

# Decision Making

Associated non-technical skills for the NSW mining and extractives industry

FACTSHEET

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## Decision Making

### What are associated non-technical skills?

Associated non-technical skills are mental, social and personal skills that support technical and management skills. They help staff do their work safely and efficiently.

These skills include:

- Situation Awareness (Factsheet 5)
- Decision Making (Factsheet 6)
- Leadership (Factsheet 7)
- Communication (Factsheet 8)
- Teamwork (Factsheet 9)

### What is decision making?

Decision making involves making a choice between various options when dealing with a given situation. The problem must be identified, a response decided on and the outcomes monitored and reviewed.

Effective decision making is crucial in the demanding and high risk work environment found throughout the mining and extractives industry.

Different theories are used to explain how experienced workers make decisions as opposed to how inexperienced workers respond, as outlined below.

### Intuitive decision making by experienced workers

Experienced workers have patterns of behaviour built up over time which they use when faced with a particular situation. They match the cues from their surroundings with these experience patterns and then decide on an appropriate response.

This is often called 'recognition primed' or 'intuitive decision making'.

**For example:** An experienced driver of a haul truck would quickly know if there was a mechanical problem with the truck and would react just as quickly.

### Rule, or procedure-based, decision making

When called on to make a decision, inexperienced workers usually rely on the standard rules or procedures they learnt at training. They match the situation with the relevant rule or procedure and then follow it. They may refer to written instructions or manuals to help them in making a decision.

Whether inexperienced workers always make decisions 'by the book' will be influenced by the workplace culture and whether it is normal to follow procedures.

**For example:** An inexperienced haul truck driver may take time to realise there is a problem with the truck because of the sheer size of the vehicle. They would then strictly follow emergency procedures rather than use intuitive decision making.

Experienced workers might also go 'by the book' if they are required to and they have confidence in the documented procedures.

Crucial to successfully applying rule-based decision making is an understanding of the reasons behind each step in the process.

With this method of decision making, risks can arise if a person misses a step in the process. This may happen if they don't fully understand what they are doing or they are interrupted.

While 'by the book' decision making is appropriate for inexperienced workers, it is important that they develop a fuller understanding of their work so they can progress to intuitive decision making which allows them to apply more flexible responses.

## Analytical decision making

Where there are insufficient information cues available and the worker needs to select between different options to make a safe decision, they may have to apply their own analysis. This analysis may involve recalling similar situations in the past, checking on written procedures, asking colleagues or consulting a specialist. These inputs must be carefully evaluated to arrive at the most effective outcome.

**For example:** *When hydraulic fluid is being injected into a device and it is supposed to come out the exit valve but doesn't, the worker needs to stop and find out why before proceeding. To just keep injecting hydraulic fluid to the point where the device fails could cause catastrophic injury.*

All possible options must be considered and information evaluated for a safe decision to be made.

People's memories can be affected by stress, noise or busy environments.

## Creative decision making

This form of decision making encourages people to explore new actions when faced with unfamiliar options or circumstances. It is particularly relevant where people have none, or only limited, experience of the situation they face.

**For example:** *A new employee may develop a new way to lift belt rollers for a conveyor belt that puts less pressure on their back and also saves time.*

Risks can arise with this type of decision making because solutions may be untested and difficult to justify when compared with rule-based and analytical decision making. As a result, creative decisions must be fully evaluated before being incorporated into rule-based procedures.

## Factors affecting decision making

A range of factors can directly or indirectly affect a person's ability to make decisions.

When a person is faced with many information inputs, such as a noisy work environment with a high level of risk and workload expectations, their decision making will suffer. The same applies if they are fatigued or stressed. These situations can undermine both creative and analytical decision making.

## Developing decision making

Training, coaching and feedback should all aim to build a person's decision making capabilities and help them progress to the intuitive level of decision making. In the mining and extractives industry, simple and logical procedures can help this progression.

Maintenance of good decision making skills relies on continual evaluation and feedback from managers and workers who are respected and trusted.

### References

Flin, R., O'Connor, P., & Crichton, M. (2008). *Safety at the sharp end: A guide to on-technical skills*. Surrey: Ashgate Publishing Ltd.  
Flin, et al, 2008; Klin, G, 2008 "Naturalist decision making", *ARA Technology Review* 4(1), 3-9.

### Disclaimer

The information contained in this publication is based on knowledge and understanding at the time of writing in March 2010. However, because of advances in knowledge, users are reminded of the need to ensure that information upon which they rely is up to date and to check currency of the information with the appropriate officer of Industry & Investment NSW or the user's independent adviser.

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