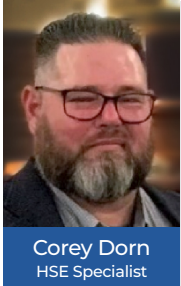


“BLUE 42! BLUE 42! SET!”

THE EVOLUTION OF PPE IN THE DRILLING INDUSTRY



Friday night
lights...
tailgating
Saturdays...



and of course, armchair
quarterbacking Sundays.
It's the most wonderful
time of the year!

Now, imagine if your favorite football team had to play a championship game with the same gear they used a century ago. The game would be drastically different—less safe, less efficient, and much more dangerous. Similarly, the evolution of personal protective equipment (PPE) in the drilling industry has transformed its safety and effectiveness over the years. Just as football gear has advanced from simple leather helmets to sophisticated, high-tech armor, PPE has undergone significant changes to better protect our most valuable asset: our people.

In the high-stakes game of drilling operations, PPE can be considered our “prevent defense” against various risks and exposures. From the protective helmets that guard against falling objects to the flame-resistant clothing that shields workers from intense heat, each piece of PPE plays a crucial role in minimizing injuries and helping ensure that every worker can stay in the game and make it home safely to their families. So, let's suit up, lace up your cleats (or steel-toed boots in our case) and get ready to dive into the history and game-changing advancements in PPE that are making a significant impact on safety in the drilling industry.

Hard Hats ▶ From Canvas to Polyethylene

The story of hard hats begins with the Hard-Boiled Hat from Bullard, crafted from steamed canvas, glue, leather, and black paint. This early version, named from its steam-based manufacturing process, was a rudimentary precursor to the hard hats we have today. Over the decades, hard hat compositions have



changed, manufactured from aluminum, fiberglass, thermoplastics, and currently polyethylene plastics, which are both durable and lightweight. Modern hard hats boast slip-resistant, adjustable suspension liners with moisture-wicking, breathable sweatbands. Innovations like vented designs and thermal barriers set the standard for comfort and protection. **The last century, from the first hard hat to today's advanced models, reflects significant improvements in design and material technology.**

Footwear ▶ From Steel to Composite Materials

Leather marching boots with steel tips were introduced at the end of World War II in Germany, protecting military engineers working on machinery and vehicles using items they already owned.

By the 1930's, Red Wing Shoes Company began commercially producing steel-toe boots, setting the stage for modern safety footwear. Over the decades, safety footwear has undergone a remarkable transformation to become the boots we know today. While steel remained a primary reinforcement material, advancements introduced composite materials and advanced polymers, offering the same protection with significantly reduced weight. Added benefits like puncture-resistant soles, electrical hazard protection, and slip-resistant outsoles have combined with cushioned insoles, arch support, and breathable materials to transform safety boots into a combination of protection, comfort, and style, making them essential for extended wear in the field.

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Eye Protection ▶ From Glass to Polycarbonate

In the mid-20th century, eye protection primarily consisted of glass or hard resin lenses, which, while protective, were quite brittle, presenting a secondary hazard. The rigid design of early eyewear was heavy, and not particularly comfortable or aesthetically pleasing. A turning point came in 1979 when the American National Standards Institute (ANSI) revised its standards, allowing for more varied designs, as long as they passed impact tests. Around the same time, polycarbonate – a lightweight, highly impact-resistant material – was introduced. From the 1980s up to present day, polycarbonate lenses became the standard, offering superior protection without the added weight. Continued innovations and improvements in durability, comfort, and design have significantly reduced the risk of eye injuries, transforming eye protection from cumbersome to cutting-edge.

Gloves ▶ From Leather to Impact Resistant

Working in the field requires hand use nearly constantly, and the evolution of gloves reflects the diverse hazards of the modern workplace. The first patented work glove dates back to 1896, with early designs primarily featuring leather for basic protection. As workplace hazards became more varied, gloves evolved to include materials and designs tailored to specific risks. Chemical-resistant gloves are used to protect workers from hazardous chemicals. Heat-resistant gloves are used to protect workers from high temperatures and open flames, and electrician gloves are designed to protect workers from electric shock. Advances in materials have led to impact, cut, and puncture-resistant gloves that greatly reduce the severity of injuries. Modern gloves not only protect but also provide improved dexterity and comfort for extended use.



Fall Protection ▶ From Belts to Harnesses

As working at heights became more common in the oilfield, fall protection equipment became necessary. The introduction of fall protection began with body belts and lanyards in the 1970s and 80s. However, these early systems still left workers vulnerable to injuries from short falls and prolonged suspension. The 1990s saw the advent of the full-body harness, which included a D-ring system that distributed weight more effectively, protecting workers from spinal and internal organ damage. Today's fall protection devices, safety lanyards, and harnesses meet strict OSHA and ANSI standards, undergoing rigorous testing to ensure optimal comfort, fit, protection, and effectiveness.

Future Trends ▶ From the Bare Minimum to Greater Integration and Adaptability

Looking ahead, the future of PPE in the oilfield promises even greater integration and adaptability. Emerging technologies such as artificial intelligence (AI) and the Internet of Things (IoT) are expected to play a

significant role in the next generation of PPE. AI could enable predictive analytics to anticipate and mitigate potential hazards before they become critical issues, while IoT devices could facilitate seamless communication and data sharing between workers and safety systems. These advancements are positioned to further enhance the safety and efficiency of oilfield operations, continuing the trend of innovation that has defined the evolution of PPE and the oil and gas industry overall.

The evolution of PPE in the oilfield stands as a testament to the industry's growing dedication to worker safety and technological innovation. From its modest beginnings with basic protection to the current state of high-tech, integrated systems, PPE has transformed in response to the increasing complexity of oilfield work and a deeper understanding of the associated risks. As technology continues to advance, the future of PPE in the oilfield promises to be even more sophisticated, offering enhanced protection and safety for people directly involved in one of the most challenging – but also exciting – industries. Kind of like a football game.

Interested in our 2024
Actively C.A.R.E. Goals?
Scan to see where we are
putting our safety focus.

