



WORKSAFE

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HHU Extractives

Updates

- Blasting notification form
- Industry quarterly report
- Truck Induction Video



Today we'll be covering:

1 Mobile Plant

2 Incident Investigations

3 CPD

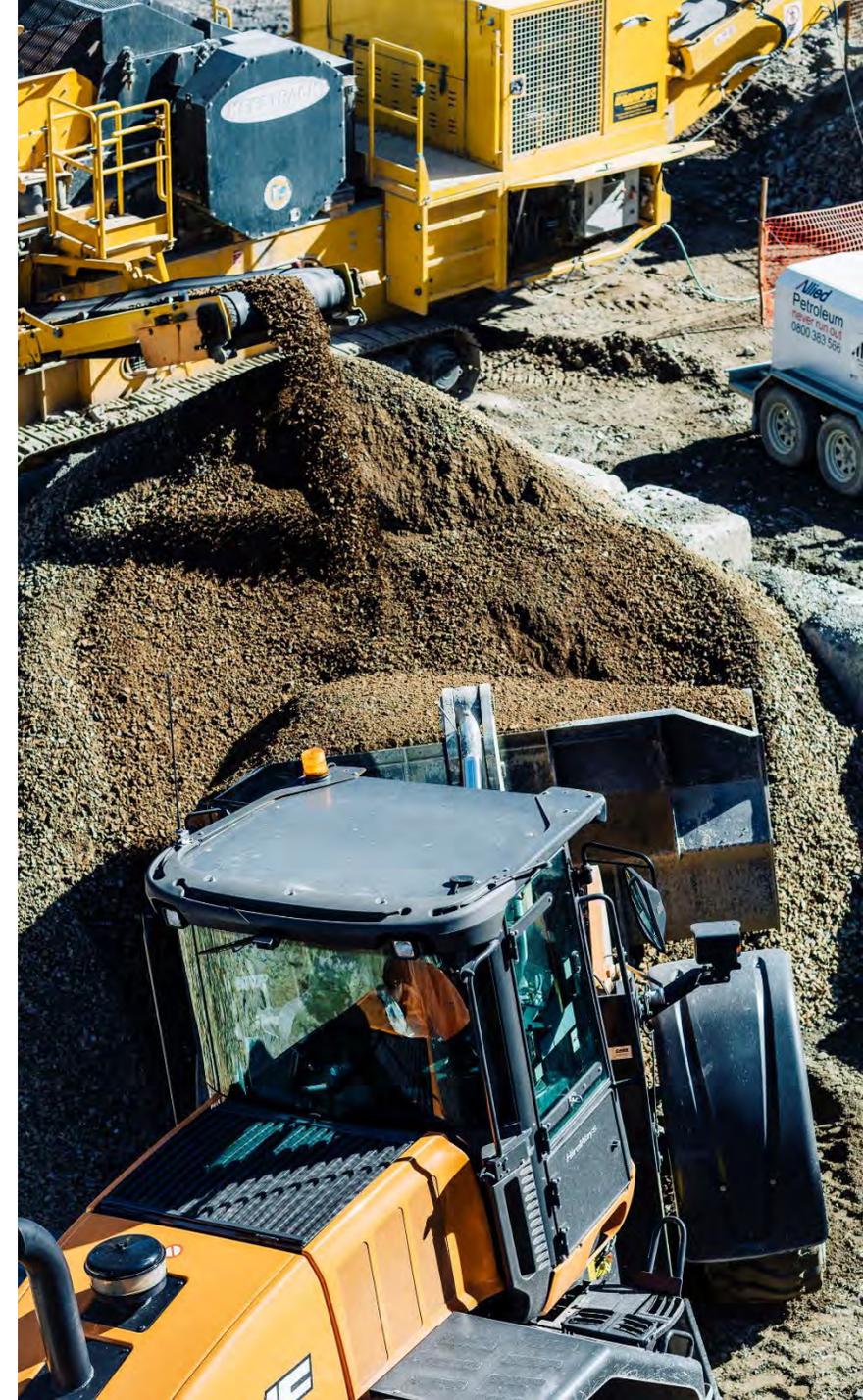
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Mobile Plant

Mobile Plant - incidents

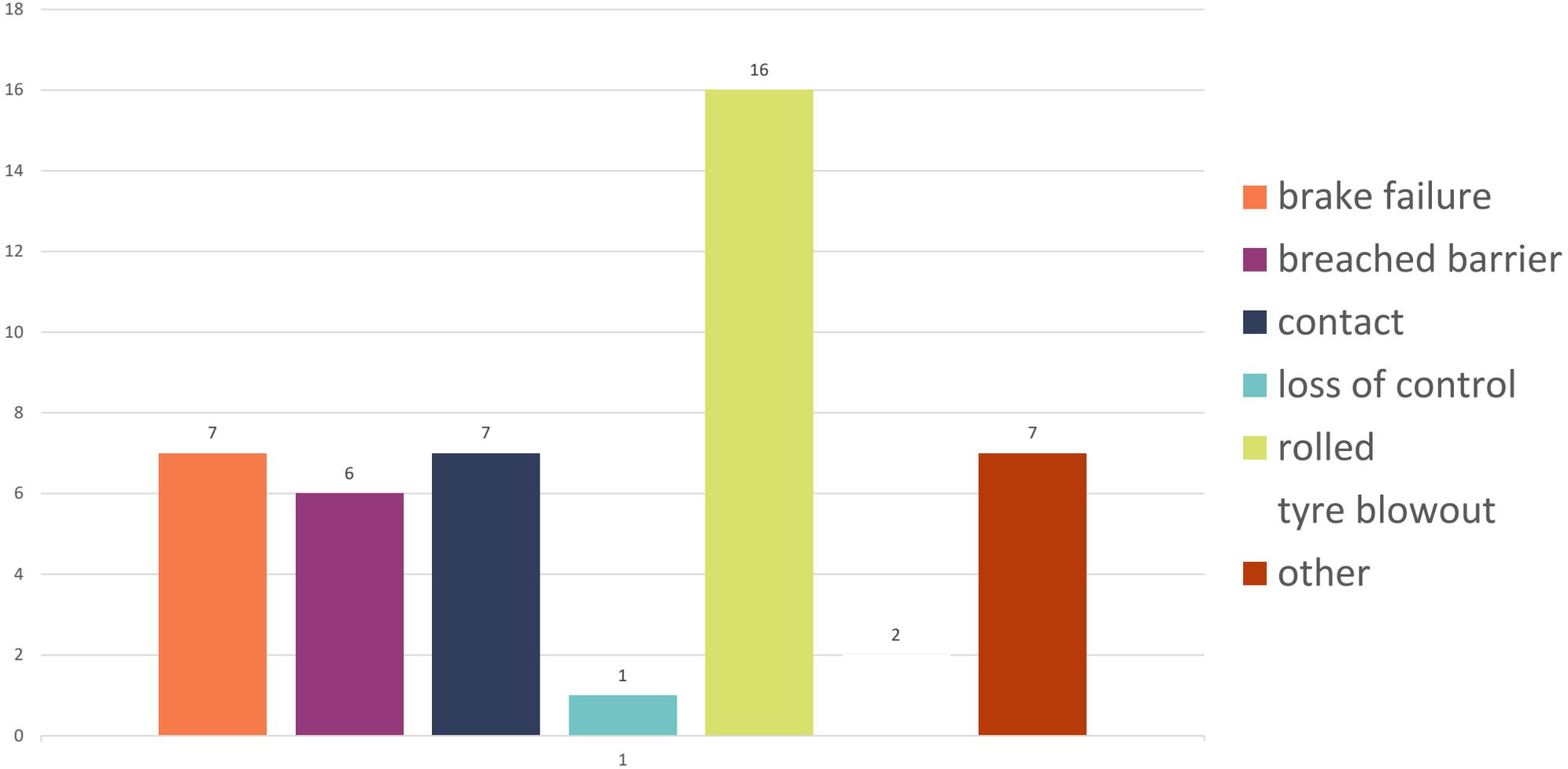
What we will cover

- Notifiable incidents
- Plant Operators
- Tyres
- Road design
- Fit for purpose plant and equipment
- Seat belts and open edge protection
- Tip head design and maintenance



Notifiable incidents

Plant & Vehicles



PCBU duties

Legal duties

Primary duty of care - the provision of any information, **training**, instruction, or **supervision** that is necessary to protect all persons from risks to their health and safety arising from work carried out as part of the conduct of the business or undertaking;

Health & Safety at Work Act

General Risk & Workplace Management Regulations



PCBU duties

Assessing competency for plant operators

- ✓ risk assessments,
- ✓ hazard identification,
- ✓ personal performance reviews,
- ✓ H&S audits or inspections,
- ✓ analysis of investigation reports and near miss reports,
- ✓ competency specified by a vehicle or equipment manufacturer,
- ✓ recommendations is GPG



