

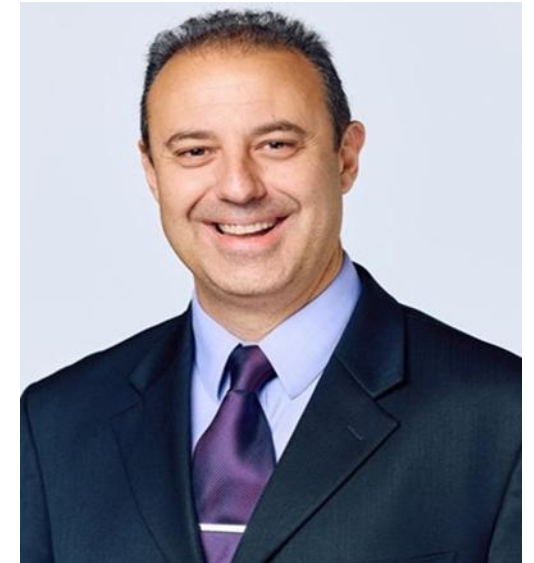
DEPLOYING SAFE AUGMENTED INTELLIGENCE TOOLS IN PROCESS SAFETY

TRANSFORMING SHE TRAINING IN OIL AND GAS USING A GPT-DRIVEN APPROACH



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AGENDA

➤ **Motivation**

- Understanding the Gap in Traditional Training
- Transforming Information to Knowledge and Training

➤ **The SHE Training Hub GPT**

- Introduction & core features

➤ **Results, Boundaries & Final Takeaways**

- Scalability and the future of SHE training



THE TRAINING GAP IN SHE PROGRAMS

➤ **Fragmented Training Approaches**

- One-size-fits-all methods often ignore role, experience, or regional nuances

➤ **Static Content, Rapidly Changing Risks**

- Training materials often lag emerging hazards and regulatory update

➤ **Accessibility and Scalability Issues**

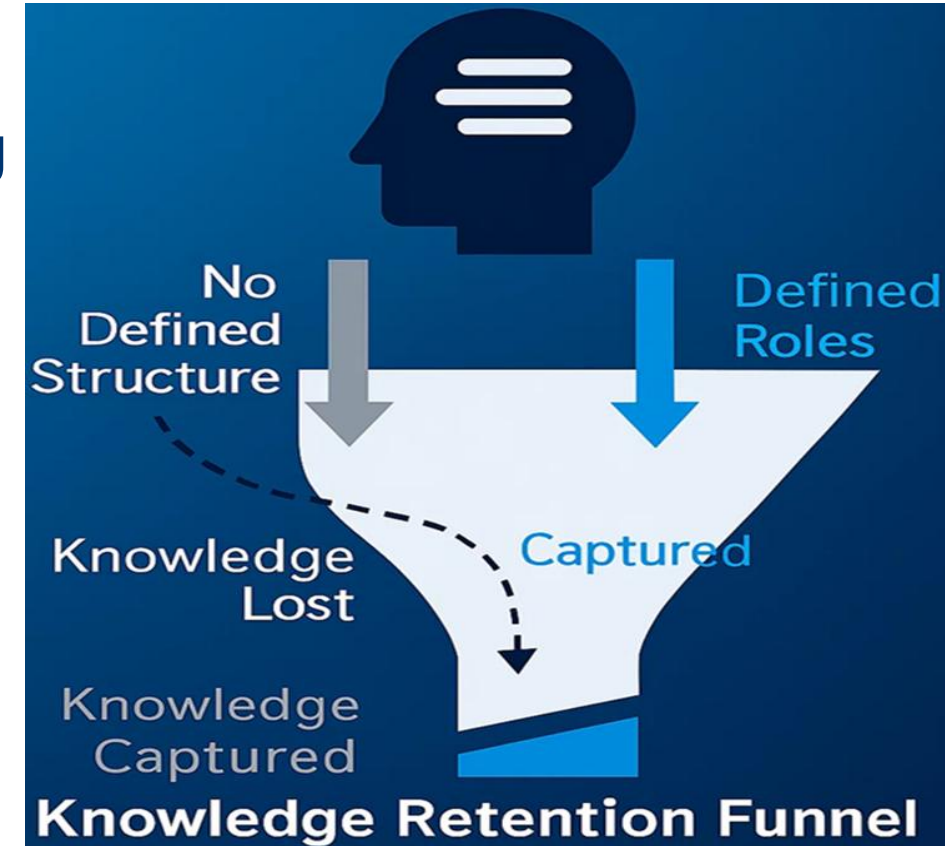
- Hands-free or on-demand access is rarely available

