Near miss reporting: a (mis)leading indicator of safety?

That reporting near misses will improve safety is an unquestioned belief in many companies. But why?

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The views expressed in this article are from the author and not from the organisation that the author is employed with currently or in the past.

The origins of near miss

The idea of reporting near misses comes from Herbert William Heinrich, a technical superintendent in a travel insurance company whose contributions to industrial safety became extremely popular during the 1930s. In fact, Heinrich never used the term 'near miss' – to him it was about 'no injuries'. By studying travel insurance claims, Heinrich came up with the conclusion that for every 300 claims involving no injuries, there were 29 involving minor injuries and 1 involving serious injury. Heinrich was of the view that reducing the frequency of no injuries claims would lead to a reduction in severe injury claims. This correlation between no injuries and serious injuries claims is commonly referred to as the Pyramid model or the iceberg model of safety. So influential is this pyramid model that references to it can be found in almost all leading safety publications (including the IMO, International Chamber of Shipping and leading industry publications) and on at least one bulkhead of most seagoing vessels.

A challenge to the model

In recent times, Fred Manuelle, the author of *Heinrich Revisited: Truism or Myth*, has questioned Heinrich's assertions at various levels and proved them baseless. Interestingly, Manuelle has rightly observed that Heinrich's data quality is questionable and his survey documents are not even accessible in the scientific domain. Hence, we are unsure how he arrived at his assertions. Put simply, there is no scientific evidence for believing in Heinrich's theory. The data is drawn from insurance claims as a quote from Heinrich's work illustrates:

'In the accident group (330 cases), a major injury is any case that is reported to insurance carriers or to the state compensation commissioner. A minor injury is a scratch, bruise or laceration such as is commonly termed a first aid case. A no-injury accident is an unexplained event involving the movement of a person or an object, ray or substance (e.g. slip, fall, flying object, inhalation) having the probability of causing personal injury or property damage. The great majority of reported or major injuries are not fatalities or fractures or dismemberments; they are not all lost time cases, and even those that are do not involve payment of compensation.'

There is no consistency between what qualifies as a major, minor and no injury in Heinrich's study and how it is interpreted today. Notice also from the quote that 'severity' of an injury was based on compensation and not so much on the seriousness of the injury. In the 1930s, on-site medical facilities were rare and hence insurance companies were expected to compensate workers for most on-site injuries. This is an important point to bear in mind: minimising the claims arising from less severe incidents should not be an indication that major accident risks are being managed effectively.

A further assumption is open to questioning. Must a near miss or unsafe event (ie no injuries and only minor injuries) occur at least 329 times before a serious injury takes place, when there is no scientific basis for this correlation? The keyword here is before. This is misleading. The potential for a serious injury does not wait for frequent recurrence of near misses.

Impact on safety

A final thought on near misses is the disproportionate focus on low frequency events in the hunt for a diamond at the tip of the pyramid. In so doing, safety departments are kept extremely busy capturing data of marginal value. Quality is sacrificed for quantity. This leads to all sorts of problems of fabricated safety where workers have no choice but to make up near-miss reports to fulfil organisational KPIs. When the data bank starts to overflow, the analysis suffers because resources are limited. There is no serious thought given to the relationship between what is reported (and, importantly, what is not reported) and how this may relate to the potential for a serious accident. Temporary improvements in low consequence incidents (based on questionable quality of data) paint the impression that safety risks are being managed effectively, until a major accident happens and the retrospective data bank exposes the futility of the entire system.

A suggested approach

The idea of counting the number of near-miss reports as a tool for managing safety could be misleading and distract organisational focus from the core issues of managing safety and reputational risks. Rather than counting numbers, much could be learnt by examining the vivid details of a single event and understanding systemic problems. In doing so, accountability should be shared evenly across the organisation. Workers at the front end would be far keener to report near misses if the top management took accountability for their actions. Furthermore, research has shown that the true value of near-miss reporting comes from encouraging voluntary reporting and not necessarily by generating numbers to feed the insatiable KPIs.

It causes a great deal of anxiety to realise that for nearly a century we have been misled into believing something that simply does not exist. But closing our eyes and walking in darkness is not an option either.