

A 7-phase strategy to prevent the number 2 cause of lost-time injuries.

#### Falls:

- Cause injuries to over 44,000 Canadian workers per year, roughly 110 per day (CCOHS);
- Are the number 2 leading cause of lost time injuries (Assoc. of Workers' Compensation Boards of Canada);
- Cost an average of \$3,500 in direct workers comp costs and up to \$21,000 in indirect costs like replacing workers, fixing equipment and legal fees.

## Vertical v. Same Level Falls

Classifying fall hazards into separate groups makes them easier to control:

- **Same level or horizontal falls**, which account for 66% of fall injuries, include both slips and trips; and
- **Vertical falls from elevation** account for the remaining 34%.

In the real world, horizontal falls often lead to vertical falls. Example: A worker falls off a roof as a result of tripping on an extension cord. Although this game plan covers vertical falls, you'd follow the same approach for preventing same level falls.

### Phase 1. Identifying Vertical Fall Hazards

OHS regulations specify when fall protection to workers working at heights is required based on:

- How high up they are (typically 3 metres/10 feet or higher);
- The surface or platform they work on (e.g., vehicles, scaffolds, sloped rooves); and
- What they're at risk of falling through, on or into (e.g., machinery, hard surfaces, water).

But while the approach is the same, criteria vary by location. Click [here](#) to find when fall protection is mandatory in your jurisdiction.

### Phase 2. Selecting Fall Protection Control Measures

As with any other hazard, total elimination is the preferred method of dealing with vertical fall hazards. If that's not "reasonably practicable, OHS regulations list the measures required to manage fall hazards in rough order of preference based on the standard hierarchy of engineering controls, work controls and PPE.

#### A. Physical Barriers

Engineering controls are an absolute must for vertical fall hazards. In most jurisdictions, the starting point is the use of reasonably practicable physical barriers, including

**Guardrails** consisting of a top rail, intermediate rail and toeboard installed around or in front of an opening to prevent somebody from falling into it. Requirements for guardrail design, construction, installation and use vary. Check your jurisdiction's OHS laws to find out things like:

- How close to the edge the guardrail must be installed.
- The maximum amount of space between rails/toeboard.
- What materials the rails must be made of.
- How much force the guardrail must be capable of resisting.
- The minimum height of the top rail.
- How tall the posts must be and how far apart they can be spaced.

**Protective coverings** are used to seal openings that workers may step, slip or fall into. OHS regulations require that coverings:

- Completely cover the opening.
- Be made of material strong enough to support the expected load without collapsing.
- Be securely fastened or held in place.
- Be clearly identified as covering an opening.

## B. Other Passive Controls

Supplement physical barriers with passive fall protection systems including warning signs and safety nets that cushion any falls that do occur. Safety nets must meet the specific design and use criteria set out in OHS regulations regarding materials, strength, elasticity and how high above the surface they're installed.

## C. Active Fall Protection Systems

The next layer of engineering controls consists of active fall protection systems that prevent or stop falls by securing workers to an anchorage point attached to their bodies via a lifeline or lanyard connected to a harness or safety belt. There are 2 basic types of fall protection systems to consider (in order of preference):

### Compliance Pointer

*Active fall protection systems may be required as either a substitute for or supplement to required physical barriers and passive controls, depending on the jurisdiction and circumstances involved.*

**Travel restraint systems** that prevent falls by limiting workers' mobility so they can't get to the edge or opening.

**Fall arrest systems** that stop falls before the worker hits the ground or dangerous thing below. Before implementing an active fall protection system, check your jurisdiction's OHS rules to find out:

- When that particular system can or must be used.
- The standards each system component must meet (typically a CSA or other voluntary standard).
- How the system must be inspected and maintained.
- The equipment the system must consist of.
- How securely the lifeline must be anchored.
- How strong the ropes and connections must be.

Because they don't prevent falls the way travel restraint systems do, fall arrest systems are lower on the preference list. Another concern with fall arrest systems is that arresting a fall may put too much stress on the body creating physical shock that can injure or even kill the worker. Accordingly, fall arrest systems are subject to stricter design, use and installation requirements regarding:

- How far they can let a worker fall before arresting it; and
- How much force they can exert on the worker's body in arresting the fall.

