

NEW PERSPECTIVES ON ACCIDENT/INCIDENT INVESTIGATION

Surprisingly enough, most people can't even count the number of close calls they've had that could have killed them.

by Larry Wilson

Most accident/incident investigations tend to look at the injury or incident from an external perspective. In other words, somebody else (*typically*) investigates the incident or injury instead of the person who was hurt doing the investigation themselves. Obviously, in the case of a very serious injury or fatality, this makes perfect sense because it would be impossible to do the investigation from a hospital bed or the morgue.

But in other cases where the person wasn't seriously injured, it is still much more common for someone else to investigate it. Why? Well, again, some obvious explanations come to mind: "We want it to be *impartial*, we want it to be *fair*, only highly trained and skilled individuals are *competent*" and so on...

However, if the purpose of doing the investigation is not to lay blame (at least that's what everybody says) but only to prevent the same thing from happening again, why is it that the highly trained, skilled and *competent* people who investigate accidents—in some cases hundreds of accidents—don't do it for themselves when they get hurt?

For example, years ago I went to a seminar on accident/incident investigation put on by one of the safest companies in the world. One of the instructors doing the seminar had a fresh gash about the size of a nickel on the top of his head. Since he didn't have much hair, it was very noticeable. He had investigated many (many) injuries and incidents in his career before he became a seminar leader.

At a coffee break, I asked him what happened. He said, "I know, I know it's so embarrassing...I was

doing some wiring in my basement and I just stood up too quickly."

"What did you hit?" I asked.

"Just a wooden joist," he said.

"Was there a nail sticking out of it or a really sharp edge?" I asked.

"No," he said, "I just forgot where I was and stood up without even thinking about the lower ceiling."

"So, what are you going to do to prevent something like that from happening again?" I asked.

"I'll just have to be more careful," he said. "Try to pay more attention to where I am next time."

Ironically, "Tell the employee to be more careful" or "Tell the employee to pay more attention next time" was *not* part of the seminar...

Even more ironic (at least in my opinion) are safety professionals and consultants who have *never*—not even once in their career—used the word "careless" on an accident/incident investigation, yet they have told their children (literally) hundreds of times to "be careful". They *know* that blaming the worker for being careless is useless, it's old technology and it doesn't work. Yet, for the people they love the most, they've said, "be careful" literally hundreds and hundreds of times...

I once asked a group of corporate safety directors at a major forest products company if they knew how to do "root cause" accident investigation. As you can imagine, every one of them put up their hand.

"How many of you have taught it?" I asked. Again, almost everybody put up their hand. Some of them even

flashed me the "you're starting to bore me look". So I asked them, "How many of you have slammed a finger in a car door somewhere along the line?" About half of them put up their hands (which will happen with almost any group of people).

"So, how many of you did a root cause accident investigation?" I asked. Not too surprisingly, no one put up their hand. "Why not?" I asked. One guy looked at me and said, "Why would I do that? It was just a stupid mistake."

With any luck at all, "Try not to make any more stupid mistakes" *has* not been one of his recommendations when he was investigating workplace injuries...

But seriously, why is it so much different when we're investigating injuries that happen to other people? Why do we give ourselves different recommendations than we give others? If we think the process is so *valuable*, why don't we do it for ourselves? Have you *ever* put pen to paper to investigate one of your own injuries? (If you have, you're the exception, not the rule.)

Perhaps it's because we don't have the right model to work from. Perhaps it's because we're not listening to ourselves. Perhaps it's because we accepted the teachings of those gone by too literally. Or perhaps it's because we're not looking at accident/incident causation from as many perspectives as we should. So (although this is boring) let's go back to the very basic building blocks: in order to have an incident you must have some form of hazardous energy and something unplanned or unexpected has to happen. In order to have an injury, you must have some hazardous energy, something unplanned or unexpected has to happen and this hazardous

FUTURE OF SAFETY

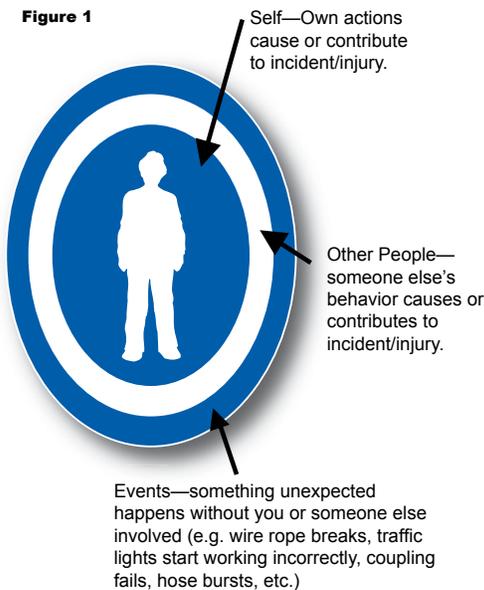
energy has to come in contact with a person or the person has to contact it.

