cority

cority ONE™

eBook | Ask the EHSQ Expert

Turn over the right stones: Keys to building an incident investigation process that delivers results

empower better performance

Table of Contents

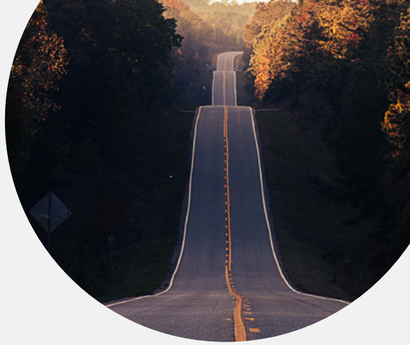
cority

Introduction

Learning from failure is essential for continuous improvement. It helps us understand the reasons why things go awry, and informs what approaches we can and should take to avoid similar adverse outcomes in the future. Nowhere is this more important than in the world of EHS.

Adverse events can cost lives, disrupt operations and result in lasting reputational damage that can stunt business growth. Improving internal capabilities to investigate adverse events helps organizations uncover how they can avoid future losses, maintain compliance, and keep them on a path toward sustainable business performance. But knowing how to optimize your incident investigations isn't always clear.

We recently asked EHS experts Sean Baldry, CRSP, Product Marketing Manager at Cority, and Alex Paradies, Strategic Advisor and Instructor with TapRooT® / System Improvements Inc., their thoughts on the key things organizations should consider to create an incident investigation program that delivers real results. Here's what they said.



Sean Baldry, CRSP

Product Marketing Manager, Cority

Alex Paradies

Strategic Advisor and Instructor, TapRooT® / System Improvements Inc

Question 1

What are the most common mistakes organizations make when it comes to incident investigation?

Alex: The first mistake that comes to mind is that many investigators start their investigation looking for someone to blame. It seems cliché, but so many investigations set out to find a person to discipline instead of trying to find something in the system to fix. I have yet to see a company that has successfully fired its way to a world-class safety culture. However, this hasn't stopped people from using blame to guide their decisions. You can tell if you have a problem with blame culture if during investigations you hear phrases like "this isn't the first time we have had a problem with him," or "if we would just hire better people..." or even: "we counseled the operators to be more careful." But we know that discipline and blame are not effective corrective actions.

Thinking about blame reminds me of another common mistake in investigations: attributing root cause to human error. I think it is fair to say that likely more than 95% of all accidents involve at least one mistake made by a person. By stopping your investigation when you find that a person made a mistake, you miss understanding the underlying system issues that allowed or enabled those mistakes to happen. And that means you often end up treating a symptom instead of the underlying cause.

Sean: I think one of the biggest mistakes investigators make is that they enter an investigation with the benefit of hindsight, but fail to control for it. Many investigators start their investigations from a known outcome (i.e. injury) and deductively work backwards through the established sequence of events to construct a chain of causality. By establishing the sequence, the investigator can then scrutinize the decisions and actions of the individuals at each stage, based on what we know happened next.

What these investigators often fail to recognize, however, is that the people involved in the event did not know the outcome of their decisions before they made them. If they had, they likely would have made different decisions. As a result, this hindsight can skew how investigators look at and understand the

event, since they often assume that the people involved had more knowledge and control over the outcome than what they really did.

Safety expert Sidney Dekker[1] mentions that this overreliance on hindsight can result in investigators "oversimplifying history, to the extent that they begin to see events as being simpler, more linear and more predictable than what they really were". It diminishes the uncertainty and complexity that existed in the lead-up to the event, and can result in investigations being reduced to an argument about the worker's behavior and not the underlying systems or conditions that influenced that behavior in the first place.

[1] Dekker, S. 2014. The Field Guide to Understanding 'Human Error'. CRC Press: Taylor & Francis Group. Baton Route, LA. 219 pp.

Question 2

How can organizations prevent cognitive bias from influencing how they approach investigations?

