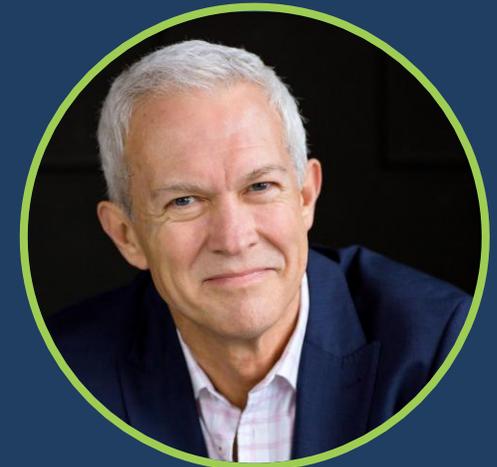


Critical Controls in Practice:

Understanding Why Implementation is Difficult for Workers



Alex Fernando
Co-founder | Incident Analytics



Warren Smith
Co-founder | Incident Analytics

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Incident
Analytics™

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About Us

We believe that learning from serious incidents and the effectiveness of controls in the field offers valuable improvements to worker safety.



Alex Fernando
Co-founder
Director: Strategy & Risk Advisory



Warren Smith
Co-founder
Director: Research & Data Science



Dave Carson
Head of Technology



Trish Kerin
Process safety expert,
engineer, past Director of
the Institution of Chemical
Engineers (IChemE)



Don Martin
Exceptional safety and risk
management professional
with 40+ years of experience,
specializing in critical risk



Anthony Deakin
Recognised thought leader in
operationalising fatality
critical controls and risk
management practices



Liz Seaward
Senior tertiary educator in
safety leadership, culture and
strategy development
programs



Critical Risk Data Analytics

VALIDATING METRICS

Validation of incident risk categorisation, informing what flies under radar, and any over-investment of investigation effort.

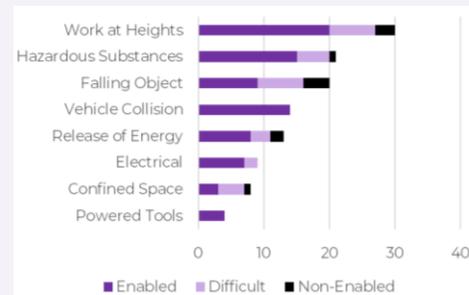
Severity Analysis

Risk Rating	Low Potential	High Potential
Negligible	49	1
Minor	135	11
Moderate	164	57
Major	9	10
Extreme		1

RISK CONTROL ANALYSIS

Reporting on the most frequent risk contexts that produce serious incidents and accompanying critical control effectiveness.

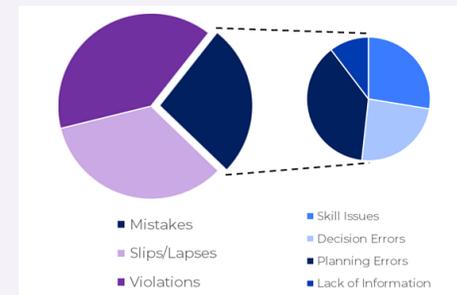
Controls Enablement



CAUSAL ANALYSIS

Identifying absent or ineffective controls, human error, operational factors and any system factors that contribute to incidents.

Human Error Analysis

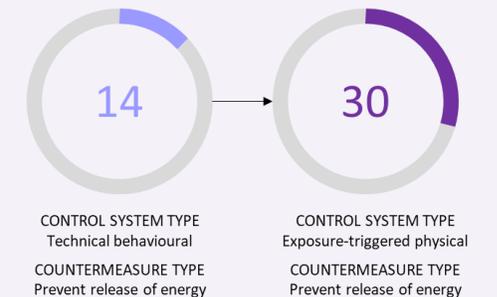


CONTROLS ASSESSMENT

Assessment of control verifications and/or inherent control effectiveness.

