

eBook

How AI Is Impacting Health and Safety

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Introduction

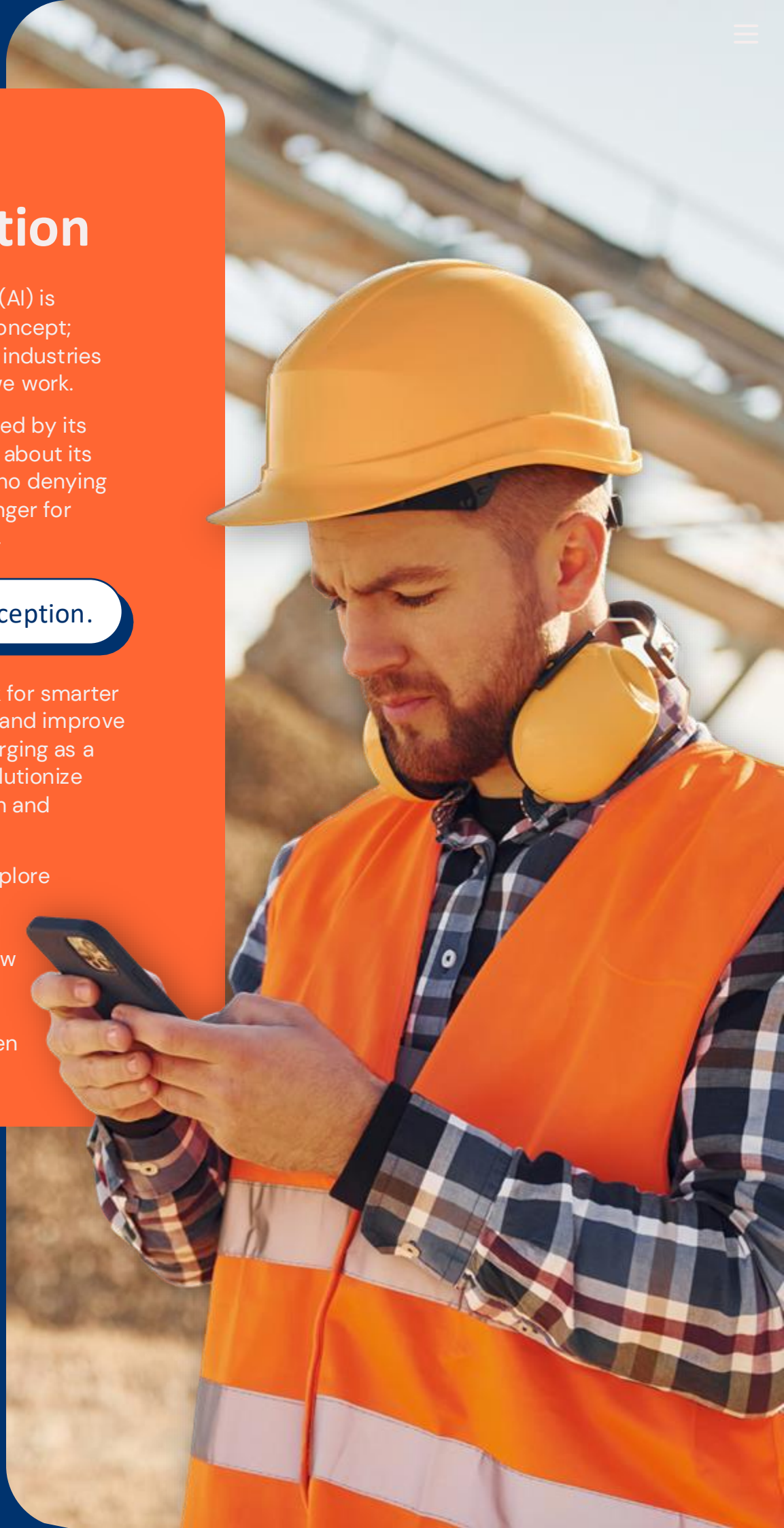
Artificial Intelligence (AI) is no longer a distant concept; it's rapidly reshaping industries and redefining how we work.

Whether you're excited by its potential or cautious about its implications, there's no denying that AI is a gamechanger for industries worldwide.

EHS&S is no exception.

As organizations look for smarter ways to manage risk and improve operations, AI is emerging as a powerful tool to revolutionize and streamline health and safety processes.

In this eBook, we'll explore how AI is influencing high-risk EHS&S industries, explain how to leverage its expansion and detail what to consider when taking the first step.



02

The Expansion of AI in Health and Safety

AI brings a transformative approach to workplace health and safety by enabling organizations to move from reactive measures to proactive, data-driven strategies using the following tools.

01

Historical Insights

Uncover hidden risks, detect emerging trends, lead decision-making and prevent potential hazards before they happen.

02

Proactive Measures

Guide smarter decision-making and enhance risk management with actionable suggestions.

