A FALL PRE
PROTECTION PA

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IT IS TIME TO ESTABLISH NEW THINKING around the planning and execution of work at height. In the U.S. today, two protection methods lie at opposite ends of the control spectrum with too wide a chasm between them. At one end of the spectrum, the preferred method is to eliminate or engineer out the hazards during the design and construction phases to the extent that they simply do not exist or are dramatically reduced. At the other end, harness-based controls occupy a virtually unchallenged role in attempting to protect workers against the outcomes of fall incidents. The phrase "The worker wasn't wearing fall protection" assumes too much about the effectiveness of PPE controls for work at height exposures.

Safety professionals are in a unique position to lead the conversation toward a paradigm shift, especially for those who only associate fall protection with PPE. Two fundamental changes can drastically improve safety for work at height. First, organizations should focus on methods to control fall hazard risk without the use of harness-based systems. Second, when these systems are the only feasible option, organizations must provide for more comprehensive application of these tools.

KEY TAKEAWAYS

- **The American workforce has a disproportionate work-at-height fatality rate due to excessive reliance on ineffective control methods.**
- **Safety professionals must influence a paradigm shift—a fundamental change in approach—among those who only associate working at height with the use of harness-based methods.**
- **When harness-based fall protection systems are the only feasible choice, safety professionals must ensure that workers have the processes in place needed for protection, such as training, procedures and supervision.**

Background

Falls are the second leading cause of occupational fatalities among American workers, behind only transportation incidents. Citations related to fall protection have held the number one spot on OSHA's top 10 list for the past 12 years (OSHA, 2022b). Despite significant updates to fall protection regulations and standards and continual advances in fall protection equipment, the number of fatalities continues to increase in the U.S. So, why do falls continue to occur at this rate and how can organizations better manage fall hazards?

First, a more successful way exists to control fall hazards. By embracing successful tactics from around the world, the lives of hundreds of American workers could be saved every year, not to mention reducing the number of workers affected by serious injuries and days away from work.

The U.K. has demonstrated the feasibility of achieving a decrease in fall fatalities. Figure 1 (p. 18) highlights differences in key statistics between the U.S. and the U.K. This is a comparison of two well-understood industrialized nations within the G7 intergovernmental political forum. While the economies are similar, the U.S. is roughly five times larger in population, and the gross domestic product figures show that while the U.S. produces more, the increase in production does not align with the dramatic difference in workplace fatalities. These numbers illustrate the urgent problem in the U.S. that needs attention.

While other countries such as Australia have also had enormous success, most have followed the U.K.'s lead, so it becomes a useful and simplified comparison point. The way the U.K. has developed and implemented these changes is well documented, and work at height regulations apply across the country and to all industries, rather than having different rules by location or industry.

A Paradigm Shift: A Refined Hierarchy of Controls

The improvements seen in the U.K. were not achieved as an overnight success or after one government directive, but rather after a determined drive across industry to reduce injuries and fatalities. In addition, the better workplace fatality figures were not achieved by simply using harnesses more effectively, but rather with PPE considered a last resort.

U.K. regulations specifically dictate that PPE should be the least preferred option for protecting workers at heights: "PPE

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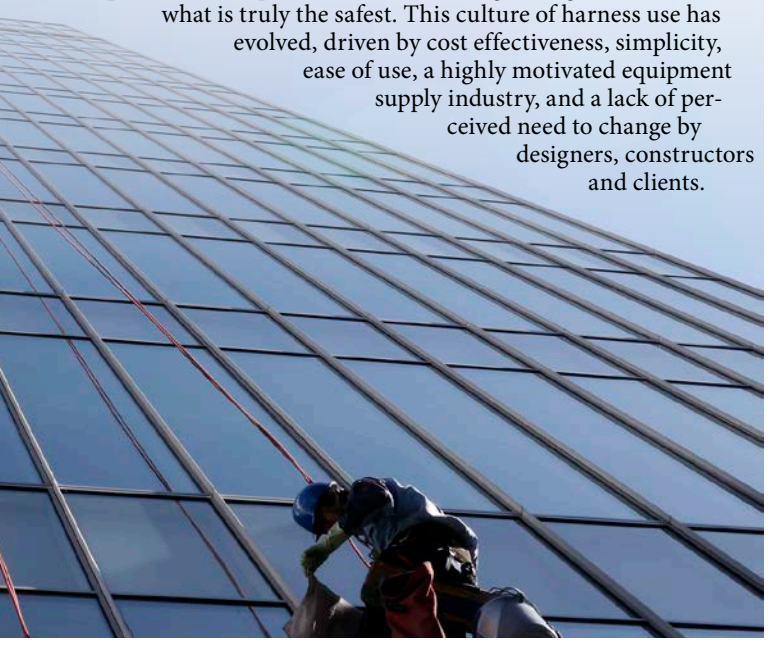
should be regarded as the last resort to protect against risks to health and safety. Engineering controls and safe systems of work should be considered first" (U.K. HSE, 2022a).

