WORKtoZERO
an nsc program

Technology Spotlight
WEARABLES

TECHNOLOGY SUMMARY

Wearable technologies refer to a broad category of devices designed to track metrics related to health, fitness and wellbeing. Examples of these devices include vital sign monitoring wearables, fatigue monitoring wearables, and smart personal protective equipment (PPE). Common barriers to adoption include high upfront financial and resource investments, technology infrastructure and connectivity challenges, and worker concerns regarding privacy and data security. These challenges can be addressed by establishing clear data policies, ongoing and transparent communication with frontline workers, and by identifying "digital champions" to provide peer-to-peer support and feedback during the pilot and implementation process.

Wearables can detect incidents such as medical emergencies, impacts, or falls and send real-time alerts to support faster response times.

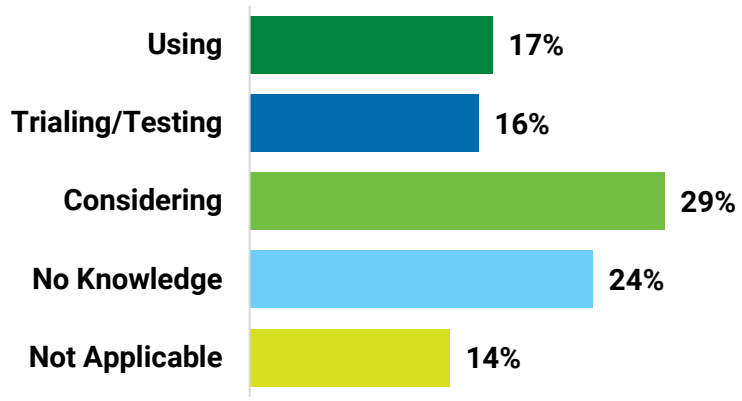
Vital signs monitoring wearables can detect and alert to early indicators of heat stress, like temperature, heart rate, or fluid loss.

Fatigue monitoring wearables detect and alert to early signs of fatigue, helping prevent potential incidents and prompting timely interventions.

SAFETY TECHNOLOGY 2024 SURVEY RESULTS

According to an NSC survey of 500 employers and 1,000 employees in safety-sensitive industries, 17% of employers reported currently using wearable technologies in the workplace, while 45% said they are either testing or considering its use. The highest reported use of the technology came from employees in construction, transportation and warehousing, and utilities.

Use of Wearables in the Workplace:



Top Industries Testing or Using:

- Construction **(49%)**
- Transportation **(37%)**
- Utilities **(36%)**

Voices from the Workplace:

"[We] can see what work duties are causing health risks and potentially identify ways to adjust processes to make things safer."—*Employer (Manufacturing)*

"'Employee pushback on privacy grounds, data security vulnerabilities and added management overhead [are potential barriers]."—*Employer (Agriculture)*

"[Wearables] helps us stay on top of drinking water, staying cool and keeping our heart rate down."—*Employee (Construction)*

"Massive amounts of health data are generated. Managing this data and extracting useful information from it can be a challenge."—*Employee (Utilities)*

Benefits of Wearables

- Wearables can monitor worker health, location, and risk exposure in real-time to prevent injuries and reduce exposure to hazards.
- If a hazard is detected, wearables can send alerts or provide direct instructions for users to reduce the risk of serious injuries and illnesses.
- Wearable devices offer supervisors deeper insights into workplace hazards and exposures to inform targeted interventions.
- Rather than relying on general estimates of environmental conditions, wearables can provide individualized data insights.

Considerations for Adoption

- Wearables do not substitute or eliminate exposure to occupational hazards.
- Lack of technology infrastructure and connectivity needs may limit use in some environments or industries.
- Initial costs and resource investments can be barriers to adoption, especially for small and medium-sized organizations
- Without transparent communication, workers may be resistant to wearables due to privacy concerns or data sensitivity.
- Wearables may pose an additional snag-risk in certain industries or tasks.

BEST PRACTICES

- **Establish transparent data policies** that clearly explain how personal data will be collected, used, stored, and protected. **Communicate early and often** to build trust and help workers understand how wearables will help keep them safe.
- To ensure smooth integration of wearables with your existing IT infrastructure and systems, **engage with the vendor early and involve relevant stakeholders** (e.g., IT, Legal, HR, etc.) throughout the process.
- **Identify a group of "digital champions" representing all levels of the organization** to support technology adoption, provide peer-to-peer support and provide feedback on the technology's use and effectiveness.
- **Begin with small-scale pilots** to identify technical or operational challenges early, gather worker feedback, and make adjustments before scaling up to reduce initial monetary and resource investments.

For more information, see our reports Wearables for Fatigue Monitoring and Vital Signs Monitoring for Heat Stress Mitigation. For additional resources and guidance on adopting safety technologies, explore the Work to Zero *Safety Innovation Journey*.

Contact Us:
worktozero@nsc.org

Learn More:
nsc.org/WorktoZero

National Safety Council