

## The Importance of **PORTABLE LADDER SAFETY**

By Matthew T. Jacquel

**Ladders are an omnipresent part of our existence. We use ladders in our personal lives, careers, homes, offices, jobsites and outdoors. They are a tool that we all need at some point. You find them at construction sites, in retail stores, in your garage and almost anytime you look into a custodial closet or maintenance room.**

**While it may be** a bit dramatic to say we cannot live without ladders, most would agree that we all need them at some point to complete a variety of tasks.

Yet these wonderfully useful tools are also a significant cause of injury each year. It is not the ladder's fault that people get hurt; it is typically the human's fault. So, what can we do to help decrease the number of ladder injuries each year? This article discusses the lagging data that shows just how dangerous improper ladder use is, how much it costs and how you can decrease the likelihood of injury from ladder use.

### The Issues With Ladders

Ladders come in many sizes and styles. Ladders are now being used that did not exist or were hardly seen 10 years ago. Extension ladders and stepladders are still the most commonly used types, but also gaining use are three-legged ladders, podium deck ladders, articulating ladders and others.

Ladders are made of common materials such as aluminum, wood, fiberglass and steel. Each can serve a different purpose, such as helping to prevent electric shock through conduction, or is made to be lightweight and portable for quick and easy movement. The type of ladder greatly depends on the consumer's needs.

Despite these differences and options, all ladders have one thing in common: their primary purpose is to elevate the user above ground level. In doing so, the user is immediately exposed to the risk of falling from heights. This alone does not make the ladder dangerous, as using the proper ladder with the appropriate setup can be safe or at least safer. Unfortunately, due to their ubiquitous nature and most people's comfort using them, ladders are often misused or used for the wrong purpose. Have you:

- stood on the top step of a stepladder?
- stood on the top cap of a ladder?
- used a stepladder as a means to access an elevated level?
- climbed a stepladder to access that pesky attic entrance?

If answering honestly, most have likely been guilty of these missteps.

These risky behaviors result in a significant number of falls from ladders. The author's company, a construction workers' compensation, general liability and commercial auto insurer, conducted an evaluation of falls that resulted from slips, trips and falls from elevations. The evaluation examined losses reported over a 10-year period (2010 to 2020) and revealed that falls in this category resulted in 1,341 losses totaling nearly \$132 million. (Note: The cost of these losses is a moving number, as some losses may increase or decrease with time. This is especially true for more recently reported injuries.) Falls from ladders occurred in 51% of these reported losses and accounted for 29% of the cost, which equates to around 68 reported falls from ladders each year, costing more than \$3.8 million annually.

These statistics illustrate how vital ladder safety is. Nevertheless, most safety professionals focus on big falls, such as falls from great heights and those that require fall-arresting equipment. As such, it is easy to overlook so-called small falls and the importance of ladder safety when evaluating risks. Indeed, it is natural to focus on the 10 people working on the edge of a building 80 ft in the air but miss the person working on a stepladder 4 ft above ground level (measured at foot level). Yet the data show that it practically comes down to a matter of a coin toss as to who will fall: the person working on a leading edge 80-ft high, or the person working from the ladder.

Another reason we may not notice the person on the ladder is the perception that the person is not working above 6 ft, a number most safety professionals cling to. Legally, this is true. A person standing 4-ft high on a ladder is below the construction standard (but not general industry standard) required for fall protection. We also know that fall protection is not required when using a ladder correctly, although it may be a good idea in some situations.

### What Can Be Done?

To change this view, we should start looking at how high the person's head is

relative to the level below, since head injuries are among the more severe potential injuries. The average heights for men and women in the U.S. are provided in Table 1. From there, we can establish the height of a person's head when working at the height of 4 ft, that is, how far a person's head would travel in the event of a fall from a ladder from that height. The person's head is traveling more than the 6 ft (or even the 4 ft) standard most of us use for compliance. At this height, serious injuries can and do occur. This also does not take into account the weight of the person or the potential injury to a person's back or neck. For perspective, imagine being dropped on your head from a height just below the height of a basketball hoop.

Establishing the person's head height as a cue for concern may change one's perception of how risky working from a ladder is. At the very least, it should help promote additional inspections of ladders to ensure that they are used correctly.