CONTROL:
Vehicle load is secured so it is unlikely to fall or be dislodged

IMPROVEMENT:
Install secondary load restraint with a sensor to indicate whether loose



Agenda

1. Overview of Research Study
2. The three control implementation states
3. Research findings on control implementation gaps
4. Risk-specific control challenges
5. What can be done about it

Research Study



12 Countries
Australia, New Zealand,
China, Brazil, USA, Belgium,
Netherlands, France, UAE,
United Kingdom, Saudi
Arabia, South Africa

12 Industry Sectors



Utilities



Metals Manufacturing



Mining



Engineering



Food Manufacturing



Agricultural Services



Land Management



Fuel Distribution



Warehousing



Rail Operations

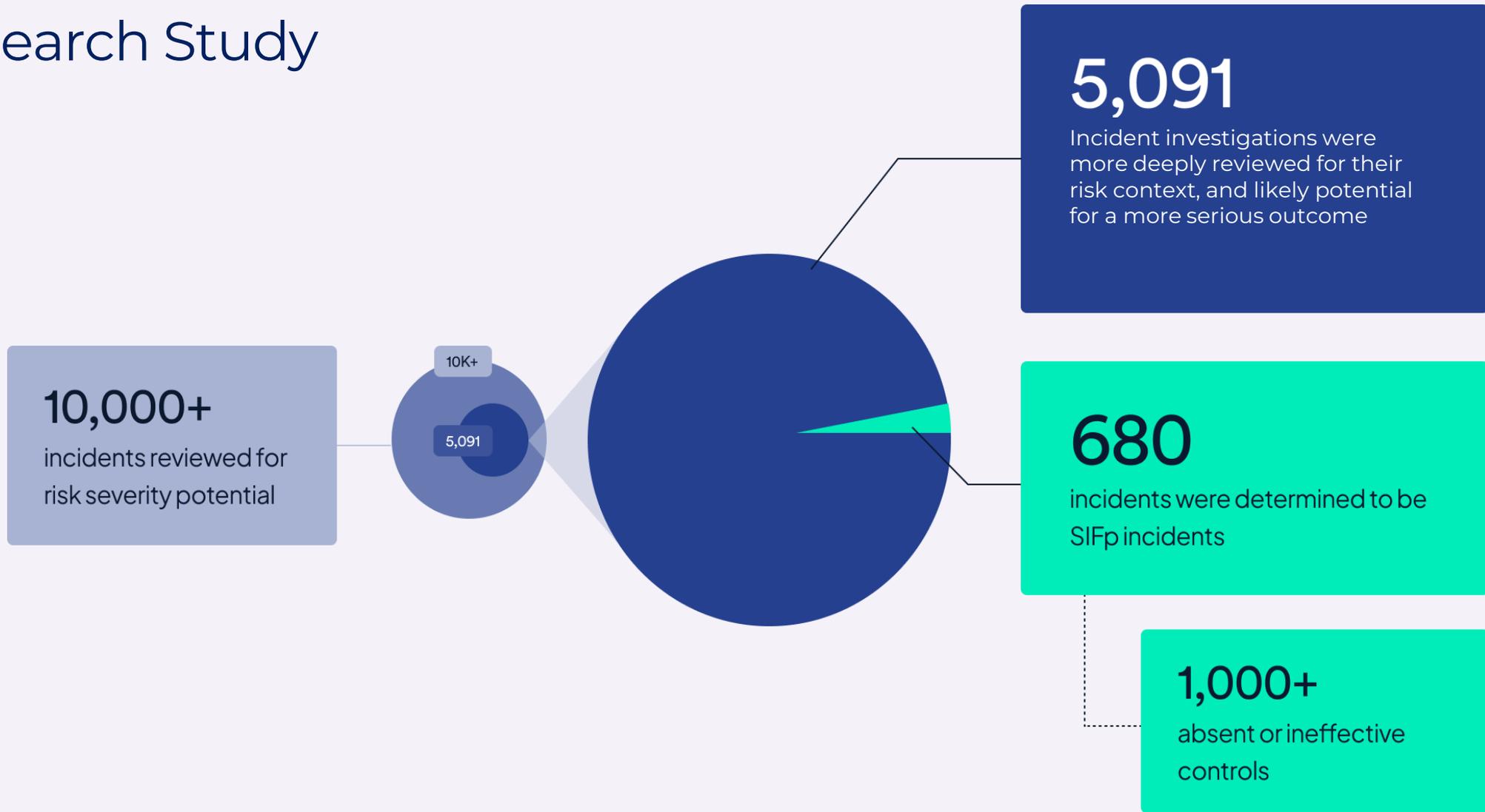


Transportation



Port Operations

Research Study



6 Key Findings

From our research study



Most serious incidents are inaccurately classified



Workers find it hard to implement critical controls in many situations



