Accident Ratio Triangle

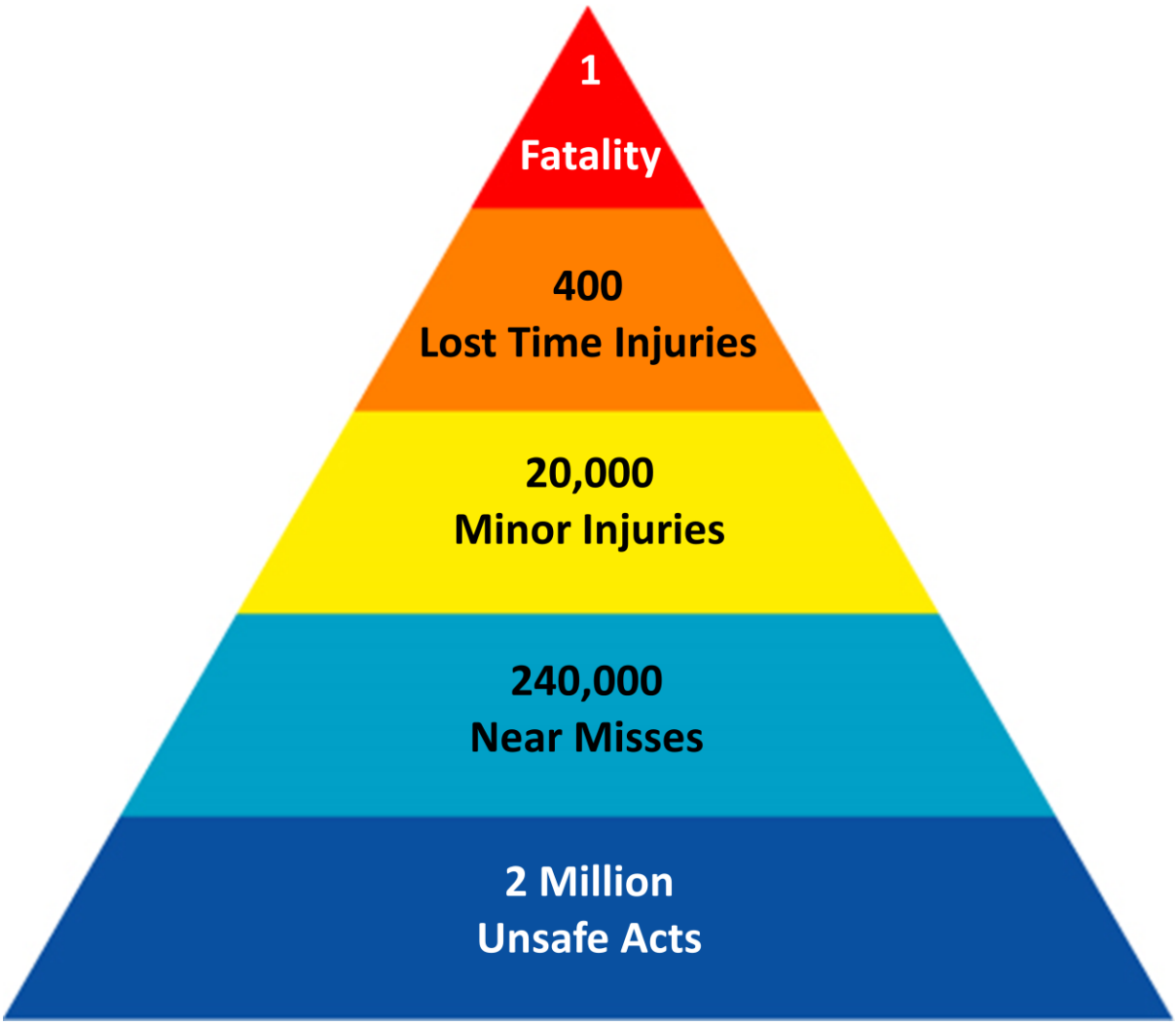
I have seen some debate recently around the continuing validity of Heinrich's Accident Ratio Triangle sparked-off by a paper published last year by Tom Krause of BST in which he called into question the relationship between minor and serious injuries.

Reading his paper I was left feeling a little disappointed with the arguments. Heinrich's theory is presented as stating that simply reducing the number of minor injuries at the bottom of the triangle will proportionately reduce the number of serious injuries and fatalities at the top. Yes and No! If all you do is deal with the immediate causes of minor injuries you may well see a reduction in minor injuries but serious injuries will continue at the same rate as before (a trend reported by Krause and the background to his argument); however if you delve deeper and discover the true root causes of the minor injuries and deal with these then you will have a proportionate effect on serious injuries also. It is suggested that minor and serious injuries have different underlying causes. Krause uses completely different incidents with similar outcomes (e.g. a bruise) in order to make this point, whereas if we look at similar incidents with potentially different consequences the theory is more robust and this is where it is useful. For example several people slipping on a patch of oil next to a machine with the outcome being: 1 a temporary loss of balance and minor embarrassment; 2 a fall on the floor with soft tissue damage; 3 an awkward fall resulting in a fractured hip; 4 an awkward fall resulting in striking the head on the machine resulting in a fractured skull and cerebral bleed leading to death. If there were a large number of these incidents we can reasonably expect the outcome ratio to be: Most 1 > 2 > 3 > 4 Least. The root cause of all of these may be (without investigating and understanding the situation) leaking machine, lack of maintenance, insufficient engineering staff, inappropriate allocation/prioritisation of funds..... If we learn from embarrassing slips – or even better deal with the unsafe condition before the first incident occurs then we can prevent the more serious consequence. Ultimately the vast majority of underlying causes of minor and serious injuries have one thing in common – they are someone's behaviour. These may be the behaviours of operators, supervisors, managers or directors – or more likely a combination of all of these in a "Domino" effect. Wherever and by whoever these behaviours are perpetrated they are the result of the surrounding culture.

The real problem I have with "learned" people knocking a model such as Heinrich's Triangle and its derivatives is that they devalue the really powerful way of getting across some important points, including but not exclusively:

- Most of the time we get away with it – leads to strengthening of belief "*it will never happen to me*"
- The importance of reporting near misses and minor injuries so that we can learn the lessons
- Most companies put too much focus on the top of the triangle (reactive) and not enough on the bottom (proactive)

As long as we don't take the model too literally or get hung up on the numbers Heinrich's Triangle and its derivatives remains a very valuable model that I would strongly support and encourage others to continue to use.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Fatality
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Lost Time Injuries
20,000
Minor Injuries
240,000
Near Misses
2 Million
Unsafe Acts