ProSafe 2014

SFAIRP
What it is and how to get there

Lachlan Dreher
Director and Principal Consultant

R4Risk

15 Yarra St (PO Box 5023)
South Melbourne VIC 3205

P: 03 9268 9700
F: 03 8678 0650

E: solutions@r4risk.com.au
www.r4risk.com.au

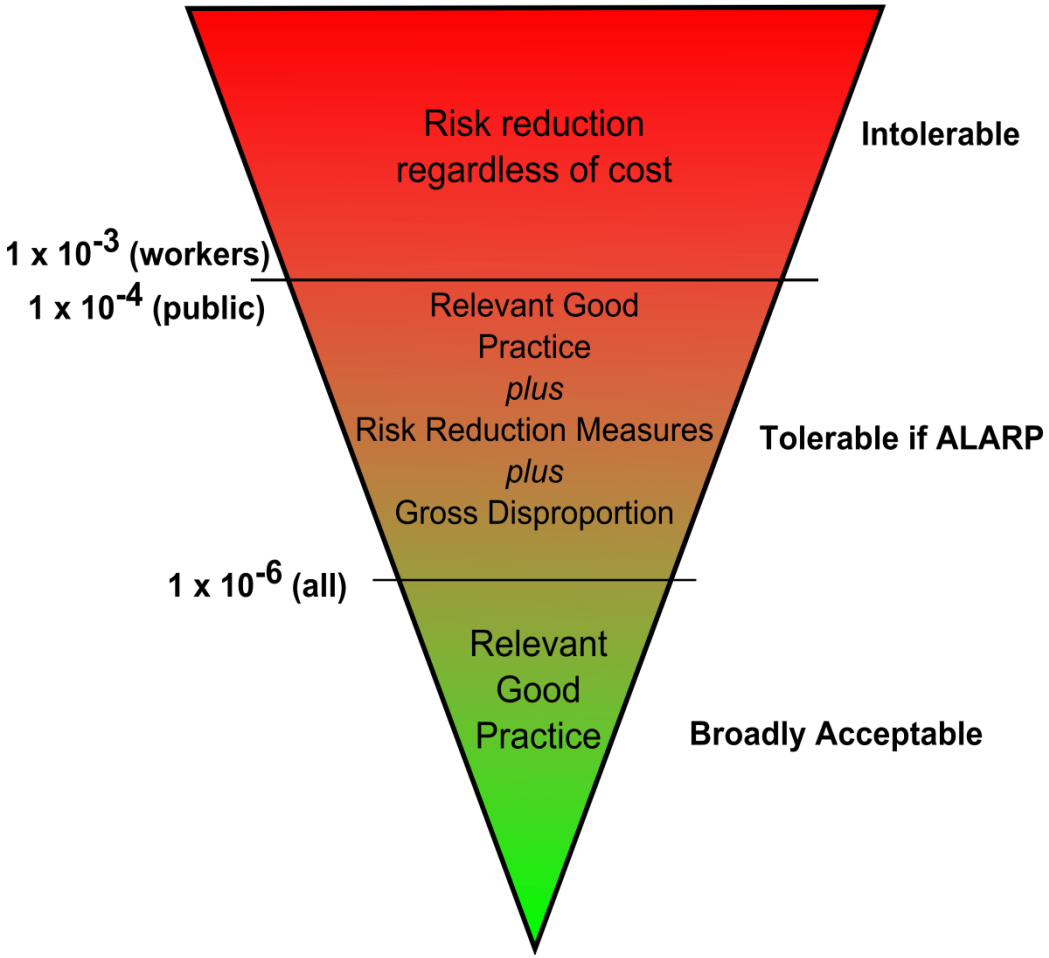
Agenda

1. SFAIRP vs. ALARP
2. Demonstration of SFAIRP
3. Cost-benefit analysis
4. Maintaining risks SFAIRP

ALARP

- “As Low As Reasonably Practicable”
- Normally considered as part of a risk framework
- Risk management process
  - Identify hazards
  - Evaluate risk (likelihood & consequence) associated with each
  - Compare to risk criteria for acceptability or tolerability
  - If not “broadly acceptable”, reduce risks with reasonably practicable options