Plant operators

Training and supervising

Tell me and I forget

Teach me and I may remember

Involve me and I learn

Benjamin Franklin



Training considerations

Safety is number one and I know because I check

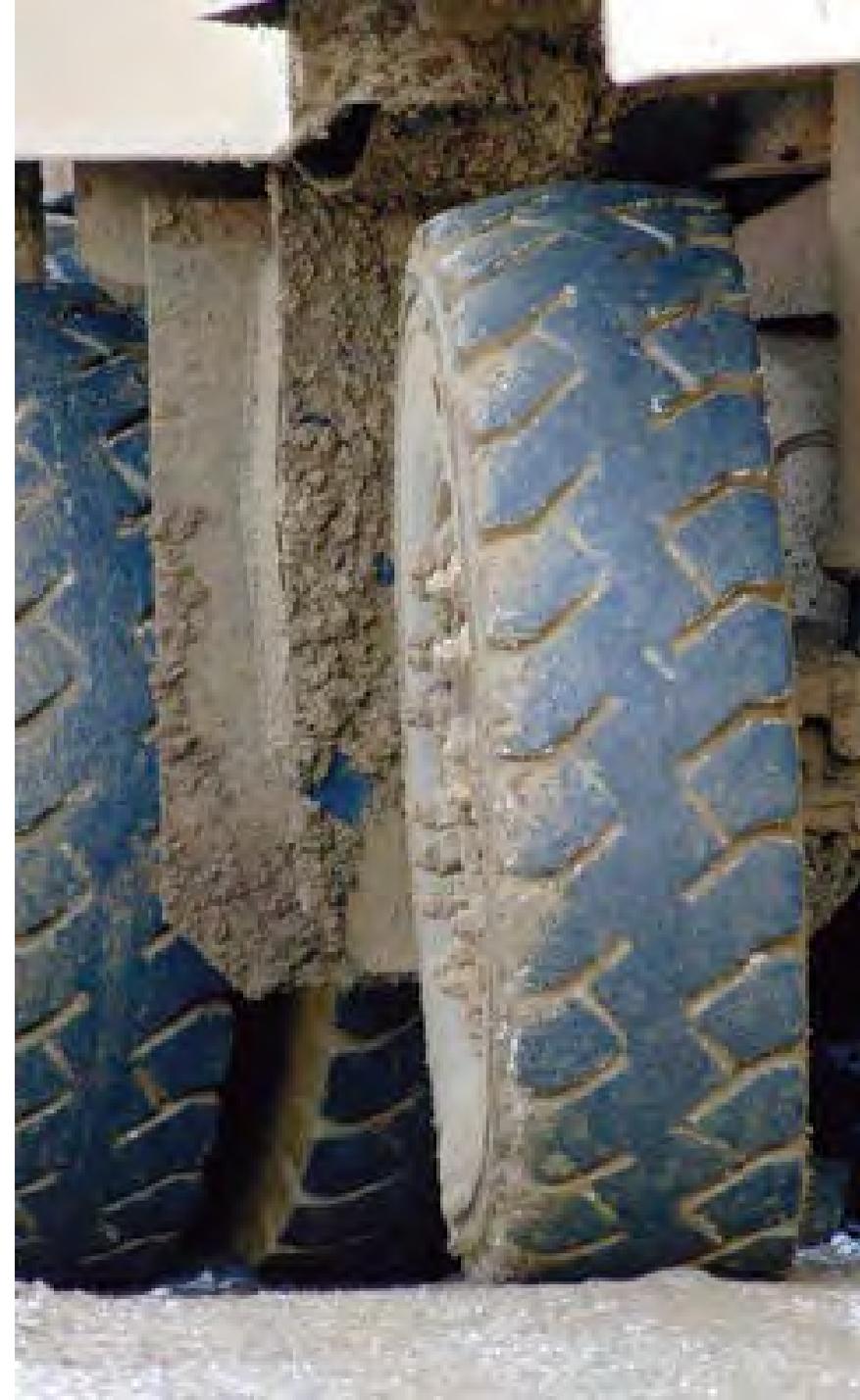
- ✓ Sitting in the cab
- ✓ Observing from a safe distance
- ✓ Utilise in cab reports
- ✓ Have a chat



Tyres

Operational considerations

- Select correct tyre type for your operation
- Don't mix tyre types.
- How do you check the tyre pressures – visual or gauge
- Poor road design impacts on tyre life

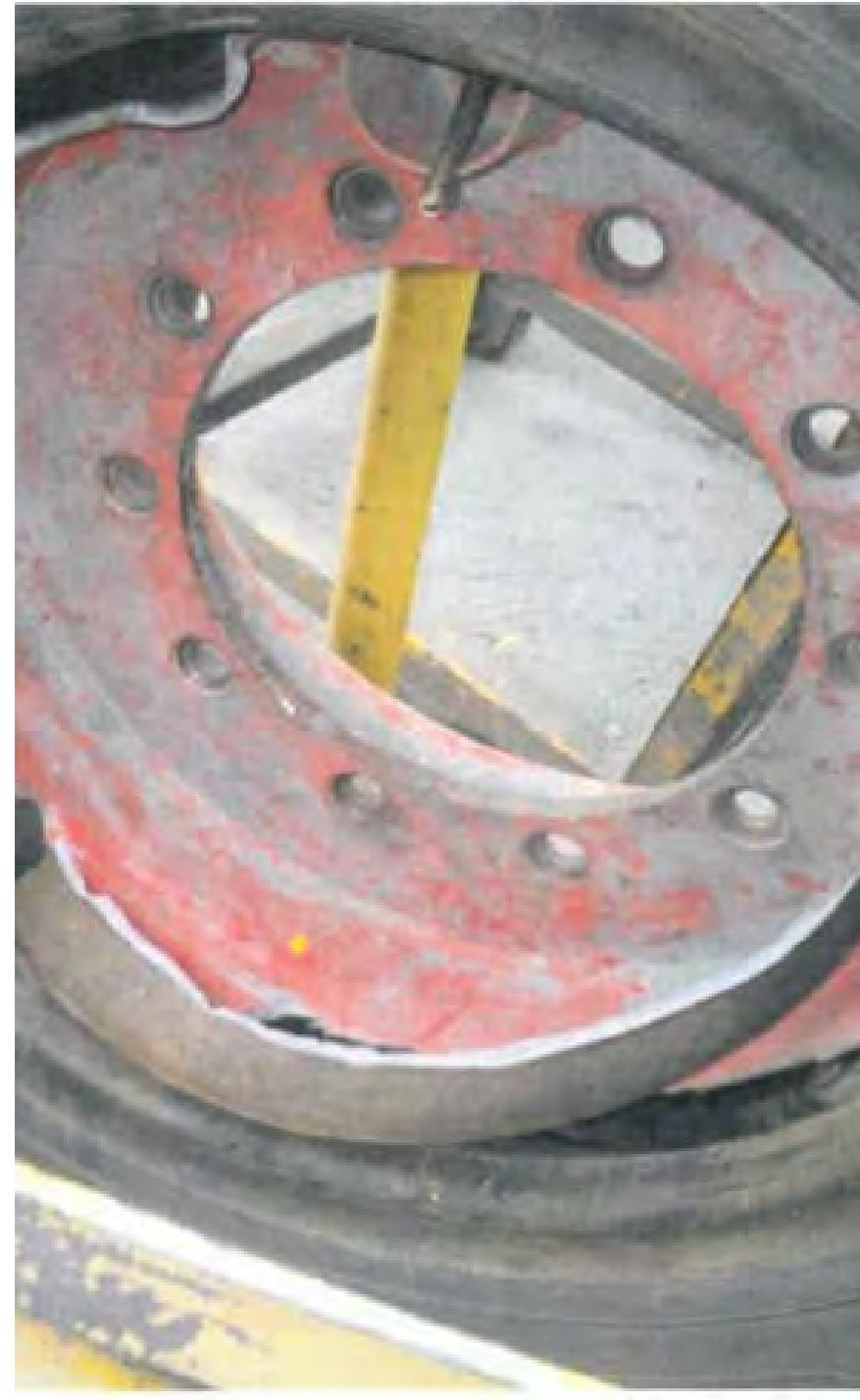


Tyres

Inflation

- Use a cage
- Use correct equipment & tools
- Trained & competent people
- Consider using a specialist tyre handling company
- Take the tyre off plant
- Safe position for operator
- Ensure inflating tyre to correct pressure. Take note of what gauge is being used (PSI or bar)

