# 10. [STRATEGIES FOR HEALTH, SAFETY, AND ENVIRONMENT (HSE) HAZARD RECOGNITION (RS293-1)](https://www.construction-institute.org/strategies-for-improving-hazard-recognition-version-1-1)

**Report Summary:** Recognizing hazards is the most essential component of the safety management process. Unrecognized health, safety, and environmental (HSE) hazards expose workers to unmitigated risks that can result in catastrophic accidents, injuries, and illnesses. CII research indicates that traditional hazard identiﬁcation methods result in workers citing fewer than 50% of the hazards at their workplace on average, with some data showing identiﬁcation rates as low as 20 percent.

This study identiﬁed, developed, and tested three transformative hazard recognition strategies that can signiﬁcantly improve hazard recognition performance. These strategies, each based on practices from psychology and behavioral science, were developed to enhance the hazard recognition ability and performance of workers. Empirical testing of these strategies on active construction projects revealed impressive, statistically signiﬁcant improvements. The three strategies may be implemented independently or in combination with one another to provide a multilayered approach to improving hazard recognition. The strategies are:

1. A pre-job safety meeting quality measurement maturity model.
2. The System for Augmented Virtuality Safety (SAVES) tool.
3. A Hazard Identification and Transmission (HIT) board.

**Key Takeaways:**

## (1) Evaluate the quality of the pre-job safety meeting using the Safety Meeting Quality Metric (SMQM).

## (Project Phase: Construction through Operate Facility)

* Deploy the following nine evaluation criteria:
  + Job identification
  + Basic steps identification.
  + Hazard identification and mitigation
  + Location of discussion
  + Supervisor leadership
  + Crew participation
  + Documentation
  + Job changes
  + Evaluation process
* Define operational levels for each criterion.
* Assess the current maturity level of each criterion.
* Identify improvement opportunities from higher achievement case descriptions.
* Implement actions to raise performance to higher levels.

## (2) Deploy the tool, System for Augmented Virtuality Safety (SAVES).

## (Project Phase: Construction through Operate Facility)

SAVES offers the following benefits:

* Provides a risk-free, high-fidelity virtual environment to enhance engagement in safety performance.
* Engages workers in safety protocols through serious gaming and avatar control.
* Identifies hazards and associated energy sources in work scenarios.
* Offers immediate and automatic feedback on safety performance.
* Facilitates small groups for enhanced engagement and discussion.

## (3) Implement a Hazard Identification and Transmission (HIT) board.

## (Project Phase: Construction through Operate Facility)

* Use a 36” × 36” board with magnetic visual-cue display components to identify hazards.
* Review energy sources using the board during pre-task safety planning to identify potential hazards.
* Use the HIT board to communicate additional hazards in real time as work progresses.
* Display permits, Job Safety Analysis, and other essential documents in transparent plastic folders on the HIT board.
* Integrate the HIT board into existing work processes for ease of use and enhanced safety.

## [(4) Tool: Improving Hazard Recognition: Training, Planning, and Execution Strategies to Enhance Safety Performance.](https://www.construction-institute.org/improving-hazard-recognition-training-planning-and-execution-strategies-to-enhance-safety-perform)

## (Project Phase: Construction through Operate Facility)

* Initiate training sessions for SAVES, emphasizing game theory and augmented reality in the context of safety.
* Implement the SMQM by incorporating maturity model assessments into pre-job safety meetings.
* Establish HIT boards for visual hazard communication at construction sites.
* Secure management buy-in for deploying these strategies effectively.
* Ensure that safety prerequisites are met before implementing each strategy.
* Monitor each strategy’s effectiveness through predefined metrics.
* Continuously integrate feedback for safety protocol improvement.
* Acknowledge limitations and adapt strategies as necessary.