ALARP Triangle for Individual risk



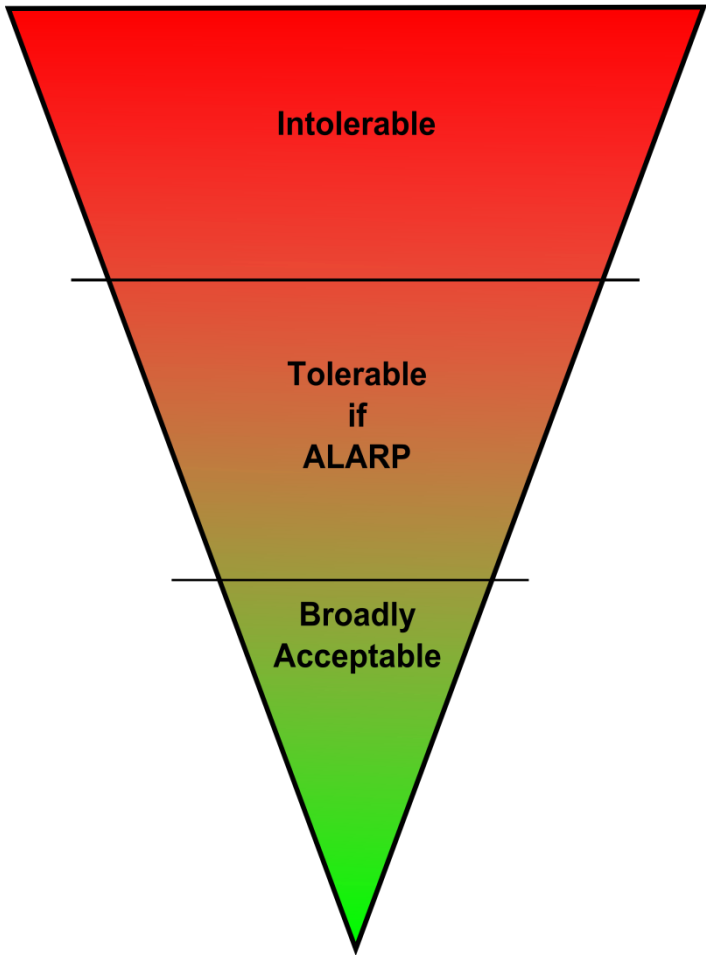
SFAIRP

- “So Far As Is Reasonably Practicable”
- Embodied in safety legislation
- To satisfy SFAIRP:
  - to eliminate risks to health and safety so far as is reasonably practicable; and
  - if it is not reasonably practicable to eliminate risks to health and safety, to reduce those risks so far as is reasonably practicable.

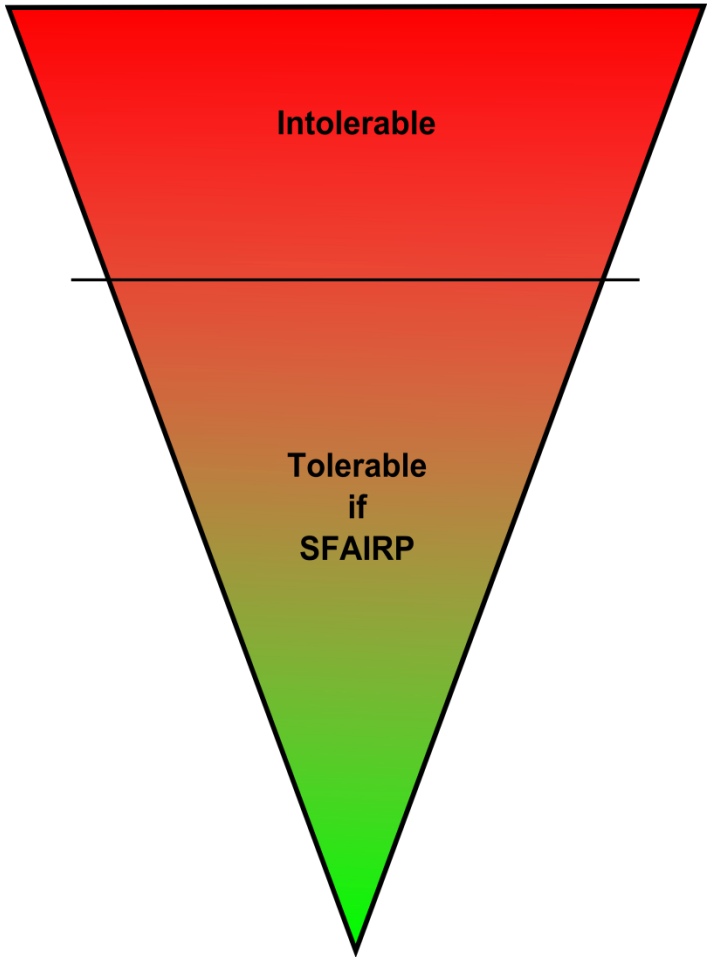
SFAIRP

- Safety obligations are ongoing
  - Demonstration that risks are reduced SFAIRP is an ongoing process.
- SFAIRP aim:
  - All reasonably practicable precautions are put in place to manage safety
- No defining point of risk tolerability

Modified Risk Triangle



Modified Risk Triangle



SFAIRP

The first question:

What else can we do?

