SafetyInfo

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Behavioral Science Approach to Incident Investigation

Introduction

Traditional incident investigations in safety tend to focus on events and unsafe conditions. More recently, some investigations are focusing on unsafe acts. Still, many could go further in understanding the environmental variables that supported unsafe behaviors and how to change them to change the behavior in the future.

Behavioral science can help improve incident investigations in two ways:

(1) It can provide a deeper understanding of the context of the consequence and ways to prevent similar events in the future, and,
(2) It can make the process of incident investigation result in a more positive and better learning experience for all involved.

This article will outline strategies for both.

What Is Behavioral Science?

Behavioral science involves using science to study and understand behavior. We define behavior as what we say and do. Behavior is influenced by the local environment in which it occurs. The local environment consists of both the physical environment and the environment created by interactions among people. Most people behave differently in different situations. For example, you probably behave differently at a wedding than you would at a football game. And, you probably behave differently on vacation compared to the way you would act at a meeting with the senior leaders of your company. The better we understand how the local environment influences behavior, the better we can get at creating environments that support safety related behaviors.

Limitations of Traditional Incident Investigations

Traditional incident investigations may consider obvious physical aspects of the environment that contributed to the incident, but often miss more distal factors that lead to the current physical environment. For example, they may note that a piece of equipment failed, but they may not note the challenges with the maintenance schedule or budget to upgrade that may have contributed to the piece of equipment not being replaced. Noting that a piece of equipment failed may suggest replacing that piece of equipment, which might make a small improvement in safety. But, fixing the underlying issue of having the right maintenance process and budget to upgrade equipment could prevent many more injuries. This requires looking at the influences created at higher levels of leadership to understand the full picture.

Some of the more sophisticated traditional incident investigations will describe the behaviors involved in the moment when the injury occurred. But typically, this leads to blaming the workers for their behaviors and choices (e.g., failure to use proper tool, distracted), even though their behaviors are heavily influenced by the things their bosses do and say every day. For example, in cases of injuries resulting from the failure to use the proper tool, it's often the case that it has happened several times before. Digging deeper might reveal the proper tool isn't provided due to budget constraints, the boss has seen it happen several times but was happy with production and didn't say anything, or the workers have mentioned their difficulty with using it in the past but it was never addressed. Traditional incident investigations do not go far enough up the leadership chain when describing behaviors that lead to injuries.

Traditional incident investigations may include some kind of analysis like "The 5 Whys" to try to better understand the behavior. However, these types of analyses cannot uncover the behavioral science principles influencing the behavior without at least some understanding of behavior. In addition, 5 Whys usually only identifies one causal factor.

For example, take a situation of an employee who slips while working at heights and grabs the handrail, which gives way and he falls. The 5 whys might be:

- Why did he fall? He slipped and the handrail gave way
- Why did the handrail give? It was corroded
- Why was the handrail corroded? From weather conditions and it hadn't been replaced
- Why wasn't it replaced? No one put in a work request
- Why wasn't a work request placed? Because it wasn't noticed during an inspection
- Why wasn't it noticed during an inspection? Because of lack of attention to detail by inspectors
- Why aren't inspectors paying enough attention to detail? Because they take a lot of time

From this 5 Whys example (note we couldn't resist doing 7 whys), we might conclude that the organization needs to fix their inspections. It would be tempting to tell people that they need to take inspections more seriously to really pay attention to details and even threaten them if they don't, but behavioral science tells us that will only make a temporary impact, if any at all. This 7 whys analysis doesn't give any information about how to get people to take inspections more seriously or increase work request submissions. A good understanding of behavior and the environment would massively increase the likelihood that inspections and submitting work requests would be improved.

There is a better, more systematic way to understand the environment and behavior that leads to injuries and ways to address them.

ABC Analysis

An ABC (Antecedent, Behavior, Consequence) Analysis is a systematic way to analyze the way the environment drives behavior. It will be explained in more detail below.

