

AI and the Future of EHS Management

A Digital Revolution



Who is Sarah Wood?

- Native of Rhode Island with Midwestern origins (Northeast Ohio)
- Environmental Engineer with over 20 years of experience in EHS Consulting
- Resigned from a full-time position in June 2020 to become President & Owner of EHS Consulting Services
- Embracing a full-time nomadic lifestyle since July 2022, spending winters in Arizona



Poll Results

AI Overview

AI



- Branch of computer science focused on creating **machines** capable of **performing tasks** that **typically require human intelligence**, including learning from experience (machine learning), understanding natural language, recognizing patterns, solving problems, and making decisions, through the use of **algorithms, data, and computational power**.

Gen AI



- **Deep-learning** (machine) models that **create new content** (text, audio, images, etc.) by **ingesting** vast amounts of training data and using complex machine-learning algorithms to **understand patterns and formulate output**
- These models have broad applications across various creative fields.

LM

- Specialized class of Gen AI specifically designed to handle **language-related tasks**, such as understanding, generating, and **processing human language**.
- Memory units are incorporated in their architectures. They **store and retrieve** relevant information which enables them to produce coherent and contextually accurate responses.

Chatbot vs. VA

Rule-Based Chatbots

- Follow predefined rules and workflows.
- Can only respond to specific commands or keywords.
- Think online screening before you get to “talk to support”

AI-Powered Chatbots (Machine Learning-Based)

- Use natural language processing (NLP) to understand user inputs.
- Learn from interactions to improve responses over time.
- Can handle more complex and varied conversations.
- Example: **ChatGPT**, IBM Watson Assistant.

Virtual Assistants (AI Assistants)

- More advanced than chatbots, capable of **multitasking** and integrating with various applications.
- Can process **voice commands**, schedule tasks, set reminders, and **control smart devices**.
- Use machine learning (ML), NLP, and sometimes voice recognition to improve user interaction.
- Example: Siri (Apple), Alexa (Amazon), Google Assistant.

Generative AI Assistants

- A subcategory of virtual assistants that generate human-like responses dynamically.
- Often built on large language models (LLMs) like GPT-4.
- Example: **ChatGPT**, Google Gemini, Claude AI.



YES

So are you telling me ChatGPT is both a Chatbot & VA

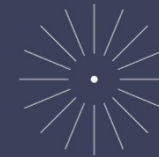
So What is ChatGPT?



Developed by OpenAI, ChatGPT is a state-of-the-art language model designed to **generate human-like text** based on user prompts.



It excels in natural language understanding and generation, making it useful for conversational interfaces, **content creation**, and **data summarization**.



Available in both free and subscription versions, it's widely adopted across industries for a range of applications.

And What is Open AI?

Mission & Focus:

OpenAI is an artificial intelligence research organization and company focused on **developing advanced AI systems**—most notably, language models like ChatGPT.

OpenAI was founded in 2015 by Elon Musk & Sam Altman with the goal of **ensuring that artificial intelligence benefits all of humanity**. Its work spans developing state-of-the-art models, advancing machine learning research, and exploring applications across various industries.

Didn't I Hear Some Drama About This in the News Recently?

In recent news, OpenAI has faced scrutiny over several issues, such as:

- **Commercialization vs. Mission:** Critics have raised concerns about the balance between rapidly commercializing cutting-edge technology and **staying true to its mission** of promoting safe and widely beneficial AI.
- **Transparency & Ethics:** There have been debates about the transparency of its research and the ethical implications of deploying powerful AI models, including discussions on **potential biases** and the **societal impact** of these technologies.

Ethical Dilemmas in EHS

- data privacy violations
 - algorithmic bias
- lack of transparency in decision-making
 - potential for over-reliance on AI systems
- ensuring accountability for AI-driven actions



Top developments making headlines in the AI world right now:

Regulatory Momentum:

1

EU and North America are finalizing proposals for AI regulations to ensure transparency, accountability, and fairness in AI-driven decisions across industries

Tech Giants and Next-Gen Models:

2

- Google's latest AI enhancements focus on better personalization and integration across devices
- Microsoft is deepening its collaboration with OpenAI to embed more advanced AI capabilities into its cloud and productivity suites.

