



Protective Headgear Safety Training Program



Goal

Head injuries are a serious concern in many workplaces, especially in construction and industrial settings. Each year, an average of 6,000 workers suffer a head injury, and more than 200 die.¹ This training program will provide you with essential information about protective headgear, including the recent shift from traditional hard hats to modern safety helmets.

Objectives

By the end of this program, you will understand how to select, use, inspect, and maintain your protective headgear to ensure maximum safety on the job. Specifically, you will:

- Understand the importance of head protection in the workplace.
- Identify different types of protective headgear and their levels of protection.
- Recognize OSHA's recent shift towards safety helmets.

- Properly select and fit protective headgear based on workplace hazards.
- Correctly use and maintain your headgear.
- Recognize when to replace your protective headgear.

The Importance of Head Protection

Traumatic brain injuries (TBIs) are a significant concern in the workplace, particularly in the construction industry.² A TBI is an injury that affects how the brain works and can be caused by a bump, blow, jolt, or penetrating injury to the head. TBIs can range from mild to severe, with more serious cases leading to disability or death.

Key statistics:

- Over 50,000 nonfatal work-related TBIs are treated annually in U.S. emergency departments.³

- 43% of hospital patients treated for a TBI did not return to ordinary work for five years after their injury.⁴
- The construction industry has the highest number of both nonfatal and fatal work-related TBIs among all U.S. industries.⁵
- Between 2015 and 2022, there were 2,297 fatal intracranial injuries in construction.⁶
- In 2020, head injuries accounted for nearly 6% of non-fatal occupational injuries involving days away from work.⁷

Traditional Hard Hats:

- Dating back to the 1960s.⁸
- Often include a webbed ribbon-style suspension with a gap between the top of the head and the hard hat.
- Usually have a brim.
- May or may not be equipped with a chin strap.
- Protect mainly the top of the head.
- Minimal side impact protection.
- Poor ventilation, trapping heat inside.

Modern Safety Helmets:

- Protects the entire head, including the sides, front, and back, not just the top.
- More comfortable and made of lighter, stronger materials that fit closer to the head.
- Consistently have a chin strap to keep helmets in place during falls and sudden movement.

Types of Protective Headgear

Traditional Hard Hats vs. Modern Safety Helmets

While the terms “hard hat” and “safety helmet” are often used interchangeably, there are some differences in their design and features:



Photo courtesy of Science Digest, “Safety Science,” Vol. 168, December 2023, 106296. Image 1-s2.0-S0925753523002382-gr1_lrg.

- Has a webbed suspension and foam liner to help spread an impact more evenly across the head.
- Improved ventilation.
- Works well with features like face shields, goggles, built-in hearing protection, and communication systems.

ANSI/ISEA Z89.1 Type I vs. Type II Headgear

The American National Standards Institute (ANSI) and the International Safety Equipment Association (ISEA) classify protective headgear into two types:

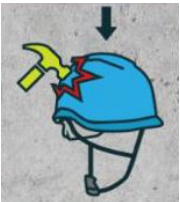



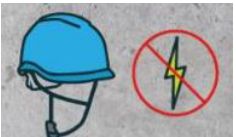
Type I:

- Intended to reduce the force of collision resulting from a blow only to the top of the head.
- Meets basic protection standards.

Type II:

- Intended to reduce the force of collision resulting from a blow to the top or sides of the head.
- Provides more protection.
- Automatically meets Type I protection standards.
- Includes additional testing for impact and penetration accidents.

Both Type I and Type II headgear can be rated for additional hazards such as electrical protection and can be equipped with chin straps, including:

Finding the Right Protection for Your Job	
Types:	Classes:
Type I: Reduces the force of impact only from blows to the top of the head. 	Class G: Rated for 2,200 volts. 
Type II: Reduces the force of impact from blows to both the top and the sides of the head. 	Class E: Rated for 20,000 volts. 
	Class C: Does not offer electrical protection. 

Class G (General):

- Rated for up to 2,200 volts of electrical protection.
- Provides protection against low-voltage conductors.

Class E (Electrical):

- Rated for up to 20,000 volts of electrical protection.
- Offers the highest level of protection against electrical hazards.

Class C (Conductive):

- Provides no electrical protection.
- Often vented for better breathability and worker comfort.

Additional ratings that may apply to both Type I and Type II headgear include:

- **Low Temperature (LT):**
Designed for protection at low temperatures, down to -30°C (-22°F).
- **High Visibility (HV):**
Meets requirements for high visibility.

OSHA's Shift to Safety Helmets

In December 2023, the U.S. Department of Labor's Occupational Safety and Health Administration (OSHA) announced a major change in head protection for its employees. OSHA is replacing traditional hard hats with more modern safety helmets to better protect its staff during site inspections.

