

Resources

Safety

matters

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Government of Western Australia
Department of Mines and Petroleum
Resources Safety

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State Mining Engineer Andrew Chaplyn

The impact of our working lives on our physical and mental wellbeing is a hot topic. This has been evident for many years and has certainly been considered in occupational health and safety laws since the commencement of the Industrial Revolution in Europe.

The early Shop and Factory Acts in Europe addressed the physical hazards of industrial environments. Over time, new regulations addressed the biological hazards associated with workers' exposure to the contaminants in the workplace. In more modern times, the issue of mental health hazards are being brought to the forefront for consideration and action.

The common law concept of "duty of care" is enshrined in our current mining and petroleum safety legislation. Although the current legislation does not explicitly define health or mental health, the regulator considers the intent of the legislation and interprets "health" to mean physical and psychological (mental) health. This has an implied impact on the management of mental health hazards in our workplaces.

As we move to a new phase of legislative modernisation in Western Australia, it is intended to bring in explicit requirements for these hazards. Mental health and psychosocial hazards will be covered by new legislation, and specific guidance and other tools will need to be developed to support the risk management approach. A core group of inspectors will also receive specialised training to help them respond to psychosocial issues that affect workers' safety and health.

In May 2014, Safe Work Australia published useful guidance on the prevention of psychological injuries, including information on psychological hazards and assessing and controlling the risks. The fact sheet is available from the publications and resources section at www.safeworkaustralia.gov.au

In the meantime, the Department of Mines and Petroleum will continue to pro-actively engage workers and employers in the conversation about how we, as a community, can help reduce the effects of mental health and psychosocial hazards. I encourage all of us who are working in the resources sector to honestly bring these issues forward for discussion, to seek solutions and support those experiencing difficulties before they reach an advanced stage.

PASSING THE BATON TO NEW STATE MINING ENGINEER

The State Mining Engineer is responsible for administering the provisions under the *Mines Safety and Inspection Act 1994*.

On 16 June 2014, Western Australia's 11th State Mining Engineer, Andrew Chaplyn, took over the role that I had held since October 2009.

Andrew, who is also Mines Safety Director at the Department of Mines and Petroleum, has been a key member of the safety management team since 2009 and is well suited to take over the role. He has spent more than 30 years working in the mining industry, from a graduate mining engineer through to senior leadership roles in both private industry and government.

Simon Ridge
Executive Director, Resources Safety
1 October 2014



DEPARTMENT HEAD RECEIVES TOP PUBLIC SECTOR AWARD

Department of Mines and Petroleum's Director General Richard Sellers has been recognised with the highest Institute of Public Administration Australia (IPAA) award in the State.

The 2014 Patron's Award was accepted by Acting Director General Dr Tim Griffin in June on behalf of Mr Sellers.

"This is a great honour for Richard, and it is an acknowledgement of the leadership he has brought to the Department," Dr Griffin said. "We have achieved significant reforms and innovations over the past five years that will help ensure the continuing prosperity of Western Australia's resources industry."

When notified of his success, Mr Sellers said that he was deeply honoured to have been selected.

The Patron's Award is bestowed annually to an individual who has made a significant contribution to public administration in Western Australia.

The judges endorsed a summary accompanying Mr Sellers' nomination that described him as "a visionary who makes considered and complex decisions".

"His insistence on consultation and transparency in decision making, together with his willingness to implement innovative business methods have been key factors of his stewardship of the Department of Mines and Petroleum, during the busiest growth period of Western Australia's resources industry," the summary said.

Appointed Director General of the Department in June 2009, Mr Sellers has had a diverse career in the private and public sectors, ranging from education, the fishing industry (commercial and government) and the resources sector.

He has a Bachelor of Applied Science in Biology, a Graduate Diploma in Education and a Masters degree in Public Policy and Management.

Mr Sellers was reappointed in December 2013 for another five-year term at the helm of the Department.



MIAC UPDATE

The Mining Industry Advisory Committee (MIAC) has met three times since the last update in the May 2014 issue of *Resources Safety Matters* magazine. Some of the matters considered include:

- *Draft guidance material – mobile autonomous mining systems*

MIAC noted the formation of a working group with industry and Government representatives to develop guidance material that would cover the safe implementation of mobile autonomous mining systems.

