own, such as a shear point, jagged edge or unfinished surface that can cause a cut; (e) create no interference—that is, they shouldn’t prevent workers from doing their work quickly and comfortably; and (f) permit safe lubrication of the machine without having to remove the safeguards.

BRITISH COLUMBIA

1. Safeguards must: (a) protect a worker from contact with hazardous power transmission parts; (b) ensure that a worker can’t access a hazardous point of operation; and (c) safely contain any material ejected by the work process that could be hazardous to a worker (*OHS Reg*., Sec. 12.2); 2. The application, design, construction and use of safeguards, including an opening in a guard and the reach distance to a hazardous part, must meet CSA Standard Z432-94, *Safeguarding of Machinery* (*OHS Reg*.,

Sec. 12.3); 3. A safeguard must be capable of effectively performing its intended function (*OHS Reg*., Sec. 12.4); 4. A fixed guard must not be modified to be readily removable without the use of tools (*OHS Reg*, Sec. 12.5); and 5. A safeguard must be designed, where practicable, to allow lubrication and routine maintenance without its removal (*OHS Reg*., Sec. 12.6).

MANITOBA

1. Safeguards must prevent a worker from coming into contact with the: (a) moving parts on the machine; (b) points of the machine at which material is cut, shaped or bored; (c) surfaces with temperatures that may cause skin to freeze, burn or blister; (d) energized components; (e) debris, material or objects thrown from a machine; (f) material being fed into or removed from the machine; and (g) Any other hazard that may pose a risk to the safety or health of the worker; 2. Employer must ensure that any required safeguard is designed, constructed, installed, used and maintained in accordance with CSA Standard Z432-16, *Safeguarding of Machinery* (*WSH Reg*, Sec. 16.5); 3. **Exception:** If it's not reasonably practicable to provide a safeguard on a machine, employer must ensure that an alternative mechanism, system or change in work procedure is put into place that offers protection to a worker that's equal, or greater to, the protection provided by a safeguard (*WSH Reg*, Sec. 16.6); 4. No person may remove or make a safeguard ineffective unless it's necessary to perform servicing, repairs, tests, cleaning, maintenance or adjustments on or to the machinery that can't be done with the safeguard in place, in which case: (a) alternative protective measures must be in place until the safeguard is replaced; (b) the safeguard must be replaced immediately after the task is completed; (c)

the safeguard must function properly once replaced; and (d) the employer must ensure that the worker who removes or makes the safeguard ineffective properly locks out the machine (*WSH Reg*, Sec. 16.7)

NEW BRUNSWICK

1. Employer must provide adequate safeguards to prevent employee from coming into contact with moving drive or idler belts, rollers, gears, driveshafts, keyways, pulleys, sprockets, chains, ropes, spindles, drums, counterweights, flywheels, couplings, pinchpoints, cutting edges or other hazardous moving parts on a machine, unless machine is equipped with a device that stops the machine automatically before an employee comes into contact with those parts; 2. Employer must install a safeguard strong enough to contain or deflect any flying object if there's a possibility of machine failure that may result in an injury to an employee from a flying object; 3. No employer or employee may alter the design of a machine that's been designed with a safeguard that interlocks with the machinery control so as to prevent the operation of the machine unless the safeguard is in its proper place; 4. If an employer determines that an adequate safeguard for a machine can't be provided, the employer must ensure that a physical modification of the machine is carried out or a change in work procedure is put into place to protect employees from being exposed to the hazards associated with the lack of an adequate safeguard (*OHS Gen Reg*, Sec. 242)

NEWFOUNDLAND

1. Employer must ensure that machinery and equipment is fitted with adequate safeguards that: (a) protect an employee from contact with hazardous power transmission parts; (b) ensure

that an employee cannot access a hazardous point of operation; and (c) safely contain material ejected by the work process that could be hazardous to an employee (*OHS Regs*, Sec. 89); 2. The application, design, construction and use of safeguards, including an opening in a guard and the reach distance to a hazardous part, must meet CSA Standard Z432, *Safeguarding of Machinery* (*OHS Regs*, Sec. 90); 3. A safeguard must be capable of effectively performing its intended function; 4. A fixed guard must not be modified to be readily removable without the use of tools; and 5. A guard must be designed, where practicable, to allow lubrication and routine maintenance without the removal of the guard (*OHS Regs*, Sec. 91)