Enterprise Integration in Focus:

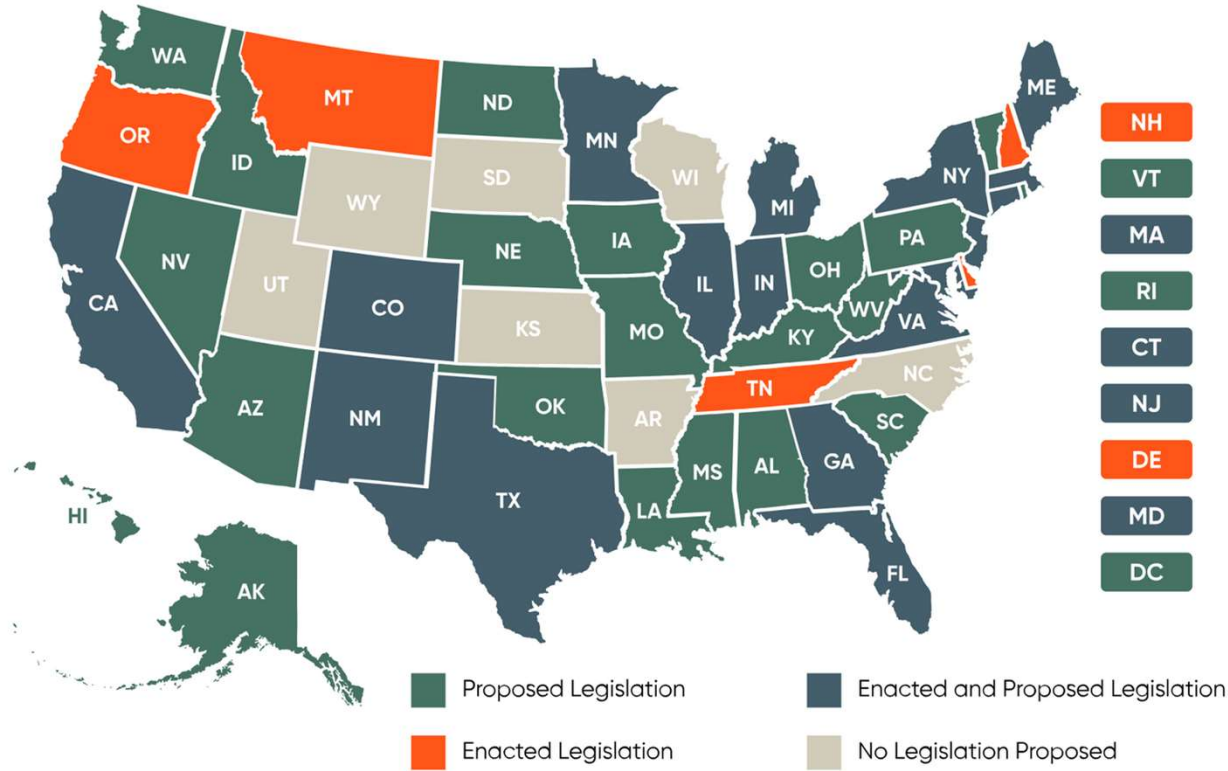
3

In the corporate world—especially in sectors like EHS—AI is moving from a buzzword to a practical tool. Companies are increasingly adopting integrated platforms that combine AI with real-time data analytics and IoT sensors to predict risks, streamline compliance, and drive sustainability initiatives.

Emerging AI Regulatory Landscape in the

U.S.

BCLP • Client Intelligent



What does all of this mean?

AI is the future and we (as the human race) have a lot of figure out when in comes to how it will be regulated and what are the ethics?

Not the focus of this presentation – as we say in my RV club – leave politics and religion at the door.

So, let's focus on...

How is EHS using AI?





True-Yam5919 • 2mo ago • Edited 2mo ago

Top 1% Commenter

A few programs, such as Gensuite, are beginning to incorporate it into their software.

However, when it comes to LLMs, I use it extensively. For EHS training, I particularly appreciate how Claude addresses the audience in writing. It strikes a better balance between being conversational and robotic.

For restructuring or formatting policies/procedures, those types of tasks, GPT is the most reliable tool. You can also ask GPT to provide an outline for PPE training in PowerPoint format and then proceed accordingly. It's great for writers block.

Gemini excels in research and is particularly useful for staying updated with the most recent laws or regulations that have been passed. It significantly reduces my research time for policies or training materials.

Now, while I highly recommend using these tools, it's crucial to double-check, triple-check, and perhaps even quadruple-check your work. I don't copy-paste anything that constitutes a regulation or standard. Instead, I let the tool guide me (keyword).

The other day, I had to write an extensive incident report and then requested it to condense it to a concise format suitable for presenting to a large audience without disclosing sensitive information. Additionally, I asked it to provide a list of corrective actions (I selected the ones that were most effective in my specific environment).