Sean: I think two types of bias occur fairly frequently in incident investigations. The first is fundamental attribution error. That's the tendency to over-estimate personality factors and under-estimate situational factors to explain behavior we see. It's not uncommon for many organizations to zero-in very quickly during an investigation on what a worker did or didn't do, and immediately start to infer things from their actions without considering the context. This often results in organizations assuming that workers had greater control over the circumstances around an event, and that their inability to control those factors is somehow a personality flaw that needs to be corrected through training or discipline.

Present bias also exerts an influence in how we investigate. That's the tendency for people to give stronger weight to shorter-term payoffs. When something adverse occurs, it's not uncommon for senior leaders to pound their fist on the table and demand immediate answers to what happened and why. That imposes time pressure that can cause teams to rush through investigations, simplify what happened, and focus on correcting the errors and omissions of a few actors. Unfortunately, doing so will invariably not address the systemic issues that triggered the incident in the first place.

By leveraging an evidence-based investigation methodology, companies can insert measures to help control some of these biases which could reduce the effectiveness of their investigation, not to mention damage their safety culture.

Alex: Cognitive bias is a common issue that often gets in the way of a good root cause analysis. Experienced investigators frequently deal with confirmation bias, which is the tendency to only look for evidence that supports their initial assumptions about what happened. As a result, the investigator fails to look for "counterfactuals" – potential evidence that disproves those assumptions, and that may explain an alternative sequence of events.

By focusing only on evidence that confirms their assumptions, investigators can

frequently draw incorrect conclusions. This can show up in the form of favorite “cause its”. Experienced investigators may have solutions they have been wanting to push for a while, and when you have a hammer everything starts looking like a nail.

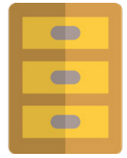
There are three ways organizations can control investigator bias:

1. **Gather and organize evidence before establishing cause** – By gathering and organizing your information into a clear timeline of what happened, the team can clearly see what assumptions they have made, and what questions they have yet to answer.

2. **Use a systematic guided root cause analysis approach** – Support investigators by providing tools to help them effectively analyze human performance issues, identify root causes and categorize best practices that address underlying system weaknesses.

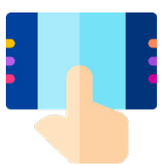
3. **Make sure your corrective actions are tied to a specific causal factor supported with evidence** – By using an evidence-based RCA investigation approach, you reduce the risk of decision bias and make it easier to detect when team members are trying to push corrective and preventive actions (CAPAs) that do not address the specific root causes found during the investigation.

3 Ways Organizations Can Control Investigator Bias



Gather and organize evidence before establishing cause

Use a systematic guided root cause analysis approach



Make sure your corrective actions are tied to a specific causal factor supported by evidence

Question 3

How can you determine when an investigation isn’t required?

Alex: It's critical that organizations adopt a process to evaluate if the expected benefits from an investigation are worth the time and effort to complete it. This is especially true for incidents categorized as low to medium-risk. If the probability of recurrence and the associated consequence is low, then there is little to be gained by investing time and resources to further an investigation.

You can also decide if there is anything else to learn from an event by thoroughly evaluating the initial facts collected. Incidents where someone trips over their own feet in a parking lot or is rear-ended at a stop-light offer little value relative to the investigative effort required, considering the business' limited ability to influence the circumstances leading up to those incidents. Companies should instead focus their investigative resources on incidents, near misses, and precursors where sufficient risk is present. This can be tricky, since calculating risk is an inexact science. But there are different approaches available to help determine when investigations are worthwhile, and when they are not. *The Energy Theory of Accident Causation* proposes that accidents occur from the uncontrolled release of energy. When applying this theory to assess which events to investigate, it could be argued that only incidents involving hazards meeting a specific energy threshold – should be investigated. In this respect, someone who trips and falls on a single step would not warrant investigation since the energy transference is, on average, too low to result in significant injury.