Worker errors are identifiable but not understood in most investigations



Factors related to how operations are managed and led and their influence



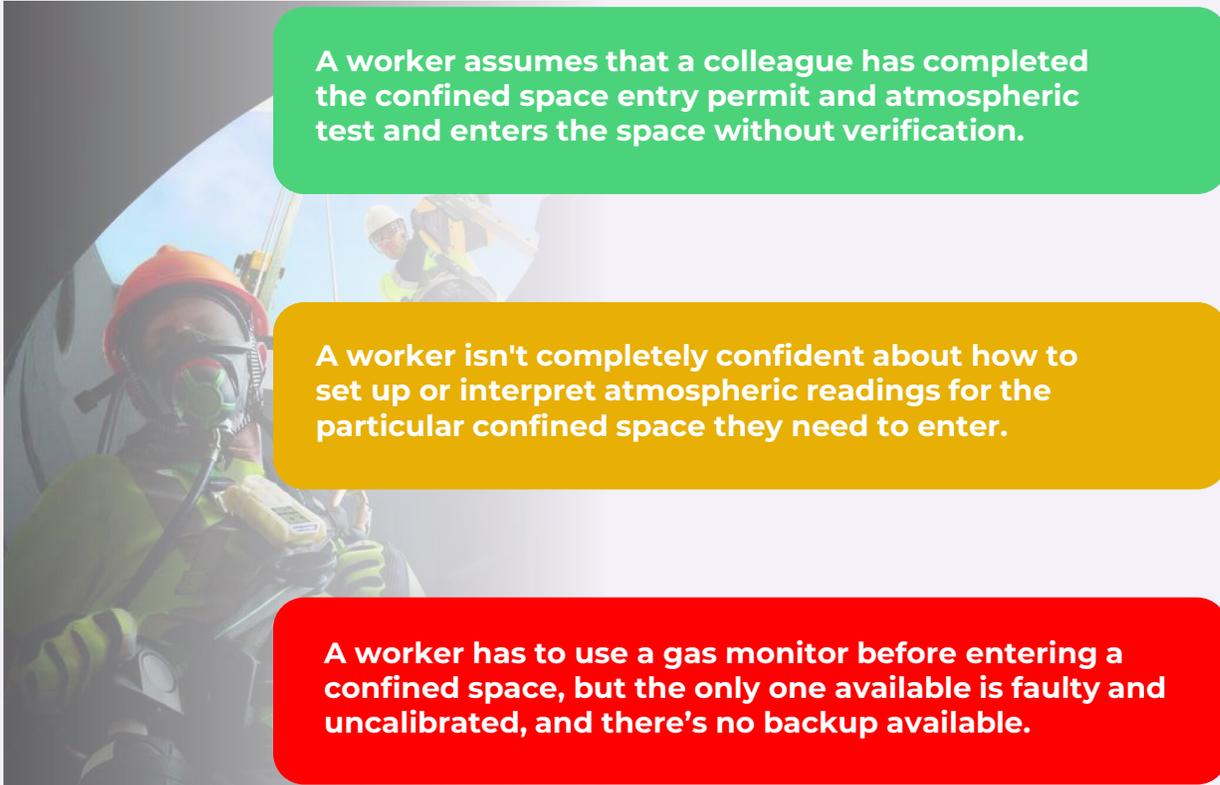
Upstream organisational systems affect how controls are implemented



Motor vehicle and gravity-related events are dominant critical risks

680 SIFp Incidents

1000+ Control Failures



A worker assumes that a colleague has completed the confined space entry permit and atmospheric test and enters the space without verification.

A worker isn't completely confident about how to set up or interpret atmospheric readings for the particular confined space they need to enter.

A worker has to use a gas monitor before entering a confined space, but the only one available is faulty and uncalibrated, and there's no backup available.

EASY



Worker *could* implement the control but didn't - or did it poorly.

DIFFICULT



Control was hard to implement due to situational or contextual barriers.