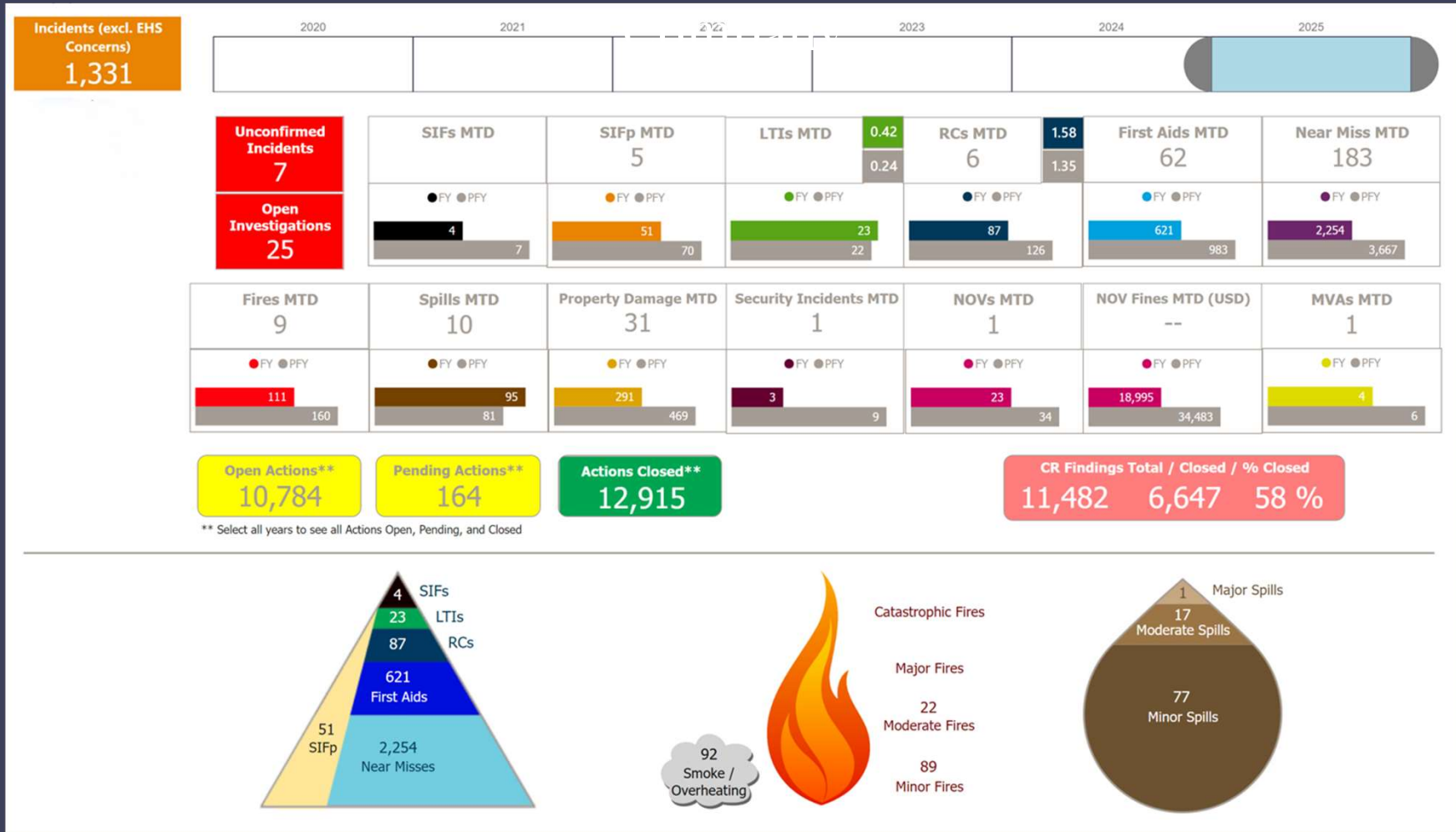
NOTE: My tone was super angry writing this (on purpose lol) and then used Apple AI writing tools to write it more professionally haha "AI" is everywhere

NOTE #2: My team pays the \$200/month service for GPT. We can all work together on the same project. We also started to use SORA for visuals.

TL;DR

- EHS Training
- Writers Block for Policies/ Procedures
- New Regulations
- Keep me from getting fired (“per my previous email...”)
- Paid version

Microsoft PowerBI - Fortune 500





Some Additional Innovations to Share

- **EHS Software – Tons of consulting firms and softwares – not going to go into each one**

LOTS of options with ranges of costs - between \$250 per month for basic plans to upwards of \$500,000 for highly customized solutions with extensive features and support needs

Gamification Training



SEEN SAFETY

IRIS 860 sensor setup reference



Sit-down Counterbalance Forklift (Open cab)

SEEN equipment to install

- 1 x IRIS 860 sensor SI-120
- 1 x buzzer volume reduction cap SI-133 (may not be required on all machines)
- 1 x IRIS-i camera SI-220

Installer notes

- Follow SEEN's installation instructions which can be downloaded at seensafety.com/info
- The sensor can be located either below or above the overhead guard unless the truck has a container mast, in which case the sensor must be mounted below the overhead guard
- Do not drill into any ROPS or FOPS structural elements
- A DC/DC voltage reducer may be required on battery electric machines
- The sensor settings match the factory default settings and do not need to be changed.