The perspective or focus “traditionally” has been on the source of the hazardous energy and keeping that hazardous energy from contacting the person through engineering controls, rules, procedures and personal protective equipment. However, as everyone knows, there are limits in terms of what you can achieve with rules, procedures, personal protective equipment, and engineering controls.

Which is not to say that the efficiency of these safeguards should be understated or overlooked, because (obviously) if you can eliminate the hazard you don’t *minimize* the risk—you eliminate it!

But perhaps it would be more illuminating, at least in this day and age, to look at the source of something

Figure 1



unexpected happening. Because, if you think about it, there are only three sources of unexpected: either you do something unexpectedly, the other guy does something unexpectedly, or the equipment or car you’re driving does something unexpectedly. It will be one of those three or a combination of them, unless of course, it’s an act of God. (See Figure 1)

Now this is where the problems come in when someone else does the investigation. It’s impossible for the “external” investigator to know *exactly* what was going on, or not going on in the person’s head at the moment or instant they got hurt. So we have to rely on what the injured

person tells us. Since few people will be deliberately trying to incriminate themselves, they might not (are you sitting down for this?) tell us that they weren’t thinking about what they were doing at that moment. If you accept what they say at face value, then it might—especially after dozens and dozens of investigations—distort your perspective on how people really do get hurt, especially in terms of short-term or acute injuries. But you know what was going on, or not going on in your own head at that moment when you got hurt. So, instead of thinking about how other people have been hurt, for the following exercise, just think about how you’ve been hurt.

How many serious or major injuries have you experienced so far this lifetime? How many broken bones, torn ligaments, third degree burns, etc. have you had? Most people, if they’re between 30 and 50, if they add it all up—on-the-job, off-the-job, driving their cars and sports (excluding contact sports) have experienced between one and five major injuries.

How about minor injuries—such as stitches, sprains and significant muscle strains? How many of those have you experienced? Again, most people if they’re between 30 and 50 have experienced between five and ten of these types of injuries. Now (here’s where the fun begins), if you drop down one more level on the old risk pyramid, how many cuts, bruises and scrapes have you experienced so far this lifetime? Well, the most common answer is “lots”. But when you ask people (and I’ve only asked about 45,000 people these questions,



so I’m not saying it’s conclusive) if “lots” is hundreds or thousands; if they think about their first 20 years or

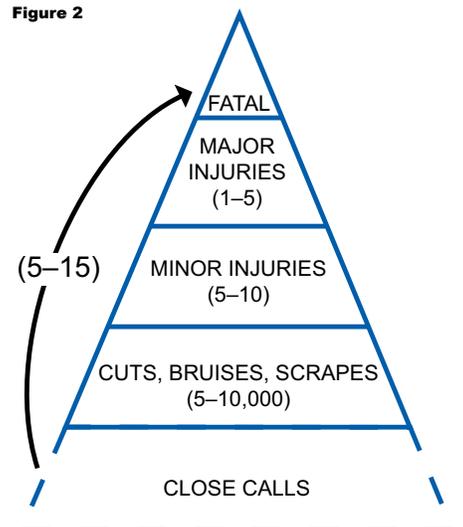
if you get them to think of their own children,—they quickly conclude that “lots” is thousands (with probably 3–5,000 they can’t even remember because they happened when they were under six years of age).

And yet the most significant category of all is at the bottom of the pyramid. How many close calls have you experienced? How many times have you had to hit the brake really quickly to avoid hitting another car, truck or pedestrian? How many times have you had to jerk the steering wheel to avoid hitting another vehicle? How many times do you think you have *almost* fallen but managed to regain your balance without actually falling? (Most people, myself included, can’t even remember the number of times they’ve actually fallen, let alone “almost” fallen.) And, what about all the times when the other guy had to hit the brake for you, or jerk the steering wheel really quickly to avoid hitting you, but didn’t have time to honk the horn or tell you that you were #1 driving by?