On the other hand, organizations may choose to focus their investigative efforts on events where a considerable amount of energy is present. Incidents and near misses involving suspended loads, falls from height, rotating machinery, contact between vehicles and pedestrians or voltage would likely meet the threshold and thus should be thoroughly investigated with effective CAPAs put in place to prevent recurrence.

Question 4

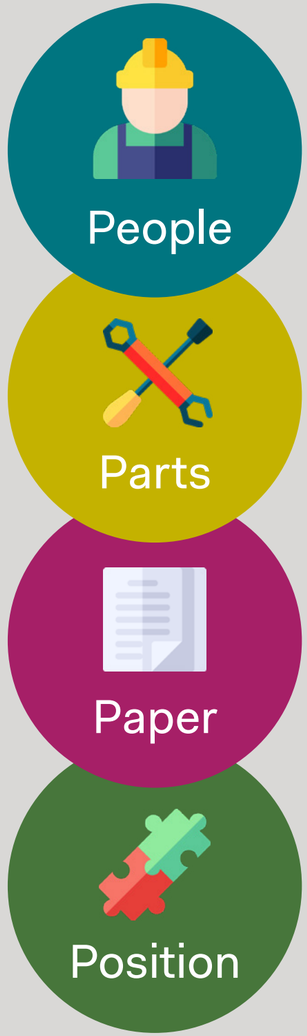
What things should organizations keep in mind when collecting evidence?

Sean: Investigators need to remember that evidence comes in different forms, and certain forms are more transcient in nature than others. Without a sound process to know what to collect, when and how, the investigator risks losing valuable pieces of information that could impact their understanding of how the event occurred, and how to prevent a similar incident in the future.

When collecting evidence, investigators should remember the 4 P's: People Evidence, Parts Evidence, Position Evidence and Paper Evidence.

Investigators may benefit from adding evidence collected into a matrix to help them easily assess what information they have, and what information is still required to fill in gaps in their understanding of the event. The investigator should work to construct a detailed narrative on what is thought to have happened. They need to be careful to avoid incorporating opinion or belief into this narrative – it should be based solely on the available evidence.