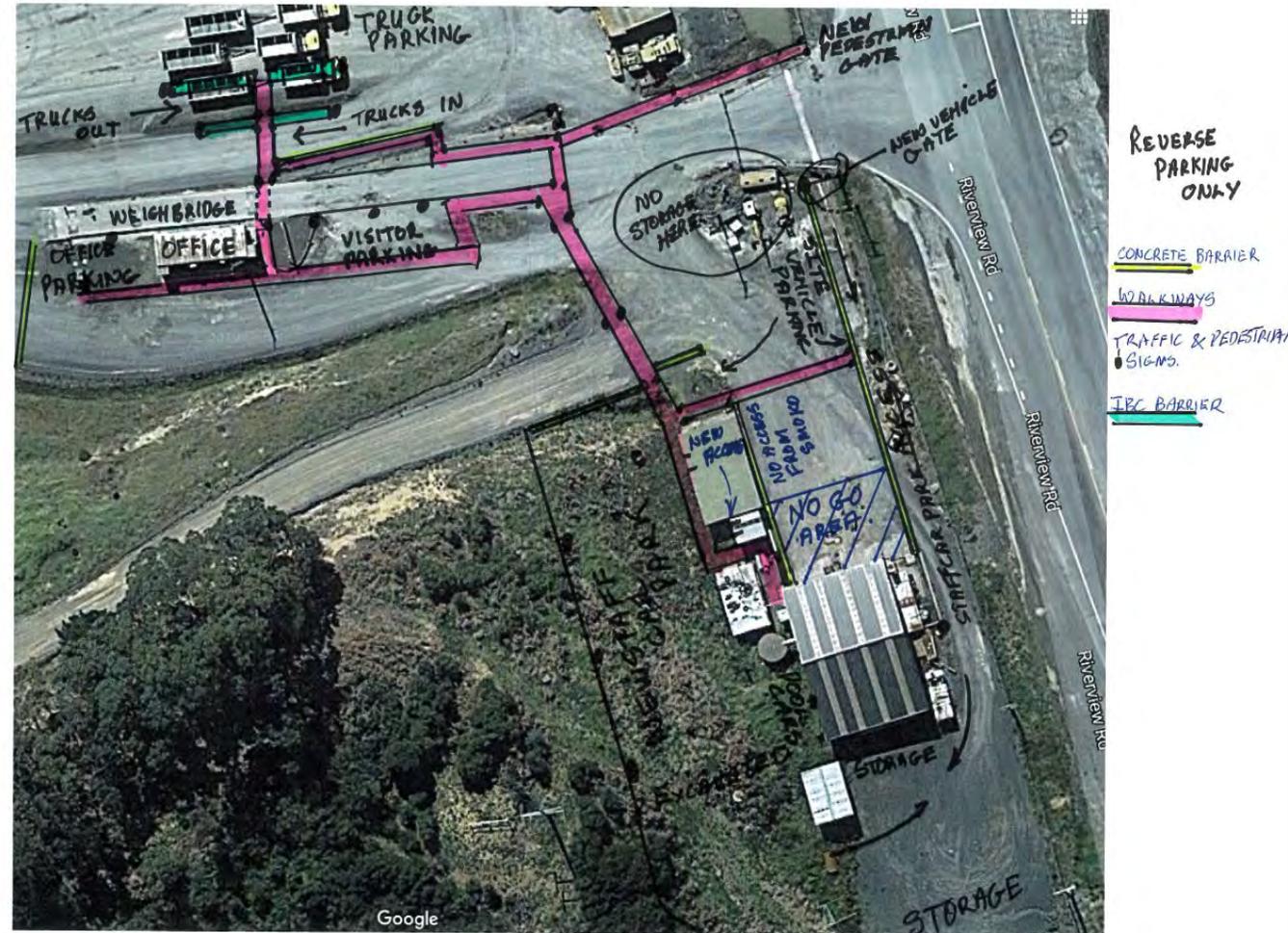
- *Photo over inflation of a jumbo tyre, Worksafe March 2018*



Planning for Roads & vehicle operating areas

Planning considerations

- Complete risk assessment
- Pedestrians
- Separate light & heavy vehicle interaction
- Buildings
- Refuelling points
- Visibility around stockpiles
- Overhead lines
- Trailer sales



* **Refer** to Regulation 80 PHMP Roads & other vehicle operating areas

Road design

Common faults

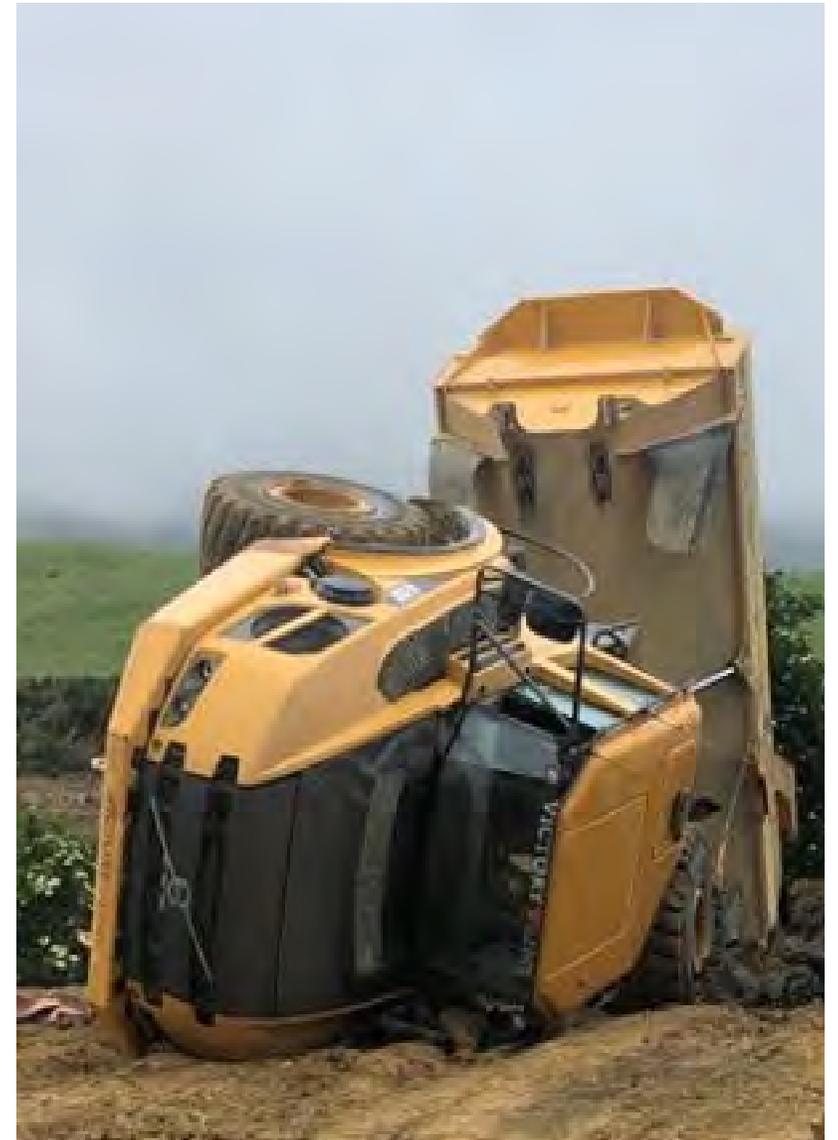
- Road gradient too steep, 1:8 or better
- Speed
- Road width narrow
- Sharp corners
- Road surface not maintained
- Poor visibility
- No thought for establishing a one way system
- Lack of road signage



Fit for purpose plant

When selecting plant consider..

- Start with an operational risk assessment
- Involve workforce in plant selection & introduction vof plant to site
- Manufacture specifications
- Laden weight limits
- Existing road design
- Will you be operating on slopes?



Open edge protection

The last line of defence

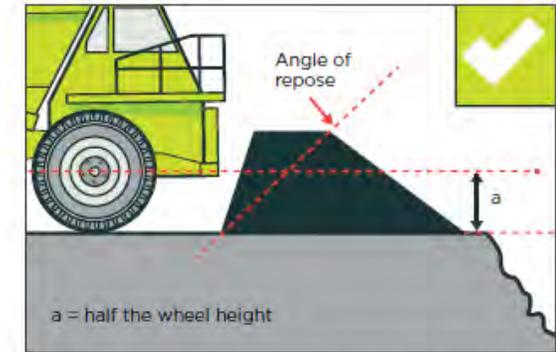


Figure 105: Suitable windrow - the width of the windrow is as wide as the normal angle of repose

