

COMPLIANCE 101: 7 Key Elements of the Explosives Requirements



Explosions aren't generally a good thing in a workplace. In fact, most companies probably have safety measures in place to prevent explosions from occurring. But in some industries, most notably construction, intentional explosions are necessary to, say, clear rock so a road can be built. Such explosions require the use of explosives. However, because explosives are so hazardous and potentially deadly, the OHS regulations across Canada contain detailed requirements on the handling, transportation, use and other aspects of work involving explosives and limit such work to specially trained individuals. The explosives requirements typically cover seven key areas. Here's an overview of those areas.

Defining Our Terms

The OHS regulations typically contain general requirements regarding explosives as well as more specific requirements for certain industries or workplaces, such as mines, and for certain uses of explosives, such as avalanche control or demolition. This article will focus on the general explosives requirements only.

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FOCUS ON 7 KEY AREAS

Across Canada, the OHS regulations have detailed requirements for work involving explosives (the requirements in NT and NU are in a separate law, the *Explosives Use Act* and its related regulations). Some jurisdictions also incorporate requirements from the federal *Explosives Act* and standards, such as *Blasting Explosives and Detonators Storage, Possession, Transportation, Destruction and Sale* (M82'8/1983), Revised 1993, published by Natural Resources Canada. So as always, you must review your jurisdiction's specific requirements and comply with them. However, there are many similarities in the explosives requirements across jurisdictions and they typically address these key areas:

[learn_more caption="1. Storage"]

Explosives are hazardous materials that need to be stored safely. For example, they may need to be stored separately from other hazardous substances or from flammable materials. They should also be stored away from any sources of ignition. And you may need to store explosives in a location with signs clearing indicating the presence of explosives. In addition, you may need to store explosives in a special container, such as a 'day box,' at the worksite or location where they'll be used. (For more information on safely storing hazardous materials such as explosives, see 'Hazardous Substances: Take 6 Steps to Comply with Storage Requirements.')[/learn_more]

[learn_more caption="2. Transportation"]

The requirements for safely transporting explosives can be found in not only the OHS regulations but also the federal *Explosives Act* and the *Transportation of Dangerous Goods Act* (TDGA) and related regulations. So make sure you consult *all* applicable laws. For example, under the TDGA, you should ensure that explosives are transported in the proper containers that bear the appropriate safety marks. (See, 'Hazardous Substances: Complying with TDG Containment Requirements,' March 2008, p. 1.)

Some common requirements in the OHS regulations for safely transporting explosives include:

- Vehicles transporting explosives should have operable fire extinguishers, be in sound mechanical condition and be suitable for safely transporting explosives;
- There should be no passengers in a vehicle transporting explosives except for those assisting with the handling and use of the explosives;
- Explosives should be kept in an appropriate container and not in the passenger compartment; and
- Workers shouldn't be permitted to carry explosives in their clothes, such as in a pocket.[/learn_more]

[learn_more caption="3. Training and Certification"]

Because explosives are so dangerous, only designated individuals who've had the appropriate training or have the proper certification may handle, use or otherwise work with explosives. (See this chart for the requirements under each jurisdiction's OHS regulations as to who may work with explosives.) In general, the OHS regulations permit explosives to be used or handled only by two types of workers:

Certified blasters. In most jurisdictions, only an individual who's typically called a 'blaster' or someone working under the direct supervision of a blaster may work with explosives. In addition, employers may also need to designate a blaster to supervise any blasting operations. To become a blaster, a worker must take specialized training and earned a blaster's certificate. And in general, an individual must be at least 18 years old to qualify for a blaster's certificate.

Workers certified as blasters in one jurisdiction will usually be permitted to work as blasters in another jurisdiction provided that their certification meets certain requirements. For example, BC recognizes blasting certificates from other Canadian jurisdictions if they meet the following criteria:

- Certificates must be valid and up to date;

- The out-of-jurisdiction blasting certificate must have been issued by a Canadian government body or regulatory agency;
- The out-of-jurisdiction blasting certificate is mandatory to perform blasting operations in the issuing province or territory; and
- The scope of activities covered by the out-of-province blasting certificate are similar to the blasting codes that are recognized by the WorkSafeBC blasting certificate.

Blasting certificates are valid for a fixed period of time, such as five years, after which the blaster must get recertified. A blaster's certification can be suspended or revoked if the blaster carries out a blast in an unsafe manner. Blasters should make sure their certificates are available in the workplace and be prepared to produce those certificates if demanded by an OHS inspector.

Competent person. The OHS regulations in ON and PE require work involving explosives to be done by a 'competent' person. (Federal OHS regulations require such work to be done by a 'qualified' person who holds a blasting certificate or other authorization required by the province where the work is being done.) In general, a competent worker is one who's qualified based on knowledge, training and experience to safely perform the assigned work. (For more on who qualifies as a 'competent person,' see 'Compliance 101: What Makes a Worker a 'Competent Person' under OHS Laws'') So although these jurisdictions don't require work involving explosives to be done or supervised by a certified blaster, it's likely that, to be considered qualified or competent for such work, those workers will have to undergo training similar to that required to earn a blaster's certificate.

Insider Says: Blasters aren't the only ones who need training on explosives. *All* workers who work in the vicinity of blasting activities should also be trained on the safe work procedures related to such activities. [/learn_more]

[learn_more caption="4. Use"]

Obviously, the bulk of the explosives requirements focus on the safe use of explosives, including:

- Before explosives are detonated, including drilling the holes for explosives, priming, loading and placing the explosives; and ensuring the area of the blast is clear;
- The explosion itself; and
- After the explosion, including clearing the area, checking for misfires and disconnecting any firing cables.