NOVA SCOTIA

1. Employer must ensure an adequate safeguard is installed on a machine to prevent contact with a hazardous moving part of the machine, unless the machine is equipped with a device that stops it automatically before a person comes into contact with the moving parts; 2. **Exception:** If it's not reasonably practicable to use a safeguard on a cutting or shaping machine and there's a possibility of injury to a person, employer must: (a) ensure that a push block, push stick or other adequate protective device is used; and (b) establish a written procedure to ensure the safety of the machine operator; 3. No person may remove or render a machine safeguard ineffective unless: (a) the removal or rendering is necessary to enable the cleaning, maintenance, adjustment, testing or repair of the machine; (b) the machine is locked out; and (c) the person replaces the safeguard and ensures it's functioning properly before leaving the machine; 4. Employer must ensure that adequate safeguards are installed on a machine where a person may be injured by a flying object from a machine; 5. If an object or

material is to be applied to, fed into or supplied to a machine or tool and the object or material may shatter, splinter, vibrate, create a flying projectile or otherwise cause hazardous movement because it's not secure, employer must ensure that the object or material is held by a restraining device or other means providing an equivalent level of safety; 6. Where opening an access door exposes the moving parts of a machine or tool, employer must ensure, where reasonably practicable, that the access door is fitted with interlocks that: (a) prevent the access door from opening while the moving parts are in motion; or (b) disconnect the power from the driving mechanism, causing the moving parts to stop immediately if the door is opened; **Exception:** If it's not reasonably practicable to fit an access door with interlocks, employer must, in consultation with workplace JHSC or safety representative, if any, establish an adequate written work procedure (*Occ Safety Gen Regs*, Sec. 87)

ONTARIO

1. A machine or prime mover or transmission equipment that has an exposed moving part that may endanger the safety of any worker must be equipped with and guarded by a guard or other device that prevents access to the moving part (*OHS Ind. Ests. Reg*, Sec. 24); 2. An in-running nip hazard or any part of a machine, device or thing that may endanger a worker must be equipped with and guarded by a guard or other device that prevents access to the pinch point (*Reg.*, Sec. 25); and 3. Machine must be shielded or guarded so that the product, material being processed or waste stock doesn't endanger a worker (*Reg*, Sec. 26)

PRINCE EDWARD ISLAND

1. Employer must ensure that all moving parts of machines are effectively safeguarded unless: (a) they're so constructed or located as to prevent a person or object from coming in contact with them; or (b) guarding would unreasonably interfere with the operation of the machinery (*OHS Act Gen Regs*, Sec. 30.2); 2. Employer must provide effective safeguards where a worker may come into contact with moving belts, rollers, gears, drive-shafts, keyways, pulleys, sprockets, chains, ropes, spindles, drums, counterweights, flywheels or couplings on machinery, pinchpoints and cutting edges, unless the machine is equipped with an effective device which stops the machinery automatically when a worker comes into contact with the above parts or prevents a worker from coming in contact with the parts (*Regs*, Secs. 30.9(1) + (2)); 3. Employer must install safeguards strong enough to contain or deflect the broken parts or particles of the machinery and flying particles of any product if there's a possibility of machine failure that may result in an injury to a worker from flying objects (*Regs*, Sec. 30.9(3)); 4. Employer and worker may not alter the design where machines are designed with guards that interlock with the machinery control so as to prevent operation of the machine unless the guard is in its proper place (*Regs*, Sec. 30.9(4)); and 5. If it's determined that an effective safeguard can't be provided, employer must ensure that an alternative mechanism, system or change in work procedure, approved by a govt. OHS officer, is put into place to protect workers from being exposed to the hazards associated with the lack of the safeguard (*Regs*, Sec. 30.9(5))

QUÉBEC

1. If it’s impossible for a machine to be designed and manufactured so as to render its danger zones inaccessible, the resulting risks must be eliminated or reduced to the lowest possible level by installing at least one of the following: (a) where access to the danger zone isn’t required during normal operation of the machine: (i) a fixed guard; (ii) a movable interlocking guard with or without a locking device; (iii) sensitive protective equipment; and/or (iv) a self-closing guard; (b) where access to the danger zone is required during normal operation of the machine: (i) a movable interlocking guard with or without a locking device; (b) sensitive protective equipment; (iii) a self-closing guard; (iv) a two-hand control device; (v) a guard with a start function; and/or (vi) a manually adjustable guard; 2. Access to a machine’s movable energy transmission elements must be protected by a fixed guard or a movable interlocking guard with or without a locking device; 3. Appropriate means of protection must be selected using recognized principles and methods to assess and reduce risk, such as those set out in CSA Z432, *Safeguarding of Machinery*, and ISO 12100, *Safety of machinery – General principles for design – Risk assessment and risk reduction*, and in accordance with sections 181 to 185 of the *OHS Regs*., where applicable (*OHS Reg*, Sec. 177); 4. A guard or protective device must be designed and installed in accordance with trade practice and must, in particular: (a) be constructed in a sufficiently robust manner to withstand the stresses to which it can be subjected; (b) remain effective while the machine is being used by being held firmly in place while taking its environment into account; (c) be located at a safe distance from the danger zone; (d) not give rise to any additional risk or be in itself a source of danger because, for example, of

