PPE Compliance in Extreme Temperatures: Protecting Outdoor Workers When Conditions Shift



Extreme weather can quickly turn routine outdoor work into a high-risk situation. For worksite managers and OHS professionals, personal protective equipment (PPE) compliance becomes especially important when crews are exposed to extreme heat, tornado conditions, wildfire smoke, or nearby forest fires. While PPE is only one part of a broader hazard control program, it remains a critical last line of defence when elimination, substitution, engineering, and administrative controls cannot fully protect workers.

In extreme heat, PPE can create a difficult balancing act. Workers still need protection from falling objects, sharp materials, chemicals, noise, dust, traffic, and equipment hazards, but the same PPE that protects them may also trap heat and increase the risk of heat stress. Hard hats, high-visibility clothing, gloves, safety boots, eye protection, hearing protection, fall protection harnesses, and respirators may all be required depending on the task. Managers should never allow workers to remove required PPE simply because conditions are hot. Instead, they should review whether lighter, breathable, task-appropriate options are available and adjust work-rest schedules to account for the added heat burden.

PPE in Different Sectors

For construction, roadwork, landscaping, utility, and agricultural crews, high-visibility clothing is often essential. In hot weather, lightweight, moisture-wicking, CSA-compliant high-visibility garments can help maintain visibility without adding unnecessary insulation. Safety footwear should protect against punctures, crushing injuries, slips, and uneven terrain, while still providing adequate support for long shifts. Gloves should be selected carefully: cut-resistant or chemical-resistant gloves may be required for specific tasks, but overly heavy gloves can reduce dexterity and increase sweating. The goal is not simply to require PPE, but to ensure workers are wearing the right PPE for the hazard and the conditions.

Head and eye protection are also important in extreme heat. Hard hats protect against falling objects and overhead hazards, while brim attachments or neck shades may provide added sun protection when compatible with the equipment. Safety glasses, goggles, or face shields help protect workers from dust, debris, UV exposure, chemicals, and windblown particles. Outdoor workers may benefit from tinted or UV-rated protective eyewear, provided it does not interfere with visibility or create hazards in shaded or low-light areas.

Respiratory protection becomes a major concern when forest fires are nearby. Wildfire smoke can expose workers to fine particulate matter, ash, and irritating gases. In these conditions, simple cloth face coverings or standard dust masks are not adequate respiratory protection. Depending on the level of exposure and the work being performed, workers may need properly selected and fit-tested respirators, such as N95 filtering facepiece respirators or elastomeric half-mask respirators with appropriate particulate filters. Respirators are most effective when they are part of a respiratory protection program that includes fit testing, training, seal

checks, maintenance, and medical considerations where required.

Unexpected Heat & Weather Threats

When wildfire smoke is present, PPE should be combined with air quality monitoring and administrative controls. Managers should reduce strenuous outdoor work, move tasks indoors where possible, provide cleaner-air rest areas, and consider postponing non-essential work when smoke levels are high. Eye protection may also be necessary where smoke, ash, or windblown debris causes irritation. Workers with asthma, heart conditions, or other medical vulnerabilities may require additional assessment and accommodation.

Tornadoes and severe wind events present different PPE challenges. PPE is not a substitute for shelter. If a tornado warning is issued or severe weather is imminent, the priority should be to stop outdoor work and move workers to a designated safe location. However, PPE may still play a role before and after the event. Hard hats, safety boots, gloves, high-visibility garments, eye protection, and cut-resistant clothing can help protect workers during shutdown activities, emergency response, debris cleanup, and damage assessment. These tasks often involve broken glass, sharp metal, unstable structures, downed branches, and scattered materials.

After a tornado or severe wind event, worksite managers should reassess hazards before allowing crews to resume work. Downed power lines, unstable scaffolding, damaged equipment, compromised roofs, hazardous spills, and blocked access routes may all be present. Workers involved in cleanup may need impact-resistant eye protection, heavy-duty gloves, chainsaw chaps, hearing protection, respiratory protection for dust, and fall protection when working at heights. PPE requirements should be based on the post-event hazard assessment rather than the pre-storm task list.

Planning with PPE

Compliance depends heavily on supervision and planning. Workers are more likely to wear PPE consistently when it fits properly, is suitable for the weather, is available in the right sizes, and is explained clearly. Supervisors should watch for signs that PPE is being removed, modified, or worn incorrectly because of discomfort. They should also reinforce that extreme weather does not reduce the need for protection; it increases the need for thoughtful hazard control.

For OHS professionals, the key is to integrate PPE into broader emergency and heat stress planning. Policies should address PPE selection, fit, maintenance, replacement, training, respiratory protection, wildfire smoke response, severe weather shutdowns, and post-event recovery work. Crews should know not only what to wear, but why they are wearing it, when it is required, and when conditions are too dangerous for work to continue.

PPE Compliance is Important in All Conditions

Extreme heat, tornadoes, and nearby forest fires each create different risks, but the principle remains the same: PPE must match the hazard, the task, and the environment. With proactive planning, proper equipment, worker training, and strong supervision, worksite managers and OHS professionals can protect outdoor crews while maintaining compliance in some of Canada’s most challenging weather conditions.