UNWORKABLE

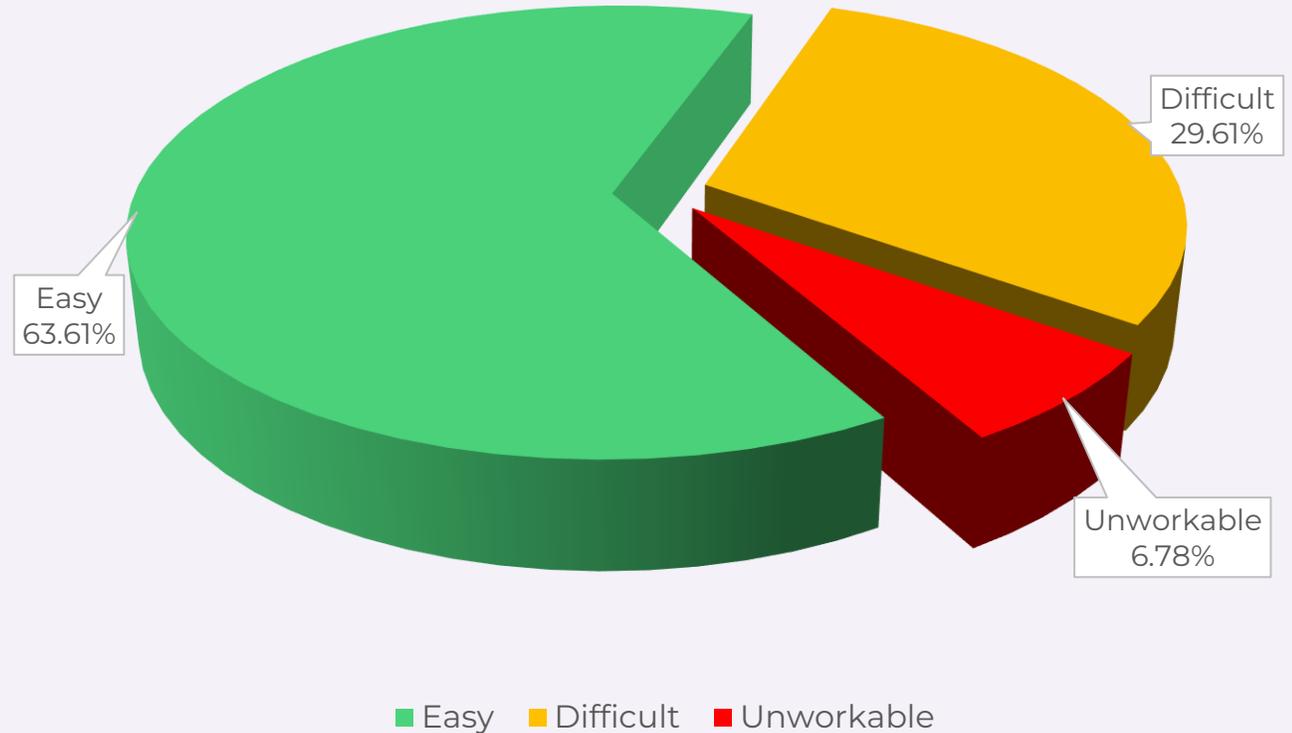


Control was impossible to implement due to missing tools, equipment, or systemic factors.

Research finding

Analysing 680 SIFp incidents revealed more than **1/3** of unsuccessful controls were **difficult** or **impossible** to implement.

SIFp Events: Control Implementation



Poll:

What issues do you see for workers implementing critical controls?

1

Control is hard to use, difficult to put in place, or awkward in practice

2

The work environment sometimes makes control difficult

3

Fatigue, stress, or mental distraction leads to skipped steps

4

Fear of slowing down the job or 'holding things up'

5

Sometimes the worker doesn't know what's required, or how to do it

6

Workers think certain controls aren't needed in some situations

7

Other: Please add into the chat

SIFp Incidents

What does the research say about how workers get into difficulty with control implementation?