### Hierarchy of Controls

Ensuring that ladders are correctly used (i.e., following manufacturer's recommendations and applicable regulations, and maintaining three points of contact) is an obvious method of reducing the likelihood of ladder incidents. But these are administrative controls, and anyone who has worked where ladders are commonly used can attest to how often people are observed misusing ladders. Administrative policies rank fourth on the hierarchy of controls (i.e., elimination, substitution, engineering controls, administrative controls, PPE). Yet this is the most common method of ladder safety on which we rely.

Why do we rely so heavily on the fourth most effective safety method? Generally, it is because it is easy, and the bottom line is that we need ladders. It is easy to look at someone using a ladder and think, "That looks good. I can move on to other more important tasks." But based on the loss analysis noted, falls from ladders are critically important to address. By consulting the hierarchy of controls, we can increase our chances of preventing ladder incidents.



**TABLE 1**  
**HEAD HEIGHT WHEN**  
**WORKING AT 4-FT**

Average height of U.S. population (age 20+)		Head height when standing 4-ft high on a ladder
<b>Men</b>	69 in. (5 ft 9 in.)	117 in. (9 ft 9 in.)
<b>Women</b>	63.6 in. (5 ft 3.6 in.)	111 in. (9 ft 3 in.)

**Note.** Adapted from "Body Measurements," by National Center for Health Statistics (NCHS), 2021, CDC (<https://www.cdc.gov/nchs/fastats/body-measurements.htm>).

## Elimination & Substitution

When it comes to ladders, elimination and substitution are closely related. Eliminating the ladder altogether creates a need for substitution. As safety professionals, we will not be valued if we only present problems and keep people from doing their jobs. So, what to do?

One option is to try to find a safer method of accessing the elevated area. Scissor lifts can be ideal substitutes and come in many sizes. Boom lifts, although typically larger, can be used safely as well. Contacting a local rental company will result in some great recommendations for ladder substitutes, even for small spaces. If rental is not an option due to the frequency of ladder use, perhaps purchasing a lift may be a wise capital investment. A cost analysis taking into account a decreased risk of falls and the potential of an increase in productivity is a sound method that safety professionals can use

to articulate the overall return on investment to upper management.

If lifts are not an option, consider the many other ladder types available. Finding the right ladder for the task will help reduce the chances of a person leaning beyond the rails, climbing too high or engaging in other risky behaviors. For example, three-legged ladders are great for working up against unfinished walls. They allow the user to place the ladder in a way that keeps the person facing forward. Conversely, a standard A-frame ladder will typically result in a person having to work to their side, which is not ideal and not ergonomically correct.

Another example is substituting the standard A-frame ladder with a podium deck ladder. The podium deck provides a stable work platform that is easier on the user's feet. It also allows the user some additional maneuverability. While some fall exposure still exists, the larger and more stable platform should

decrease the risk of a fall.

Of course, other options are also available. Finding the perfect substitution for each situation may be a challenge, but any changes that result in a lower risk will be positive. A safety professional can gain valuable insight by discussing substitution options with employees who use ladders regularly.

## Engineering Controls

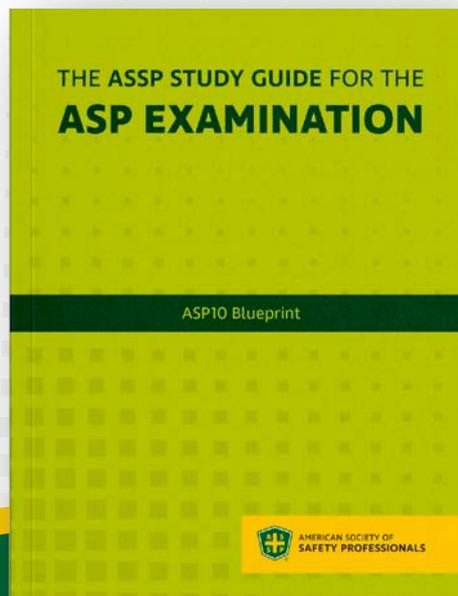
Engineering controls are difficult to implement for safe, portable ladder use. These controls work well with fall protection along an elevated work zone: Simply install guardrails. Unfortunately, it is less

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simple with portable ladders. These controls may be best evaluated from the perspective of management, by asking, “How can we design out ladder use?” While easier said than done, this is not impossible. It may mean having a mezzanine and stairs constructed to replace tall shelves. While this may pose other risks, such as potential leading-edge exposures when moving materials off the mezzanine, it can help reduce the use of ladders.