- *Draft guidance material – management of noise*

MIAC considered and endorsed a guideline on the management of noise in Western Australian mining operations. The publication includes the procedure approved by the State Mining Engineer for personal noise exposure assessment.

- *Development of guidance material – collision management systems*

MIAC endorsed the adoption of a New South Wales guideline for the selection and implementation of collision management systems in mining, with minor amendments to make it suitable for use as a guideline in Western Australia.

WHAT IS MIAC?

MIAC is a body established to advise the Minister for Mines and Petroleum and the Department on matters relating to occupational safety and health in the mining and exploration sectors.

The committee is a tripartite body as its members are drawn from industry, the unions and Government. It also has expert members who have been chosen for their practical expertise and experience in mining or exploration.

Visit www.dmp.wa.gov.au/14390.aspx for detailed information about MIAC, including its statutory functions and confirmed minutes from meetings.

Queries

Doug Brown, MIAC Executive Officer
 Telephone: 08 9358 8157
 Email: doug.brown@dmp.wa.gov.au

Mobile autonomous mining working group with delegates from the international ISO 17757 committee

PP



HOW ARE WE DOING?

2014 STAKEHOLDER PERCEPTIONS SURVEY

Feedback from a variety of sources over the past 18 months suggests that, in general, industry has seen improvements in the way Resources Safety conducts many of its regulatory activities. This observation is supported by the results of the latest stakeholder perceptions survey undertaken by the Department of Mines and Petroleum.

In 2010, the Department started implementing the State Government's Reform and Development at Resources Safety (RADARS) strategy. RADARS addresses issues of legislation, staff capacity and competency, and introduces a cost recovery approach to fund safety regulation of the Western Australian resources industry. It also aims to support positive cultural change across the industry. The strategy is now over four years into a plan expected to take at least six years to be implemented for the minerals and petroleum sectors as well as dangerous goods, including major hazard facilities (MHFs).

A perceptions survey is conducted every two years to monitor changes in industry's perception of Resources Safety's performance as a safety regulator.

The survey is a qualitative assessment of:

- the importance of the various roles of a safety regulator and how well Resources Safety has performed those roles
- perceptions of Resources Safety's performance when working with industry to reduce the likelihood and consequences of serious incidents
- perceptions of the value that various initiatives could add to clients' safety outcomes.

It also seeks respondents' views of their own industry's performance in achieving a proactive, consultative safety culture, and how advanced it is in acquiring the attributes of a resilient safety culture.

The original survey was conducted in 2010 to establish a baseline against which to measure progress. The first of the biennial follow-up surveys was conducted in 2012, with the second this year. The results from the latest survey are compared with the previous survey results to determine whether, and how, industry perceptions of Resources Safety's regulatory activities are changing. It is recognised that attitudes

change slowly, so there is likely to be a lag in changing perceptions — even when improvements have been made.

The survey results are used to identify those compliance and awareness-raising activities that stakeholders consider the regulator to be performing well or where there has been a significant improvement in perception ratings, as well as areas of concern where industry perceptions are less favourable or ratings have decreased.

Together with a range of internal measures, this information is used for operational planning processes and to identify opportunities for improving interactions with industry. The aim is to work together to improve safety and health outcomes for the Western Australian resources industry.

Visit the publications section to download the full 2014 report, including details of the survey responses at www.dmp.wa.gov.au/ResourcesSafety

ACTIONS SINCE THE 2012 PERCEPTIONS SURVEY

Mines safety

When RADARS was implemented in 2010, the highest priorities were the regulatory activities undertaken to administer the *Mines Safety and Inspection Act 1994*. The initial aims were to address issues of capacity and competency, and increase the focus on a risk-based approach to occupational safety and health. Extensive recruitment campaigns and a competency-based training and development program led to an increase in the number of inspectors and a broader mix of skills and experience.