EASY



75% of 'easy' control situations resulted in **unintended errors**

DIFFICULT

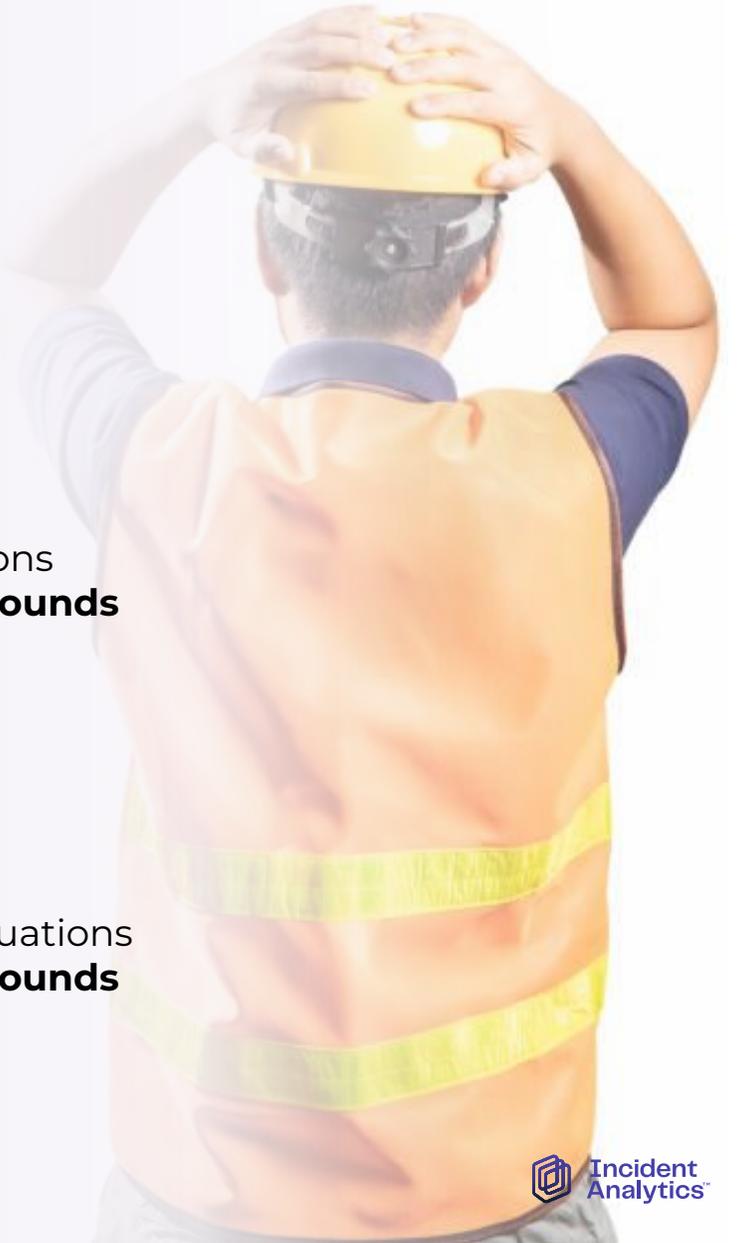


68% of 'difficult' control situations resulted in **intentional workarounds**

UNWORKABLE

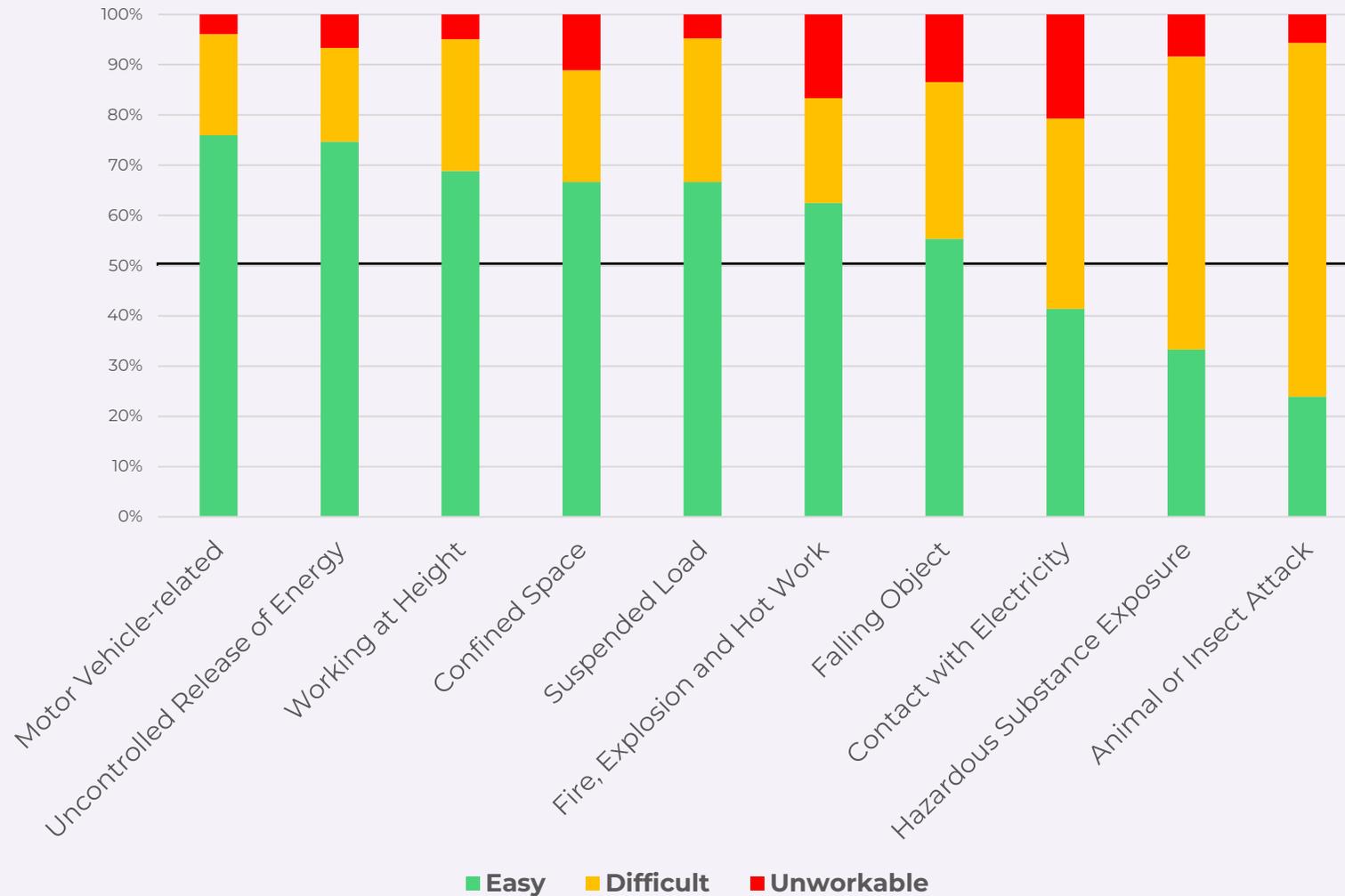


72% of 'unworkable' control situations resulted in **intentional workarounds**



Risk category affects ease of control implementation

Control Implementation by Top 10 Risk Categories



Gravity-related incidents

Control Challenges

■ Easy ■ Difficult ■ Unworkable



CONTROL IMPLEMENTATION CHALLENGES

FALLING OBJECT:

- Stacked material management
- Adjacent work segregation
- Securement device adequacy
- Flooring integrity at height