03

Regulatory Compliance

Stay ahead with instant access to regulatory requirements and automate routine reporting tasks.

04

Recurring Gaps Identification

Resolve recurring issues from past audits to address common pitfalls and efficiently mitigate risks.

05

Relevant Training

Ensure worker competency with recommended training based on recent incidents and risk assessments.

06

Multilingual Support

Translate important safety information and processes into various languages to ensure diverse workforces have the tools necessary to stay safe and healthy.

07

Image Insights

Using advanced image recognition, extract key details from images to efficiently evaluate workplace hazards and ergonomic issues.

Leveraging AI Across High-Risk Industries



Energy & Utilities

AI is transforming the energy and utilities sector by **enabling predictive maintenance and proactive asset management**. By continuously monitoring infrastructure, such as pipelines and electrical grids, AI can detect early signs of wear, corrosion or system irregularities to suggest maintenance before failures occur.



AI can also adapt EHS e-learning courses to the needs of individual workers for a **personalized, tailored approach to safety training**. This ensures every utility worker, from plant operators to engineers, receives the most relevant and effective training. AI can also analyze past incident data to detect root causes of disruptions and suggest preventative training material.

Leveraging AI Across High-Risk Industries



Manufacturing

AI enhanced tools empower frontline workers in manufacturing facilities to improve the quality and accuracy of reported information through image-based hazard identification, real-time translation and guidance on best practices.

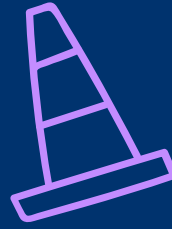
These tools also provide **instant feedback on reports**, offering actionable, real-time safety insights and enabling workers to respond more effectively to workplace risks.



AI can also automate routine reporting tasks and compliance reports, including equipment checks, environmental metrics and injury logs, to reduce the **burden on administrative staff**. Eliminating tedious, manual tasks gives EHS professionals more time to evaluate workplace hazards and develop safety initiatives.



Leveraging AI Across High-Risk Industries



Construction

Computer vision technology provides EHS professionals in the construction industry with **real-time hazard detection**.

EHS professionals can create real-time safety dashboards using generative AI to monitor data, such as high dust levels, worker behaviors and improper equipment or PPE usage.

These dashboards highlight high-risk zones and emerging hazards, helping teams intervene before accidents happen.



Generative AI can also **streamline documentation processes** in the construction industry by auto filling permit applications, inspection forms and incident reports. Managers are alerted regarding upcoming regulatory deadlines, enabling them to proactively gather and submit the necessary compliance information to reduce administrative burdens.



Leveraging AI Across High-Risk Industries



Oil & Gas

Natural Language Processing (NLP) tools empower EHS professionals in the oil and gas industry to automatically analyze and extract critical insights from complex regulatory documents, industry standards and audit reports.

This ensures organizations **remain proactive and fully compliant** with evolving EHS requirements by streamlining compliance monitoring, highlighting operational gaps and tracking regulatory changes.

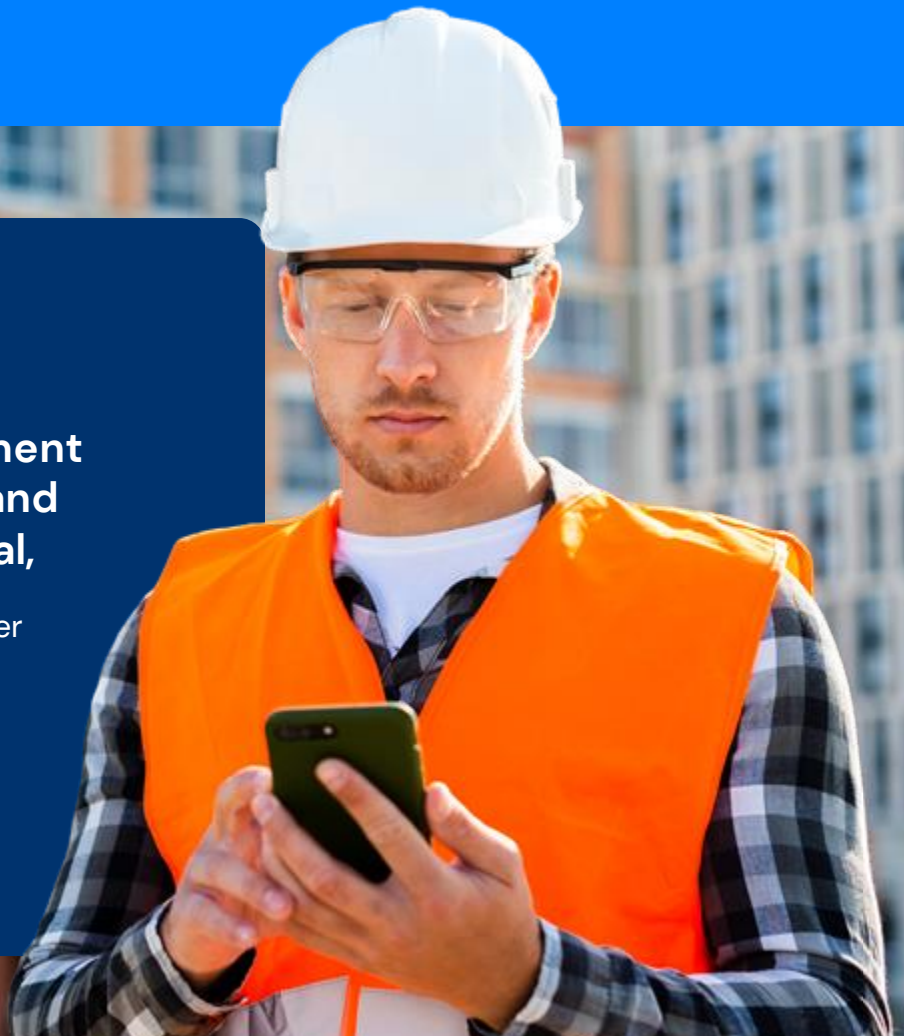
Advanced data analysis and predictive maintenance can also be leveraged to enhance safety and operational efficiency.

