WORKtoZERO
an nsc program

Technology Spotlight
IMPAIRMENT DETECTION

TECHNOLOGY SUMMARY

Impairment detection technologies (IDTs) have the potential to screen for multiple forms of impairment to aid in fitness for duty assessments. Typically, these solutions do not identify the cause of impairment, but rather the indicators that are associated with impairment, such as slowed reaction times, reduced cognitive function, and compromised motor coordination. Significant time and resource investments, as well as ambiguity surrounding formal product validation, are considerable limitations to the adoption of the technology. Employers should engage early and often with both relevant stakeholders and end users, establish transparent data policies, and use any data or insights to provide tailored support, treatment, or accommodations for identify mental health or medical conditions that impact impairment in the workplace.

IDTs aim to detect impairment stemming from various sources, including fatigue, alcohol, opioids and other substances, medical conditions, and mental distress.

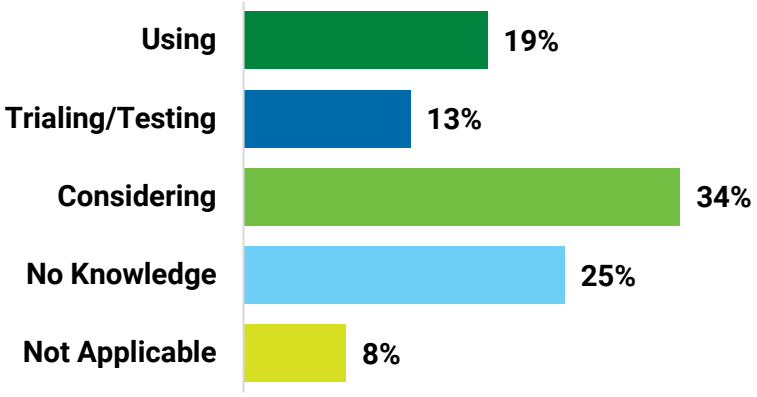
Multiple types of technology can detect impairment, from wearable devices and cognitive assessments to eye-tracking systems and in-cab camera analytics.

IDTs can be deployed at various intervals (e.g., pre- or post-shift, continuously, after an incident, etc.), providing organizations with greater flexibility in managing impairment risks.

SAFETY TECHNOLOGY 2024 SURVEY RESULTS

According to an NSC survey of 500 employers and 1,000 employees in safety-sensitive industries, 19% of employers reported currently using impairment detection technologies in the workplace, while 47% said they are either testing or considering their use. The highest reported use of the technology came from employees in construction, transportation and warehousing, and utilities.

Use of IDTs in the Workplace:



Top Industries Testing or Using:

Construction **(52%)**

Transportation **(35%)**

Utilities **(35%)**

Voices from the Workplace:

"IDTs ensure that our employees have the maximum cognitive awareness to safely operate machinery during their shifts."—*Employer (Transporation and Warehousing)*

"There are privacy concerns if biometric data is being collected. The costs of rollout and integration are also drawbacks."— *Employer (Agriculture)*

"The biggest benefit [of IDTs] is that they help ensure that our workers are healthy and have access to treatment or support if they are impaired in any way."— *Employee (Mining/Quarrying)*

"Implementation costs and adhering to various software requirements can be a drawback of [impairment detection] technologies."— *Employee (Manufacturing)*

Benefits of Impairment Detection

- IDTs aim to detect impairment stemming from various causes, including fatigue, alcohol or substance use, medical conditions, or mental distress.
- IDTs provide an objective framework for fitness for duty determinations.
- IDTs can detect impairment even when visible signs are absent, screen at multiple points during the day, and help identify patterns of chronic impairment.

Considerations for Adoption

- Technology identification and implementation can take significant time and resource investments, which may be a barrier especially for small or medium-sized organizations.
- Without transparent communication, workers may be resistant to wearables due to privacy concerns or data sensitivity.
- Ambiguity regarding product validation is a considerable limitation. In many cases, the scientific basis for the technology has been evaluated, but more research is needed for the effectiveness in diverse workplace settings.

BEST PRACTICES

- **Engage early and often with key stakeholders**, including IT, legal, and HR, to ensure a smooth implementation process. Policies and procedures should be clear and consistently implemented to ensure equitable use of the technology across the workplace.
- **IDTs can provide an opportunity to better support employees**, which can take shape as workplace accommodations, treatment and support for identified mental health or medical conditions, or altered workplace policies that mitigate the risk of impairment in the workplace.
- **Establish transparent data policies**, clearly communicating how worker data will be collected, used, stored, and protected to build trust with employees and address privacy concerns early. Where possible, avoid using safety technologies for punitive use, opting instead for coaching, mentoring, or providing support or accommodations where appropriate.

For more information, see our report Impairment Detection Technology & Workplace Safety. For additional resources and guidance on adopting safety technologies, explore the Work to Zero *Safety Innovation Journey*.

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Learn More:
nsc.org/WorktoZero

National Safety Council