

## Ladders in the Workplace

### A versatile tool but also a major source of injuries

Ladders and stepladders are found in almost every workplace and used by virtually everyone. From maintenance staff changing light bulbs in a retirement residence to volunteers putting up Christmas decorations in the church hall, from kitchen staff retrieving items on a high shelf to students decorating the gym, almost everyone feels comfortable using a ladder or a stepladder. The same is likely true in your organization.

It is easy to get the impression that working on a ladder (the official term being ‘working at height’) requires no special knowledge or skills. After all, it seems to be a very simple and straightforward tool. In fact, the opposite is true. Ladders may well be one of the most misused pieces of access equipment. And while they can be very versatile, they have inherent limitations and can pose serious hazards.

**Fact: In Ontario alone, during 2005-2006, there were almost 9,000 emergency department visits and 1,170 hospitalizations for falls from ladders, accounting for more than 6,100 days in acute care hospitals<sup>1</sup>.**

**Fact: In 2003, approximately 1,500 Canadians died as a result of falls from elevations<sup>2</sup>.**

**Fact: Even at a couple of meters off the ground, an awkward fall can kill you<sup>3</sup>.**

All Canadian provinces have regulations for the use of ladders in workplaces and Provincial Occupational Health and Safety Acts include regulations governing stepladders, mobile equipment, scaffolds, platforms and other tools that enable people to work at a height.

### Understanding the risks

Accidents can happen when individuals in your organization use ladders inappropriately, use ladders that are poorly maintained or ladders that are inadequate for the job. Among the many hazards associated with ladders:

- Falling from a ladder
- Being struck by a falling ladder
- Being struck by materials falling from a ladder
- Tripping over a ladder
- Lifting a heavy ladder
- Striking persons or objects when carrying a ladder
- A ladder coming into contact with electrical equipment<sup>4</sup>

## Managing the risks

It is important for your organization to develop **Ladder Safety Protocols and Procedures** that comply with regulations; to provide some safety training/awareness for employees and volunteers with regard to ladder use, handling and storage; and to ensure that everyone follows procedures in order to prevent accidents and injuries.

## Four steps towards ladder ‘best practices’

### 1. Ladder Selection

The first step is to select a CSA-approved ladder that is suited for the task at hand. To do so, you must determine:

- The type of ladder needed – step, straight, extension or platform
- The size/length of ladder required to perform the task (ensuring that work can be reached without stepping on the upper rungs or stretching)
- The kind of ladder material required (aluminum, wood or fiberglass)
- The *combined* weight of the user and materials to ensure that the maximum safe load capacity (Duty Rating) of the ladder can handle it

### 2. Ladder Inspection and Maintenance

Once an appropriate ladder has been selected, it must be thoroughly inspected before set up and use. The ladder should be checked to ensure that it is in good condition, clean and dry, and free from wet paint, oil, mud, dirt or other slippery substances. A checklist should be filled out at every inspection and at every stage of a maintenance program. These checklists should be kept for reference. They should cover such additional items as:

- Are there any defects such as broken or missing rungs, cleats, safety feet or rails?
- Spreaders are sturdy and can be locked in place
- Ropes and pulleys on extension ladders are lubricated and in good repair
- Ladder feet are equipped with slip-resistant surfaces

If any defects are found, the ladder should be withdrawn from use, suitably labeled and set aside for professional repair or safe disposal.

### 3. Ladder Set Up

Before using a ladder, it should be placed on a firm, level and dry surface and fixed to prevent slipping. Where this is not possible – for example, when working on grass – the feet should be tied to stakes in the ground to stop slipping and a large flat board placed underneath the feet to prevent them from sinking into the earth.

## Additional set-up protocols:

- The ladder should only be set against structures capable of supporting the load that they will bear.
- Make sure that the ladder is positioned safely. The recommended angle is 4:1 – that is, 1 foot back for every 4 feet up.
- Ensure the ladder cannot be knocked over by passing traffic. Exclusion zones may be necessary to ensure that unauthorized people do not pass underneath the ladder. In aisles or where there may be the danger of traffic, have someone hold the ladder and post a warning sign, if necessary.
- Both the bottom and upper part of the ladder should be secured by tying the stiles to fixed objects.
- If ladders are used frequently in the same location, affix permanent ladder ties into suitable nearby masonry or brickwork.
- Extension ladders should have an overlap of at least three rungs.
- Be aware of wires, electrical devices and live electrical circuits. Metal ladders, and even wooden ladders that become wet, conduct electricity and can create a danger of electrocution. Failure to follow electrical safety instructions can result in serious injury or death

## 4. Proper Ladder Use

The following are common instructions for safe ladder use:

- Keep your body facing the ladder at all times centered between the stiles
- Don't reach too far forwards or sideways or stand with one foot on the ladder and one on something else
- Allow one metre of ladder length above the highest rung you use. Never stand on the top four rungs.
- Securely engage ladder locks before climbing.
- Do not overreach or overstretch. Make sure the ladder is long enough and positioned to reach the work safely. Climb down and reposition the ladder as often as required
- Keep both hands free to hold onto the ladder as much as possible. If you need to carry tools use a shoulder bag, belt holster or belt hooks
- Maintain a minimum 3 point contact with the ladder: 1 hand and 2 feet on the same rung, as outlined in Canada's Ladder Safety requirements
- Canada ladder safety requirements require that proper footwear, with clean, dry soles and a good grip be worn. Make certain that footwear does not get wet or muddy
- Do not use a ladder in strong winds or if it is raining.
- Be aware of surroundings when carrying ladders. Pay particular attention to overhead obstacles, electrical elements and people around you to avoid striking them.
- Make sure that a good handhold is available.

- Hoist materials or attach them to a belt. Do not carry materials in your hands.
- Make sure that only one person at a time is on the ladder.

Whenever possible:

- Take steps to avoid working at height.
- Lower items to ground level to facilitate maintenance.
- Consider alternative means of access, like scaffolding or mobile elevated platforms (‘cherry pickers’) where these devices would be safer and more appropriate for the task at hand.
- Hire professional contractors with the proper equipment (and insurance) to undertake more complicated jobs – for example, cleaning or repairing gutters, cleaning windows, painting, trimming large trees, etc.

Where it is not feasible to avoid working at height, assess the risks and take measures to prevent falls and associated injuries.

Note that many of the rules for straight ladders apply to stepladders.

## Conclusion

Accidents due to the improper selection, maintenance and use of ladders can result in serious injuries, permanent disabilities and fatalities. Having formal safety precautions and procedures in place can help your organization manage the risks and avoid the hazards. If your organization requires a significant amount of ongoing maintenance, the best approach would be to engage the services of professionals. For more information, review the regulations and ladder safety requirements in your province or territory, as well as information provided by such organizations as the Industrial Accident Prevention Association.

## Sources:

- <sup>1</sup> <http://www.oninjuryresources.ca/downloads/Compass/2009/2009-12-01Compass-ladders.pdf>
- <sup>2</sup> [http://www.worksafebc.com/news\\_room/news\\_releases/assets/nr\\_08\\_02\\_08/If\\_You\\_Fall\\_Off\\_a\\_Ladder.pdf](http://www.worksafebc.com/news_room/news_releases/assets/nr_08_02_08/If_You_Fall_Off_a_Ladder.pdf)
- <sup>3</sup> <http://www.consultnet.ie/Working%20at%20Heights.htm>
- <sup>4</sup> A Health and Safety Guideline for Your Workplace. Industrial Accident Prevention Association, 2008.

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