➤ **Limited Behavior Change**

- Training outcomes aren't aligned with field decisions or incident prevention

PROCESS SAFETY KNOWLEDGE MANAGEMENT

- **Data ➡ Information ➡ Knowledge ➡ Training**
- **Framework for Transformation**
- **Training Model (Framework)**
- **Information and Instructions (Structured Data)**



FROM TRADITIONAL TRAINING TO AUGMENTED INTELLIGENCE

➤ **Why Augmented Intelligence?**

- Enhances decision-making while ensuring compliance
- Bridges the gap between static training and dynamic field realities

➤ **Key Shifts in SHE Training**

- From Periodic → Continuous learning
- From Generic → Role-Specific training
- From Reactive → Preventive hazard management
- From Classroom-Only → Field-Ready access



TRADITIONAL TRAINING

Static. Generic. Reactive.

AUGMENTED INTELLIGENCE

Dynamic. Contextual. Proactive.

THE SHE TRAINING HUB - POWERED BY AI

➤ What It Is

- A purpose-built GPT model designed specifically for Safety, Health & Environmental (SHE) training in oil & gas

➤ Core Training Features

- Structured regulatory guidance
- Scenario-based learning & simulations
- Role-specific training
- Quizzes, challenges, and gamification to improve retention



SHE Training Hub

SHE compliance trainer for oil and gas; realistic, role-based, and regulation-focused learning.



Link to GPT tool

DEMO PROMPT EXPLAINING HOW THE TOOL STANDS OUT

Explain how you are different from traditional SHE training methods in oil and gas

Great question. Here's how I differ from traditional SHE training methods in the oil and gas industry — in ways that make safety, health, and environmental compliance more engaging, role-relevant, and effective:

1. Interactive vs. Passive Learning

| Traditional SHE Training | SHE Training Hub (Me) |
|--------------------------------|---|
| Lectures, PowerPoints, manuals | Interactive modules, simulations, and decision-based learning |
| One-way information delivery | Two-way conversations with real-time feedback |
| Often compliance-driven | Comprehension- and judgment-driven |

I turn passive listeners into active participants by letting users choose actions in real-world scenarios, see consequence trees, and ask follow-up questions for clarity.

2. Role-Based Customization

| Traditional: "One size fits all" | SHE Training Hub: Personalized learning |
|--------------------------------------|---|
| Same module for managers & new hires | Content adapts by role, location, and experience level |
| No field-level context | Field-ready training with voice, visuals, and step-by-step hazard recognition |

Whether you're a junior field tech in Texas, a HSE coordinator in offshore ops, or a compliance officer working under TCEQ — I adapt the content to your specific needs, regulations, and language.