If a company is working on an update or a new project, there may be an opportunity to install systems that would reduce the need for ladders. Light fixtures are an excellent example of something that presents numerous ladder exposures. There is a real risk of a fall from a ladder while replacing light fixtures, and in some cases, the lights can be quite high. A company could switch to long-lasting LED lights as a means of reducing exposure. This may not eliminate the risk, but it will decrease the frequency of ladder use.

Purchasing lights that can be replaced by using a tool is another excellent example of an engineering control. Tools are available that allow a person to use a pole with the proper attachment to grab a light bulb and replace it. This eliminates the need to climb a ladder at all.

Finally, before deciding to update a facility or build a new one, it is wise to discuss ladder use with employees who perform maintenance. These workers can provide valuable insight as to how the company can eliminate ladder exposures and also increase productivity. Even if only some of the ideas can be adopted, these are still improvements that will reduce risk.

## Administrative Controls

Administrative controls rely heavily on the employee or the person trained to follow the rules. Unfortunately, as safety practitioners and management can attest, people tend to struggle with following rules. Generally, the lack of compliance stems from employees wanting to “get a job done” rather than because they were poorly trained.

The reality of administrative controls is that they often depend on rewards and consequences, both of which require significant management. Unfortunately, many organizations believe that ladder training and ladder decals are enough to keep employees safe. Administrative controls for ladders will always be needed. Even safer ladders require training and administration. However, safety professionals and organizational leaders must seek other controls first. Think of the exposures that could be eliminated,

coupled with the elimination of time spent enforcing safe ladder use. That time could be spent on other projects that help improve an organization’s safety.

To increase the probability of success with these controls, implement a well-managed accountability program and recognize employees who follow the ladder safety program. Speak honestly with employees who are observed incorrectly using a ladder. Do not simply tell them to get off the top step; find a way to have a meaningful conversation about ladder safety with them. Accountability does not need to be punitive; it can be a sincere conversation about working safely and demonstrating that the organization cares.

Also, take time to recognize employees who are following the rules. Most people like to be recognized, but recognition does not need to be a grand gesture. A phrase not used often enough is “thank you.” Taking time to thank someone for working safely can promote positive behavior and inspire others to behave similarly so they can gain recognition as well.

## PPE

The last resort in the hierarchy is always PPE. Not many forms of PPE are meant specifically to protect workers from the dangers of ladders. Generally, the most a person will have on is a hard hat, shoes and perhaps safety glasses. In some situations, a fall-arrest system anchored to the ceiling may be used.

A hard hat is not a bad idea when using a ladder. Hard hat use need not be limited to construction sites. Wearing a properly fitted hard hat in any situation, even retail, could protect people from further head injury if they fall. While relying on a hard hat is certainly not ideal nor a cure-all, at the very least, it may limit the harm done.

Proper shoes or boots should also be worn. This is also true for homeowners working on a weekend project. Any ladder can become slippery or may not work well with some types of footwear. This generally seems to be less problematic at construction sites, where proper work boots are typically worn. In other settings, the lack of adequate footwear can pose an increased risk. Retail stores

are an excellent example. Many people who work in retail environments may wear fashionable shoes, which may not be meant to provide significant traction; when a person climbs a ladder to reach an elevated shelf or a lofty display, these shoes may not provide the grip needed to work well with the tread on the ladder. This can quickly increase the risk of a fall. Ensuring that proper shoes are worn with ladder use can help reduce the risk of a slip and fall, but this takes us back to working with administrative controls.

## Conclusion

Options are available to organizations and safety professionals to reduce the risk of portable ladder injuries. It requires changing how we view portable ladders and the ways we manage their safe use. Key points to remember:

- Think about how far a person’s head will fall, not just how high up their feet are.

- Look for ways to eliminate the need for ladders through engineering and substitution. These three controls go hand-in-hand and can help reduce exposure.

- When you must rely on administrative practices, have a strong program and impactful conversations about ladder safety with employees.

- Recognize employees for doing the right thing and discuss unwanted behaviors with employees in a meaningful and lasting way.

- Use PPE as best you can. A hard hat can go a long way in preventing severe head trauma, and proper footwear may prevent a fall from a ladder due to a slip.

Safety professionals should be able to help reduce the number of ladder incidents by changing their mindset about ladder use and following these recommendations. By going back to the basics and utilizing the hierarchy of controls, organizations will see far fewer losses that result in lost dollars and, more importantly, lost workers. **PSJ**

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