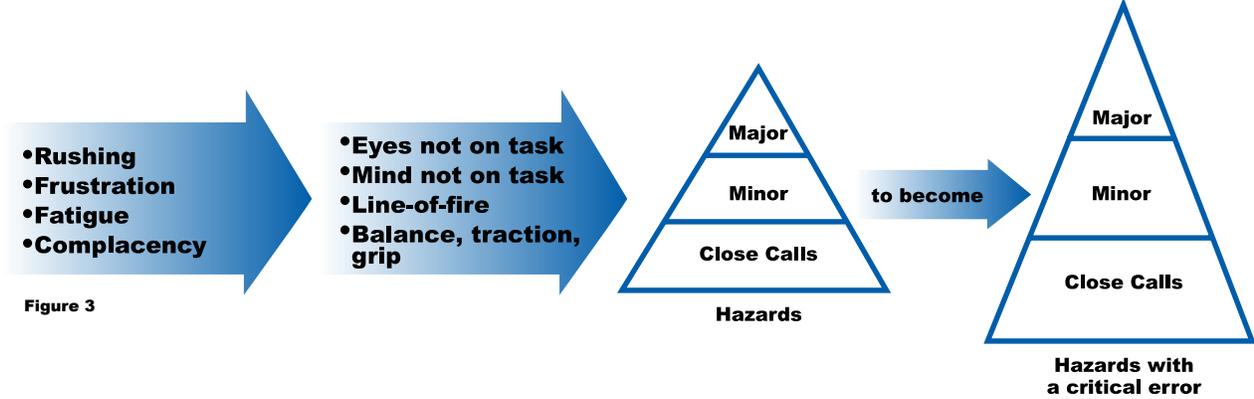
So, it’s impossible for anyone to *accurately* count the number of close calls they’ve had in total. But surprisingly enough, most people can’t even count the number of close calls they’ve had that could have killed them. Especially if you get them to think about the number of times they’ve fallen asleep or “almost” fallen asleep while driving. (It’s estimated that between 13–20% of all fatal car crashes are caused by people falling asleep at the wheel.)

If you get people to look at (or build) their own personal risk pyramid it

Figure 2



States (cause) Errors (which cause) Less Risk (to become) More Risk



looks something like this (see Fig. 2); which means that most, if not all of us, have experienced more injuries and significant close calls than the number of injury/incident investigations that we've done (or will ever do). And to a certain extent, it's more reliable data because we know what we were thinking about or not thinking about at that moment when we got hurt.

Now, if after building your own personal risk pyramid, you ask yourself "what was the source of the unexpected" in each of these injuries. What you will probably find is that for over 90% of all of your own injuries, the unexpected thing that entered the equation *wasn't* the equipment or the other guy.

If you have a hundred people in the room (for easy math) and you ask them to only think about their serious injuries eg. stitches or worse, and then you ask them how many of you have been "seriously hurt"—in terms of a short-term or acute injury—because the car you were driving or the equipment you were working with broke, malfunctioned or did something "screwy" unexpectedly. You will probably get about two to five hands up in the air. If you then ask them, "How many of you have been hurt because the "other guy" did something unexpectedly?", you will likely get about 10–15 hands in the air although most people will only have the one example. (I have met someone who has been rear-ended at a red light twice and both times sent him to the hospital but it's very uncommon.) And then you can say—although I'd do it "gingerly" if I were you—"Would anyone need me to point out which area is left...?" For any given room full of people, over 90% of their serious

injuries will be in the "self area".

However, if you open it up to include cuts, bruises, bumps and scrapes, then over 99% of the acute injuries will be in the self area. In other words, with the exception of a very, very small percentage, people hurt themselves. It's *not* the equipment or the other guy. We did something ourselves unexpectedly to cause the injury. And these numbers or percentages hold true, no matter whether you're on-the-job, off-the-job or driving your car.

So, where does that leave us? Should we just tell other people the same things we tell our children, "You've got to be more careful..." *NO*. That is old methodology and it doesn't work. What we need to do is get them to realize how all of the factors involved in an incident or accident are important (not just what they told us in the investigation).

For instance, were you rushing or frustrated or overly tired? Had you become so complacent with the job, task or hazards that you weren't thinking of the risk at the exact moment you got hurt?

Did any of these states or human factors cause you to make a mistake or a critical error like eyes not on task, mind not on task, moving into or being in the line-of-fire or somehow losing your balance, traction or grip?

