

TerranearPMC Safety Share

Week of February 4, 2013 – Heinrich's Triangle

Recently, Los Alamos National Laboratories announced an All-Hands meeting for those involved with environmental projects. It was two hours and everyone was expecting anything but receiving some information that would really be meaningful. Quite frankly I viewed this as another mandatory meeting that required my presence: nothing more. I was dubious about actually walking away with anything useful. I was wrong.

After the introduction, a safety message was presented. Instead of the all-too-typical *watch how you lift heavy items* or *look out for uneven surfaces*, a movie was presented that explained how a simple distraction can lead to devastation. In this movie, the story opens with a scaffold worker that was working about ten feet above the ground. His cell phone rang just after he loosened a railing. Instead of not taking the call, he allowed himself to be distracted from his assigned task and began a conversation and allowed the railing to remain detached. The story moves on by illustrating all the possible negative scenarios that could result from such an act. In one scenario, a fellow worker walks past the scaffold worker, coming way too close to the loose railing. The scaffold worker grabs his mate (it was an Australian film) just before he comes in contact with the railing. In this case, no one was hurt, but both men had the opportunity to realize that something was wrong and a correction was needed. All too often, whether at work or home, when we experience such an event, we do not take the time to stop and realize that under a slightly different scenario, something much more severe could have occurred. Maybe someone in your home places a laundry hamper right at the top of the stairs and while someone else may only stub their toe on the basket; someone else could have just as easily tripped over it and fallen down a flight of stairs. If we were able to recognize that this item was placed in an unsafe location AND decided to take the initiative to move the laundry basket to a safe place, a potentially serious accident would be prevented.

The movie continues by showing the possibilities of other incidents; each one more severe than the one before. In the final occurrence, not only does the scaffold worker fall and cause himself to be permanently disabled, but a person that was merely jogging near the work site (listening to music with her I-Pod and ear plugs), unaware of her surroundings, was struck by a wooden plank, resulting in a fatality. Yes, this was only a movie; but its message was quite real.

Throughout the movie, after each scenario, a single die was shown being thrown at a board with a picture of a triangle, divided into various levels. While the movie never stated it, that triangle is often referred to as the Heinrich Triangle, as it was developed by a pioneer in the field of Accident Prevention.

Herbert William Heinrich was an American industrial safety pioneer from the 1930s. He was an Assistant Superintendent of the Engineering and Inspection Division of Travelers Insurance Company when he published his book *Industrial Accident Prevention, A Scientific Approach* in 1931. One empirical finding from his 1931 book became known as Heinrich's Law: that in a

workplace, for every accident that causes a major injury, there are 29 accidents that are less severe and 300 accidents that are minor. By placing these accident types in a vertical configuration, with the smallest group at the top (one major accident such as a fatality or plane crash), followed by the next group (29 lost time injuries) and then the largest group at the bottom (300 minor or first aid injuries), we can see how a triangle can be a good representation of the relationship between the different severities and their frequencies of occurrence. Since his initial triangle concept, many other safety experts have made modifications to include other categories, including near-misses (where observers actually witness an event that could have resulted in an unwanted event) and unsafe acts where someone performs an activity that is unsafe and there is no apparent observable result (such as taking a short cut).

Heinrich's work is the basis for the theory of Behavior-Based Safety, which holds that as many as 95 percent of all workplace accidents are caused by unsafe acts. Heinrich came to this conclusion after reviewing thousands of accident reports completed by supervisors, who generally blamed workers for causing accidents without conducting detailed investigations into the root causes.

Every day we find ourselves in situations where if just one thing was altered, a serious event would occur (or not occur!). Maybe it happens when we're driving to work. For instance someone is distracted because they're listening too intently to music on the radio, or they're putting on make-up or reading a newspaper (come on, we've all seen this!), texting or talking on the cell phone. Just at the last moment, the driver catches him/herself and is able to avoid an accident. It is during these instances that those involved need to ask the question, "why did that happen?" instead of just giving a sigh of relief and thanking their lucky stars that they remained unscathed. Unfortunately, the chance of someone questioning their "near-miss" is quite small. They may even decide the fault to be someone else's; and therefore, "there is nothing I could have done." And so their unsafe behavior is being reinforced. It is this reinforcement that makes people say "I've been doing it this way for years and I've never had anything go wrong." Therefore it must be OK to keep doing things the same way, right? WRONG! If we can identify an unsafe act and do not take measures to protect ourselves even though we have not experienced any bad - we are placing ourselves or someone else at risk to get hurt.

When we witness an unsafe act; whether it involves us or someone else (such as a coworker) it is imperative that we question it. Safety is not just a box on an Org-chart. Safety is everyone's business. It is empowering. We have the ability to prevent someone from being hurt. Speak up when you see something wrong. An unsafe act is the first step to a very serious accident. Stopping that unsafe act will stop someone from getting hurt: maybe not today, and maybe not next week or next month, but without a doubt, Heinrich's Triangle, throughout the years has been shown to be correct - stopping an unsafe act and placing the proper controls will prevent someone from getting hurt.

**"Keep away from people who try to belittle your ambitions,
Small people always do that, but the really great make you feel that
you, too, can become great." Mark Twain**