The team-based structure and focus groups now in place are supporting more consistent approaches to raising awareness, seeking compliance and enforcing the legislation. When fully developed, the online Safety Regulation System (SRS) will provide enhanced data management and analysis capacity to support these activities.

The Department believes that, under RADARS, there have been significant improvements in the delivery of mines safety regulatory services. Using a variety of data sources, including the results of the biennial surveys, the mines safety

Being a proactive safety regulator

Stakeholders	Average rating out of 10	Proportion assigning rating of ≥ 8 out of 10
Mining professionals	6.2	29%
Mines safety and health representatives	6.5	32%
Petroleum	6.5	28%
Major hazard facilities	5.6	22%

Adding value to the organisation

Stakeholders	Average rating out of 10	Proportion assigning rating of ≥ 8 out of 10
Mining professionals	6.0	24%
Mines safety and health representatives	6.5	36%
Petroleum	5.8	28%
Major hazard facilities	5.6	22%

inspectorate is targeting areas where improvements can be made to address areas of continuing concern.

In 2010, for example, it was recognised that mines safety and health representatives required more support and recognition of the importance of their role so a specific focus group was established. A range of strategies and resources were developed and these are reflected in the positive 2014 survey results for regulatory performance.

Petroleum safety

No specific programs were put in place by Resources Safety over the last two years for petroleum safety other than to recruit and train new staff. The regulator has mostly focussed on handling incoming safety case and safety management system assessment work and doing safety systems inspections.

Given this background and the increased number of respondents, it is perhaps not surprising that the ratings for most of the questions have fluctuated over the survey periods.

Although most performance ratings have improved, activities awarded an excellent rating by fewer than half the respondents could be considered by industry as needing improvement. They are:

- conducting audits and inspections
- investigating incidents

- resolving safety disputes in the workplace and responding to safety complaints
- providing advice and information about safety and health
- monitoring safety performance data and health surveillance programs
- supporting safety and health representatives.

Major hazard facilities

As for petroleum safety, the MHF group had not put in place any specific programs to address issues raised by the 2012 perceptions survey. However, in the past two years, the MHF group completed all of its brownfield safety report approvals and implemented an auditing program. The auditing program was probably viewed with some trepidation by industry at first but it is now acknowledged as being a highly professional and productive activity. This is reflected in industry's assessment of the MHF group's overall performance as a regulator, which significantly improved in every area in 2014. Responding to safety complaints was an activity that received excellent ratings from more than half the respondents.

The assessments also show that there is still room for improvement in:

- consistency of approach and response
- being adaptable to industry conditions
- efficiency of audits
- usefulness of guidance material.

RAISING AWARENESS AND SEEKING COMPLIANCE

Discussions at two recent Resources Safety events covered very different topics. One event explored the challenges of reducing workers' exposure to diesel emissions while the other focused on safe design and the registration process for bridge and gantry cranes.

DIESEL PARTICULATE FORUM – THE JOURNEY TO EFFECTIVE EMISSIONS MANAGEMENT

The Diesel Particulate Forum was held in Kalgoorlie on 24 July 2014. There were 90 participants, with representation from industry, local and interstate regulators, service providers and product manufacturers.

The day's agenda included presentations from Resources Safety staff, who spoke about:

- findings from the recent initiative involving real-time diesel particulate analysis of underground mines
- why diesel emissions need to be managed
- what needs to be done to produce and implement a diesel emissions management plan
- the role of ventilation in managing diesel emissions.

Industry representatives provided participants with an update on initiatives applied at their underground mines, including significant reductions in diesel emissions. A shift from compliance-driven processes to a risk-based monitoring program was described. Stakeholder engagement was raised as an important consideration when tackling diesel emissions, with the involvement of maintenance management seen as essential.

Specialist service providers described the testing facilities available to industry to assist in evaluating emission

reduction and control measures, and how these can be applied to diesel equipment used at mine sites.

