Conveyor Safety – Know the Laws of Your Province

Conveyors require additional machine guarding measures.

In addition to general machine guarding and lockout/tagout rules, OHS regulations require employers to take additional measures to prevent conveyor injuries. Here's a look at the rules in each part of Canada

Conveyor Safety Requirements

FEDERAL

Employer must ensure that conveyors: (a) Are equipped with machine guard, if feasible, that's not removable, and that: i. prevents employees from making contact with moving parts, ii. bars employee access to area of exposure to hazard, or iii. makes the machine inoperative if employees or any part of their clothing are in or near a part of the machine that's likely to cause injury; and (b) Meets the design, construction, operation and maintenance of most recent version of American Society of Mechanical Engineers Standard ASME B20.1-1993 (*COHS Regs*, Secs. 13.13 and 14.19)

ALBERTA

Employer must ensure that:

(a) Conveyors are equipped with a machine guard that: i. prevents a worker's hands, arms and any other body part from making contact with dangerous moving parts, ii. is secure so workers can't easily remove or tamper with it, iii. protects moving parts from the entry of falling objects, such as tools and materials, iv. creates no new hazards, v. doesn't prevent workers from working quickly and comfortably, and vi. allows for safe lubrication of the conveyor without having to remove the safeguards (*Explanation Guide to Part 22 of OHS Code* guidelines); and

(b) An elevated conveyor belt passing over a walkway: i has side walls high enough to prevent materials from falling from it, and ii. runs in a trough strong enough to carry the weight of a broken chain, rope, belt or other material that falls from the conveyor (*OHS Code*, Sec. 372(1))

BRITISH COLUMBIA

General Guarding: Employer must ensure that machinery and equipment is fitted with adequate safeguards which: i. protect a worker from contact with hazardous power transmission parts, ii. ensure that a worker can't access a hazardous point of operation, and iii. safely contain any potentially hazardous material ejected by the work process (*OHS Reg*, Sec. 12.2)

Additional Requirements for Conveyors: Employer must ensure that conveyors: (a) Meet ANSI/ASME B20.1-1993 (*OHS Reg*, Sec. 12.22); (b) Ensure that if the feed point can't be guarded because of the work process, all workers in the area have and use safety belts, lanyards or other suitable devices and tools to prevent contact with moving parts of the conveyor system (*OHS Reg*, Sec. 12.25); (c) Have guards or sideboards to prevent potentially hazardous material from falling into areas occupied by workers (*OHS Reg*, Sec. 12.27); (d) Have an emergency stopping system (unless worker access to the conveyor is prevented by guarding) that's designed and installed so that the system activate as a worker falls onto the conveyor, or if a fallen worker on the conveyor moves an arm or leg off to one side of the conveyor, or if the emergency stopping system uses a pull wire, the system activates by a pull of the wire in any direction, or by a slack cable condition (*OHS Reg*, Sec. 12.28); and (e) Aren't restarted after an emergency stop until inspection determines it can be operated safely (*OHS Reg*, Sec. 12.28)

Specific Conveyor Types: Employer must ensure that: (a) A belt conveyor has accessible nip points of spools and pulleys guarded to prevent contact by a worker (*OHS Reg*, Sec. 12.23); (b) Moving parts of a screw-type conveyor are guarded from contact by a worker, with each guard secured by fasteners requiring a tool for removal and the openings in mesh and grid guards meeting Appendix A of CSA Z432-94 (*OHS Reg*, Sec. 12.24)

MANITOBA

General Guarding: Employer must ensure that a machine has safeguards that: (a) Prevent a worker from coming into contact with moving parts, energized components, debris, material or objects thrown, material being fed into or removed or any other hazard that may endanger a worker; and (b) Meet CSA Z432-16 (*WSH Reg*, Sec. 16.5)

Additional Requirements for Conveyors: Employer must ensure that: (a) Conveyor has an emergency stopping system that's readily accessible to workers working at the conveyor unless access to the conveyor is prevented by guarding or other means; (b) The emergency stopping system is designed and installed so that manual resetting is required before the conveyor can be restarted after an emergency stop; (c) A conveyor can't be restarted after an emergency stop until an inspection finds it can be operated safely; (d) If the emergency stopping system uses emergency stop pull-cords: i. the pull-cords are clearly visible and readily accessible at the operator's normal control station and other appropriate points, and (ii) the system is activated when: x. the pull-cord is pulled in any direction, y. the pull-cord breaks, or z. the failure of a single spring in the pull-cord assembly occurs; and (e) If an elevated conveyor crosses over a place where a worker may pass or work, a suitable guarding system is provided to prevent materials on the conveyor from falling on the worker (*WSH Reg*, Sec. 16.19)

NEW BRUNSWICK

General Guarding: 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 moving parts (*OHS Gen Reg*, Sec. 242)