- Load stability when unrestrained
- Inspection processes

WORKING AT HEIGHT:

- Scaffold construction & protections
- Open-edge protection
- Motorised platform usage & setup
- Fixed work platform integrity

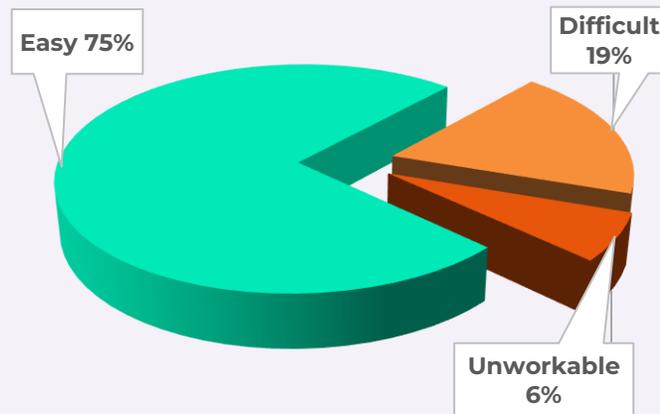
SUSPENDED LOAD:

- Lifting team competence
- Load weight monitoring
- Lifting equipment inspection

- 1 Increase focus on Falling Object control reliability – educate workers about the risks.
- 2 Increase inspection focus for fixed work platforms (inc. scaffold)
- 3 Ensure competence of all workers associated with complex lifts.
- 4 Inspect all critical equipment (mechanical & PPE) for fitness for purpose at shorter intervals.

