Managing risks

Some shipboard environments are vulnerable to dangerous practices becoming accepted behaviour. This leads to situations where risky activities are perceived as being normal. Example of high-risk operational tasks include amongst others working at heights and over the side.

Risk assessment is a key component of the vessel's Safety Management System which is part of the International Safety Management Code requirements.

Implementing effective controls after identifying and analysing potential hazards is a well-established approach to managing risk. However, the usefulness of a risk assessment is severely limited unless risks are adequately identified, and outcomes of the process are effectively implemented.

Case study one[1]

A crew member fell into the cargo hold from a vertical ladder and sustained fatal injuries on a bulk carrier bound for Adelaide. At the time of the casualty, the vessel was rolling with an amplitude of around five degrees, the hatches were shut. The crew member who was preparing the cargo hold to load grain was not wearing a climbing harness.

The investigation found that the company's risk assessment did not fully identify all ship or task-specific hazards associated with cargo hold preparation. The safety manual identified the holds' vertical ladders as an "emergency exit only" and risk assessments required the use of a climbing harness when using them to climb higher than two metres. However, the policy was not effectively communicated or enforced.

Estimated position of fall, 9m above tank top

Figure 1: Hold 7 vertical (aft ladder) of the marine incident[1]

Case study two[2]

A crew member was working alone in the cargo when he fell 8m to the tank top from an unprotected platform and was fatally injured.

The investigation found that the crew member was not wearing a harness or any other fall protection device. The risk of falling was not obvious to the crew onboard and there were no risk control measures identified by the company. The risk assessment forming part of the safety management system did not include any assessment of risks for work in cargo holds, access/egress that includes risk of falling or working alone.

AMSA safety data

As shown in figure 2, there were a total of 345 serious crew injuries reported to AMSA from regulated Australian vessels and foreign flagged vessels in Australian waters since 2020, with 74 reported in 2024.
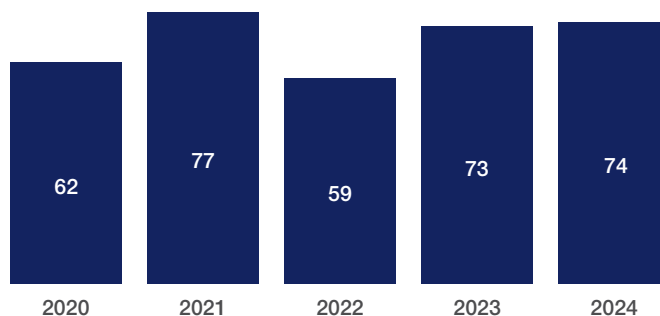

2020	2021	2022	2023	2024
62	77	59	73	74

Figure 2: Serious crew injuries reported by year (source: AMSA)

Serious crew injuries accounted for 38.7% of all reported injuries in 2024 with a slight increase since 2022.

Year	Crew injuries	Serious crew injuries	Proportion of serious crew injury
2020	198	62	31.3%
2021	218	77	35.3%
2022	178	59	33.2%
2023	179	73	40.8%
2024	199	74	38.8%

Figure 3: Proportion of reported serious crew injuries by year (source: AMSA)

Australian Government
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High risk shipboard tasks

Many high-risk tasks at sea involve working at heights and over the side. When considering tasks involving working at heights, images of tall masts and deep cargo holds often spring to mind. However, falls can occur anywhere on a ship, such as, ladders, gangways, over the side and stairs in machinery spaces. When adding slippery surfaces and ship motion, the potential for accidents is high.

Perception of risk

Different people perceive risk differently. The way people perceive risk is influenced by many factors such as their values, needs, assumptions, and concerns. It is also influenced by how much they know about the risk and how much they fear a particular risk.

Our perception of risk is shaped by the situations we find ourselves in. If we feel that we are in control of the situation, we often feel that the risk is low. But if we feel that we have limited ability to influence the situation, we feel that the risk is high. Similarly, if we are frequently exposed to a risk, we may perceive it differently from how we would if we were rarely exposed to it.

It is important to recognise these differences, as people make judgements and decisions about risk based on their perceptions of risk. This in turn may influence their behaviour when facing a risk.
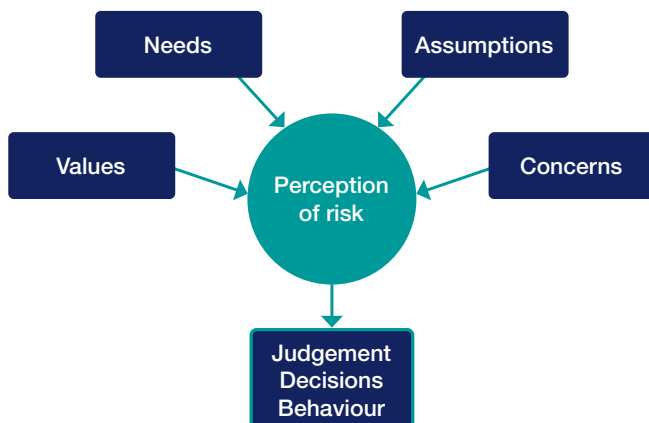

Figure 4: Perception of risk are influenced for example by our values, needs, assumptions, and concerns. Our perception forms a basis for judgement, decisions, and behaviour

Risk identification

The aim of risk identification is to generate a comprehensive list of risks. This is important, as a risk that is not identified at this stage will not be included in the risk assessment and management process. It is also important to ensure that crew members with different experience and expertise are involved in identifying risks. In this way, differing perceptions can help in getting a richer understanding of risks.

