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GENERAL EDITION



DISRUPTIVE TECHNOLOGIES

THAT ARE CHANGING OUR WORLD

Understanding the WHS dilemma

The following items are in response to an article by John Giles, 'The WHS dilemma for design engineers' in the October issue of *Engineers Australia*.

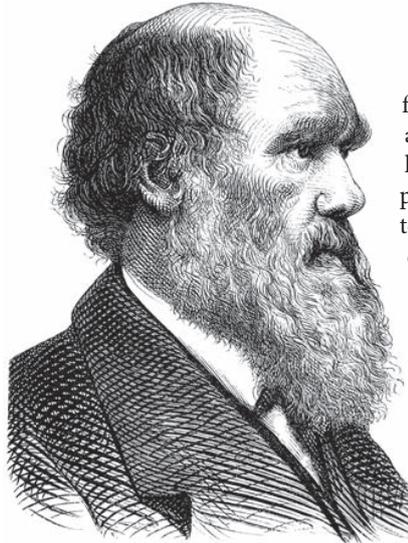
Don't be a test case

by Gaye Francis
and Richard Robinson

The underlying assumption in 'The WHS dilemma for design engineers' article is that 'risk' is a wholly scientific concept. That is, the risk associated with a circumstance or situation is a natural property of the material time-space universe and wholly subject to the laws of nature – making it objectively measurable.

If this were true, then using target (acceptable or tolerable) levels of risk would be entirely logical, rational, and defensible in court.

But risk analyses are not repeatable for rare events. Two independent risk experts using quantitative risk assessments for low likelihood, high consequence events never come up with the same answer (unless of course they are using identical process and assumptions, in which case the assessments are not independent). This is the source of the dilemma for engineers and exacerbated by the fact that we often use probability theory to mask our ignorance. Both Darwin and Einstein were suspicious of this.



Charles Darwin.

For example, in a letter to his geologist friend Lyell, Darwin noted that if you take a jar of sand and give it a shake, then like law, one grain of sand will be on top. But predicting which grain will be the one on top is complex. This is not because it can't be done, but because of the lack of knowledge regarding all the circumstances of the sand, the jar and the shaking. By characterising a probability we often suggest a level of confidence that is quite unjustified. But our ignorance is usually revealed post-event in court.

The courts have always recognised that while engineers can't always be right, they can always be diligent, which is the point of the WHS legislation and what our parliaments wish engineers to achieve.

As an American website notes: due diligence to an engineer is like water to a fish. Ignoring the expressed will of our parliaments is truly courageous. If you want to do so then pray that your estimates of rarity are sound and that you aren't the test case.

Gaye Francis and Richard Robinson
are directors of R2A due diligence engineers.

Satisfy the principle of SFAIRP

by Marcus Punch

The WH&S dilemma demonstrates the confusion over the principles at the core of the WH&S Act.

Giles has made a case for the return of WH&S legislation to an 'ALARP (As Low As Reasonably Practicable) process', however, his notion that "ALARP uses numbers to guide engineers about what are acceptable risks" is incorrect. The ALARP principle is actually concerned with ensuring that risks are made 'as low as reasonably practicable', not to a "pre-determined risk level" as he states. Practically, ALARP is concerned with placing safeguards against hazards, incrementally reducing their risk, until it is not 'reasonably practicable' to reduce risk any further. 'Reasonably practicable' is an objective test in law, whereas pre-determined risk levels are subjective.

The confusion arises from equating the ALARP principle with the 'tolerable risk approach', whereby the frequency of the unwanted consequence of a hazard is

reduced to a pre-determined level that is considered to be 'tolerable'. Indeed, such an approach was never a feature of the previous regime of OH&S legislation, so it cannot be returned to.

However, the 'tolerable risk approach' is not irreconcilable with the WH&S Act, which applies SFAIRP (So Far As Is Reasonably Practicable), a variation on ALARP. SFAIRP facilitates decision-making about what safeguards should or should not be implemented but does not facilitate decision-making about the strength, integrity or reliability of the safeguards. The 'tolerable risk approach' is embodied in many of our standards, enabling engineers to do just this, and should remain so. However, the engineering profession must be brought to the realisation that no matter what their numbers say, the principle of SFAIRP must be satisfied first.

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