Powder Actuated Tools Safety – Know the Laws of Your Province

What you must do to protect workers who operate powder actuated.

A powder actuated tool is literally a loaded gun. But instead of bullets, it fires nails, bolts, clips or pins at great speeds into a hard object or material, such as steel or concrete. And like a gun, powder actuated tools must be handled, used and stored with great care by properly trained operators who know what they're doing. All jurisdictions require employers to take specific measures to protect workers who use these tools. Here's a summary of the requirements in each part of Canada.

OHS Powder Actuated Tools Requirements

FEDERAL

(1) Explosive actuated fastening tools must meet CSA Z166-1975, *Explosive Actuated Fastening Tools*, (June, 1975); (2) Employees may not operate explosive actuated fastening tool unless employer authorizes them to do so; and (3) Employees must operate explosive actuated fastening tool in accordance with CSA Z166-1975 (*COHS Regs*., Sec. 13.7)

ALBERTA

Worker must not allow the trigger of an actuated fastening tool to be mechanically held in the 'ON' position unless the manufacturer's specifications permit the tool to be used that way (*OHS Code*, Sec. 374)

BRITISH COLUMBIA

(1) Powder actuated fastening system, consisting of the tool, power loads and fasteners must meet ANSI A10.3-1995, *American National Standard for Construction and Demolition Operations ' Safety Requirements for Powder-Actuated Fastening Systems*; (2) Must use a low velocity powder actuated tool, with a fastener test speed rating of less than 100 m (330 ft) per second, unless no low velocity tool available on the market is capable of doing the fastening task; (3) Two separate and distinct operations must be required to activate a powder actuated tool and

the final firing movement must be separate and after depressing the tool into the firing position; (4) The tool must be designed so that positive means of varying the power level is available, or can be made available, enabling the operator to select a power level appropriate for the work; (5) Powder actuated tool must be marked with the manufacturer's name or trademark, model number and serial number; (6) A guard or accessory for use with a powder actuated tool must be marked with the manufacturer's name or trademark; (7) When not in use, a powder actuated tool must be unloaded and the tool and power loads must be securely stored and accessible only to qualified and authorized persons; (8) Power loads of different power levels and types must be kept in different compartments or containers; (9) A powder actuated tool or power loads may be handled or used only by a qualified person may handle or use who, when using or servicing the tool, has immediately available: (a) a copy of the manufacturer's operating instructions for the tool, (b) a copy of the power load and fastener charts for the tool, and (c) any accessories or tools needed for use or field servicing of the tool, including personal protective equipment; (10) A powder actuated tool must not be used in an explosive or flammable atmosphere; (11) A powder actuated tool may only be loaded when it's being prepared for immediate use, and must be unloaded at once if work is interrupted after loading; (12) A powder actuated tool must not be pointed at any person; (13) If a powder actuated tool misfires, the operator must hold the tool firmly against the work surface for at least 5 seconds, then follow the manufacturer's instructions for such occurrences, and until the cartridge has been ejected, keep the tool pointed in a direction which won't cause injury to any person; (14) A powder actuated tool fastener must not be driven into very hard or brittle materials, such as cast iron, glazed tile, hardened steel, glass block, natural rock, hollow tile, and most brick; (15) A powder actuated tool fastener may only be driven into easily penetrated or thin materials or materials of unknown resistance if the receiving material is backed by a material that will prevent the fastener from passing completely through; (16) A powder actuated tool fastener must not be driven into steel within 13 mm (1/2 in) of an edge, or within 5 cm (2 in) of a weld except for special applications permitted by the tool manufacturer; (17) Except for special applications recommended by the manufacturer, a powder actuated tool fastener may not be driven into masonry materials: (a) within 7.5 cm (3 in) of an unsupported edge with a low velocity tool, or (b) within 15 cm (6 in) of an unsupported edge with a medium or high velocity tool; and (18) A powder actuated tool fastener must not be driven: (a) into concrete unless material thickness is at least 3 times the fastener shank penetration, (b) into any spalled area, or (c) through existing holes unless a specific guide means, as recommended and supplied by the tool manufacturer, is used to assure positive alignment (*OHS Reg*., Secs. 12.51 ' 12.57)