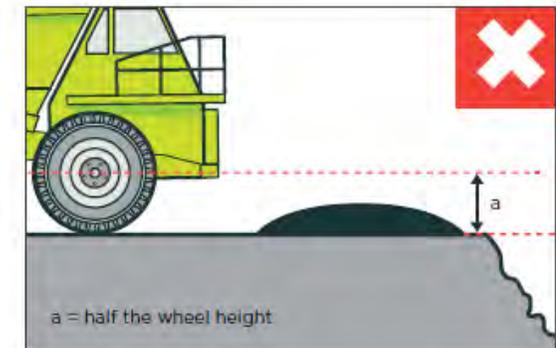
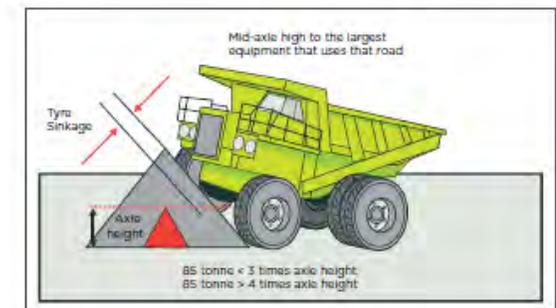
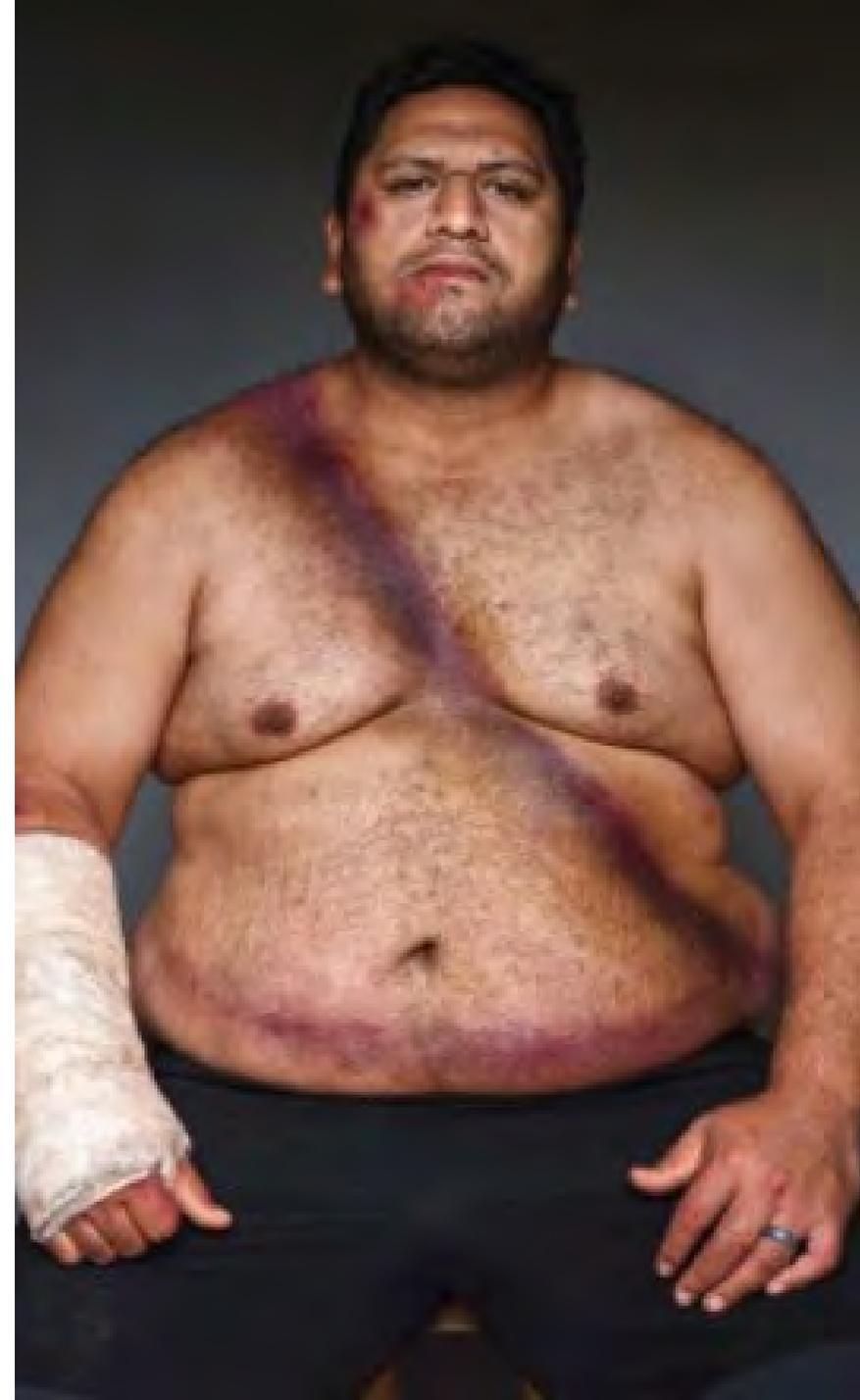


Figure 106: Unsuitable windrow - curved slopes



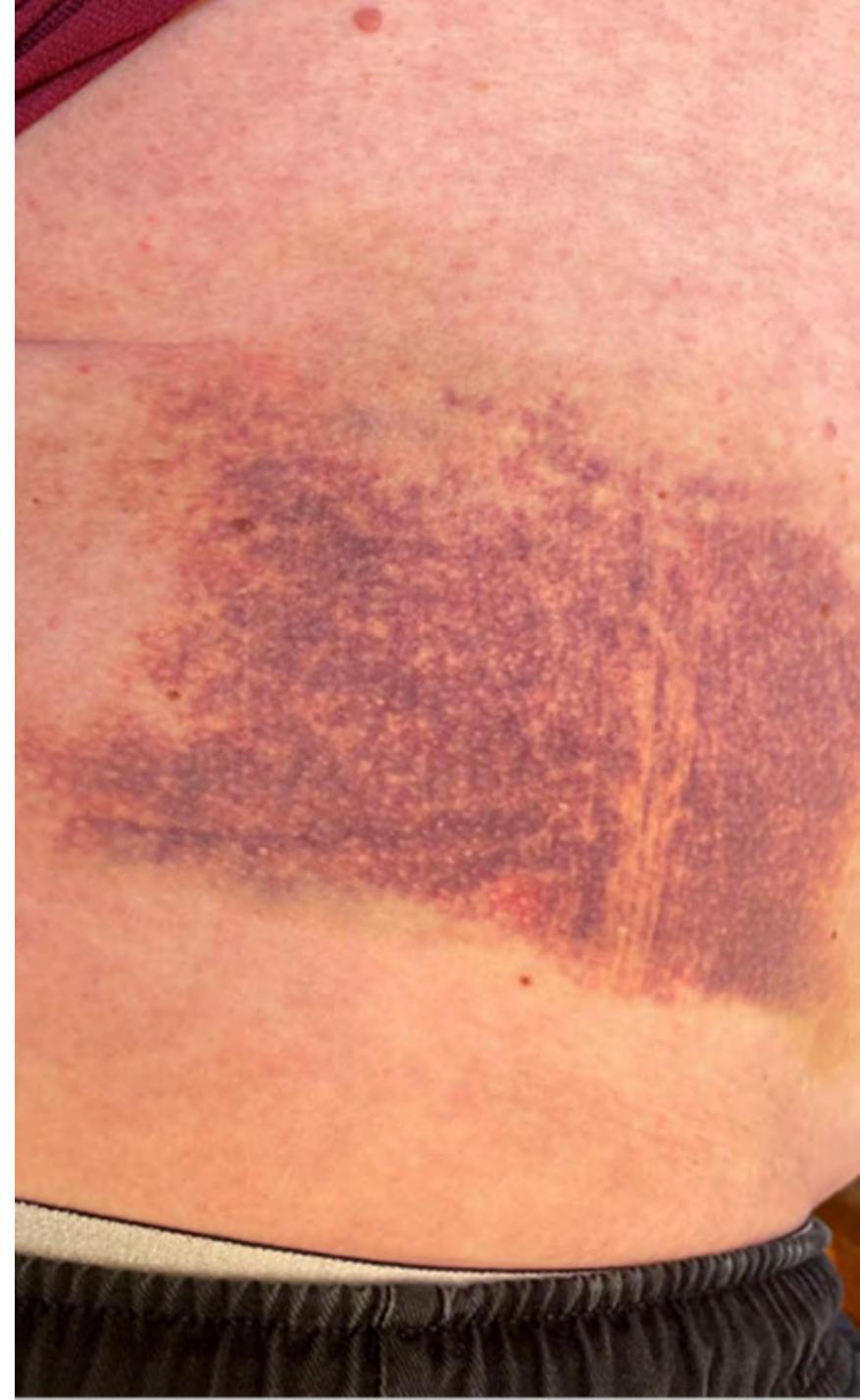
Seatbelt Myths

- **Myth** “If I do get into a crash, I’d have a better chance of survival because I’d be **thrown clear.**”
- You're far more likely to be killed or seriously injured if you're **ejected** from your vehicle. About **80 percent** of occupants ejected from vehicles are **killed**. By design, seat belts are meant to keep you contained in your vehicle during a crash.
- *Photo Courtesy of NZTA Seatbelt Campaign*



Seatbelt Myths

- **Myth** *“I'm strong enough to **brace** myself against the steering wheel or dashboard in a collision.”*
- No, you are not. The sudden deceleration of a car in a crash at just 50kmph will transform the mass of an unbelted **80kg person into 12 tons**. For around 30kmph this works out at over 6 tonnes – so unless you can **bench press 6000kg**, the answer is no.
- Also, you can't predict the onset of a sudden crash, which can happen in less than a second.





Tiphead

Unsafe tiphead conditions

- No safety bund
- Safety bund too narrow
- Weakened edge
- Cracks
- Not compacted
- Soft or weak foundation
- Poor lighting & visibility
- Inadequate clearance
- Congestion at tip head
- No design & tip head too high



Tiphead

What goes wrong?



Tip head



What goes wrong ?