sharp edges or angular parts; and (e) not be easily bypassed or rendered inoperative (*OHS Reg*, Sec. 181); and 5. Steps must be taken to manage "residual risks" remaining after appropriate means of protection is implemented, or when it's foreseeable that the effect of installing a means of protection on a machine will render the function for which it was designed "reasonably impractical," including: the residual risks must be identified and measures to control and reduce them must be taken, including (a) working procedures and methods for the safe use of the machine that are consistent with the expected proficiency of the workers using the machine or of other persons who may be exposed to the machine's danger zone; (b) training necessary to ensure the safe use of the machine; (c) identifying and providing required training on all PPE that must be worn when using the machine; and (d) disclosure of sufficient information, including warnings, about the residual risks (*OHS Reg*, Sec. 178)

SASKATCHEWAN

Employer or contractor must: 1. Provide an effective safeguard if a worker may contact: (a) a dangerous moving part of a machine; (b) a pinch point, cutting edge or point of a machine at which material is cut, shaped, bored or formed; (c) an open flame; (d) a steam pipe or other surface with a temperature that exceeds or may exceed 80°C; or (e) a cooled surface that is or may be less than -80°C; **Exception:** Safeguard not required for: (a) a machine equipped with an effective safety device that stops the machine automatically before any part of a worker's body comes into contact with a hazard; or (b) a belt, rope or chain operated from a cathead or capstan; 2. Ensure that a safeguard removed from a machine or made ineffective to permit maintenance, testing, repair or adjustment of a machine is replaced or made effective before a worker is required or permitted to use the machine; and 3.

Install safeguards that are strong enough to withstand the impact of debris from the machine failure and to contain any debris resulting from the failure if there's a possibility of machine failure and injury to a worker resulting from the failure to contain debris (*OHS Regs*, Sec. 10-4)

NORTHWEST TERRITORIES & NUNAVUT

Employer must: 1. Provide an effective safeguard if a worker may contact: (a) a dangerous moving part of a machine; (b) a pinch point, cutting edge or point of a machine at which material is cut, shaped, bored or formed; (c) an open flame; (d) a steam pipe or other surface with a temperature that exceeds or may exceed 80°C; or (e) a cooled surface that is or may be less than -80°C; **Exception:** Safeguard not required for: (a) a machine equipped with an effective safety device that stops the machine automatically before any part of a worker's body comes into contact with a hazard; or (b) a belt, rope or chain operated from a cathead or capstan; 2. Ensure that a safeguard removed from a machine or made ineffective to permit maintenance, testing, repair or adjustment of a machine is replaced or made effective before a worker is required or permitted to use the machine; and 3. Install safeguards that are strong enough to withstand the impact of debris from the machine failure and to contain any debris resulting from the failure if there's a possibility of machine failure and injury to a worker resulting from the failure to contain debris (*OHS Regs*, Sec. 145)

YUKON

1. Machinery and equipment must be fitted with proper and adequate safeguards that: (a) protect a worker from contact with hazardous power transmission parts, (b) ensure that a worker can't access a hazardous point of operation, (c) safely contain any material ejected by

the work process, which could be hazardous to a worker, and (d) meet all the requirements of CSA Standard Z432-04, Safeguarding of Machinery, or other similar standard acceptable to the board (*WSC Regs*. Sec. 7.02); 2. A safeguard provided on machinery or equipment must: (a) be capable of performing its intended function, (b) be designed, where practicable, to allow lubrication and routine maintenance without the removal of the guard, (c) be removed or made inoperable only after the machine is locked out as required by the Regs., (d) be modified or readily removable only with the use of tools when it's a fixed guard, and (e) when designed with an opening in the guard, have a reach distance to hazardous parts that meets Appendix A of CSA Standard Z432-04, *Safeguarding of Machinery*, or other similar standard acceptable to the board (*WSC Regs*, Sec. 7.03); 3. Effective guards shall be in place wherever workers are exposed to or may contact: (a) rotating parts on machines or transmission equipment, such as friction drives, shafts, coupling and collars, set screws and bolts, keys and key-ways, and projecting shaft ends, (b) a crank, connecting rod, tail rod, extension piston rod or other reciprocating or oscillating part, or (c) the in-running nip point of a power transmission belt, rope or chain, and any portion of a flywheel or pulley located within 2.5 m (8 ft.) of a floor, walkway or platform; and 4. All pinch points of any machine and the cutting edges of all power driven tools shall be properly guarded or provided with a device to prevent accidental contact with workers (*WSC Regs*, Sec. 7.06)