MANITOBA

No specific WSH rules for powder actuated fastening tools

NEW BRUNSWICK

Owner of a powder actuated tool must ensure that: (a) the tool, power load and fastener meet ANSI A10.3-1995, *American National Standard for Construction and Demolition Operations – Safety Requirements for Powder-Actuated Fastening Systems*, (b) the tool is legibly and durably marked to show the manufacturer's name or trademark and the model and serial number, (c) guards for the tool are legibly and durably marked to show the manufacturer's name or trademark, (d) the

powder load of each cartridge for the tool is clearly identified, (e) boxes of fasteners for the tool are legibly and durably marked to show the manufacturer's name or trademark and the type or size of fastener, and (f) the tool has a storage container at the place of employment (*OHS Gen. Reg.,* Sec. 87)

Employer must ensure that: (a) no employee operates a powder actuated tool unless the employee (i) has been trained in the use of the tool's specific make and model and has a valid operator's certificate, (ii) is competent to use the tool, and (iii) is authorized to use the tool, and (b) all powder actuated tools and their explosive charges are kept in a storage area accessible only to persons who are authorized to handle them (*OHS Gen. Reg.,* Sec. 88)

Employee who uses a powder actuated tool must: (a) inspect the tool thoroughly before using it, paying particular attention to the cleanliness of the chamber and barrel; (b) load the tool only after inspection reveals that the breech and barrel are free of foreign matter and only to prepare the tool for immediate use; (c) use only cartridges and fasteners designed for the tool; (d) select cartridges of sufficient power to perform the work without the application of excessive force; (e) not use the tool in the presence of flammable or explosive substances; (f) not fire a fastener: (i) through an existing hole unless the tool is specifically equipped by the manufacturer for accurate alignment of the barrel with the hole, (ii) into cast iron, glazed brick or tile, marble, granite, slate, glass or any other unusually hard or brittle material, (iii) into a steel surface that is of greater hardness than the fastener being used, (iv) with a high velocity tool into a hollow concrete block, and (v) until the work area has been checked for employees working in proximity to where the fastener is going to be fired; (g) when the hardness of a surface is not known, use a hand hammer to drive the point of the fastener into the material and not use the tool on that surface if the fastener does not penetrate the surface; (h) if a misfire occurs, continue to hold the tool in a firing position for not less than fifteen seconds and then, until the cartridge has been ejected, keep the tool pointed in a direction which will not cause injury to the user or others; (i) wear suitable eye protective equipment of the close fitting eyecup or cover-goggle type; (j) return unused cartridges to a proper storage box; and (k) operate it in accordance with the manufacturer's specifications (*OHS Gen. Reg.,* Sec. 89)

NEWFOUNDLAND

(1) A powder actuated fastening system, consisting of the tool, power loads and fasteners, must meet: (a) ANSI A10.3-1995 *American National Standard for Construction and Demolition Operations – Safety Requirements for Powder-Actuated Fastening Systems*; (b) CSA Standards for Powder Actuated Devices; or (c) standards of another authority acceptable to the minister; (2) Must use a low velocity powder actuated tool, with a fastener test speed rating of less than 100 metres a second, unless no low velocity tool available on the market is capable of doing the fastening task; (3) 2 separate and distinct operations must be required to activate a powder actuated tool and the final firing movement must be separate and subsequent to depressing the tool into the firing position; (4) Tool must be designed so that positive means of varying the power level is available, or can be made available, to enable the operator to select a power level appropriate to perform the work; (5) Powder actuated tool must be marked with the manufacturer's name or trademark, model number and serial number; (6) When not in use, a powder actuated tool must be unloaded and the tool and power