Over 90% of all injuries anywhere—on-the-job, off-the-job, or on the road are caused by these state to error risk patterns (see Figure 3).

Once you've explained the "mechanics" of how people (over 90%) get hurt, then it's easy enough to explain what *can* be done and what they can do for themselves

besides "try to be more careful".

First of all, you can teach them to realize that when they're rushing, frustrated, tired or complacent they'll be much more likely to make one of the four critical errors.

If they can recognize when they're in a rush or frustrated or tired, and then think about eyes on task, mind on task, line-of-fire and balance, traction or grip, that's usually enough to keep from making one of those errors. In other words, "self-trigger on the state before you make the error".

If they weren't rushing or tired or frustrated, they might have become complacent. Complacency can easily lead to mind not on task. Mind not on task can lead to line-of-fire, eyes not on task and balance, traction or grip errors.

Complacency isn't an easy thing to notice until "after the fact". However, it's easy enough to identify jobs or tasks where someone is likely to become complacent (like driving) and then get them to work on their habits. So even if their mind wanders, they will still have their eyes on the road. Other habits like holding the handrail, testing your footing when getting out of your car and looking before you move will reduce the risk of injury for other jobs or tasks when complacency might become a factor.

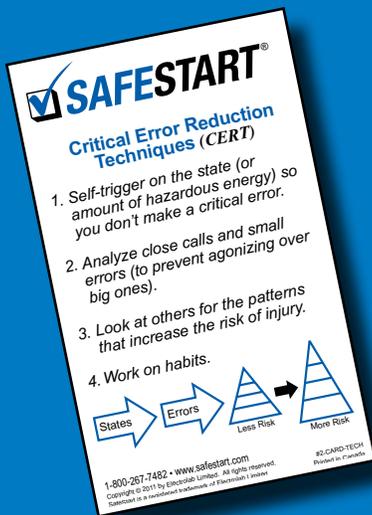
So when you're doing accident/incident investigations, see if you can get the employee to tell you what mental state they might have been in when the accidental injury occurred. If they were rushing, frustrated or tired, talk to them about the "self-triggering" technique. If they were complacent, see if they can work on their habits so that *when their*



reinforces the concepts of
Rushing, Frustration, Fatigue
and Complacency . . .



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mind goes off task, they will have a safe behavior occurring automatically. You might even want to let them know how valuable observing others for these state to error risk patterns can be (every time you do this it automatically makes you more aware of your own safety and helps you fight the complacency factor creeping up on you).

Finally, teach them to do this same analysis for themselves even when it's a very minor bump, bruise, cut or scrape; or even when it was just a close call. That way, they can learn from all of their mishaps, not just the serious ones. After all, we've all been hurt thousands of times. If we could just learn a bit from each one, instead of writing it off as "just another stupid mistake!", we'd all be a lot better off.

But don't just say (even to your kids), "Try to be more alert", or "Try to pay more attention next time" or (get this) "Try to be more cognizant of your situational awareness next time..." You might as well say, "Try to be more careful". Instead, teach them what they really need to do to prevent the next injury:

1. Trigger on the state so you don't make the error.
2. Work on improving your habits.
3. Observe others for the state to error risk patterns that increase the risk of injury (once you see them you'll see them everywhere), and
4. Analyze close calls and small errors. Learn from them and you won't (likely) have to agonize over the big ones.

About the author . . .

Larry Wilson has been a behavior based safety consultant for over 20 years. He has worked with over 2,000 companies in Canada, the United States, Mexico, South America, the Pacific Rim and Europe. He is also the author of SafeStart, an advanced safety awareness program currently being used by over 1,500,000 people in 40 countries worldwide and 25 languages. You can reach him at safety@electrolab.ca.

Since this article was originally published, thousands of work sites in more than 40 countries have trained their employees on these concepts and critical error reduction techniques to prevent injuries.

Because many safety professionals spend a lot of their time with accident/incident investigations, and for the most part their hearts are in the right place, they see no potential harm in enhancing their accident/incident investigations with these concepts. Going over the states and errors that may have been involved, and discussing what critical error reduction techniques might help to prevent similar injuries in the future, seem like movements in the right direction.

However, experience has shown the importance of covering basic concepts with employees first, before moving into self-evaluation mode. They must receive proper training before you can ask them to reflect on how to move their personal performance to a higher level of awareness.

Larry Wilson
January 2011

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