Uncontrolled Energy incidents

Control Challenges



CONTROL IMPLEMENTATION CHALLENGES

HIGH PRESSURE EQUIPMENT:

- Equipment mechanical integrity
- Equipment usage method
- Relevant PPE suitability
- Pipe/hose equipment fastening
- Pressure monitoring componentry
- Relief valve positioning

ISOLATION:

- Use of correct matrix
- Performance of step-tests
- Dead-man switch functioning

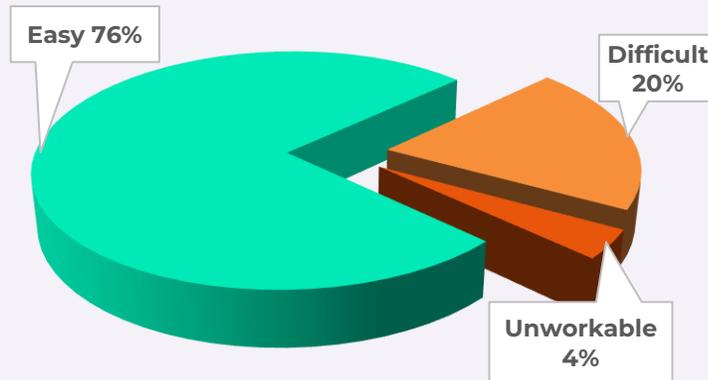
SEGREGATION:

- Mechanical guarding in place

- 1 Improve the mechanical integrity of equipment.
- 2 Ensure procedures are suitable and practical.
- 3 Strengthen inspection processes.
- 4 Enhance the use of checklists and validation steps for complex tasks before releasing energy.

Vehicle Movement incidents

Control Challenges



CONTROL IMPLEMENTATION CHALLENGES

VEHICLE CONTROL:

- Vehicle maintenance
- Vehicle choice for conditions
- Driver fatigue recognition
- Pedestrian-vehicle demarcation
- Positive communication
- Interior road conditions
- Journey management policy
- Interior fencing

VEHICLE LOAD MANAGEMENT:

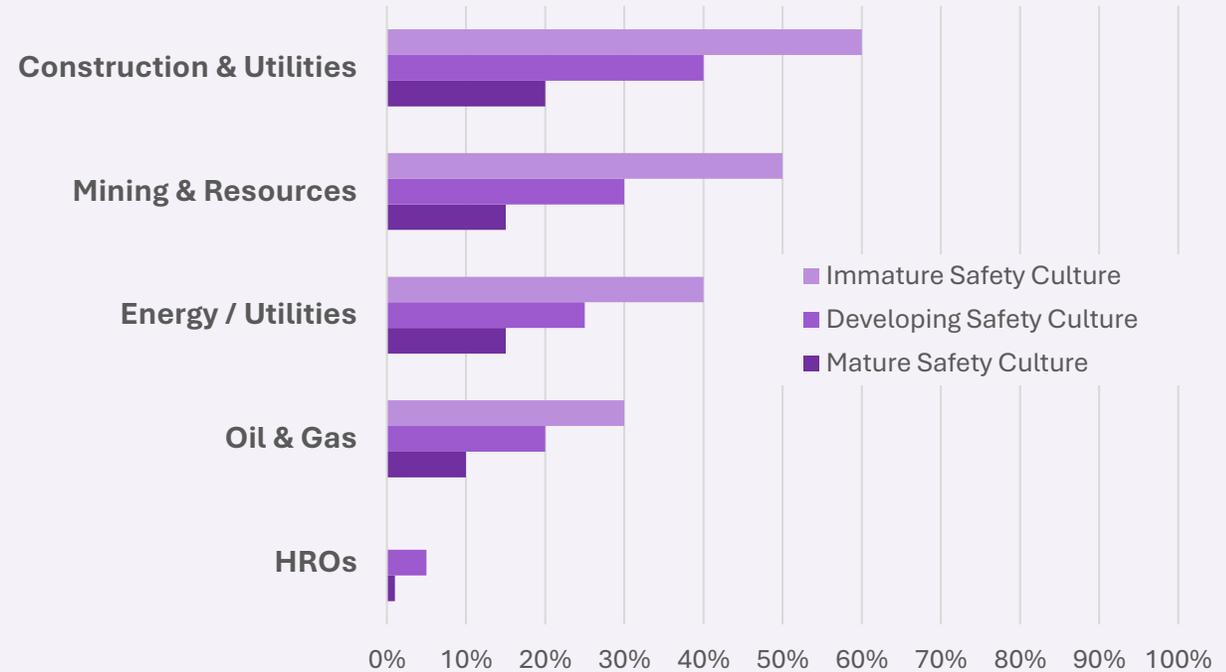
- Trailer coupling integrity
- Load movement sensors
- Load balance and securement