One of the most critical requirements in this area concerns warning individuals of a blast *before* it occurs. Prior to conducting a blast, the blaster in charge of the operation should ensure the danger area is clear and is kept clear during the blast, such as with guards or flaggers. You may also be required to post warning signs and take steps to block roads. In addition, the blaster should sound an audible warning signal. For example, in BC, the blaster must ensure that an audible signalling device is used to give the following warning signals:

- Before the blast, 12 short whistle signals must be sounded at one second intervals;
- Two minutes must elapse after the last warning signal before initiating the blast; and

- After the blast and after the area has been inspected and found safe, one prolonged whistle signal of at least five seconds duration must be sounded to signify that it's safe to return to the blasting area [Sec. 21.69(1)].

It's important to note that the explosives requirements aren't concerned with just the safety of workers—they're also concerned about protecting the surrounding community, including both individuals and property.

Example: The Yukon Department of Community Services (Department) hired a contractor, who in turn hired a licensed blaster to conduct explosive blasts to remove rock for a road project. During the largest blast, a nearby trailer court was showered with flyrock, which caused property damage and endangered tenants. The Department, the contractor, a supervisor and the blaster were charged with OHS violations. The blaster pleaded guilty; the rest were convicted at trial. The appeals court, in upholding the conviction, ruled that the duties under the OHS laws aren't 'limited to situations where workers are endangered or injured but rather require that work is performed without undue risk to anyone.' The whole purpose of the OHS law is to promote safe work practices *at all times*, including ensuring safety for members of the public who are near the workplace, ruled the court [*R. v. Government of Yukon*, [2012] YKSC 47 (CanLII), June 11, 2012].

Some jurisdictions include specific explosives requirements intended to protect non-workers and property during blasting operations. For example, Sec. 498 of Alberta's *OHS Code 2009* says that if an employer or a blaster is conducting blasting operations in the vicinity of a city, town, village, hamlet, inhabited campsite, other inhabited area, building, railway or road, the employer and the blaster must take adequate precautions against possible injury to persons and damage to property by:

- Limiting the explosive charge to the minimum required to do the job;
- Using a blasting mat or other suitable protective device over the drill hole, bore hole or blasting area;
- Closing roads, trails, paths and other approaches to the blasting area during blasting operations; and
- Placing warning signs or barricades or using flag persons to ensure that no unauthorized person enters or remains in the area that's potentially dangerous. [/learn_more]

[learn_more caption="5. Misfires"]

Explosives don't always explode properly—or explode at all. And misfired explosives pose additional safety hazards. So the explosives requirements typically include a section devoted to misfires. This section generally covers:

- How long the blaster must wait before approaching and assessing the misfired explosive;
- The procedures for assessing the misfire and preventing an accidental explosion;
- Treating the misfire, such as by reblasting the explosive or safely removing it; and
- Determining why the explosive misfired and taking steps to ensure similar misfires don't reoccur. [/learn_more]

[learn_more caption="6. General Safety"]

The OHS regulations also contain various general safety requirements relating to explosives. Some of the most common include:

- Smoking or burning material within 15 metres of explosives is banned;
- Blasting work shouldn't be conducted during or on the approach of a thunder, electrical or dust storm;
- Tools or other implements used to open containers of explosives should be made of non-sparking material;
- Because of the dangers inherent in work involving explosives, some jurisdictions bar blasters from working alone; and
- Requirements for the reporting of the theft or attempted theft of explosives.

So ensure that your safe work procedures for explosives include these general safety requirements.[\[learn_more\]](#)

[\[learn_more caption="7. Recordkeeping"\]](#)

Several jurisdictions, including BC, NB, NL and NS, require blasters to maintain a log or journal of all the blasting work they've performed or supervised. The blaster must keep these records for a designated length of time (typically three to five years) and make them available upon request of an OHS inspector. The OHS regulations may specify the information the blaster's log must contain. For example, Sec. 13(5) of Nova Scotia's *Blasting Safety Regulations* require a blast log to include:

- The date, time and location of the blast;
- The name, address and telephone number of the employer;
- The name, blaster certificate number and signature of the blaster who had direction and control of the blasting operation;
- The distance from the nearest house, residence, shop, church, school or other structure occupied in whole or in part by people;
- The distance from the nearest structure other than one referred to above;
- How the blast was initiated;
- Specified drilling and loading characteristics for each hole or for each group of holes sharing the same characteristics, such as the hole identifier number, hole diameter, spacing and quantity of explosives planned to be loaded in each hole;
- A sketch of the loading pattern for the blast;
- The total quantity of explosives actually loaded into each hole (in kilograms);
- The maximum quantity of explosives per delay (in kilograms);
- The specifics of the delay pattern;
- The number of detonators and period numbers of the detonators used in the blast;
- The resistance in the electric blasting circuit recorded in ohms;
- The type of warning signal used;
- Whether blasting mats were used;
- Whether warning signs were posted on all public roads near the blasting area, leading to the blasting area and leading from the blasting area;
- Whether all roads and approaches were guarded or barricaded;
- The results of the inspection of the blasting area conducted after the blast;
- Whether a misfire occurred; and

- Whether there was any injury to persons or damage to property resulting from the blast.

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BOTTOM LINE

Compliance with any OHS requirements is critical. But because the unsafe use of explosives can often have tragic consequences, complying with the requirements for blasting operations is particularly important. In fact, several jurisdictions consider violations of explosives requirements to be high risk and subject to administrative penalties. So if you use explosives in your operations, make sure you have safe work procedures for their use and that those procedures comply with the explosives requirements in the OHS regulations.