Types of Evidence to Collect

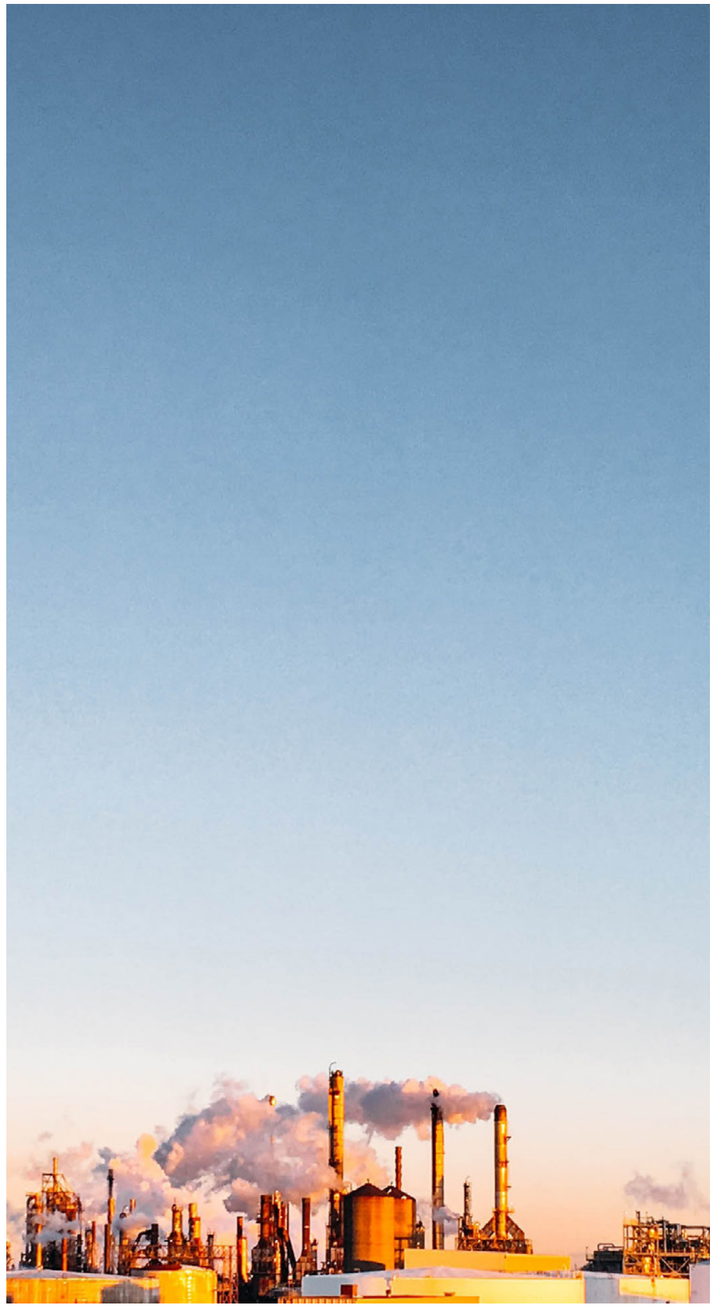


Includes information from people directly involved or with knowledge of the event. That might include witness statements, first-hand accounts or opinions from experts on what happened based on other data available.

Evidence collected from an examination of the machinery, equipment, tools, materials or other components of a system. Damage to equipment or tools used to perform a task can provide clues as to how the event unfolded.

Includes documentation associated with the event, such as policies, inspection or maintenance reports, training records and administrative data.

Pertains to the relative position and movement of people, equipment and materials in the moments leading up to, at the moment of, and immediately after the incident unfolded. Knowing where these items originated and where they ended up can provide insights into the sequence of events.



Alex: It's beneficial to set clear expectations concerning the collection, documentation and long-term preservation of evidence. This guidance should be laid out within your organization's investigation policies. For serious incidents with the potential for litigation, the policy should outline the following:

- What types of evidence to collect
- Techniques to prevent evidence contamination
- Long-term storage of evidence
- Guidance for collecting certain types of evidence (i.e. photographs or videos)
- Maintaining an evidence log and chain-of-custody

Organizations have lost litigation cases due to lost, destroyed or contaminated evidence.

When we work with clients, we discuss developing a tactical plan for evidence collection. This plan should cover the expectations for what evidence must be collected, and the timeline to do so. No one expects to have a major accident so having this information laid out beforehand is critical to ensure evidence collection is done quickly and correctly.

Question 5

In an investigation, what questions should we ask or are even worth asking?

Alex: A common mistake that people make is they think the interviewing process is about asking the right questions. My experience has told me that interviewing is not about asking good questions but rather about improving our ability to listen while others remember what happened.

When we teach cognitive interviewing techniques, we reinforce with investigators the importance of not interrupting a witness when they're trying to recall what happened. Witness interviews are less about asking the best questions, and more about stimulating peoples' memories. You want to collect the most detail possible, which will later enable you to dig into those details and ask the right follow-up questions once you have a clearer picture of the event.

Investigators frequently disrupt the memory recall process by interrupting to ask another question. In reality, the first (and best) question to ask is "In your own words, and in with as much detail as possible, explain what happened start to finish." Then hold your follow-up questions until the witness is done recalling what they remember.

Sean: Alex is spot-on. Interviewing is less about what questions to ask and more about how to ask questions to reveal insights into how the event occurred. We need to remember that participating in a post-event interview can be extremely stressful, especially if the event is particularly serious. The individuals involved are trying to piece together snippets from their memory to help explain to themselves what happened and why. Poorly timed questions can disrupt what a witness recalls, can put them on the defensive, or cause them to shut down, effectively shutting off the tap of information needed by the investigation team. But there are a few things we can do to avoid this.