loads must be securely stored and accessible only to qualified and authorized persons; (7) Powder loads of different power levels and types must be kept in different compartments or containers; (8) A worker may not operate a powder-actuated tool until the worker: (a) has been trained in the use of the specific make and model of tool and has a valid operator's certificate issued by the manufacturer or other qualified instruction agency; (b) demonstrates that they can use the tool effectively and safely; (c) is familiar with the OHS regulations; (d) has been authorized by their supervisor to use the tool; and (e) is wearing the required PPE; (9) When using or servicing a powder-actuated tool, an operator must have immediately available: (a) a copy of the manufacturer's operating instructions for the tool; (b) a copy of the powder load and fastener charts for the tool; and (c) accessories or tools needed for use or field servicing of the tool, including PPE; (10) A powder-actuated tool must not be used in an explosive or flammable atmosphere; (11) A powder-actuated tool may only be loaded where it's being prepared for immediate use, and must be unloaded at once where work is interrupted after loading; (12) A powder-actuated tool must not be pointed at a person; (13) If a powder-actuated tool misfires, the operator must hold the tool firmly against the work surface for at least 5 seconds, then follow the manufacturer's instructions for those occurrences and, until the cartridge has been ejected, keep the tool pointed in a direction that can't cause injury to any person; (14) A powder-actuated tool fastener must not be driven into very hard or brittle materials, including cast iron, glazed tile, hardened steel, glass block, natural rock, hollow tile, and most brick; (15) A powder-actuated tool fastener may only be driven into easily penetrated or thin materials or materials of unknown resistance where the receiving material is backed by a material that prevents the fastener from passing completely through; (16) A powder-actuated tool fastener shall not be driven into steel within 13 millimetres of an edge, or within 5 centimetres of a weld except for special applications permitted by the manufacturer; (17) Except for special applications recommended by the manufacturer, a powder-actuated tool fastener must not be driven into masonry materials: (a) within 7.5 centimetres of an unsupported edge with a low velocity tool; or (b) within 15 centimetres of an unsupported edge with a medium or high velocity tool; and (18) A powder-actuated tool fastener must not be driven: (a) into concrete unless material thickness is at least 3 times the fastener shank penetration; (b) into a spalled area; or (c) through existing holes unless a specific guide means, recommended and supplied by the manufacturer, is used to assure positive alignment (*OHS Regs*., Secs. 105 – 107)

NOVA SCOTIA

Employer must ensure that: (1) A powder-actuated tool is operated by a competent person in accordance with the latest version of ANSI A10.3, *American National Standard for Construction and Demolition Operations – Powder-Actuated Fastening Systems – Safety Requirements*; and (2) A powder-actuated tool, the fastener and powder load complies with the latest version of that same ANSI standard A10.3 (*Occ. Safety Gen. Regs.*, Sec. 108)

ONTARIO

Industrial Establishments: (1) An explosive actuated fastening tool must: (a) have a firing mechanism to prevent the tool from being fired: (i) while being loaded, (ii) during preparation for firing, or (iii) if dropped; (b) be capable of being operated only when the muzzle end is held against a working surface with a force of at least 22 newtons greater than the weight of the tool; (c) if