SFAIRP

The second question:

What is reasonable to do?

What is ‘Reasonably Practicable’

- Two elements:
  1. What can be done?
  2. What is reasonable to do?

- Section 18 of WHS Act:
  - Degree of harm
  - What should be known
  - Availability & suitability of risk management means
  - Then can consider cost, including whether it is “grossly disproportionate”

Demonstrating SFAIRP

- Typical risk management process
  - Identify hazards
  - Assess the risk
  - Identify and implement suitable control measures
  - Review the effectiveness of the control measures
  - Identify additional control measures
  - Implement or reject proposed controls

- Risk reduction needs to be considered for each hazard

Demonstrating SFAIRP

- Adequacy of the identified control measures must be assessed.
  - Implemented
  - Effective
  - Reliable
  - Auditable
  - Monitored

- Independence of controls should also be considered

Demonstrating SFAIRP

- Identify additional control measures to further reduce or eliminate the risk
  - Include improvements to existing controls

- Incorporate the “Hierarchy of Controls”
  - Elimination
  - Substitution
  - Isolation
  - Engineering
  - Administrative
  - PPE

Demonstrating SFAIRP

- Show:
  - Implementation is not practicable
  - Implementation may introduce other risks
    - No net reduction of risk
  - That the cost of implementation vastly outweighs the benefit
- Documentation of decisions for rejection of controls

Cost-Benefit Analysis

- Part of the process to evaluate controls
- Are further measures “reasonably practicable”?
- Used to show whether cost of implementing further controls is grossly disproportionate with the risk reduction gained

Cost-Benefit Analysis

LPG Depot

- Bulk LPG storage
- Road tanker loading & unloading
- Cylinder filling & distribution

- Adjacent to light industrial neighbours
- Risk exposure to these neighbours

Cost-Benefit Analysis

Three risk reduction options considered:

1. Buy the neighbouring site

2. Relocate to a greenfield site

3. Mounding of bullets at the existing site

Cost-Benefit Analysis

- Implied Cost of Averting a Fatality (ICAF)
  (i.e. cost per fatality averted)

$$ICAF = \frac{Annualised\ Cost}{\Delta\ Risk}$$

Cost-Benefit Analysis

- Low ICAF values:
  - The proposed measure is highly cost effective
  - The cost is low compared to the risk reduction achieved
- High ICAF values:
  - The proposed measure is relatively ineffective
  - The cost is high compared to the risk reduction achieved
  - Risk reduction efforts may be better directed to an alternative

Cost-Benefit Analysis

- Annualised Cost:
  - Initial capital cost
  - Ongoing operating and maintenance costs
  - Typically assume a 10 year lifecycle

- Δ Risk:
  - Commonly use PLL
  - Change in risk expected from addition of the new measure

Cost-Benefit Analysis

- Options 2 & 3

	Option 2 Relocation	Option 3 Mounding
Capital Cost	$2M	$150K
Operating Costs	-	-
Annualised Cost (10 years)	$200K	$15K
Δ Risk (fatalities/year)	5×10^{-6}	3×10^{-6}
ICAF (over a 10 year period)	$40,000M	$5,000M
"Cost of a life"	$10M	$10M
Disproportionate factor	4,000	500

Ongoing Assurance

- Is the facility still operating with risk reduced SFAIRP?
- Hazards
  - Any new knowledge?
  - Any learnings from other incidents?
  - Changes to operations have been properly assessed?

Ongoing Assurance

Control Measures

- Performance indicators and standards
- Integration of the management of controls into the SMS
- Auditing and monitoring

In Summary…

- ALARP and SFAIRP
  - Similar words
  - Same meaning
  - Different frameworks
- ALARP framework sets a level considered “broadly tolerable”
- SFAIRP framework is open-ended

Thank you

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