Additional Requirements for Conveyors: Employer must ensure that conveyor: (a) Is constructed and installed so that: i. there's sufficient clearance between the material transported and any fixed or moving object, ii. shearing points between moving and stationary parts are avoided, and iii. the conveyor can't feed onto a stopped conveyor; (b) Has emergency stop devices at loading and unloading stations, drive and take up sections, and other convenient places along the run of the conveyor; (c) Installed underground or in any other place where a belt fire of the conveyor may endanger an employee's life is made of fire resistive material, or protected by an adequate automatic fire extinguishing system; (d) That carries a load up an incline is equipped with an anti-rollback device (*OHS Regs*, Secs. 255 to 257); (e) Where employee access to an elevated conveyor is necessary, ensure that the elevated conveyor has a walkway along its entire length that's no less than 500 mm wide and equipped with guardrails; (f) If an employee must cross over a conveyor, ensure that adequate crossing facilities are provided (*OHS Regs*, Sec. 258); (g) Has sheet metal or screen guards installed under or along side the conveyor if it's not entirely enclosed so as to prevent material from falling; and (h) Has adequate safeguards extending 1 m from the pulleys and along the sides of the conveyor if employees in proximity to the conveyor may be in danger (*OHS Regs*, Sec. 258)

Conveyor-Specific Requirements: (a) Inclined bucket conveyors must be enclosed with a solid safeguard that has one or more wire glass windows and that's at least 2.1 m in height (*OHS Regs*, Sec. 259(3)); (b) Screw conveyors must: i. be placed in metal troughs fitted with secured covers of no less than 3 mm thick metal plates in removable sections or of other material providing equivalent protection, and ii. have adequate safeguards around the opening when fed from the floor level (*OHS Regs*, Secs. 259(4) and (5)); and c. Enclosed or pneumatic conveyors must: i. if used for carrying combustible or flammable material of an explosive nature, have an adequate explosion prevention system or safety relief vents leading as directly as possible to the outside air and not connecting with any chimney pipe, vent or flue used for any other purpose, ii. if non-escape of materials being carried on an enclosed conveyor is essential, the safety relief vent outlets on the conveyor must have counter-balanced relief valves, iii. a fan for a pneumatic conveyor must be made of fire resistive material, secured to a substantial support or foundation, located, arranged and guarded so as to afford ready and safe access for maintenance, and provided with remote controls in addition to normal operating controls, iv. the blades and spiders of the fan of a pneumatic conveyor through which flammable materials are passed must be made of non-ferrous material and the casing of the fan must be lined with non-ferrous material, v. intake openings of fans for a pneumatic conveyor must be protected with metal screens or gratings, and vi. precautions must be taken to ensure employee isn't drawn into the opening of a pneumatic conveyor 300 mm in width or larger into which materials are fed by hand (*OHS Regs*, Sec. 260)

NEWFOUNDLAND

General Guarding: Employer must ensure that machines are fitted with adequate safeguards that: (a) protect an employee from contact with hazardous power transmission parts; (b) ensure an employee can't access a hazardous point of operation; and (c) safely contain material ejected by the work process that could be hazardous to an employee; and (d) meet CSA Z432 (*OHS Regs*, Secs. 89 and 90)

Additional Requirements for Conveyors: Conveyors must: (a) meet ANSI/ASME B20.1-1993; (b) have guards or sideboards to prevent material from falling into areas occupied by workers if the falling material creates a risk of injury; (c) have an emergency stopping system except where worker access to the conveyor is prevented by guarding; (d) if the emergency stopping system uses a pull wire, the system must activate by a pull of the wire in any direction, or by a slack cable condition; (e) have an emergency stopping system that's designed and installed so that after an emergency stop manual resetting is required before the conveyor can be restarted; and (f) not be restarted after an emergency stop until inspection has determined it can be operated safely (*OHS Regs*, Sec. 100)

NOVA SCOTIA

(a) Employer must ensure that a conveyor is constructed or installed so that: i. there's adequate clearance between the material transported on the conveyor and a fixed or moving object, ii. pinch points that a person may come into contact with are adequately guarded, and iii. the conveyor can't feed onto a stopped power-driven conveyor, or that written procedures are established that provide an equivalent level of safety (*Occ Safety Gen Regs*, Sec. 93(2)); (b) If a person in the workplace has access to a power-driven conveyor, employer must ensure that emergency stop devices are installed at designated work stations and other appropriate locations along the run of the conveyor (*Occ Safety Gen Regs*, Sec. 93(3)); (c) If a person must cross over a conveyor, employer must: i. provide an adequate means of crossing the conveyor, and ii. identify the crossing point by adequate means (*Occ Safety Gen Regs*, Sec. 94); (d) If a conveyor is installed at a height that may result in falling objects causing injury, employer must ensure that: i. it's equipped with guards or other adequate protection to prevent the material from falling, or ii. adequate barriers are installed that prevent a person from being under the conveyor while it's running (*Occ Safety Gen Regs*, Sec. 95); and (e) If the rollback of the load or belt creates a hazard, an employer must ensure that an anti-rollback device is installed on a conveyor that carries a load up an incline to prevent the belt or the load from rolling back (*Occ Safety Gen Regs*, Sec. 96)