Tiphead

Planning and Design

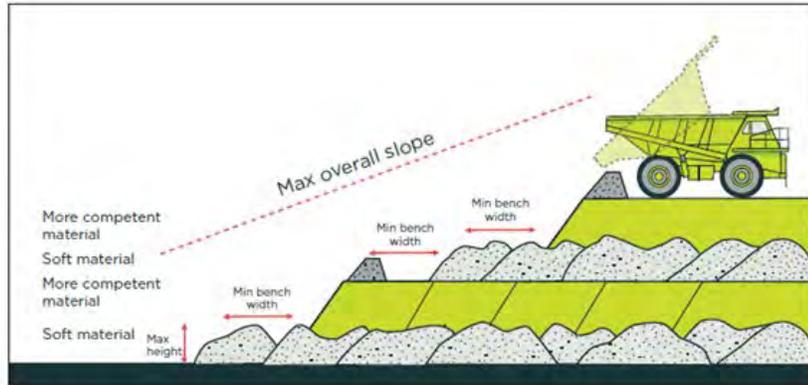
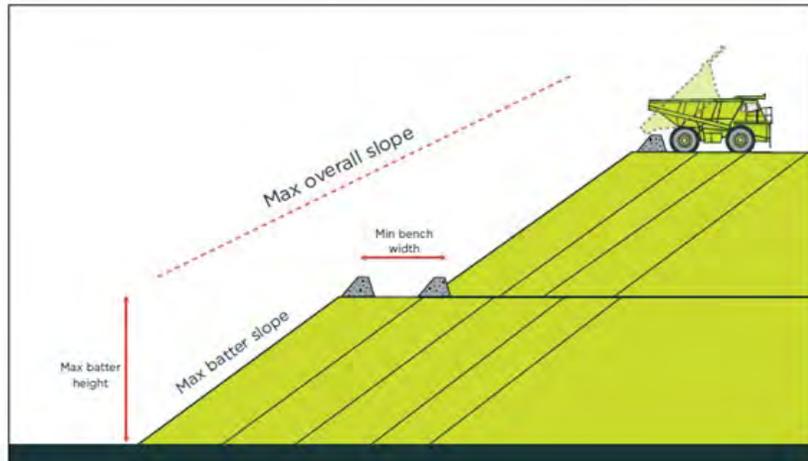


Figure 38: Example dump construction method for mixed material (mattressing)



Tip head

Controls

If you have a tip head you must have controls in place to manage it

- ✓ Documented tip head procedures
- ✓ Training for operators and subcontractors
- ✓ Daily / shift inspections

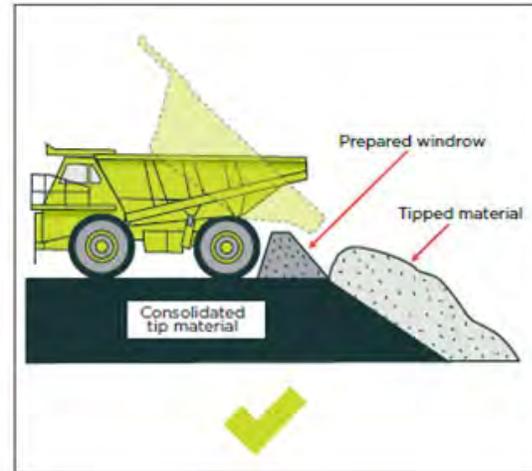
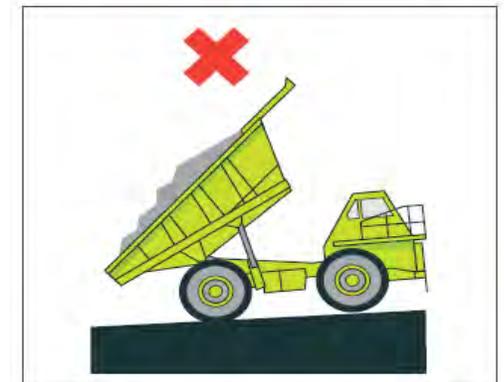
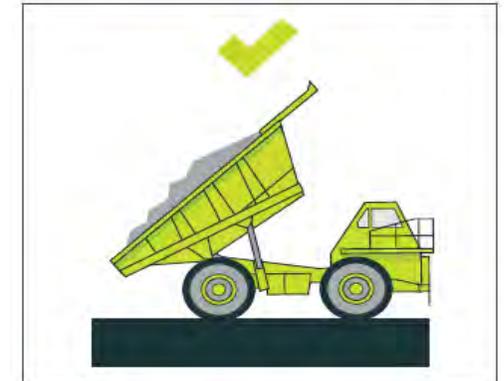


Figure 41: Approaching tip point windrow



Mobile Plant

What we have covered

Notifiable incidents

Plant Operators

Tyres

Road design

Fit for purpose plant and equipment

Seat belts and open edge protection

Tip head design and maintenance



2

Incident Investigations

Why Investigate Incidents?

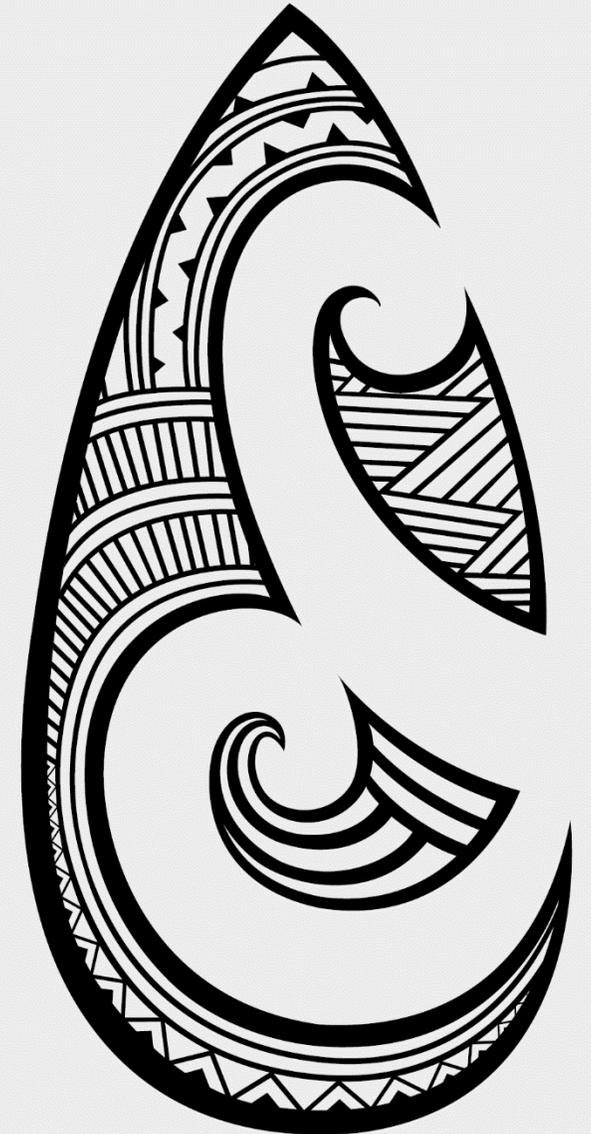
- **Identify hazards** and shortcomings in the health and safety management systems.
- Prevent future incidents or reoccurrences by implementing **corrective actions** to address root causes.
- Incident investigations that focus on identifying and **correcting root causes**, not on finding fault or blame, can also improve workplace morale and increase productivity.



Incident Investigations

Investigation Team

- Investigations are best done as a **team** so all parties can contribute their skills and expertise.
- Choose the **right people** to conduct the investigation.
- Consider :
 - Health and safety representatives
 - line manager/supervisor
 - Workers from the operation
 - People with relevant knowledge.



Steps in an incident investigation



Preserve and Document Incident Scene

- First priority – ensure incident site is **safe and secure**
- Take photos or video recordings of the scene as soon as possible, before equipment or materials are moved.
- Take note of **information** such as:
 - equipment and safety devices in use at the time of the incident
 - positions of machine guards and controls
 - housekeeping conditions of the area
 - weather conditions
 - lighting or noise levels etc.



Collect Information

- Incident **information** is **collected** through interviews, document reviews and other means.
- In addition to interviews **other sources of useful information** include:
 - Equipment manuals
 - Industry guidance documents
 - Company policies and records
 - Maintenance schedules, records and logs
 - Training records (including communication to employees)
 - Audit and follow-up reports
 - Inspection records
 - Previous corrective action recommendations

Collect Information

Interview Tips

- Try to **interview** witnesses as **soon as possible**, and **individually**.
- **fact-finding, not fault-finding.**
- recount their version of what happened.
- Use **open-ended questions** and clarifying questions.
- Ask what they think could have prevented the incident, focussing on the conditions and events preceding the incident.
- **Summarize** the information that you've received from the witness so that they can confirm their account or correct any inconsistencies.

Collect Information

PEEPO

- PEEPO is an acronym given to a method of Data Collection e.g. for an ICAM investigation
- The collection of data is divided in to five main areas:

People / Environment / Equipment / Procedures / Organisation

- For each of the 5 information categories, the investigation team should identify all conditions, acts or deficiencies that could have been **contributing factors** to the incident
- To ensure all facts are uncovered, ask questions for each category:
- **Who? What? Where? Why and How?**



Collect Information

ACTIVITY - PEEPO example

- Identify what sorts of information you would want to collect as an investigator for this incident, in each PEEPO category



People	Environment	Equipment	Procedures	Organisation

Collect Information

PEEPO

People	Environment	Equipment	Procedures	Organisation
Haul Truck Operator	Lighting – day or night?	Visibility	Task specific work instructions/SOPs	Fatigue management
Other Haul truck operators	Visibility	Brakes	Training records	Culture e.g. speeding, production pressure
Shift Supervisor	Bunding	Tyre maintenance	Induction records	Previous incident records – similar incidents, lessons learned
Witnesses	Road dimensions and grade	Communication	Pre-start checks Maintenance records	
	Road conditions and weather e.g. wet, rainy?		Shift inspection records	
			Risk Assessments/Take-5s	
			Road design standards	

“Rather than being the main instigators of an accident, operators tend to be the inheritors of system defects by poor design, incorrect installation, faulty maintenance and bad management decisions.

