

# Wearable Safety Technology Fact Sheet

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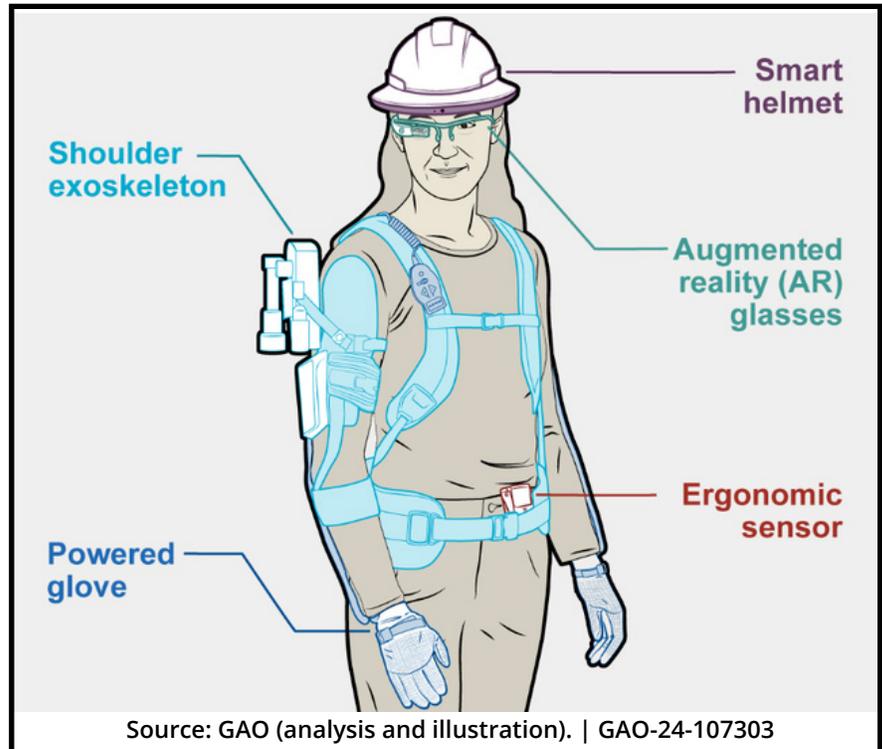
**W**earable safety technology, also called WIoT (Wearable [Internet of Things](#)), is changing how workplaces protect employees.<sup>1</sup> These devices use sensors, global positioning systems (GPS), and wireless signals to track workers and their surroundings in real time. They help prevent accidents and allow for quicker response to emergencies.<sup>2</sup>

## What are wearable safety devices?

Wearable safety devices are small, personal gadgets workers wear to help stay safe and healthy on the job. You'll find them in construction, manufacturing, mining, transportation, and health care, where workplace hazards are common.<sup>3</sup>

**SMART** is an acronym for **S**elf-Monitoring, **A**nalysis, and, **R**eporting **T**echnology. Common examples of "smart" wearable safety devices include:

- **Smart helmets:** Detect dangers like high heat or gas, track worker health, and sense falls or impacts.
- **Smart glasses:** Display instructions, warn about hazards, and offer training help using augmented reality (AR).<sup>4</sup>
- **Exoskeletons:** Support the body during lifting or repetitive work to reduce fatigue and injuries.<sup>5</sup>
- **Smart boots:** Monitor posture and movements to promote safer lifting and alert workers to nearby dangers.
- **Smart clothing:** Track health signs, heat, and motion to spot unsafe behaviors.



- **Fitness and health trackers:** Monitor heart rate, stress, and activity levels.
- **Proximity sensors:** Warn workers when they get too close to moving equipment or vehicles.
- **Lone worker monitoring devices:** Allow remote or solo workers to send alerts or call for help.
- **WIoT gloves:** Monitor hand movements and warn about unsafe actions or nearby hazards.

## Why it matters:

In 2022, workers in warehousing, manufacturing, and construction had more than 700,000 nonfatal injuries and over 2,000 deaths on the job. At the same time, these industries face a growing demand to get more work done, faster. To help protect workers and boost productivity, many companies now use wearable safety devices like body sensors and exoskeletons.

# Categories of Industrial Wearable Safety Devices

Most wearable safety devices used at work fit into four main categories: **monitoring**, **supporting**, **training**, and **tracking**. Each type plays a different role in keeping workers safe.<sup>6</sup>

Function type	Examples of devices	What they do	How they help
<b>Monitoring</b>	Fitness trackers, smart rings, smart glasses, body sensors, smart clothing, and implantable wearable safety devices.	Track vital signs (like heart rate, temperature, and blood pressure) and workplace conditions (such as heat or radiation).	Help spot health issues before they become serious, monitor the environment, and make sure workers have the right safety gear.
<b>Supporting</b>	Exoskeletons, lifting patches, wearable robots, and headsets.	Make lifting easier, support posture, help workers talk to each other, and assist with task information.	Lower the risk of injuries, improve communication, and provide hands-free guidance with diagrams or AR.
<b>Training</b>	Smart glasses, smart helmets, and head-up displays.	Give feedback during tasks and use virtual reality (VR) or AR to safely practice hard or risky work.	Let workers learn safely, build skills, and reduce mistakes on the job.
<b>Tracking</b>	Smart bracelets, smart clothes, smart boots, and digital pedometers.	Show where workers are and how close they are to hazards.	Improve emergency response, avoid equipment accidents, and manage crews more efficiently.



From left clockwise: An exoskeleton is worn when picking up steel beams; A health tracker provides vital signs monitoring; A smart boot tracks movement and slip hazards; A WIoT glove provides a digital control panel for communication.

## Benefits for workers and employers

Wearable safety devices offer clear advantages:

- **Fewer injuries and deaths:** Devices can warn workers about dangers before accidents happen.
- **Better safety habits:** Constant feedback encourages safer behavior.
- **More efficient work:** Real-time alerts and data help avoid delays and fix problems faster.
- **Lower costs:** Fewer injuries mean less money spent on medical care and missed work.
- **Easier compliance:** Automatic data collection helps meet safety rules and reporting needs.



Construction worker uses VR goggles for safety training at a job site.

## Real-life examples by industry<sup>7</sup>

Industry	Functions used	Example	How it helps
<b>Mining</b>	Monitoring, Tracking.	Smart helmets with cameras, microphones, and GPS.	Keep track of workers and gather safety data to prevent accidents underground.
<b>Chemical</b>	Monitoring, Tracking.	Wristbands that detect chemical exposure.	Alert workers and supervisors about contact with harmful substances.
<b>Forest products &amp; construction.</b>	Monitoring, Tracking, Supporting.	Smart boots with GPS and radio-frequency identification (RFID).	Show worker locations and withstand tough work environments.
<b>Crude oil production.</b>	Monitoring.	Smart helmets with advanced sensors.	Track worker health and improve safety on oil rigs.
<b>Transportation &amp; shipping.</b>	Monitoring, Tracking, Supporting.	Belt-worn sensors that analyze posture.	Warn workers about unsafe lifting and help prevent back injuries.

## Looking ahead

Wearable safety tech is growing fast. New devices are becoming more affordable, tougher, and easier to use. Researchers are also improving battery life, accuracy, and privacy features. These updates will help make job sites even safer.

### Want to learn more about workplace safety?

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## References

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