3. Understanding the 'Why' Behind Rules

| Traditional SHE: "Don't do this." | SHE Hub: "Here's <i>why</i> this matters." |
|---|---|
| Focus on rule memorization | Focus on building professional judgment |
| No context on consequences | Uses real-world analogies, event trees, and root cause analysis |
| Example: Instead of saying "Lockout/Tagout is required," I'll simulate a failed LOTO incident, then break down the mechanical, procedural, and human failure chain, helping you retain and apply the knowledge. | |

4. Field-Ready & Hands-Free Capabilities

- Voice-activated for glove-safe, on-site use
- Enables microlearning — quick refreshers on-site, before tasks


5. Gamification & Adaptive Learning

- Scenario-based decisions with branching outcomes
- Quizzes with feedback that explains all answers
- Progressive complexity: As you advance, the content gets deeper
- Offers team-based challenges to drive collaborative compliance

6. Always Current, Region-Aware Compliance

- I adapt to state-specific rules like Cal/OSHA, TCEQ, NORM, etc.
- I use real-time search (when needed) to ensure regulatory updates are factored in — no waiting for annual training updates

7. Retention & Reinforcement Tools

- Built-in glossaries, explainer cards, and checklists
- Event Tree Analysis to show how decisions cascade into incidents
- Choose-your-own-outcome safety storytelling  build judgment

ALIGNING WITH FEDERAL & STATE REGULATORY STANDARDS

➤ **Direct Regulatory Mapping**

- Training content is structured to directly match key OSHA PSM and EPA RMP requirements for clear compliance alignment

➤ **Compliance Confidence**

- Ensures clear traceability from training material to regulatory clauses and real-world application, reducing interpretation risks

➤ **Regulatory Insight in Practice**

- Example: A field worker in California receives Cal/OSHA-tailored heat illness prevention training, while a Texas worker gets TCEQ environmental discharge guidance - all within the same platform

SCENARIO-BASED TRAINING

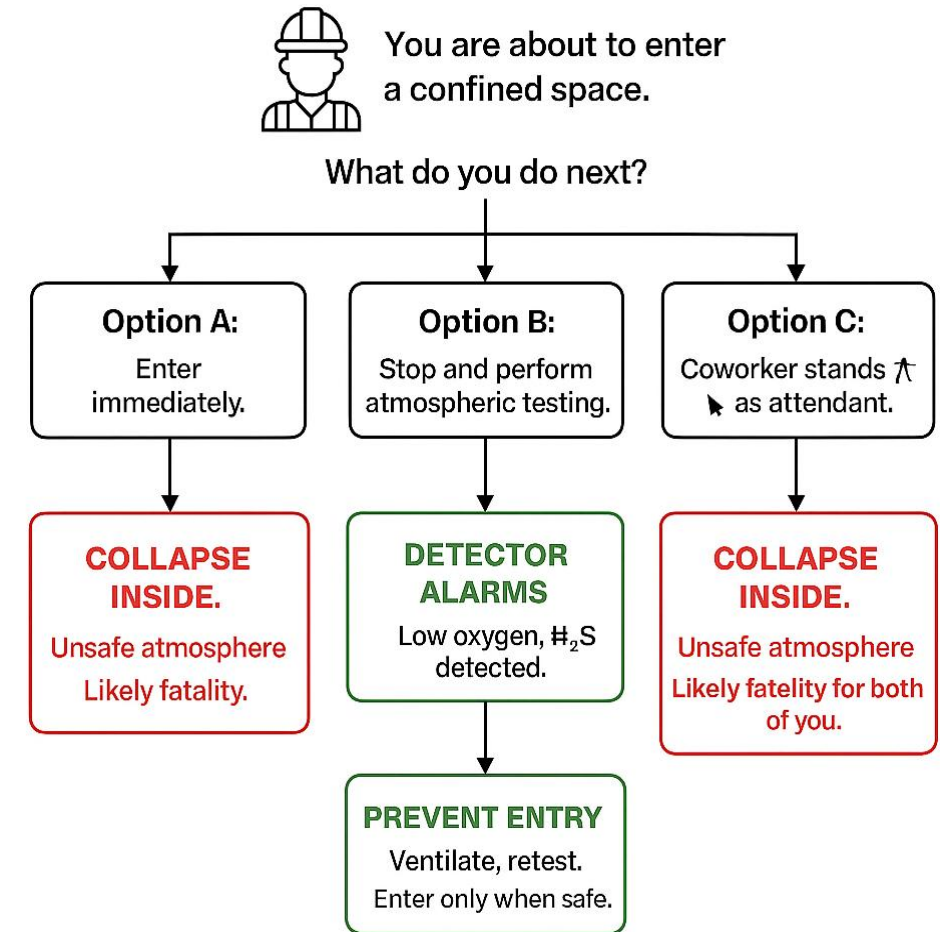
➤ Practical Application

• Examples:

- Confined Space Entry → What if gas testing is skipped?
- Lockout/Tagout → What if a shortcut is taken?
- Spill Response → What if the wrong containment method is chosen?

➤ Event Tree Feedback

- Each choice shows consequences and regulatory implications



DEMO PROMPT RELATED TO SCENARIO-BASED TRAINING

Run a choose-your-own-adventure safety scenario: worker about to enter a confined space without testing air quality

Great choice—confined space entry is one of the **most dangerous yet common** hazards in oil and gas operations. Let's run this as a **choose-your-own-adventure style safety simulation**.

🚧 Scenario Setup:

You're a field worker about to enter a **confined space** (a large storage tank). The supervisor is nearby but occupied. You have the entry permit paperwork but **no atmospheric testing has been performed yet**.

Your task: Decide what you will do next.

Option A:

Enter the confined space immediately. You assume it looks safe inside and you need to finish the job quickly.

Option B:

Stop and perform atmospheric testing with a calibrated multi-gas detector before entry.

Option C:

Ask a coworker to "stand by" as an attendant and proceed inside without testing, figuring the standby person can help if something goes wrong.

👉 What's your choice: **A**, **B**, or **C**?

Once you choose, I'll walk you through what happens next (and the consequences).

📄 🍌 🗨️ ...

B

✅ **Correct choice: Option B – Test the air first with a calibrated multi-gas detector.**

Here's what happens when you choose this:

- You stop before entry and test the confined space atmosphere.
- The detector alarms: **low oxygen (17%)** and presence of hydrogen sulfide (**H₂S**).
- By identifying this, you **prevent a likely fatal entry**. You then follow procedure: ventilate, retest, and only

✅ **Correct choice: Option B – Test the air first with a calibrated multi-gas detector.**

Here's what happens when you choose this:

- You stop before entry and test the confined space atmosphere.
- The detector alarms: **low oxygen (17%)** and **presence of hydrogen sulfide (H₂S)**.
- By identifying this, you **prevent a likely fatal entry**. You then follow procedure: ventilate, retest, and only enter once the space meets safe atmospheric criteria.
- You save yourself (and possibly a coworker) from becoming an entry statistic.

Why Option B was correct:

OSHA's **29 CFR 1910.146** (Permit-Required Confined Spaces) mandates that **air quality must always be tested prior to entry** for:

1. Oxygen content (19.5–23.5% safe range)
2. Flammable gases/vapors (<10% of LEL)
3. Toxic contaminants (like H₂S or CO)

What would have happened with the other choices:

- **Option A (Enter immediately):**
 - You would likely collapse within minutes due to oxygen deficiency and H₂S exposure.
 - A "rescue attempt" by an untrained coworker could result in **multiple fatalities**—this is one of the **leading causes of confined space deaths**.
- **Option C (Coworker stands by, but no testing):**
 - Same result as Option A—you collapse.
 - The attendant, unprepared and unprotected, might attempt an entry rescue and also become a victim.
 - This is called a **"double fatality cascade"**, tragically common in confined space incidents.

🌱 Learning point:

Always **test, ventilate, verify, and document** before entry. No deadline or supervisor's pressure is worth the risk.

Would you like me to **expand this scenario into a decision tree diagram** showing the branching consequences of each option (like an Event Tree Analysis), so you can visualize how one choice leads to outcomes?

