

TerranearPMC Safety Share

Week of December 5, 2016 – Lessons Learned and Accident Precursors

There is an old proverb which states: “An individual learns from their mistakes - A wise individual learns from the mistakes of others - A fool never learns.” There is no reason why we cannot all be wise and learn from the mistakes of others. And there is no reason to repeat the mistakes we have made in the past.

Today, we have a term for learning from past experiences. *Lessons learned* is simply about reviewing our own actions or the actions of others relative to a given topic. And while lessons learned is usually associated with reviewing negative or undesired outcomes, successful events should be reviewed as well. For the purpose of lessons learned is to review past circumstances – good or bad - to see what was experienced and what can be learned so future events can be either improved or used again to ensure positive outcomes.

Although it may be an over generalization, unfortunately many of us – especially in the world of occupational safety and health – need a wakeup call through witnessing an unfortunate event. Such a wake up would include the decision to implement a corrective action only after misfortune has struck. This is not unlike the event of September 11, 2001, when it took a national devastation for the country to understand our vulnerabilities and take appropriate precautions to prevent similar events. In the workplace, it seems that someone must become injured or possibly worse before actions are taken to fix what can be seen as a potential problem. Yet, on the other hand, if we are overly protective, we may limit our ability to perform our assigned tasks in an effective manner. Therefore, being overly concerned about accidents or injuries will limit what we do. This means we must continuously find that delicate balance between implementing effective workplace controls with those that may be unnecessarily stringent.

If we do not give proper consideration for the possibility of an accident and injury occurring, we risk a high probability of such an event happening. This is where we have the benefit of looking at the *lessons learned* of others in similar operations. There are general rules which can be followed to prevent accidents or injuries: one of which is to incorporate the lessons learned of past experiences. Another important rule is to continuously look to improve operations at all levels. This means to see how each task can be performed more efficiently and safely with quality workmanship. High risk businesses, such as the aircraft and nuclear industries, have embraced this message and have greatly improved their ability to control risk factors. The same can be attained for any organization.

(The following comes from the article, “Flirting with Disaster,” in the 2005 Fall Issue of *Issues in Science and Technology*, written by James R. Phimister, Vicki M. Bier, Howard C. Kunreuther):

In the aftermath of catastrophes, it is common to discover prior indicators, missed signals, and dismissed alerts that preceded the event. Indeed, in reviewing the accident literature, there are many notable examples where such prior signals were observed but not recognized and understood for the threat that they posed. They include the 1979 Three Mile Island nuclear power plant accident (another U.S. nuclear plant had narrowly averted a similar accident two years before) and the 2000 Concorde crash (tires had burst and penetrated the fuel tanks on five previous flights). Probably the most famous examples are the two space shuttle disasters. After it was determined that

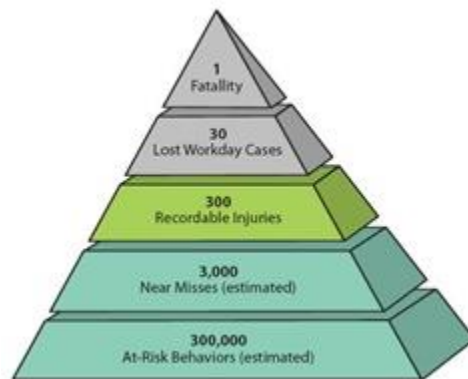


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an O-ring failure had doomed Challenger in 1986, it was recognized that on a number of other occasions, O-rings had partially failed. After the loss of Columbia on February 1, 2004, investigators found that insulating foam had become detached from the external tank and pierced the orbiter's thermal protection system. Although managers at the National Aeronautics and Space Administration (NASA) had observed debris strikes on numerous prior missions and had recognized them as a potentially serious issue, the Columbia Accident Investigation Board concluded that over time, a degree of complacency about the importance of debris strikes had crept into NASA's culture.

These so-called precursor events can, in hindsight, seem so conspicuous that it is hard to understand why they were not recognized and acted on. In practice, organizations and individuals face significant challenges in identifying and reporting precursors; filtering, prioritizing, and analyzing signals that represent significant threats; and tracking the implementation of corrective actions until completion. Multiple approaches have been developed across industries and between firms within an industry to use information about precursor events and economic incentives to improve the safety of technological systems.

One of the guiding principles of occupational S&H comes from the illustrated concept of H.W. Heinrich's Safety Triangle.



This “triangle” depicts that there are many non-accidents that occur in great abundance prior to and in association with, a disaster. Such precursors, such as “at-risk behaviors” and “near-misses” occur more often than accidents. As such, they are inexpensive learning opportunities for understanding what could go wrong – especially if we can learn from incidents that have occurred on other projects! Encouraging all persons within an organization to identify and report precursor events can reveal numerous instances of potentially serious safety gaps. In contrast, failure to solicit, capture, and benefit from precursor information simply wastes a valuable resource that can be used to improve safety while leaving personnel at risk to serious injuries and/or illnesses.

Don't worry if you are making waves simply by being yourself – The moon does it all the time! – Scott Stabile (Modern American Writer and Screen Writer)