Their part is usually that of adding the final garnish to a lethal brew whose ingredients have already been long in the cooking”.

James Reason

Determine Root Cause

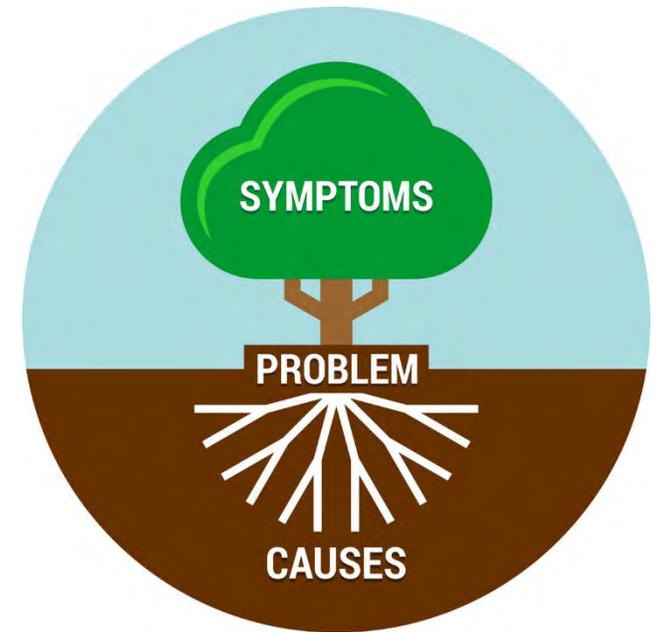
- A **root cause** is a fundamental system-related reason **why** an incident occurred i.e. the underlying reasons **why unsafe conditions exist** or if a procedure or safety rule was not followed
- Root causes generally reflect management, design, planning, organizational or operational failings
- **Correcting only an immediate cause may fix a symptom of a problem**, but not the problem itself.
- By addressing root causes, an employer may be able to **prevent** the same or a similar incident from recurring.

“Human error is not the conclusion of an investigation. It is the starting point.”

-Sidney Dekker (2006)

Determine Root Cause

- Finding the root causes goes **beyond the obvious or immediate** factors
- Conclusions such as “worker was careless” or “employee did not follow safety procedures” don’t get at the root causes of the incident.
- **Investigators need to continue to ask “why?”**
- If an investigation is focused on finding fault, it will always stop short of discovering the root causes.
- The **main goal** must always be to **understand how and why** the existing barriers against the hazards failed or proved insufficient, not to find someone to blame



Determine Root Cause

Incident Investigation Tools

Tools that could be used by employers to conduct a root cause analysis include:

- Brainstorming
- Checklists
- Logic/Event Trees
- Timelines
- Sequence Diagrams
- Causal Factor Determination

Regardless of the investigation tools chosen, they should be used to answer four important questions:

- **What** happened?
- **How** did it happen?
- **Why** did it happen?
- **What** needs to be corrected?

Determine Root Cause

Asking Questions

For Example - If a **worker suffers an injury on a screening plant**, the investigator would ask questions such as:

- Was the plant adequately guarded? If not, why not?
- Was the guard damaged or non-functional?
- If so, why hadn't it been fixed?
- Did the guard design get in the way of the work?
- Had the employee been trained properly in the procedures to do the job safely?

Determine Root Cause

More examples of digging deeper to find root causes

If a procedure or safety rule was not followed...

- **Why** was the procedure or rule not followed?
- Was the procedure out of date or safety training inadequate?
- Was there anything encouraging deviation from job procedures such as incentives or speed of completion?
- If so, why had the problem not been identified or addressed before?

Determine Root Cause

More examples of digging deeper to find root causes

Was a management system defect a contributing factor? If so, why?

- a culture of improvising to meet production goals
- failure of supervisor to detect or report hazardous condition or deviation from job procedure
- supervisor accountability not understood
- supervisor or worker inadequately trained
- failures to implement previous corrective actions

Determine Root Cause

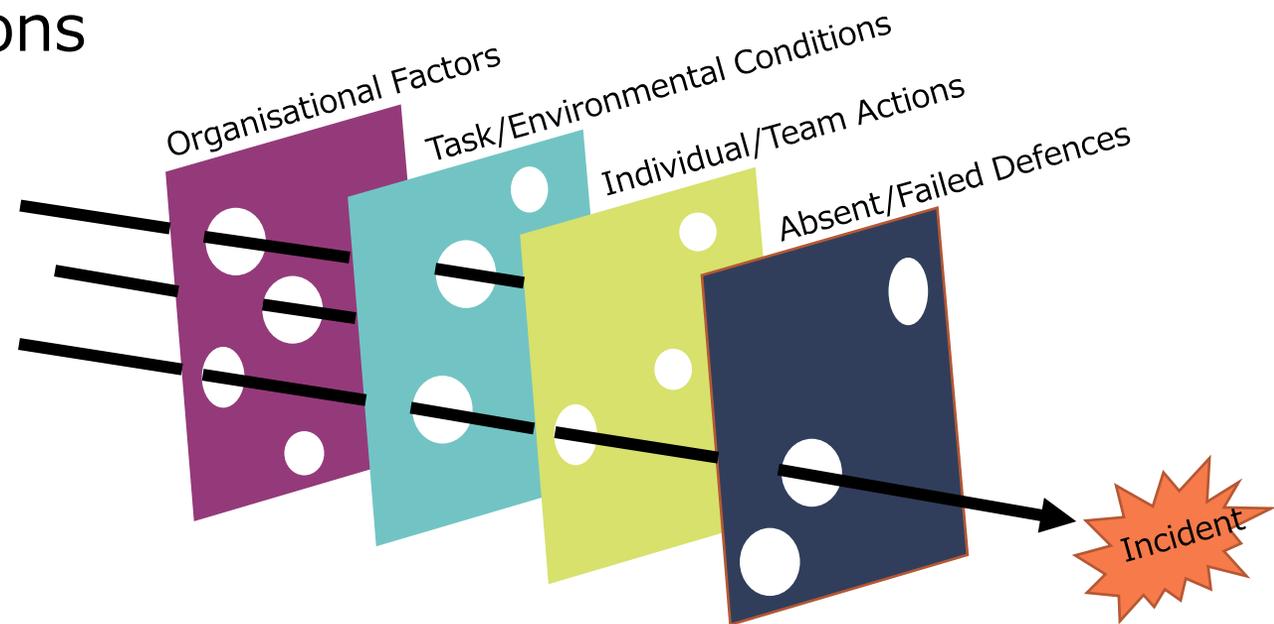
Five Why's

- Question: Why did the worker slip and fall?
Answer: There was oil spilled on the plant floor.
- Question: Why was the oil on the floor in the first place?
Answer: The source of the oil was a nearby piece of equipment.
- Question: Why did the equipment leak?
Answer: There was a defect in its valve system.
- Question: Why wasn't the leak detected?
Answer: The system wasn't inspected regularly, so the problem was not discovered and repaired.
- Question: Why wasn't the valve system inspected?
Answer (and root cause): The valve wasn't logged appropriately in the maintenance system.

Determine Root Cause

ICAM (Incident Cause Analysis Method)

- Classifies the underlying factors that may have contributed to the incident into four categories
 - Absent or failed defences
 - Individual or Team Actions
 - Task or Environmental Conditions
 - Organisational Factors



Identify and implement corrective actions

- The investigation is not complete until **corrective actions** are implemented that address the root causes of the incident.
- Corrective actions should include **practical system level improvements** and should be supported by **senior management**.
- Each corrective action listed in your incident report should have a **person assigned** as the responsible party for the task, a set completion date, and a place to mark completion of the item.
- You should have some way to **track** if and when all corrective actions have been put into place.
- If you don't track the completion of corrective actions, it's easy for one (or several) to never get done.
- **Check that corrective actions that have been implemented are effective.**