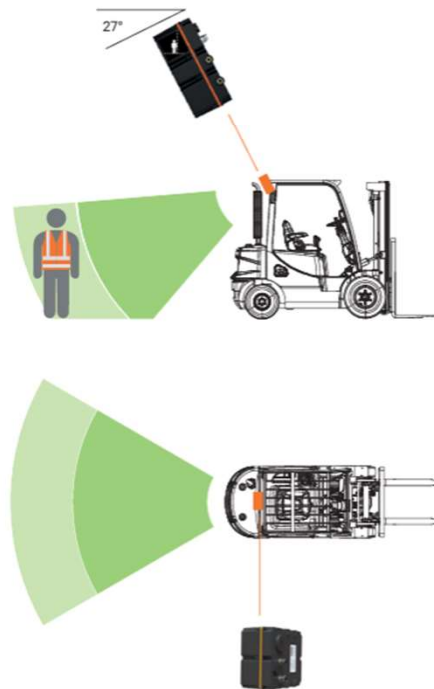
Sensor settings*

CRITICAL ALERT	3m
EARLY WARNING	+1m
REVERSE DEPENDENT ALERT	
Sensor can only alert when the reverse signal is on	
VOLUME	Normal

*A SEEN IRIS 860 Setup Dongle (SI-138) is required if you need to change the sensor settings.

Sensor Location and Angle

■ Sensor location (graphic not to scale)



Safety Tech

- Seen Safety utilizes AI to detect pedestrians in a work environment, primarily designed for forklift operations, providing real-time alerts to operators to prevent collisions with people on foot

What does the future for AI in EHS Hold?

Here's what ChatGPT had to say:



Over the next 5 years, AI is likely to drive major advancements in the EHS industry, transforming compliance, risk management, and sustainability efforts.

Here's what I foresee:

Predictive and Preventative Safety Programs

01

- AI-driven **predictive analytics** will become more refined, identifying hazards before incidents occur.
- **Wearable technology** with AI-enhanced sensors will monitor worker health in real time, predicting fatigue, stress, or exposure to hazardous conditions.
- **Computer vision** will be used in workplaces to detect PPE compliance, unsafe behaviors, or hazardous conditions in real time.

Autonomous Environmental Monitoring & Compliance

02

- AI-powered Internet of Things sensors will provide **real-time monitoring** of air, water, and soil quality, helping companies stay ahead of regulatory compliance.
- **Drones and robotics** will be more common for inspecting hazardous sites, reducing human risk in dangerous environments.
- AI-based **permit tracking and reporting automation** will reduce compliance violations by ensuring documentation is always up to date.

3. AI-Enhanced Auditing & Compliance Automation

- AI will streamline EHS compliance audits, **automatically identifying gaps** and generating reports with corrective action recommendations.
- Natural language processing will enable AI systems to review vast **regulatory databases** and automatically flag relevant updates for companies.
- **Chatbots** will assist employees with real-time compliance Q&A, helping organizations adhere to complex regulations.

4. Sustainable and Carbon Footprint Optimization

- AI-driven carbon footprint analysis will allow businesses to **track and optimize emissions** reductions more effectively.
- **Smart energy management** systems will automatically adjust facility operations to minimize environmental impact.
- AI-powered lifecycle analysis tools will help companies design more **sustainable products and packaging**.

5. Enhanced Incident Management and Root Cause Analysis

- AI will **analyze patterns** in incident reports to identify recurring risks and recommend interventions.
- **Virtual models of workplaces** will simulate accident scenarios and propose risk mitigation strategies.
- **Machine learning** will enhance **root cause analysis**, helping companies implement proactive rather than reactive safety measures.

What Does This Mean for EHS Professionals?



AI in EHS will shift from being a compliance-focused function to a strategic advantage, allowing companies to be safer, more sustainable, and more proactive in their environmental and workplace safety initiatives.



The role of EHS managers will evolve from compliance enforcement to **strategic risk and sustainability** leadership.



Companies will need to **invest in AI literacy** to fully leverage these tools.



AI adoption will drive cost savings and efficiency improvements, but also **regulatory challenges** around data privacy and AI decision-making.

Questions?



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