In large part, the improved statistics are a result of a paradigm shift that included new construction methods, increased expectations and demands from owners, improved guidance and standards, targeted enforcement, increased fiscal penalties and implementation of the hierarchy of controls, with the development and acceptance of a different risk management culture across industry.

The elements of the U.K.'s paradigm shift share a common theme not yet prevalent in the U.S. workforce. At its core, U.K. risk management culture is less willing to assign workers to exposures with potentially catastrophic or fatal outcomes. When such exposure must occur, the investment made in preventing a harmful outcome more closely approaches the incalculable cost of the loss of human life. Because the cost of a workplace fatality is so horrible, U.K. risk management stakeholders are willing to spend more money, time or resources to prevent such an occurrence. The U.K. has put regulations in place to motivate industry to do better (Thomas, 2015). By comparison, the U.S. has few drivers of change.

U.S. regulatory agencies do not differentiate between the quality and reliability of the method of working at height (OSHA, 2016). When all options are considered acceptable, the industry has developed a culture that accepts whatever is the perceived cheapest method of working at height, rather than what is truly the safest. This culture of harness use has evolved, driven by cost effectiveness, simplicity, ease of use, a highly motivated equipment supply industry, and a lack of perceived need to change by designers, constructors and clients.



While OSHA regulations have yet to take a firm stance on an ordered hierarchy of controls for fall hazards, the safety profession's growing acceptance of the hierarchy of controls is illustrated in ANSI/ASSP Z359.2-2023. To build on the general hierarchy of controls provided in the ANSI/ASSP consensus standard, effectively managing hazards in any harness-based work at height task requires implementation of a more nuanced approach.

The control sequence shown in Figure 2 (p. 19) is adapted from the ANSI/ASSP Z359.2 hierarchy of controls and adds a work positioning element as the missing piece to help achieve more consistent worker protection in harness-based work at height. Rope access guidance provided by the ANSI/ASSP Z459 standard, the Society of Professional Rope Access Technicians and the International Rope Access Trade Association embraces this approach, which contributes to the high safety record that rope access enjoys.

This refined hierarchy of controls calls for improved hazard management, including more intentional management of personnel, equipment, work methods and incident responses. It also acknowledges that there is a role for the proper use of harness-based systems, including fall arrest, work restraint, rope access (as defined in ASSP Z359.0-2023) and positioning systems. However, these systems require significant supervision and cannot perform their crucial roles when called upon unless the user has configured them within the scope of the use, limitations and restrictions assigned by the components' manufacturer.

Required Changes

Acknowledging the drastic discrepancies between fall fatalities in the U.S. compared to the U.K., it is important to consider the possible reasons for the disparity between the outcomes. Imparting fundamental change requires cooperation at a systemic level from all stakeholders—regulators, industry influencers, employers and users—which takes time to establish. Still, the following three areas provide the greatest opportunity for safety professionals to influence improvements in the U.S. today.

1. Emphasize Prevention Through Design

While it is easier to see fall hazards in an existing structure, safety practitioners around the world have found that it is safer and more cost effective to implement fall protection solutions before structures or processes are built. This concept, referred to as prevention through design (ANSI/ASSP, 2021a) in the U.S., ensures that safety measures are evaluated and implemented during the programming and design phases of a project. In the U.K., this is achieved through construction (design and management) regulations (U.K. HSE, 2015).