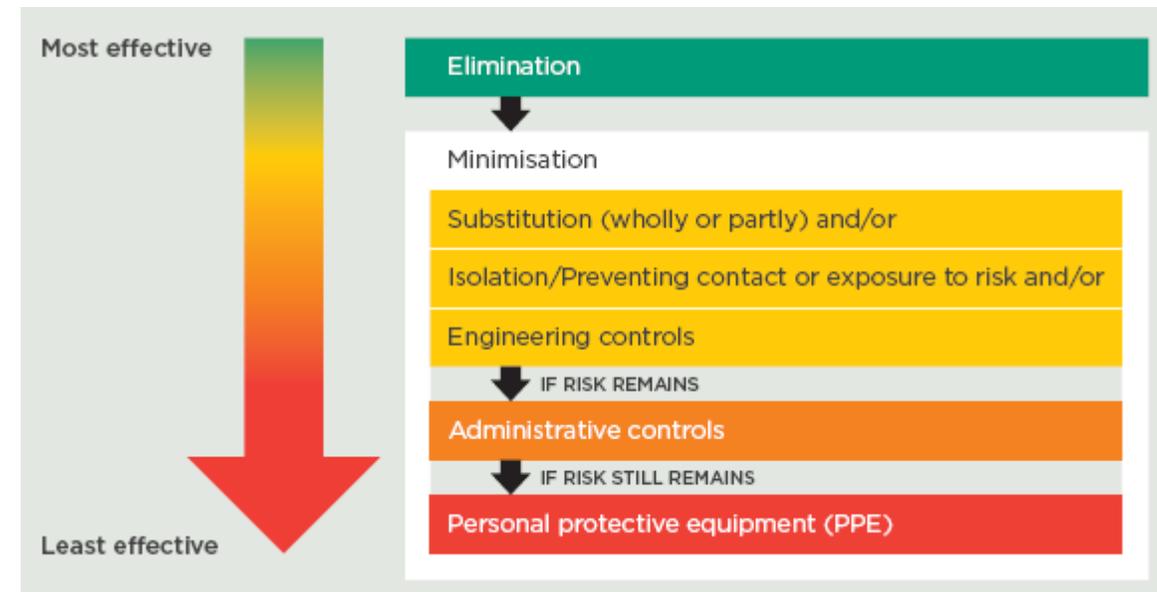
Identify and implement corrective actions

- The investigation **findings** and how they are **presented** and **communicated** will affect worker perceptions and subsequent corrective actions.
- Superficial conclusions such as "Bob should have used common sense," and weak corrective actions such as "Employees must remember to wear PPE", are unlikely to improve the safety culture or to prevent future incidents.
- **Some root causes will take time and perseverance to fix.**
- Following through on implementing corrective actions will reduce the risk of future incidents and also improve the company's safety, morale and its bottom line.

Identify and implement corrective actions

WorkSafe Observations about investigation reports

- WorkSafe have noted a high number of investigations of high potential incidents received from operators where **administrative controls** are all that are identified to prevent reoccurrence.
- Operators should first consider **if elimination** is possible, and if it is not, then consider minimisation by use of substitution, isolation, or engineering controls.
- **The use of administrative controls or PPE is the last consideration.**



Identify and implement corrective actions

WorkSafe Observations about investigation reports

- Investigations too often attribute blame to workers.
- **Human error is always foreseeable.**
- There is an expectation that operators consider what will happen if any control fails and what mitigation controls are in place to prevent the serious consequence.



Case Study

ACTIVITY – Investigation Report Review

Look at the sample investigation report

- Do you think it's a good quality investigation report?
- Do you think all the relevant information was collected?
- Do you think the findings got to the root cause?
- What could be improved?



3 CPD

**Continuing Professional
Development**

Background

- CPD reviewed after three years.
- new CPD requirements were introduced and came into effect on **1 February 2020**
- Refer to **CPD logbook guidelines** for details.



Areas of Learning

- All your CPD activities must be based on topics that fall into one or more of the areas of learning:
 - Operating and safety systems
 - Legislation
 - Emergency Management
 - Leadership
- There are **no hourly requirements** for areas of learning



Evidence

- All CPD activities **require suitable evidence**
- List of suitable evidence in Guidelines
- What if I don't have any suitable evidence?
- **Alternative evidence form**
- If you have 'informal' CPD hours recorded that did not require evidence – use the alternative evidence form.
- Tip – transitional arrangement pro rata hours mean you may not need to use those 'informal' hours



Key Learnings

– There are two components to key learnings:

1. What did you learn?

2. How will you apply what you learnt?

Key learnings are individual to a CoC holder.
Everyone attending the same activity will have different key learnings.

TIP: Use the questions in the guidelines to help you write your key learnings



Key Learnings

How could this key learning improve?

learning about the Regulations, the hazards, Blasting, how to use, storage, how to get it underground as in transporting.

Lots of good learnings to use going forward



Key Learnings



What did they learn about regulations, Hazards, blasting, storage and transporting specifically?

learning about the Regulations, the hazards, Blasting, how to use, storage, how to get it underground as in transporting.

Lots of good learnings to use going forward



What specifically is the CoC holder going to do with the learnings?

Note: Reviewers are not worried about spelling and punctuation, as long as it can be understood



Key Learnings

What are the good things about this key learning?

The importance of having a TMP and involving all parties in its development. To ensure separation of light vehicles and pedestrians from mobile (quarry) machinery. If possible to reduce reversing manoeuvres.

At our site we will reduce reversing at the face by giving access to the diggers by 2 road system. Reversing only to enable end loading.



Key Learnings

Specific things the CoC holder learnt

The importance of having a TMP and involving all parties in its development. To ensure separation of light vehicles and pedestrians from mobile (quarry) machinery. If possible to reduce reversing manoeuvres.

At our site we will reduce reversing at the face by giving access to the diggers by 2 road system. Reversing only to enable end loading.

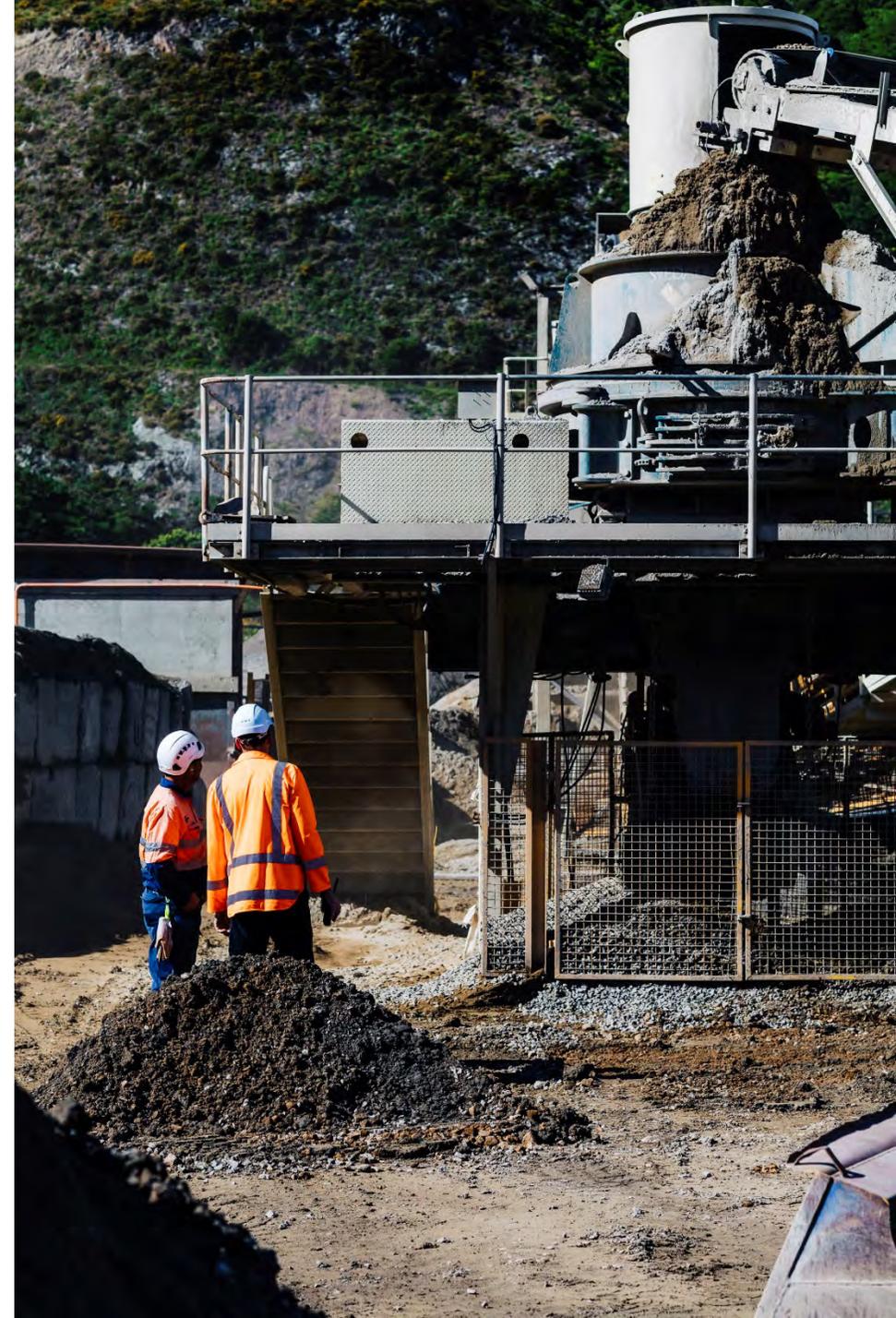
What the CoC holder is going to do with what they learnt



Key Learnings

How could this key learning improve?

Reading articles on recent examples of quarry operations, keeping up to date with any relevant H & S issues



Key Learnings



This is a description of what the CoC holder did, not of what they specifically learnt from reading the articles

Reading articles on recent examples of quarry operations, keeping up to date with any relevant H & S issues



Where is how they are going to apply what they learnt?



Key Learnings

What are the good things about this key learning?

I learned about what is an approved handler, what is a hazardous substance and the labelling of them using the globally harmonised system of pictograms e.g explosive 1:1, Toxic 6, Radioactive 7 etc. Threshold levels and much more.