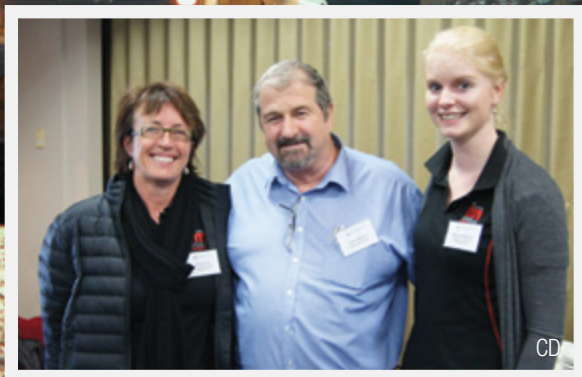
Representatives of the regulatory agencies in New South Wales and Queensland demonstrated the uniformity of approach being taken by the major mining States in addressing this issue. In particular, they confirmed the commitment to the commonly adopted occupational exposure limit (OEL) of 0.1 mg of elemental carbon per cubic metre of air.

Most of the participants stayed for the open session at the end of the day, which saw animated discussions. Representatives of mine site maintenance personnel, underground managers, ventilation engineers, mining contracting companies, product manufacturers and service providers shared frank opinions on the success and failures of some of the initiatives and technology currently being applied to reduce diesel emissions.

The merits and limitations of real-time monitoring, ventilation on demand, engine emission reduction packages and exhaust treatment devices were all examined.

The day was a success, with positive feedback from most participants. They appreciated the opportunity to share learnings about which practices could help them reduce and better manage diesel emissions on their sites.

The contribution of external presenters allowed for a well-rounded program from a variety of perspectives.





REGISTRATION OF CRANES – INDUSTRY INFORMATION SESSION

The first industry crane information session was run in July 2013 to address registration and compliance issues. Guidance material was then released to assist in the registration process for gantry and bridge cranes, and Resources Safety adopted a more stringent approach when reviewing registration applications. However, little improvement was observed in the quality of submissions in the following months. It was decided to run a second information session to reiterate the Department's concerns, raise awareness of the issues, and advise industry that compliance may be sought through means other than the registration process.

There were 75 industry representatives at the second session held on 22 July 2014. Mike Dean from EUC Engineering discussed the legal obligations for designers and suppliers of mining machinery, while Resources

Safety staff covered the registration process, common non-compliances, recent learnings, and the Department's plans for the next year.

Lex McCulloch, WorkSafe WA Commissioner, discussed his agency's role and approach to crane registration. He highlighted that, as for the State Mining Engineer, he relies on verifiers to confirm that crane designs comply with the applicable standards. The registration process must not be viewed as a safety net because neither WorkSafe officers nor mines inspectors verify designs and there are no line-by-line checks.

The presentations were well received, with respondents indicating that they had a better understanding of:

- their legal obligations
- the function and roles of the designer and verifier
- the Department's crane registration process
- common non-compliances with AS 1418.



From left: Andrew Chaplyn, State Mining Engineer, Mike Dean, EUC Engineering, and Neil Woodward, Regional Inspector of Mines



From left: Andrew Chaplyn and Lex McCulloch, WorkSafe WA Commissioner



CRANE DESIGN AND VERIFICATION ISSUES

Safety in design continues to be a focus for Resources Safety following the failure last year of a crane during commissioning testing.

The Mines Safety and Inspection Regulations 1995 direct that before certain types of cranes may be used at a mine, they must be registered. An application for registration requires the submission of detailed drawings, design calculations and verification by a third party that the design complies with relevant Australian Standard, AS 1418 *Cranes, hoists and winches*.

A review of 58 crane registrations submitted between July 2012 and April 2014 identified the following major issues:

- designers are not fully complying with all clauses of AS 1418
- third-party verifiers are not performing the diligent reviews necessary to confirm that the design complies with AS 1418
- crane suppliers and designers have poor or no quality management procedures.

Only nine per cent of submissions were compliant with AS 1418. For crane designs alone, 81 per cent of submissions had compliance issues, while the figure was 76 per cent for support structures. Major compliance issues included:

- deflection, fatigue and seismic checks
- combined stress evaluations
- welding and other connection checks.

There were also submissions where AS 1418 criteria failures identified in the documentation had not been addressed.