Applying prevention through design has proven to decrease risk and reduce life cycle cost for both the builder and the building owner. Risk is minimized by eliminating hazards

FIGURE 1

COMPARISON OF WORKPLACE FATALITIES BETWEEN U.S. & U.K.

Note. Adapted from LJB Inc.
[a]"World Economic Outlook Database," by International Monetary Fund, 2022; [b]"Work-Related Fatal Injuries in Great Britain," by U.K. HSE, 2022; and [c]"Injuries, Illnesses and Fatalities," by U.S. Bureau of Labor Statistics, 2022.

before they are created and applying solutions at a higher level in the hierarchy of controls. Implementing prevention through design requires a paradigm shift, as safety practitioners must become part of the initial design team and process rather than coming in after structures or processes are built.

2. Quit Overreliance on PPE

The current norm of defaulting to the assignment of harness-based work in the U.S. is flawed for many reasons. While it may be intuitive for some, considering solutions in a higher position in the hierarchy of controls can be a fundamental paradigm shift for others who only associate fall protection with PPE. The different controls should not all be considered as equally safe. Safety professionals will achieve greater success in protecting workers from fall hazards by evaluating other control systems, limiting harness-based systems, and, when necessary, using these systems in a far more controlled manner—with better training, procedures, supervision and a commitment to providing secondary yet independent protection methods, based on terminology adopted by the ANSI/ASSP Z359 full committee (ASSP Z359.0-2023).

3. Strengthen Enforcement Activities

All organizations must maintain vigilance in managing risk, including safety and financial concerns. Many risk managers balance the need to reduce safety risk with the financial impacts of doing so. In the U.S., some organizations may passively equate safety with avoiding OSHA citations and fall incidents. However, a lack of incidents may be due to luck rather than an effective program, since falls, while rare, are often catastrophic.

In the U.S., OSHA only cites companies, and at relatively lower penalty rates compared to other countries. For example, U.K. courts can levy significantly higher fines and include prison sentences against both employers and individuals. The U.K. introduced new sentencing guidelines for safety and health violations in 2016, and severe penalties range from £4 to £10 million ($4.8 to $12 million). When the case involves corporate manslaughter (death caused by high corporate fault), the fine can be £20 million ($24 million) as well as prison time (Sentencing Council, 2016). In comparison, the penalty ceiling for the most egregious OSHA citations (willful or repeat) is $145,027 per violation (OSHA, 2022a).

The Role of the Safety Professional

Safety professionals are in a unique position to lead and serve as champions of new ideas. They interface with management and design teams, as well as workers and contractors. As safety professionals consistently apply a renewed approach to the hierarchy of controls, they will more effectively support trades in reversing the unacceptable trend of serious injuries and fatalities resulting from workplace falls.

When issues arise, the safety professional increases the odds of success by having previously enlisted the support of foremen, superintendents and other production managers. When the safety professional is the subject matter expert who leads line-level management, the probability that fall hazards will remain under control increases even when the safety professional is not on site (Gualardo, 2014).

All safety professionals must understand human factors and acknowledge that the worker adds the most variability when managing any hazard, which underscores the importance of empowering workers at all levels to identify and control fall hazards. Whether by direct interaction or by influencing others to act as the safety professional would, the safety professional's role in facilitating successful work at height outcomes requires tenacious and thoughtful application of ANSI/ASSP Z359 principles.

Safety professionals must secure management commitment to ensure that the company provides adequate time and resources for exposed workers to obtain suitable training that qualifies them to perform their tasks at height and to use the required equipment for each task.

Just as an elimination control for truss construction is to assemble the truss on the ground and lift it up to the structure with a crane, it is critical to ensure that a worker can perform the task on the ground before asking them to do the same at height. Safety professionals must also consider a worker's existing experience level in performing assigned work at height tasks. For those tasks, adequate and informed competent person supervision matters greatly, especially in situations with inexperienced workers or those who have previously demonstrated hazardous behavior.