Back in the workplace I used the knowledge to go right through the site and dispose of any hazardous substances that we didn't need and to ensure the ones we did need were correctly labelled and stored in an appropriate locked cabinet if necessary.



Key Learnings

Specific things the CoC holder learnt

I learned about what is an approved handler, what is a hazardous substance and the labelling of them using the globally harmonised system of pictograms e.g explosive 1:1, Toxic 6, Radioactive 7 etc. Threshold levels and much more.

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How the CoC holder applied what they learnt



Key Learnings

What are the good things about this key learning?

Learnt about the new first aid options including the use and the colour coding of the EpiPen.

I need to create a register of staff that are effected by allergic reactions and conduct a team meeting to discuss so they are comfortable that their fellow workers are aware.



Key Learnings

Specific things the CoC holder learnt

Learnt about the new first aid options including the use and the colour coding of the EpiPen.

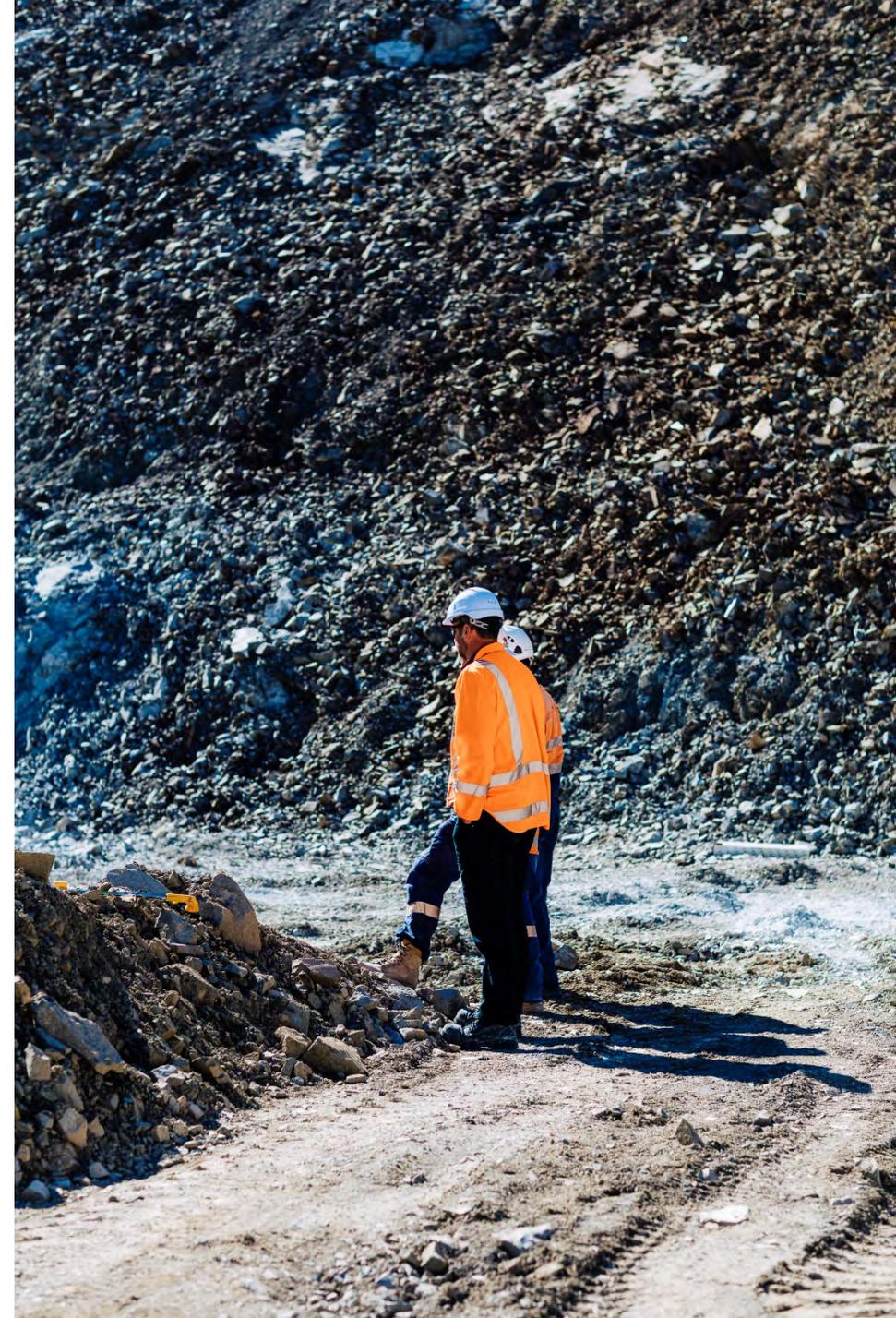
I need to create a register of staff that are effected by allergic reactions and conduct a team meeting to discuss so they are comfortable that their fellow workers are aware.

How the CoC will apply what they learnt



Task – logbook review

- Working in pairs review the log book provided.
- Check dates
- Key learnings
- Log book entry
- Evidence

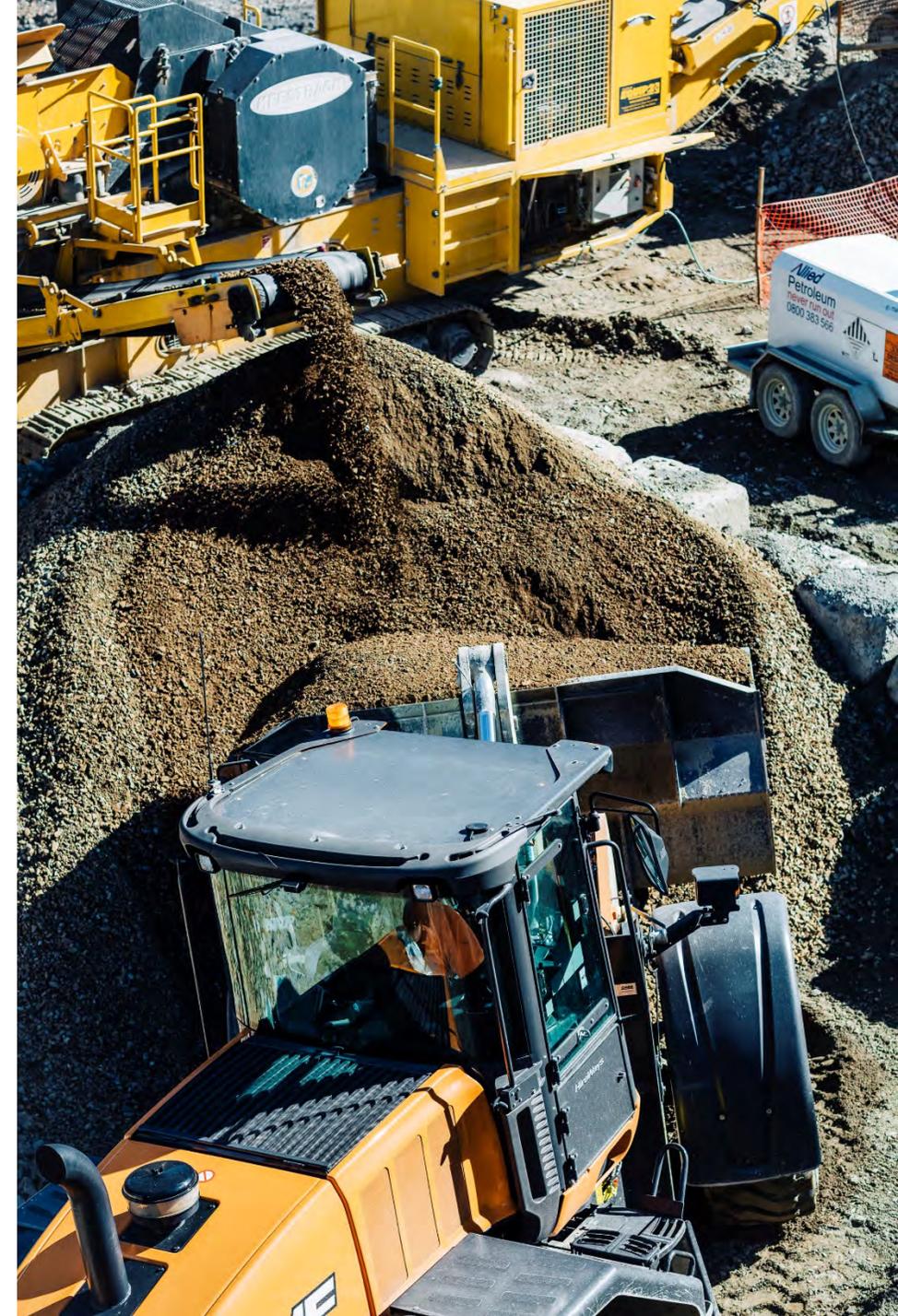


Learnings from renewal CPD logbook reviews

- Key learnings detail what you learnt and
- how you will apply what you learnt.

- Log book entry must match evidence

- Claim for the correct number of hours



Any questions?

<https://www.worksafe.govt.nz/topic-and-industry/extractives/cocs-and-cpd/about/>

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Getting you home healthy and safe.
That's what we're working for.

WORKSAFE
Mahi Haumarū Aotearoa