By continuously monitoring equipment and processing massive streams of data from sensors and machinery, AI can detect performance issues, recommend proactive maintenance fixes and **prevent disruptions or accidents caused by faulty machinery.**



In a complex environment with diverse hazards and high accident potential,

AI-driven insights that empower EHS professionals to make smarter, risk-based decisions are critical for risk mitigation and compliance efforts.



Leveraging AI Across High-Risk Industries



Mining & Minerals

AI systems are revolutionizing environmental stewardship in mining by analyzing real-time data from sensors that track air quality, dust levels and water contamination across sites. These tools enable early detection of environmental risks, such as toxic gas leaks or excessive dust emissions, **triggering automatic alerts and guiding immediate mitigation actions.**

Machine learning models can also analyze incident reports, near-miss data and worksite conditions to **predict where and when hazards are most likely to occur.** By highlighting emerging risk patterns, EHS professionals can deploy targeted interventions, such as additional inspections or safety briefings, in high-risk zones to dramatically reduce accident rates.



04

Addressing Misconceptions

Despite the growing interest in artificial intelligence, many organizations still hesitate to explore its potential due to uncertainties. Understanding common misconceptions can help teams adopt it with greater confidence and clarity.



“AI will replace our jobs.”

AI is designed to support EHS professionals, not replace them. It automates repetitive, time-consuming tasks like data entry, routine reporting and compliance tracking to free up time spent on strategic initiatives and areas that require human insight.

“We don’t have the right data for AI.”

You don’t need massive amounts of data to start seeing value from AI. Many AI tools can begin working with the data you already have, such as past incidents, inspections or audit reports, and provide early insights and suggestions. As your data grows, so will the value of the system.

“Using AI puts our company’s data at risk.”

Not all AI tools are created equal. That’s why it’s important to choose platforms equipped with robust security. Solutions powered by OpenAI Enterprise, for example, ensure that your data is protected and used exclusively for your benefit. Your organization’s information will not be used to train public AI models, and your privacy will stay protected.

“It’s too complicated to adopt AI into our system.”

Adopting artificial intelligence in your health and safety processes may feel like a big step, but it’s achievable with a structured approach.

Getting Started with AI

Step 1:

Audit Your Current System



Start with a comprehensive review of how your organization currently collects, stores and uses EHS data. This audit will uncover areas where AI can deliver the most value. Ask yourself how incidents and near misses are currently being captured: AI relies on high-quality, complete data to identify meaningful patterns.

Next, identify how your safety data is stored and understand how data may need to be consolidated to allow AI tools to process it effectively. Finally, pinpoint gaps where critical health and safety metrics are not currently being tracked to identify areas of improvement.

Step 2:

Invest in the Right AI-Driven Tools



The tools you choose will shape the success of your AI strategy. Look for solutions that align with your goals and can evolve with your organization. Your AI tools should be able to grow with your organization and integrate smoothly with your current systems. An intuitive interface and clear workflows encourage adoption and reduce resistance to change.

Step 3:

Train and Empower Your Team



AI is only as good as the person using it. Equip your team with the knowledge and confidence to use AI effectively and emphasize to your team that AI is being brought in as a support tool, not a job replacement. Explain how AI automates repetitive tasks and enhances decision-making to highlight its practical value. Finally, reinforce the importance of consistently logging incidents, near misses and observations to help the system generate meaningful insights over time.





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Our Evotix team is passionate about applying market leading technology to create safer, smarter workplaces, partnering with organizations that value people's safety, communities and the planet.

As safety professionals and long-term leaders in the Verdantix EHS Green Quadrant, our deep and practical insight addresses your evolving needs, helping you achieve your health, safety and sustainability goals.

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