Antecedent: Anything that occurs before behavior and encourages it (e.g., a sign, training, procedures)

Behavior: What we say or do

Consequence: Something that occurs after the behavior and makes it more or less likely that the behavior will occur again in the future. (e.g., injury, fitting in with peers, avoiding discomfort).

Antecedents might get behavior to start, but consequences have a stronger influence over behavior, especially in the long term. A safety orientation might make you wear your hard hat the first day on the job, but if no one else is wearing them most people will soon conform to the consequence of peer pressure.

To further the analysis, we must examine the consequences along three dimensions described below.

Is it a reinforcer or punisher? A reinforcer makes it more likely the behavior will occur in the future, a punisher makes it less likely.

Is it now or later? Immediate consequences have a stronger influence over our behavior than delayed consequences.

Is it sure or unsure? Sure consequences, those that always happen when the behavior occurs, are more likely to drive behavior than unsure ones.

Therefore, 'reinforcing, now, sure consequences' and 'punishing, now, sure consequences' have the strongest influence over behavior.

Below is an example of an ABC Analysis for working at heights with and without a harness. It's best to analyze both the current behavior and the desired behavior

Antecedents	Behavior (Current)	Consequences	Reinforcer or Punisher	Now or Later	Sure or Unsure
• Harness is not readily available	Working at heights without a harness	• Get job done faster	R	N	S
• Fit isn't comfortable		• Avoid discomfort	R	N	S
• Work will only take a few minutes		• Might get in trouble	P	N	U
• Company has		• Fit in with peers	R	N	S

harness policy • It's only 9 feet up • Production pressure • Management never noticeS		• Avoid injury	P	N	U

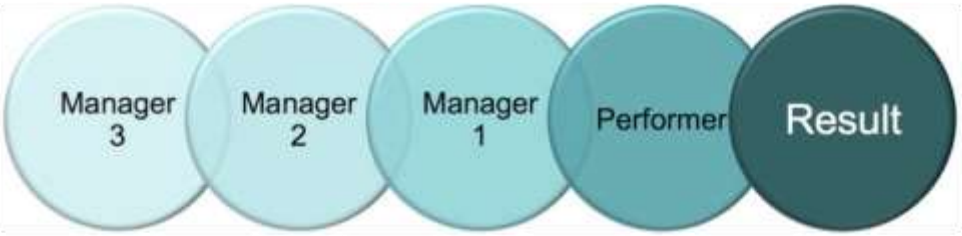
Antecedents	Behavior (Desired)	Consequences	Reinforcer or Punisher	Now or Later	Sure or Unsure
• Harness is not readily available	Working at heights without a harness	• Job takes longer	P	N	S
• Fit isn't comfortable		• Discomfort	P	N	S
• Work will only take a few minutes		• Avoid getting in trouble	R	L	S
• Company has harness policy		• Look stupid to peers	P	N	S
• It's only 9 feet up • Production pressure		• Avoid injury	R	N	U
• Management never notices		• Management praises	R	L	

From this example you can see that peer pressure, time pressure, and discomfort may be drivers for working without a harness at heights. Remember, now sure consequences (circled in red) are the strongest drivers of behavior. Avoiding an injury is the primary reason to use the harness, but an injury is a later and unsure consequence and therefore doesn't have a strong influence over behavior, no matter how much we'd like it to!

Using an ABC Analysis in an Incident Investigation

The first step in using an ABC Analysis in an incident investigation is to apply it to the behavior of the injured. It is important to consider the environmental and management factors that may have contributed to an injury. For each antecedent and consequence listed, ask the question, "What management decisions may have led to this?" and list those. For example, in the harness example, consider whether one was readily available and in the correct sizes. If not, ask what management decisions lead to that. If the person worked without one to save time, ask why the person may have felt enough production pressure to skip a step. Once you have applied the ABC Analysis to the injured employee, you can repeat it up the consequence chain.