required to be dismantled into separate parts for loading, be capable of being operated only when the separate parts are firmly locked together; (d) be capable of being fired only after 2 separate and distinct actions are carried out by the operator, with the firing movement separate from the operation of bringing the tool into the firing position; (e) be used only when equipped with a protective guard or shield: (i) suitable for the particular fastening operation being performed, (ii) mounted at right angles to the barrel, (iii) at least 75 millimetres in diameter, and (iv) placed in a central position on the muzzle end of the tool except where the fastener is intended to be driven into a surface at a point within 38 millimetres of another surface that is at an angle to the surface into which the fastener is intended to be driven; (f) be capable of being operated when the guard required under subsection (e) above is placed in the central position only when the bearing surface of the guard is tilted not more than 8 degrees from the working surface; (g) when not in use, be stored in a locked container; (h) not be left unattended where it may be available to a person other than a worker having the appropriate qualifications; (i) whether loaded or unloaded, not be pointed directly at any person; (j) not be loaded unless it's being prepared for immediate use; (k) be used only: (i) by a worker instructed in the proper and safe manner of its use by the manufacturer or the manufacturer's authorized and qualified agent, (ii) by a worker wearing both head protection and eye protection, (iii) after it's been inspected by the worker to ensure that: (A) the tool is clean, (B) all moving parts operate freely, (C) the barrel is free from any obstruction, (D) the tool is adequately equipped for the intended use, and (E) it's not defective, (iv) in accordance with the instructions of the manufacturer, (v) with an explosive load of a strength adequate to perform the intended work without excessive force, and (vi) to drive a stud or other fastener suitable for insertion in the tool; and (l) not be used in an atmosphere containing flammable vapours, gases or dusts; (2) A misfired cartridge that's been removed from an explosive actuated fastening tool must be placed in a water filled container until the cartridge may be properly disposed of after its safe removal from the industrial establishment; (3) An explosive load for an explosive actuated fastening tool must: (a) be so marked or labelled that the operator can readily identify its strength; (b) not be stored in a container where an explosive load of a different strength is stored; (c) not be left unattended where it may be available to a person other than a qualified worker; and (d) be stored in a locked container when not in use; and (4) A hand-held nailing gun or similar tool must be: (a) capable of being operated only when in contact with the work surface; and (b) operated only by a competent person wearing eye protection (*Indust. Ests. Regs.,* Secs. 36 – 38)

Construction: (1) Workers may not use an explosive actuated fastening tool unless they're adequately trained in its use; (2) When using an explosive actuated fastening tool, worker must carry proof of their training in its use; (3) Workers may not use an explosive actuated fastening tool unless they're wearing adequate PPE and eye protection; (4) A worker using an explosive actuated fastening tool shall inspect it before using it to ensure that: (a) it's clean; (b) all moving parts operate freely; (c) its barrel is free from obstruction; and (d) it's not defective; (5) Worker must not use an explosive actuated fastening tool unless it has a suitable protective guard that's: (a) at least 75 millimetres in diameter; (b) mounted at right angles to the barrel of the tool; and (c) centred on the muzzle end of the tool, if practicable; (6) An explosive actuated fastening tool must not be operated unless: (a) its muzzle end is held against a surface using a force at least 22 newtons greater than the force equivalent of the weight of the tool measured in newtons; and (b) when a

protective guard is centred on the muzzle end of the tool, the bearing surface of the guard is not tilted more than 8 degrees from the work surface; (7) An explosive actuated fastening tool designed to require dismantling into separate parts for loading must be inoperable unless the separate parts are locked together; (8) An explosive actuated fastening tool must have a firing mechanism that prevents the tool from being fired if it's dropped or while it's being loaded or prepared for firing; (9) The firing movement for an explosive actuated fastening tool must be a separate action from the operation of bringing the tool into firing position'an explosive actuated fastening tool must not be capable of being fired until the operator performs those 2 separate actions; (9) Every explosive actuated fastening tool must be stored in a locked container when not in use; (10) Explosive actuated fastening tool must not be left unattended when out of its container; (11) Explosive actuated fastening tool must not be loaded unless it's being prepared for immediate use; (12) Explosive actuated fastening tool, whether or not it is loaded, must not be pointed at a person; (13) Every explosive load for an explosive actuated fastening tool must be marked or labelled so that a worker can easily identify its strength, and stored in a locked container unless it's required for immediate use; (14) Explosive load for an explosive actuated fastening tool must not be stored in a container with explosive loads of other strengths, or left unattended where it may be available to a worker who's unqualified to operate an explosive actuated fastening tool; and (15) A misfired explosive load removed from an explosive actuated fastening tool must be placed in a water-filled container on the project until the misfired explosive load is removed from the project (*Const. Projects Reg.*, Secs. 117 – 121)

PRINCE EDWARD ISLAND

Employer must ensure that a powder-actuated fastening system, consisting of the tool, power loads and fasteners, meets ANSI A10.3- 2020, *Safety Requirements for Powder-Actuated Fastening Systems* (*OHSA Gen. Regs.*, Sec. 28.1)