MAKING COMPLIANCE TRAINING ENGAGING & MEMORABLE

➤ **Gamified Learning Modules**

- Points, levels, and badges for completing training challenges
- **Retention Boosting Techniques**
 - Spaced repetition quizzes to reinforce memory
 - Interactive problem-solving exercises rather than rote recall

➤ **Proven Impact**

- Increased engagement leads to higher completion rates
- Gamified approaches shown to improve retention by up to 40% vs. traditional training



DEMO PROMPT SHOWCASING GAMIFICATION CAPABILITY

Give me a 3-question quiz on spill response

Sure — here is a **3-question spill-response quiz**.

After each answer you give, I'll provide **detailed feedback** (why correct options are correct, and what the incorrect options would lead to), as required.

Question 1

You notice an unknown liquid leaking from a drum in a storage area. What is your **first action**?

- A. Approach the spill to identify the odor and source.
- B. Evacuate the immediate area and alert others.
- C. Try to upright the drum without PPE.
- D. Cover the spill with absorbent pads immediately.

👉 Your answer: A, B, C, or D?

Question 2

A small diesel spill occurs during fueling. You have proper PPE and are trained in spill response. What should you do next (after ensuring no personnel are in danger)?

- A. Use absorbent booms/pillows to contain the spill.
- B. Hose the spill into a nearby drainage ditch.
- C. Leave it for evaporation since diesel isn't "high hazard."
- D. Apply a chemical neutralizer.

👉 (Answer after Question 1)

Question 3

During a chemical spill, someone on your team begins feeling dizzy. What is the correct priority?

- A. Continue spill cleanup and check on them afterward.
- B. Move the affected person to fresh air and call for medical assistance.
- C. Give them water and keep them working.
- D. Ignore symptoms unless they lose consciousness.

👉 (Answer after Question 2)



1 B



✅ **Correct! Option B — Evacuate the immediate area and alert others.**

This is the **first and most critical step** when encountering an unknown spill.

Before identifying, containing, or cleaning, you must **protect personnel** by creating distance from a hazard you haven't yet characterized. Unknown liquids may be toxic, flammable, corrosive, or oxygen-displacing.

Why the other options are incorrect:

- **A — Approach to identify the odor/source:**
❌ Dangerous. Many hazardous vapors have **no detectable odor** or can **overwhelm the senses**, and approaching could expose you to toxic inhalation or splashes.
- **C — Upright the drum without PPE:**
❌ Direct contact risk. Even small splashes can cause burns, poisoning, or respiratory injury depending on the chemical.
- **D — Cover with absorbent pads immediately:**
❌ "Control before characterization" is unsafe. Until you know the chemical and hazard class, you cannot apply the right absorbent, PPE, or procedures.

Question 2

A small diesel spill occurs during fueling. You have proper PPE and are trained in spill response. What should you do next (after ensuring no personnel are in danger)?

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- B. Hose the spill into a nearby drainage ditch.
- C. Leave it for evaporation since diesel isn't "high hazard."
- D. Apply a chemical neutralizer.

👉 Your answer for Question 2: A, B, C, or D?

DEPLOYMENT, CUSTOMIZATION & SCALABILITY

- **Seamless Deployment**
- **Customizable Modules**
- **Scalable Across Operations**

Security & Confidentiality



Seamless Deployment



Customizable Modules



Scalable Across Operations



BOUNDARIES & CURRENT LIMITATIONS

- **Data Privacy & Proprietary Content**
- **Network Dependency**
- **Not a Replacement for Safety Judgment**
- **Poor Image Processing**
- **Dependent on correctly worded prompts**

FINAL TAKEAWAYS

➤ **Augmented Intelligence as an assistant, Not a Replacement yet**

- Supports human judgment with adaptive, role-specific training

➤ **Compliance + Engagement = Better Outcomes**

- Training mapped to OSHA, EPA, Cal/OSHA, TCEQ
- Role based and scenarios increase retention and safe behavior

➤ **Future Roadmap**

- Roadmap includes AR/VR, predictive analytics, and global expansion

THANK YOU!



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