The Consequence Chain



The figure above shows the consequence chain. The senior leader influences the environment and behaviors of the middle manager, who influences the environment and behaviors of the front line supervisor, who influences the environment and behaviors of the worker. Many incident investigations stop after looking at the behavior of the worker or the worker and the front line supervisor. Yet, they were both influenced through the consequence chain and therefore, it is important and fair to examine all the way up the consequence chain. A senior leader's offhand remark about spending may lead the middle manager to avoid spending his entire budget which may lead to not allowing the front line supervisor to purchase needed equipment. It can be difficult for a senior leader to see their influence through the consequence chain, especially when the impact is subtle, without getting regular honest feedback.

The Incident Investigation Process

In many organizations, incident investigations are uncomfortable. Looking at the typical process and outcomes, it is easy to see why. Often times, incident investigations are conducted to understand the cause of an injury, they are reactive. Little consideration is given to how each investigation influences the safety culture as a whole. Each visible action taken related to safety either improves or harms the current safety culture. Below are some examples of how safety investigations can harm a safety culture.

Interviews That Feel Like Interrogations

For example, an investigation often involves interviewing each individual involved in the event. The interviews feel more like interrogations, regardless of the intent, as each individual sits in a room with several more senior people asking them many questions. Often times, the boss of the injured individual is in the room or leading the investigation and this can produce unnecessary threats.

Poor Communication

Many organizations fail to share information about an event or investigation until a month or several months after it occurred. This delay in information sharing creates uncertainty in the workplace. Employees wonder who is to blame and whether discipline will be delivered. Lack of communication also invites people to guess the outcomes, which is unproductive. In addition, waiting too long to discuss an event then reduces the impact of the learning related to that event. In some cases, it may not be possible to

share important information such as disciplinary actions taken due to HR or legal policies, which further clouds communication.

Slow Follow-up Actions

If an investigation uncovers conditions that need to be addressed, slow follow-through communicates that senior leadership doesn't care about safety.

Using Investigations to Assign Blame and Deliver Discipline

In organizations where incidents often result in some type of discipline, people are going to fear investigations and avoid giving honest feedback. Instead, they are going to try to say things that might prevent them or their peers from being fired, demoted, or transferred.

A Better Incident Investigation Process

A better incident investigation process requires a foundational understanding of behavioral science principles and applications in the workplace. Understanding how the environment impacts behavior lends itself to creating an incident investigation process that promotes an environment of trust, learning, and engagement. Below are a few examples, based in behavioral science, of strategies for improving investigations.

Get Input about How to Conduct Interviews

Gathering input from the interviewees about how they'd like to share information about the event can help alleviate some of the discomfort and help them feel supported. It may be easier to articulate descriptions of an event if they can see many of the questions in advance and write out responses. Some may prefer to have co-workers or their immediate boss (depending on the relationship) join the meeting, who can support their perspective and help articulate points.

Create a Culture of Honest Feedback

The only way to get people more and more comfortable giving honest feedback is to ask for it, reinforce it, and avoid punishing it. It's tempting to act upset when someone brings up an issue, but even if that anger isn't directed at the person telling you, it can still reduce the likelihood that they will tell you bad news in the future. In cultures where honest feedback is not the norm, it can help to use anonymous survey tools to start getting some input. If this input is acted on quickly and makes things better, people will want to start sharing more.

Share Responsibility for Improving Instead of Placing Blame

Recently a leader hoping to improve the safety culture in his work area listed a few things he will be doing differently as a result of an incident that occurred. It took a lot of

humility, but the downstream impact was that others felt comfortable discussing what they could do differently as well. In the end, they had more respect for the leader's honesty than if he would have simply blamed the workers.

Conclusion

These suggestions just touch the surface of what is possible if behavioral science is considered in incident investigations. Because behavioral science considers the current environment, the best investigation practice for your organization will be different than for another. In fact, it will probably vary from department to department and incident to incident. Although some level of consistency may be necessary, a flexible and considered process based in the understanding of behavioral science is much more likely to get the information and impact the safety culture in a positive way.

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