QU□BEC

(1) May only use a low velocity explosive actuated, defined as any tool designed so that when it's used with the maximum explosive charge permitted by the manufacturer's specifications, it imparts to the fastener a speed of no more than 91.4 m per second and transmits to it kinetic energy of no more than 33 joules measured at a distance between 1.99 to 2.01 m from the mouth of the tool; (2) A low velocity explosive actuated tool must be unloaded when not in use and never be left without supervision when it's loaded; (3) Only the manufacturer is allowed to modify a low velocity explosive actuated tool; (4) A low velocity explosive actuated tool may only be operated by a worker with training and a certificate of low velocity explosive actuated tool operator; (5) No work may be performed by a low velocity explosive actuated tool operator who's under 18 years of age; (6) Operator may not use a low velocity explosive actuated tool to drive: (A) fasteners into: (a) curved or rounded objects, except if the tool is equipped with a protective device designed for such work; (b) plaster tiles, hollow bricks or slates; (c) cast iron, marble, granite, glazed linings and other hard and brittle materials; (d) steel or alloys that are harder than the fastener used; (e) hard materials in which holes have already been made, except if the tool is equipped with a device capable of holding back the fasteners; (f) corner bricks or vertical mortar joints; and (g) steel where: (i) the steel is less than 4.83 mm thick; (ii) the point of entry of the fasteners is less than

50 mm from a weld; and (iii.) the point of entry of the fasteners is less than 13 mm from an edge; OR (B) fasteners with a shaft diameter equal to or less than 4.83 mm into concrete where: (a) the concrete is less than 65 mm thick or equal to 3 times the depth of penetration of the shaft of the fasteners; (b) the point of entry of the fasteners is less than 50 mm from an unsupported edge; and (c) the point of entry of the fasteners is less than 75 mm from another fastener that's broken; (7) Before firing, the operator must ensure: (a) that the low velocity explosive actuated tool is placed in a stable firing position and held so that the barrel of the tool is perpendicular to the firing surface; and (b) that there's no other person within firing range; (8) Where a firing incident or misfire occurs, the low velocity explosive actuated tool must be held in its firing position for at least 15 seconds and then unloaded, with the barrel of the tool: (a) not pointed toward the operator or any other person; (b) held pointing obliquely toward the ground; and (c) held as far as possible from the operator's body; (9) Employer must ban use of a low velocity explosive actuated tool in shops or other areas where the concentration of inflammable vapours, gases or dust has reached the lower explosive limit; (10) Employer must ensure that a low velocity explosive actuated tool is: (a) checked before its first use each day; and (b) regularly inspected to detect worn or damaged parts, in accordance with the manufacturer's recommendations; (11) Employer must also ensure that all parts of the low velocity explosive actuated tool have been cleaned after its use and that the safety devices are in proper working order; (12) Only spare parts recommended by the manufacturer may be used; (13) No low velocity explosive actuated tool may be used if any of its parts or accessories is defective; (14) When not in use, a low velocity explosive actuated tool must be placed in a case designed for that purpose and the case must contain: (a) a copy of the manufacturer's instructions for the use and maintenance of the tool; (b) all the accessories and implements necessary for the maintenance of the tool at the work site; and (c) a logbook recording the date of each inspection provided for and the date and type of each repair made; (15) The case and boxes containing the fasteners and cartridges must be put in a place that's kept locked and is inaccessible to unauthorized persons; (16) The operator must: (a) pick up the cartridge cases that exploded as work progresses; (b) properly store unused cartridges; and (c) dispose of used cartridges that didn't explode in accordance with the manufacturer's instructions; (17) The following notices must be permanently affixed and clearly legible on each low velocity explosive actuated tool: (a) the manufacturer's name or trademark; (b) the tool type and model; (c) the strength of the maximum charge permitted by the manufacturer's specifications; (18) The manufacturer's name or trademark must be permanently affixed and clearly legible on the accessories; (19) The following notices must be permanently affixed and clearly legible on each box containing fasteners: (a) the manufacturer's name or trademark; and (b) the nominal dimensions of the fasteners; (20) The following notices must be permanently affixed and clearly legible on each box containing explosive charges: (a) the manufacturer's name or trademark; (b) the place where it was manufactured; and (c) the strength of the explosive charge of the cartridges (*Safety Code for Const*., Sec. 7.1.1.)

