

OPTIMISING SAFETY PERFORMANCE WITH THE BRAIN IN MIND

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'Improving health and safety in challenging times'

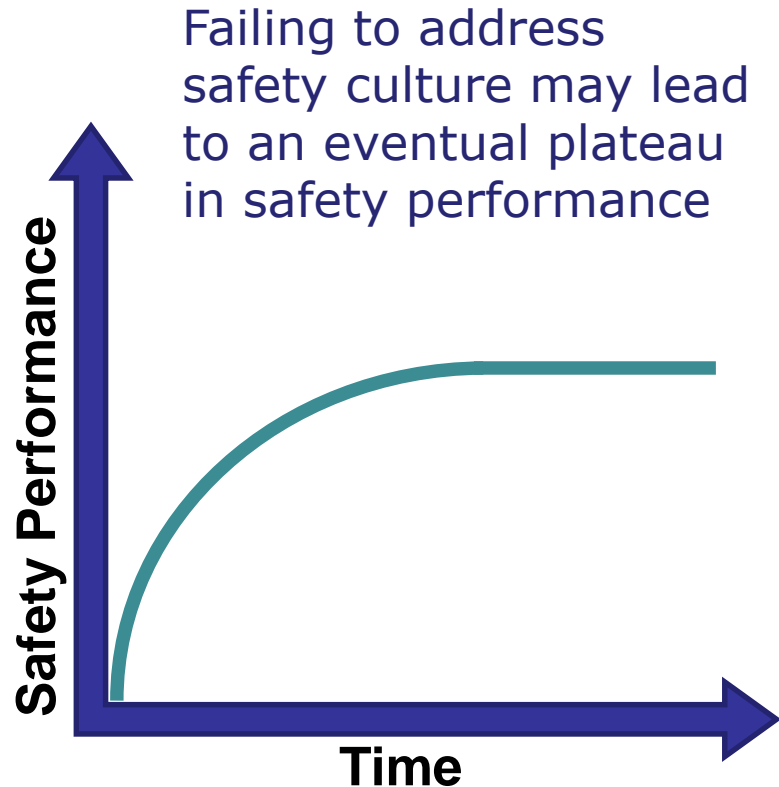
Introduction



- Mining: an inherently risky work environment
- High degree of focus on safety management systems and engineering safe work environments – slowly evolving focus on safety culture, and safety attitudes and behaviours
- There is more space to introduce greater focus on human factors and the ability of the average worker to stay safe



Importance of Safety Culture



Investment into greater protection for workers and engineering a safer work environment does not guarantee any improvement to safety performance in the absence of improvement to safety culture.

(Feng, 2013)



Taking it One Step Further...



The question is:

- Could a better understanding of the limitations of the brain and human performance enhance the design and development of safe work practices in the mining industry?



Limitations of the Human Brain



- Our brains haven't developed much since the days of the caveman, which poses some challenges in navigating today's complex work environments



- We don't process information and perceive risk in a way that is always conducive to staying safe



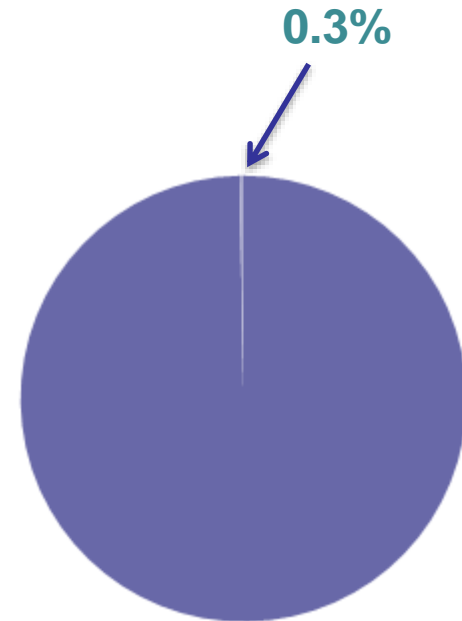
- Furthermore, the brain uses a lot of our body's energy, and so automates function to make best use of this energy



Conscious Processing Capacity



- Every moment we are exposed to a huge amount of information
- We can only handle a very small amount of the data we are exposed to every moment
- This means that we don't pay conscious attention to most of what happens in our day to day lives, and consequently we miss things!



Attention



- We are not all created equal!
- Our brain applies filters to determine what information we attend to
- It is a myth that humans are able to multi-task!
- When we divide our attention between multiple complex tasks, our performance decreases
- A range of factors can impact our ability to pay attention, such as fatigue, stress, boredom and distractions



Perception and Risk



- In order to identify risks, we need to be able to recognise that there is a potential threat or danger
- Our brains aren't well designed for identifying risks in complex work environments
- Over-familiarity with our work environment can cause us to miss important information
- Our perceptions of danger and threats can shift over time with greater exposure
- When we are constantly exposed to risk with no consequence, we can become complacent



Decision-Making



- Decision-making requires conscious focus and a lot of our attentional resources
- It can be taxing for our brain
- Effective decision making relies on accurate evaluation of risk
- Factors such as fatigue and stress can compromise our ability to make effective decisions
- Reporting of incidents needs to be encouraged so that information can be shared and inform future decisions





Recommendations

- Educate workers on human factors
- Ensure managers are leading effectively
- Design risk assessments with consideration for brain limitations
- Accept that effective safety practice takes time
- Integrate psychosocial safety in WHS systems
- Address human factors in risk management
- Encourage robust reporting practices
- Find opportunities to obtain a new perspective
- Foster high performance teams
- Examine approaches to rostering and task design



Conclusion



- The mining industry does involve risk – but it's not realistic to suggest that workers simply need to pay more attention
- The limitations of human performance need to be addressed
- This can be achieved by taking safety culture interventions one step further and considering the design and effectiveness of current safety practices
- By taking a holistic, integrated approach, the mining industry can continue to optimise safety performance





**Thanks for your
attention!**

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