

Why the “Iceberg Theory” has misdirected safety

Author: George Robotham

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Contact: fgrobotham@iprimus.com.au

On 7 August 1994, there was an underground explosion at Moura underground mine and eleven men subsequently lost their lives. In *Managing Major Hazards*, Andrew Hopkins comments that one of the facts prior to the explosion was that the mine operators were aggressively driving down the Lost Time Injury Frequency Rate (LTIFR) and not placing enough attention on the more serious types of risk. He goes on to say,

“The Moura experiences cast doubt on the often repeated claim that a good LTIFR indicates that safety is being well managed.” Further comment is “On the contrary, the danger is that a single-minded focus on reducing the LTIFR leads systematically to the neglect of catastrophic risk”

In *Occupational Personal Damage Causation*, Geoff McDonald describes personal damage as follows:

“The damage a person suffers at work can have three different consequences. Their life can be permanently or temporarily altered or simply inconvenienced. A person’s life is permanently altered by a fatality or permanent disability (Class 1 damage). The person’s future can be temporarily altered but the person subsequently fully recovers (Class 11 damage) or the damage simply inconveniences the person (Class 111 damage)”

The author’s 30 years experience in OHS leads him to agree with McDonald. Safety is fundamentally a Class 1 problem. McDonald goes on to say,

“Safety within many organisations is regarded as predominantly a Class 11 control activity. Class 1 occurrences are regarded as simply a chance worse variation of a Class 11 occurrence. In many organisations the concentration is on controlling Class 11 and Class 111 occurrences.”

The report of the Industry Commission 1995 indicates that safety in Australia is fundamentally a Class 1 problem (87% of occurrences were Class 2 with 18% cost, 13% occurrences were Class 1 with 82% cost) This report further strengthens the argument that instead of concentrating on reducing LTIFR, we should be focusing on Class 1 damage reduction. Class 1 incidents have more energy available to be exchanged than the usual Lost Time Injury and thus require a different preventative approach. Methods of Class 1 damage reduction can be found in the paper, *Change for the Future-Not Blame for the Past* by G.L. McDonald

My grandmother used to say,

“Look after the pence and the pounds will look after themselves.”

In the world of traditional safety, there seems to be similar thinking that if you prevent minor damage, you will automatically prevent major damage. Accident ratio studies (insisting on set ratios between near misses, minor accidents and serious accidents) are common and accepted unthinkingly. The result is a furious effort to eliminate lost time injuries in the belief that major incidents will be eliminated in the process. Certainly there

are minor incidents that have the potential to result in more extensive damage (and we should learn from them), but personal experience tells me the majority of minor damage incidents do not have this potential. It is a matter of looking at the energy that was available to be exchanged in the incident. The concept that preventing the minor incidents will automatically prevent the major ones seems to me to be fundamentally flawed.

All organisations have limited resources to devote to safety, it seems more efficient to prevent one incident resulting in paraplegia than to prevent 20 incidents where people have a couple of days off work (Some will say this comment is heresy.) Somewhere in the push to reduce L.T.I's, reduce the LTIFR and consequently achieve good ratings in safety program audits the focus on serious personal damage tends to be lost. I know of companies that have made great reductions in LTIFR, yet they are still seriously injuring their people.

Having been bought up on a solid diet of Heinrich and Bird in the early 1970's, the author recognises that the *ice-berg theory* and the belief there are set ratios between incidents of various types are responsible for the concentration on Class 11 and Class 111 occurrences in many companies in Australia today.

In relation to the *Iceberg Theory*, McDonald says:

“The vast majority of the mishaps can never get to be minor occurrences and which in turn can never get to be major occurrences. Minor incidents and mishaps can form part, but only a part, of a predictive base. Concentrating on them in the past seriously misdirected safety effort and resources and has been instrumental in bringing safety into disrepute. The common cold is not indicative of heart, stroke, cancer or AIDS deaths.”

The author's view is that the *Iceberg Theory* has mis-directed safety effort for too long. There is an urgent need to develop a comprehensive, Australia-wide data base of Class 1 information that can be **easily** accessed by industry.

The author offered the above on the *HS-Canada Internet Safety Forum*. Approximately 50 Canadians and 1 American requested a copy of the paper. Ten Canadians stated reasons for why the author was wrong. Ten Canadians agreed with most or all of what the author said. Another said Bird, Heinrich etc were hopelessly outdated and he could not understand why fellow Canadians hang on to this legacy of the past. Another stated Bird & Heinrich were fantastic fellas who had contributed enormously to health and safety and how dare the author say anything against their teachings. Some people did not read what the author said very closely and jumped to the conclusion that the author was saying things that were not written. This dialog was expected.

The following comments are made in relation to replies the author received:

The author is not saying ignore near-misses and minor accidents. They certainly have a part to play as a predictor of more serious personal damage. What the author objects to is the notion that Class 3 and Class 2 damage be used as the main predictors of Class 1 damage. This has been the case for many companies in Australia. In a previous job with a major safety training organisation 30 years ago the author used to teach just this concept.

If you type “critical incident recall” into most search engines you should pick up the author’s paper on this topic. This process taken over a six month period was that about 30% of the critical incidents (or near-misses) could be relied upon as predictors of Class 1 damage. Clearly 30% is not a good predictive base.

The best way to learn about future Class 1 damage is through examining other Class 1 damage and Australia needs to further develop our capability to manage such data. Heinrich, Bird et. al., through the *Iceberg Theory* have promoted the notion, (in Australia), that the best way to predict Class 1 damage is through examining Class 2 and Class 3 damage exclusively. This is a serious mis-direction of safety effort.

The *Ice-berg Theory* is but one of many “myths and misconceptions” that surround and inhibit the safety profession (The author has eight of these on his list). Some comment was received that the *Iceberg Theory* is a good way to motivate senior management and boards of companies towards safety. My experience with senior management and boards of companies is that they are usually quite astute people and unlikely to be impressed by such simplistic arguments.

When the author wrote this brief paper he expected a lot of resistance to it. The author has been pleasantly surprised that he is not the only one questioning the lessons from the past.

Remember:

When initiating change, people support what they create.