ANSI/ASSP Z359.2 defines a competent person as one who shall be:

> designated by the employer to be responsible for the immediate supervision, implementation and monitoring of the employer's managed fall protection program who, through training and knowledge is capable of identifying, evaluating and addressing existing and potential fall hazards, and who has the authority to take prompt corrective action with regard to such hazards. (ANSI/ASSP, 2023)

When the safety professional's application of the hierarchy of controls results in qualified workers relying on PPE, certain

fundamentals for management of equipment apply. In any harness-based work at height exposure, ANSI/ASSP Z359.2 (paragraph 9.1.1) requires that all equipment between the worker and the anchorage comply with the appropriate ANSI/ASSP Z359 substandard (ANSI/ASSP, 2023).

When authorized persons (as defined in ASSP Z359.0-2023) must rely on PPE, the safety professional not only influences the worker and the equipment, but also the relationship between the two. System configuration is one example of managing the work method, and the safety professional must also facilitate suitability for the user in terms of equipment fit and task requirements. Such user suitability factors might include consideration of PPE exposure to sharp structural edges or of workers' body proportions outside the normal distribution. As an example from one author's field experience, consider a production foreman who intended to connect the worker with a vertical lifeline to a hinged plate anchor mounted upside down to a pair of 2 x 4 truss members. In these instances, safety professionals must ensure that someone on site is prepared to educate the foreman that this anchorage does not meet OSHA, ANSI/ASSP Z359.2 or ANSI/ASSP Z359.6 requirements.

As another example, the safety professional might need to balance the ideal of rope access as the appropriate control for a task against the availability of workers who can safely perform the task while protected in that manner. Managing each of these components supports the goal that any foreseeable fall would result in the minimum possible loads to the worker, the equipment and the anchorage.

Because of PPE's crucial role when called upon, the safety professional must ensure that workers configure it within the scope of the manufacturer's use, limitations and restrictions (ANSI/ASSP Z359.2, paragraph 4.4.6). The PPE must have passed both informal pre-use and formal scheduled inspections (ANSI/ASSP Z359.2-2023, paragraph 9.3.2.1-2). Also, each piece of equipment must be individually represented in the employer's records that verify compliance with standards for use, cleaning, maintenance and inspection, as well as documenting any incidents that occurred while using the equipment (ANSI/ASSP Z359.2-2023, paragraph 9.3.2.1-2).

While successful harness-based work at height minimizes both the probability and the effects of a fall, the safety professional must also maintain competence in managing the outcome of a fall. To ensure effective rescue of a suspended worker, the safety professional facilitates a collaborative approach to adopt the protocol that the suspended worker's teammates are trained to execute. Because these would-be rescuers are primarily on site to perform their production work and not specifically for rescue purposes, it may be appropriate to pre-rig a rescue system to enable them to execute a prompt rescue. This plan of response must address any reasonably foreseeable work at height emergency injury or incident.

While some business needs create lone worker exposures, safety professionals should ensure whenever possible that work at height tasks involve a minimum team of two workers. ANSI/ASSP Z359.2 expanded upon the guidance in OSHA's prompt rescue doctrine [29 CFR 1926.502(d)(20)]; however, suspended and seriously injured or incapacitated lone workers often do not receive prompt and well-planned recovery or rescue.

Safety managers must have senior management support to immediately retire out-of-date or damaged equipment. Since not all fall protection equipment is suited for all work at height exposures, the safety professional must ensure that equipment configurations are compatible to the circumstances, maximize system performance and minimize fall clearance requirements.

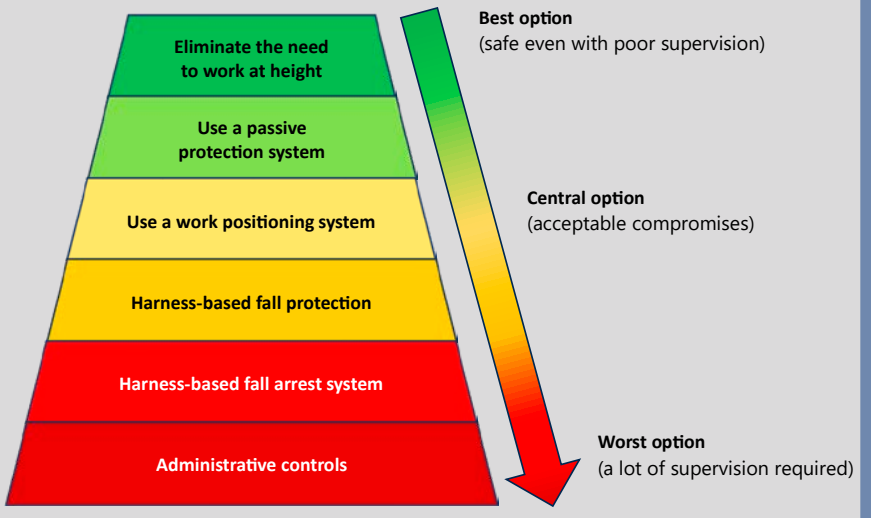
Finally, effective work at height personnel management requires assessing worker qualifications against established criteria and executing reassessment and retraining to take place at least every 2 years (ANSI/ASSP, 2023).

