Government of **Western Australia**
Department of **Mines, Industry Regulation and Safety**

WorkSafe
Western Australia
Petroleum Safety

INFORMATION SHEET

Human factors: Five principles of human performance

Introduction

Workers performing normal work continually adapt and overcome unexpected situations, detect changes in risk, are flexible in managing and linking multiple tasks, can apply knowledge and judgement to identify patterns and understand impacts of actions, and can manage complex communications.

Human performance also plays a significant role in preventing initiation, mitigating the impact, preventing escalation and improving recovery efforts of major accident events (MAEs). People apply their physical and mental capabilities (strength, flexibility, memory, attention, resourcefulness and problem solving) to keep the system functioning safely, effectively and efficiently. These capabilities are critical to safety and effective operational performance. Additionally, human performance is constrained by physiology, cognitive ability, memory, attention, and sensory and information processing limits.

Incorporating the five principles of human performance into the design of systems, equipment, workplaces and processes supports desired human performance for performing normal work, and for preventing initiation, mitigating the impact and improving recovery efforts of MAEs.

Scope and objectives

This document has been prepared to assist major hazard facility, petroleum and geothermal energy operations in understanding why the principles of human performance should be incorporated into the design of systems, equipment, workplaces and processes.

Definitions and abbreviations

MAE – Major accident event – an event connected with a facility, including a natural event, having the potential to cause multiple fatalities of persons at or near the facility (as defined within regulation 26 of the Work Health and Safety (Petroleum and Geothermal Energy Operations) Regulations 2022).

MI – Major incident – As defined by regulation 4 within the Dangerous Goods Safety (Major Hazard Facilities) Regulations 2007 the term “major incident” refers to any involving or affecting a Schedule 1 substance that causes serious harm to people, property, or the environment. For the purpose of this information sheet, “major accident event” (MAE) will be used to encompass “major incident”.

Five principles of human performance[1][2][3]

1. **Variation in human performance is normal and not causal.** Variation in human performance is normal and to be expected given the strengths and constraints that come with being human. Human performance should not be capable of leading to a major event or incident on its own.
2. **Blaming human performance fixes nothing.** Attributing the cause of a major incident to human performance is overly simplistic. More often than not, the performance is a symptom of wider systemic issues and even the best, most experienced, most competent people will make mistakes.
3. **Learning is vital.** Organisational learning, driven by leadership commitment and continuous improvement or a learning culture, is fundamental for preventing re-occurrence. Opportunities for learning should be sought from all types of incidents: actual loss or harm incidents, near misses and weak signals (i.e. small indications and signs that something is not correct or as it should be).
4. **Context drives behaviour.** Context is the meaning assigned to the situation. Context involves people's beliefs, perceptions, motivations and values which shape human behaviour. People perform in ways that make sense to them, they adapt to the demands of the situation, assess risks and make trade-offs with good intentions. Understanding the contextual factors which drive behaviour helps identify underlying weaknesses in the system and opportunities to improve the system.
5. **How leadership responds matters.** Visible leadership commitment and modelling desired behaviours and attitudes is pivotal as workers take their cues from their management and the immediate work environment. A 'just', no-blame culture encourages reporting and improvement.

Additional information and resources

Department of Mines, Industry Regulation and Safety

- Human factors fundamentals for petroleum and major hazard facility operators: guide
- Human factors self-assessment guide and tool for safety management systems at petroleum and major hazard facility operations
- Human factors: Usable procedures: information sheet
- Human factors: Integrating human factors into bowtie analyses of major accident events: information sheet
- Human factors: Integrating human factors into major accident event investigations: information sheet

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1 Conklin, T. (2019), The Five Principles of Human Performance: A Contemporary Update of Human Performance for the New View of Safety. Independently published.

2 Daniellou, F., Simard, M. and Boissières, I. (2011), 'Human and organizational factors of safety: a state of the art', Cahiers de la Sécurité Industrielle (Foundation for an Industrial Safety Culture) No. 11(01), Toulouse, France. Available at foncsi.org/en.

3 Chartered Institute of Ergonomics and Human Factors, Learning from Adverse Events. Retrieved on 28 July 2021.

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