- 1 Develop skills for managing hazardous driving conditions.
- 2 Use vehicle monitoring data (IVMS) and coaching feedback.
- 3 Provide targeted feedback to drivers.
- 4 Introduce autonomous vehicle technology as soon as available.

Broader industry research

It's not just incidents that reveal critical control challenges.

Critical Control Verification (non-conformance rates)



SOURCES:

- International Council on Mining and Metals (ICMM)
- Minerals Council of Australia
- International Association of Oil & Gas Producers (IOGP) Report
- ICMM/Anglo American Safety Leadership Exchange
- SafeWork NSW / WorkSafe Victoria Audits
- Deloitte's Operational Risk Reports
- DuPont's STOP program data

Key takeaways

1

Understanding control effectiveness depends on real-world usability – not just theoretical design

2

Improve incident investigations to include controls analysis

3

Proactively verify how controls are being implemented & perform

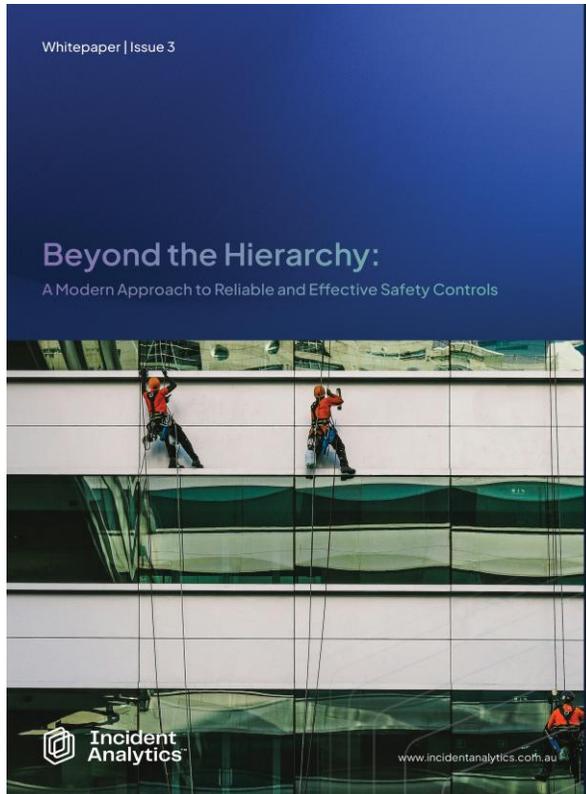
4

Foster a culture that values learning and development from 'work as done'

REGISTER to receive a copy of our upcoming research paper:

Beyond the Hierarchy: A Modern Approach to Reliable and Effective Safety Controls

Register with the QR code
(Link in chat)



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Thank you for attending the event: Critical Controls in Practice

Please take a moment to complete the survey below.

1. How did you hear about this webinar? *

- Sentis email
- Sentis website
- LinkedIn
- Facebook
- From a colleague
- Other

2. How would you rate this webinar? *

0 1 2 3 4 5 6 7 8 9 10

Poor Excellent

Thank you for joining us!



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