As Alex mentioned, when asking for a witness' account, let them speak freely and describe what they experienced without interruption. It's best not to take notes at this time. Simply listen. Once the interviewee has given their account, ask them to repeat it, but now stop

at regular intervals to explore issues in greater detail. Encourage the interviewee to leverage all of their senses. What did they see? What did they hear? This second run-through is to confirm the sequence of events, and remove any contradictions.

Lastly, embrace silence. Let's face it – interviews can be uncomfortable. And there's often a tendency for investigators to want to fill up all the dead-air between the interviewee's last statement and the investigator's next question. Avoid doing so. Often, sitting in silence can be the necessary cue for another fact to pop into the mind of the interviewee. Investigators can slow down their question cadence by taking meticulous notes and offer the silence that's necessary for memory recall. You may find you obtain a more accurate account with very few questions actually asked.

Question 6

How does (or should) human factors fit into your investigative approach?

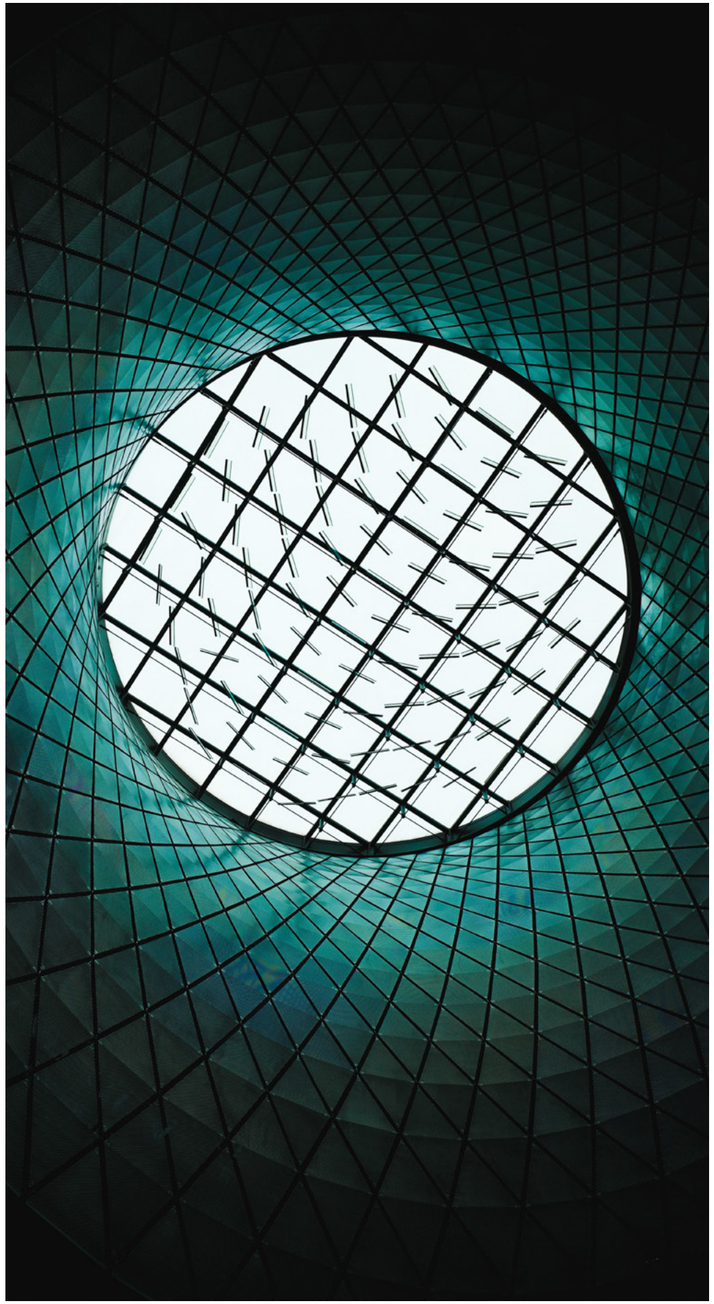
Alex: Human failure is involved in virtually all accidents. It's extremely rare for an incident not to involve at least one error committed by a person. And yet, human factors – and the study of human error – are often missing in most investigation processes.