Communication and consultation

When a risk to safety has been identified, it needs to be controlled. Both the identification and implementation of risk controls are most likely to be successful when different perceptions are recognised and taken into consideration. It is important that crew members are consulted and that their views together with other knowledge of risk are considered in the risk assessment and management process.

Effective communication and consultation will ensure everyone involved understands the basis on which decisions are made and the reasons why particular actions are requested. This further provides an opportunity for people to raise issues, for example regarding conflicting goals and competing tasks.

Communication and consultation can be a useful way of ensuring that risks are identified, and risk controls are effectively implemented.

Example: Controlling the risks of working over the side

An effective risk assessment for working over the side must firstly be treated as working at height and must consider falling overboard. The hierarchy of controls provides risk control options at various levels, with 'elimination of the hazard' being the most reliable and safest option.
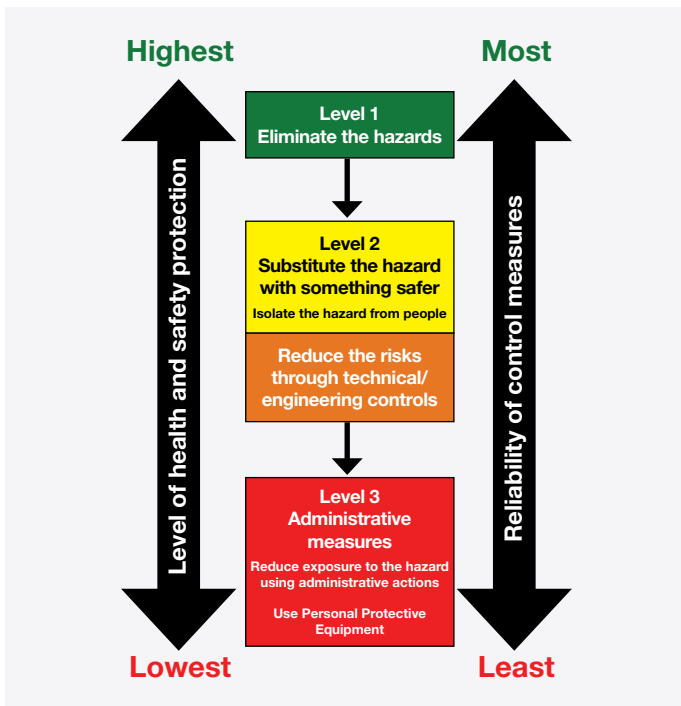
Figure 5: Hierarchy of controls diagram (adapted from (3))

The hierarchy of controls should be used to eliminate high risk tasks whenever practicable.

Level 1: Elimination

- use of drones or remote cameras for inspection over the side
- use of water gauges (manometers) for calculating draughts on the outboard side.

Level 2: Substitution

- use of a boat instead of ladder for over the side tasks, whenever possible.

Level 3: Administrative measures

- implement effective procedures for working over the side. The procedures should incorporate the same rigour and control measures as for providing safe access to the ship. The International Maritime Organization (IMO) Circular MSC.1/Circ.1331 provides requirements on this, ensuring:
  - adequate lighting
  - safe access location away from working hazards
  - lifebuoy equipped with a self-activating light and a separate lifeline available for immediate use.
  - use of appropriate Personal Protective Equipment (PPE) including fall prevention equipment and inflatable life-vest
  - when using personnel baskets, they should be fitted with a secondary means of securing to the crane and people inside should be wearing harnesses which are attached to lifelines
  - conduct regular person overboard and recovery drills and rectify identified deficiencies
  - do not work alone. Keep the master and/or supervisor informed
  - ensure equipment and PPE are appropriately maintained and suitable for the task at hand.

Monitor and review

Ineffective or failed risk controls can pose a significant risk – particularly if they go undetected. If people believe a risk has been effectively controlled when in fact it has not, they may expose themselves to unnecessary and involuntary risk. It is essential to regularly monitor and review the risk controls.

Monitoring and reviewing can take place both on a periodic basis and as the need arises such as when the operational conditions change. This helps in ensuring that risk controls are effective, relevant, and are updated in light of new information. New information can for example be based on lessons learnt from near-misses.

Key messages

- Safety management systems should capture and address a comprehensive list of risks.
- Ensure hazards and risks are identified early to reduce risks to safety.
- Introduce specific measures and controls to mitigate risks effectively
- Regularly review the risks and control measures to ensure the controls remain effective and up to date, in light of new information or a change in operational condition.
- A good safety culture supports an effective shipboard safety management system. Such a culture can help seafarers apply safe practices at all times, both during work and recreational activities on board.

References

[1] Bahamas Maritime Authority (2021) Marine Safety Accident Investigation Report into a fatal fall onboard Star Planet. 20 December 2021.

[2] Bahamas Maritime Authority (2021) Marine Safety Accident Investigation Report into a fall resulting in one fatality onboard. 10 June 2022.

[3] Safe Work Australia (2024) How to Manage Work Health and Safety Risks Code of Practice p. 21. 14 November 2024.

[4] Standards Australia (2010). HB 327:2010 Communicating and consulting about risk