## Phase 3. Implementing Administrative & Work Controls

Controls affecting how the work is done are the next level in the hierarchy after engineering controls. Key work controls for vertical fall hazards include:

**Fall protection programs** setting out a complete plan for hazard assessment, system installation, inspection and maintenance, rescue and safety training. Such programs are mandatory in AB, BC, NB, NL, NS, PE, SK and YK.

**Safe work procedures** for working at heights, assembling and disassembling fall protection systems and rescuing workers swiftly and safely after their fall is arrested.

**Equipment inspection and maintenance** including daily field inspection before each use to check for dangerous defects like:

- Cuts, tears, abrasions, burns, mould, stretching, corrosion and other damage.
- Cracked, broken or deformed D- and O-rings or snaphooks
- Unauthorized repairs or alterations that harm equipment effectiveness.
- Water damage or corrosion in ropes.
- Distorted hooks and faulty hook springs.
- Loose, damaged or non-functioning parts and mountings.

You also need a mechanism for workers to report damages and defects and ensure that defective equipment is taken out of service immediately. Reinspect fall arrest systems and their components after each incident in which a fall is arrested.

# Fall Protection – Compliance Game Plan

## Phase 4. Furnishing PPE & Safety Equipment

PPE is the last line of defence used as a supplement rather than a substitute for fall protection systems. PPE for vertical fall hazards may include:

- Full body harnesses attached by a lanyard or lifeline to an independent and secure anchor system;
- Shock absorbers on lanyards or lifelines to cushion the force of arresting the fall;
- Life jackets or flotation devices where work is performed above water or other liquids in which workers could drown;
- Hardhats, knee, elbow and other pads to cushion any falls that do occur;
- Shoes with slip-resistant soles to prevent slips; and
- Rescue equipment like a speed boat or heaving line for work above water.

## Phase 5. Ensuring Workers Have Proper Fall Protection Training

Workers aren't allowed to use a fall protection system (or, in some jurisdictions like Alberta and New Brunswick, even be present at a site where such a system is used) unless and until they successfully complete training in its safe use. At a minimum, such training must cover:

- The fall hazards to which the workers are exposed.
- Assessment and selection of anchors.
- How to inspect and care for the equipment.
- The safe work and rescue procedures to follow.
- The fall protection measures and systems used.
- Proper use of connecting hardware.
- The impact of falls and fall arrest on the human body.

Training must be provided by a competent person and be documented in a record listing the name of the worker and trainer, date of training, topics covered and when training must be renewed. In Ontario and Newfoundland, workers working at heights must take a government-approved fall protection course.

## Phase 6. Coordinating with Contractors

Fall protection must also account for any contractors working at heights at your site. At a minimum, notify contractors of the fall hazards to which their workers will be exposed. Then it becomes a matter of coordinating safety measures with the contractor. How you do that depends on which of you is the legally responsible for carrying out the work safely and in compliance with OHS laws.

**Employer:** If you, as the employer, are in charge:

- Give the contractor your fall protection plan and safe work procedures;
- Require the contractor to communicate the plan and procedures to its workers and ensure that they comply; and
- Have the contractor verify that its workers are properly trained to use the fall protection required.

**Prime contractor:** If the contractor is in charge as a prime contractor or constructor, require it to either:

- Follow your fall protection plan and safe work procedures; or
- Furnish fall protection that meets the requirements of your own plan and procedures as well as your jurisdiction's OHS regulations.

## Phase 7. Monitoring Your Fall Protection Controls

After implementing fall hazard controls, you must continuously monitor them at least once a year and immediately in response to indications that they may no longer be effective or responsive to actual workplace conditions, including after:

- Fall injuries or near misses;
- Major changes to operations, equipment, personnel or other conditions on which your current plan is based; and
- Worker complaints, JHSC recommendations or work refusals.

Source: [ohsinsider.com](http://ohsinsider.com)