In most cases, the absence of human factors in incident investigations is simply because investigators haven't been trained on the topic. And while it's highly recommended for investigators to receive human factors training, expert-guided solutions are also available to guide teams on how to identify and evaluate human performance gaps during investigations of incidents and precursor events.

By employing human factors concepts including situational awareness, skill-rule-knowledge (SRK) decision-making model, organizational resilience and human-machine interface, investigators will better understand the causes of human error, and learn how to mitigate system weaknesses through effective corrective actions.

Sean: We definitely see a growing trend amongst organizations to adopt a more human-factors approach to incident investigation. And beyond the need to train investigators on how to correctly adopt these approaches in the field, organizations need to ensure that senior leaders are also educated on human factors, especially the distinction between unintentional human error and willful violation.

When executives understand that most errors identified in an incident are unintentional, and often the result of system-based variables, they become less likely to push a discipline-oriented investigation process. This not only supports the adoption of a just culture – ensuring discipline is reserved for only the most egregious cases - but helps orient organizational commitment toward system-based improvements and a greater understanding of how we can design our workplaces to avoid error-traps that can lead to mistakes and at-risk behavior.



Question 7

How can you measure the effectiveness of your investigations?

Alex: The ultimate test of an investigation's effectiveness is whether it results in actions that actually prevent the same type of event from happening again. That said, it can take a very long time for those results to become apparent. So, the organization needs another way to evaluate the quality of an investigation.

One way to continuously improve your investigations is through a peer-review process, where other investigators or leaders review and grade the quality of the investigation. That evaluation process needs to be systematic and objective so to avoid individuals applying arbitrary criteria to judge the investigations of their peers, which can often lead to inconsistent results.

The TapRooT® program includes an embedded process to help organizations objectively evaluate the quality of their investigations. Investigations are evaluated across 15 grading factors assessing items including evidence collection, assigning causal factors, identify root causes, as well as the effectiveness of corrective actions.

By monitoring these performance metrics, organizations can track and trend their results and see if the effectiveness of investigations are improving over time.