Clearly, success in fall incident prevention requires multiple people and systems functioning exactly as intended to deliver high levels of safety for work at height, as achieved in the U.K. and other similar markets. While harness-based systems have historically been overused in the U.S., global outcomes show the value of simply designing fall hazards out and not contending with PPE systems in the first place.

Next Steps

While working toward the long-term goal of reducing harness-based systems use in favor of more effective controls for work at height, safety professionals can achieve immediate progress by elevating the role of planning, management, training and use of passive protection systems. As safety professionals continue to understand the depth of information already available to them from the ANSI/ASSP Z359 Fall Protection Code and consistently apply a renewed approach to the hierarchy of controls, they will more effectively support the trades in

FIGURE 2
REFINED HIERARCHY OF CONTROLS FOR WORK AT HEIGHT



Note. Adapted from ANSI/ASSP Z359.2-2023, Minimum Requirements for a Comprehensive Managed Fall Protection Program, 2023, p. 25; and "Hierarchy of Controls: Working at Height," by LJB Inc., 2023.

reversing the unacceptable trend of serious incidents and fatalities resulting from workplace falls.

Safety professionals in any career phase have an important part to play and can take several steps to support a paradigm shift for safe work at height:

•**Learn from other countries:** Individual practitioners can widen their scope of resources and look for ways to apply best practices from other countries.

•**Consistently apply the ANSI/ASSP Z359.2 standard:** Applied as intended, this globally recognized standard delivers a better way to manage fall hazards: true to a hierarchy of controls approach. Using the guidance from the ANSI/ASSP Z359.2 standard should result in reduced use of fall protection PPE, which has proven to save more lives on jobsites globally. With an accompanying education program, ANSI/ASSP Z359.2 allows the safety professional to perform a gap analysis of their fall protection program to objectively gauge what methods can help them better protect workers at height.

•**Gain senior management support:** As with any endeavor, true success is unlikely to occur without senior management ownership. In organizations with employee fall hazard exposures, management can use its position to support the implementation of a fall protection program in alignment with ANSI/ASSP Z359.2. When corporate leaders communicate that PPE systems represent a short-term cure instead of long-term prevention, the appropriate changes can be made from project planning to finance to procurement to line management.

Senior management should ask, "In accepting the use of PPE controls, do I accept the greatly increased probability of having to notify a family that their loved one is not coming home?" To avoid this pitfall, leadership can allocate appropriate resources and support for personnel to fill the program administrator, qualified person, competent person and authorized person roles as defined in ANSI/ASSP Z359.2.

•**Continue the battle:** The safety professional community can exert its influence to help this improved hierarchy of controls in the ANSI/ASSP Z359.2 standard. Regardless of the best intentions of any particular OSHA representative, the U.S.'s regulatory environment has allowed fall fatalities to stray wildly from gross-domestic-product-adjusted norms compared to other developed nations. Those who are passionate about safe work at height should remain diligent in efforts to educate and reduce incidents by vocally making the case to address fall hazards ever more aggressively.

Conclusion

Countless industries, from healthcare to maintenance, attest that prevention is better than a cure. The selection of PPE to control a fall hazard forfeits the opportunity to prevent the incident from occurring, compelling all parties to address hazards or incidents reactively instead of proactively.

An American future of fewer falls and improved fall outcomes is possible. Each safety professional who dedicates themselves to learning, influencing, supporting and championing the change can help reduce the dramatically high fall fatalities in this country. It is time to lead the change that these workplaces need. **PSJ**

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