Nailing Gun: (1) A nailing gun for framing work must be equipped with a trigger and a nose contact element and operate by dual-action contact-trip command; (2) A nailing gun must be used in a stable position by a person wearing appropriate protective glasses who doesn't point the tool at themselves or any other person; and (3) A nailing gun must be disconnected from its energy source before its maintenance or unblocking (*Safety Code for Const*., Sec. 7.1.2.)

SASKATCHEWAN

Employer or contractor must ensure that: (1) A worker doesn't hold the trigger of an air-actuated fastening tool mechanically in the operating position unless the tool is specifically designed to be used that way; (2) A worker who operates explosive-actuated fastening tool systems is trained in and uses safe work procedures for any explosive actuated fastening tool that the worker may operate, including: (a) the selection of the appropriate tool, accessories, fastener and power load for each application; (b) the limitations of each type of tool, fastener and power load; and (c) the maintenance, inspection and use of the tool; and (3) A worker who operates an explosive actuated fastening tool: (a) doesn't leave the tool or explosive charges unattended; (b) stores the tool and explosive charges in a locked container when not in use; and (c) uses an industrial eye or face protector that meets the requirements of Part 7 of the OHS regulations (*OHS Regs*., Sec. 10-9)

NORTHWEST TERRITORIES & NUNAVUT

Employer must ensure that: (1) A worker doesn't mechanically hold the trigger of an air-actuated fastening tool mechanically in the operating position unless the tool is specifically designed to be used that way; (2) A worker who operates an explosive-actuated fastening tool is trained in and uses safe work procedures for any explosive actuated fastening tool that the worker may operate, including: (a) the selection of the appropriate tool, accessories, fastener and power load for each application; (b) the limitations of each type of tool, fastener and power load; and (c) the maintenance, inspection and use of the tool; and (3) A worker who operates an explosive actuated fastening tool: (a) doesn't leave the tool or explosive charges unattended; (b) stores the tool and explosive charges in a locked container when not in use; and (c) uses an industrial eye or face protector that meets the requirements of Part 7 of the OHS regulations (*OHS Regs*., Secs. 150 – 151)

YUKON

(1) A powder actuated fastening system consisting of the tool, power load and fastener must meet ANSI A10.3-1995, *Powder Actuated Fastening Systems,* or other standard acceptable to the director; (2) Powder actuated tools must be designed so that the tool: (a) requires 2 distinct and separate motions to activate with the firing movement being separate and subsequent to the depressing of the tool into the firing position, and (b) provides for a positive means of varying the power level so that the worker may select and use a power level appropriate to the task; (3) The powder load of each cartridge for the tool must be clearly identified (4) Different power levels and types must be kept in different compartments or containers; (5) A low velocity powder actuated tool with a fastener test speed rating of less than 100 m (330 ft.) per second must be used unless no low velocity tool available on the market is capable of doing a particular fastening job; (6) Boxes of fasteners for the tool must be legibly and durably marked to show the manufacturer's name or trademark and type or size of fastener; (7) The tool must be securely stored in unloaded condition and be accessible only to qualified and authorized workers; (8) Workers operating powder actuated tools must be: (a) adequately trained in the use of the tool, (b) aware of the materials that may or may not be shot into, by a safety officer or an instructor approved by the director; (d) authorized by their supervisor to operate the tool, and (e) wearing proper PPE; and (9) A powder actuated tool

must (a) be used in accordance with the manufacturer’s instructions, (b) only be used in a confined space when it’s properly ventilated, and (c) not be used in an explosive or flammable atmosphere (*OHS Regs.,* Secs. 4.13 – 4.15)