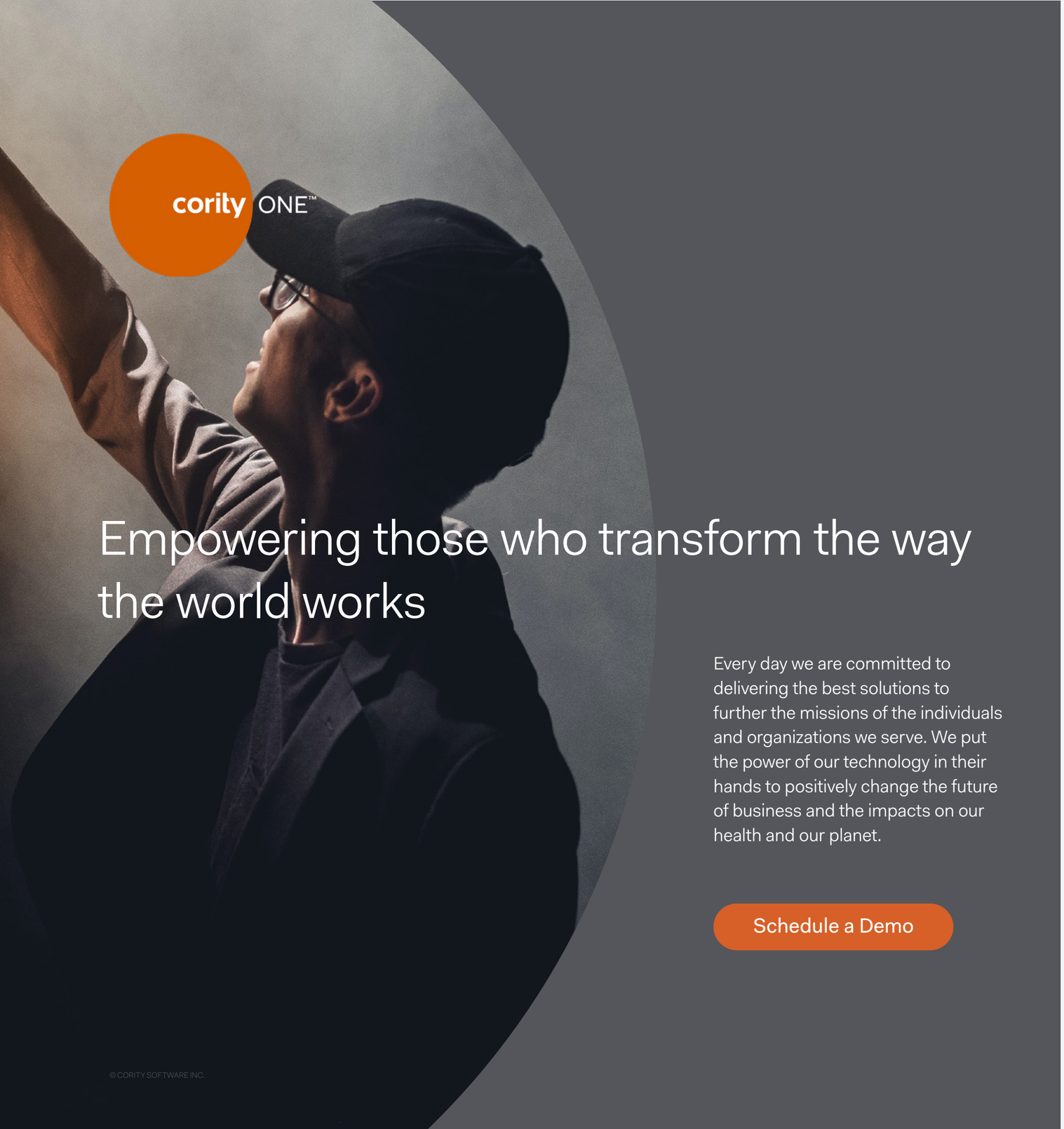
Sean: Another way to assess the effectiveness of investigations is to measure the protective value of the corrective or preventative actions adopted. Do the measures adopted actually prevent a future failure, or are they nothing more than window-dressings?

A simple way to test whether an implemented solution is successful at preventing recurrence is to remove the control and attempt to recreate the failure (in a controlled manner). While not always possible, these tests can clearly identify if the control measure is effective, or if teams need to reconsider the root cause they've previously identified and determine if other factors were present that could increase the risk of a failure.

Final Thoughts

Learning from our past experience is an invaluable way to detect latent risk residing in our processes, and help inform our safety strategy to prevent adverse outcomes in the future. A strong incident investigation program is foundational to building the organizational knowledge needed for future EHS success.

The good news is that, for most organizations, drastic change isn't required. By making some simple tweaks to their incident investigation process, they can more effectively, and efficiently, uncover the insights they need to mitigate risk, and safeguard their workplace and the business.



Empowering those who transform the way the world works

Every day we are committed to delivering the best solutions to further the missions of the individuals and organizations we serve. We put the power of our technology in their hands to positively change the future of business and the impacts on our health and our planet.

Schedule a Demo

TapRooT®

The TapRooT® System is used by leading companies around the world to investigate and fix the root causes of major accidents, precursor incidents, quality issues, human errors, maintenance problems, medical mistakes, productivity issues, manufacturing failures, environmental releases - in other words, all types of mission-critical problems. With over 30 years of research into human performance and the best incident investigation and root cause analysis tools, TapRoot® I System Improvements Inc. has built a systematic investigation process with a coherent investigation philosophy.

This process helps people who have never had extensive human factors training investigate human errors and equipment performance issues, find the real root causes, and fix them with effective corrective actions.

Learn More