ONTARIO

General Guarding: (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 (*Industrial Establishments Reg*, Sec. 24); (b) 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 (*Industrial Establishments Reg*, Sec. 25); and (c) Machine must be shielded or guarded so that the product, material being processed or waste stock

doesn’t endanger a worker (*Industrial Establishments Reg*, Sec. 26)

Additional Requirements for Conveyors: (a) Portions of conveyors that aren’t visible from the control station, and where starting up may endanger any worker must be equipped with automatic start-up warning devices (*Industrial Establishments Reg*, Sec. 33); (b) Guards must be provided beneath conveyors that pass over any worker, or from which falling material, including broken conveyor parts, may be a hazard to a worker (*Industrial Establishments Reg*, Sec. 34); and (c) Overhead protection must be provided where falling material may endanger a worker (*Industrial Establishments Reg*, Sec. 35)

PRINCE EDWARD ISLAND

General Guarding: 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)

Additional Requirements for Conveyors: Employer must ensure that: (a) a conveyer is so constructed and installed that: i. sufficient clearance is provided between the material transported and fixed or moving object, ii. hazardous shearing points between moving and stationary parts are avoided, and iii. no conveyer can feed onto a stopped conveyer; and (b) a power driven conveyer to which a worker has access is provided with emergency stop devices at: i. loading and unloading stations, ii. drive and take up sections, and iii. other convenient places along the run of the conveyer (*OHS Act Gen Regs*, Sec. 30.16)

QU□BEC

(a) Carrying elements of conveyors must be designed to safely support the loads hauled (*OHS Reg*, Sec. 265); (b) Belts, chains, gears, drive-shafts, drums, sheaves, chain pinions of conveyor installations must be guarded, if they’re located 2.1 m or less above the floor or working platform (*OHS Reg*, Sec. 266); (c) Conveyors should ‘preferably’ not be installed above passages and work stations; otherwise they must be provided with guardrails to prevent objects from falling (*OHS Reg*, Sec. 267); (d) The emergency stop device of a conveyor to which workers have access comprises several control devices located at loading and unloading piers as well as at other points along the conveyor’s itinerary. In addition, these devices must have the following features: i. they’re easily visible, ii. one single action activates them, and iii. they’re clearly identified (*OHS Reg*, Sec. 270); (e) The resetting of the emergency stop device after it’s used must not by itself cause the start-up of the machine, unless the conveyor is moving slowly and workers can have access to it safely (*OHS Reg*, Sec. 270); and (f) A bucket conveyor must be: i. covered on all sides and from top to bottom, and ii. equipped with doors or removable panels to facilitate inspection, cleaning and repairs (panels must be equipped with an interlocking device) (*OHS Reg*, Sec. 271)

SASKATCHEWAN

General Guarding: Employer must 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 -80øC (*OHS Regs*, Sec. 10-4)

Additional Requirements for Conveyors: If an elevated conveyor crosses over a place where a worker may pass or work, employer must ensure that suitable precautions are taken to prevent materials on the conveyor from falling on the worker (*OHS Regs*, Sec. 9-6)

NORTHWEST TERRITORIES & NUNAVUT

General Guarding: Employer must 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 -80øC (*OHS Regs*, Sec. 145)

Additional Requirements for Conveyors: If an elevated conveyor crosses over a place where a worker may pass or work, employer must ensure that suitable precautions are taken to prevent materials on the conveyor from falling on the worker (*OHS Regs*, Sec. 123)

YUKON

(a) Conveyors must meet ANSI Standard B20.1-2000, or other similar standard acceptable to the director; (b) Openings in mesh and grid guards must meet Appendix A of CSA Z432-04, or other similar standard acceptable to the director; (c) Conveyor must have guards or sideboards to prevent material from falling in areas occupied by workers if the falling material poses a hazard; (d) Conveyor must have an emergency stopping system (unless guarding prevents access to the conveyor and possible contact with the moving parts) that’s designed and installed so the system: i. activates if a worker falls onto the conveyor, or if a fallen worker on the conveyor moves an arm or leg off to one side of the conveyor, ii. activates by the pull of the wire or cord in any direction or by a slack cable condition if a pull wire or cord is used as an emergency stopping device, and iii. reactivates only after the controls have been manually reset after an emergency stopping; (e) Conveyors must only be restarted after an emergency stop if the conveyor has been inspected to determine that it can be operated safely; (f) The moving part of a screw type conveyor must be properly guarded to prevent worker contact and the guard secured in place with fasteners that require tools to remove; (g) Elevated conveyors must have walkways with guardrails over them if workers must walk across them; and (h) Each time a conveyor is started, an audible warning alarm must sound before movement of the conveyor (*OHS Regs*, Sec. 7.13)