OSHA recommends the use of safety helmets for people working in:

- Construction industry.
- Oil and gas industry.
- High-temperature environments.
- Specialized work and low-risk environments.
- Tasks involving electrical work.
- Working at heights.
- Any environment where regulations or industry standards require them.

This shift by OSHA underscores the importance of staying up-to-date with the latest safety equipment and practices. While OSHA has not mandated this change for all industries at the time of this publication, their recommendation carries significant weight and may influence future regulations and industry standards.

Selecting Appropriate Protective Headgear

When choosing protective headgear, consider the following workplace factors:

- **Work at Heights:**
For work at heights of 6 feet or above, consider ANSI/ISEA Z89.1 Type II

protective headgear with a chin strap for optimal protection.

- **Slips, Trips, and Falls at the Same Level:**
Even for ground-level work, Type II head protection with a chin strap provides better overall protection.
- **Struck-by Hazards:**
Type II protective headgear is the safer choice in environments with potential falling or flying objects.
- **Use of Accessories:**
Consider compatibility with face shields, hearing protection, and other necessary accessories.
- **Electrical Hazards:**
Choose Class G (General) or Class E (Electrical) headgear based on the level of electrical protection required.
- **Weather and Temperature:**
Consider ventilation options for hot environments and compatibility with cold-weather accessories.
- **Visibility Needs:**
For work in low-visibility areas, look for HV-marked headgear.
- **Cost:**
While safety helmets may have a higher initial cost, their longer service life (up to 10 years) may offset the expense compared to traditional hard hats (up to 5 years).
- **Fit and Comfort:**
Consider the overall fit, weight, and comfort of the headgear for long-term wear.

Proper Fit and Use

To ensure maximum protection:

- Adjust the headband for a snug but comfortable fit.

- Make sure there is enough space between the hard hat and the headband for airflow and to help spread out any impact.
- Wear the headgear so that the brim is parallel to the ground.
- Use chin straps when provided, especially for work at heights or in windy conditions.
- Never store items between the shell and suspension.
- Be cautious when adding accessories to avoid compromising protection.



- Clean monthly with hot water (about 140°F) and mild soap.
- Use a gentle scrub brush for the shell and a soft sponge for the suspension and headband.
- Rinse thoroughly and inspect again after cleaning.
- Replace the suspension and headband if tears are noticed.

Inspection and Maintenance

Regular inspection and maintenance are crucial:

- Inspect daily for dents, cracks, or other damage.

- Always replace the entire headgear after a significant impact, even if damage is not visible.



When to Replace Your Protective Headgear

Replace your protective headgear:

- After five years for hard hats or 10 years for safety helmets (or according to manufacturer specifications).
- Immediately after a significant impact.
- If you notice any cracks, dents, or other visible damage.
- When the suspension system shows signs of wear or damage.

Review

- 1. What are the main differences between traditional hard hats and modern safety helmets?**
 - a. Color and style.
 - b. Only one is designed for working at heights.
 - c. Protection coverage and features.
 - d. Cost and availability.
- 2. How do Type I and Type II protective headgear differ in terms of protection?**
 - a. Type I protects against electrical hazards, but Type II doesn't.
 - b. Type I protects the top of the head, and Type II protects the top and sides.
 - c. Type I is for construction, and Type II is for industrial use.
 - d. Type I is waterproof, but Type II is not.
- 3. What factors should you consider when selecting appropriate headgear for your work environment?**
 - a. Brand popularity and color options.
 - b. Weight and comfort only.
 - c. Hazards present, job requirements, and additional features needed.
 - d. Cost and availability only.
- 4. How can you ensure your protective headgear fits properly?**
 - a. Choose the most expensive option.
 - b. Adjust the headband and ensure sufficient clearance.
 - c. Wear it loosely for comfort.
 - d. Always use the same size as your regular hat.
- 5. When should you replace your protective headgear?**
 - a. Every month.
 - b. Only when it breaks completely.
 - c. After a significant impact, visible damage, or manufacturer's recommended lifespan.
 - d. When a new style becomes available.
- 6. What are some advantages of using safety helmets over traditional hard hats?**
 - a. They look more stylish.
 - b. They are always cheaper.
 - c. Better side impact protection, chin straps, and additional features.
 - d. They are heavier for more protection.
- 7. How does protective headgear help prevent traumatic brain injuries?**
 - a. By making workers more visible.
 - b. By absorbing and distributing impact forces.
 - c. By improving worker concentration.
 - d. By eliminating all workplace hazards.
- 8. What is the significance of OSHA's recent shift towards safety helmets?**
 - a. It is a new fashion trend.
 - b. It is only effective for OSHA employees.
 - c. It demonstrates a commitment to improved worker safety standards.
 - d. It makes hard hats obsolete immediately.

Answer Key: 1.C; 2.B; 3.C; 4.B; 5.C; 6.C; 7.B; 8.C

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