A concerning trend was identified when considering the time taken to verify calculations — 26 per cent of verifications were completed in two days or less for cranes, with the figure being 14 per cent for support

structures. Only seven per cent of the crane verifications completed in two days or less had no compliance issues. More problematic is the apparently negative verification time identified for four per cent of submissions! According to the dates on documents, verification took place before submission of the actual design.

The difference between using in-house verification and a third-party verifier is substantial. Only seven per cent of submissions were compliant when verified in-house whereas the figure was 80 per cent where the parties were totally independent.

Poor documentation practices, which include the absence of important documents or information, and disorganised or poorly labelled sections, were observed in 41 per cent of the submissions. Half the submissions were missing basic information relating to the crane, such as the crab, hoist, end stops and end carriages.

Unfortunately, inconsistent parameters were identified in 59 per cent of submissions.

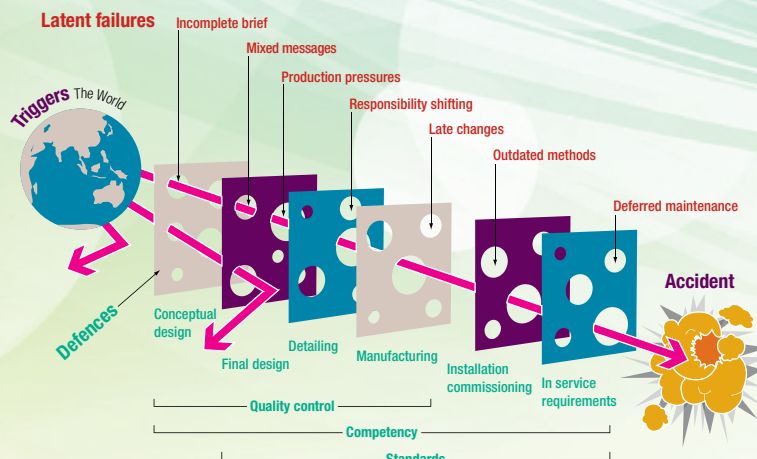
These are situations where:

- measurements or parameters differ between two sources in document (e.g. between drawings and calculations)
- parameters used are incorrect, leading to calculation errors
- parameters are not sourced correctly, or lack any justifying references.

For gantry and bridge cranes being used in Western Australia, better defences against accidents are required in terms of:

- quality control
- competency of designers and verifiers
- application of standards.

Example of Reason's Swiss Cheese model applied to large structures



MINES SAFETY

CALL TO FOCUS ON TIMELY REPORTING

Each year, the Department of Mines and Petroleum releases a poster and report that overview the mining industry's safety performance for the previous financial year. Before the statistical information may be released, however, Resources Safety must be assured of the accuracy of the information supplied by industry, particularly data used to calculate frequency and incidence rates.

If mining operations are tardy in reporting incidents and workforce details, this can have a significant effect on the final figures. This is well illustrated by the reporting of injuries.

Apart from fatal and serious injuries, which need to be reported as soon as practicable, operations need to report injuries at the end of the calendar month. However, information derived from the Department of Mines and Petroleum's online Safety Regulation System (SRS) for a three-year period from 2011 to 2014 shows that about 45 per cent of injuries are not being

reported within the prescribed time frame. In fact, three months usually pass before 95 per cent of the total injury reports for a particular month are notified in SRS. This means there is typically a delay of at least four months before Resources Safety may release injury statistics for a particular month.

I encourage mining operations to review their systems, including SRS processes, to ensure reporting is efficient and effective — and not only to meet statutory requirements. Timely reporting allows sites to recognise clusters and trends of incidents, including potentially serious incidents (i.e. near misses). This, in turn, provides an opportunity for management to address root causes.

Timely reporting is important as we aspire to resilient safety cultures being the industry norm.

Andrew Chaplyn, Director Mines Safety

What are the potential consequences if incident reporting is:

Not done?

- Hazard may not be identified.
- Incorrect assumptions may be made about exposure to hazard and associated risks.
- Risk assessment may be flawed because it does not include all knowledge for the workplace or activity.
- The outcome for the next person may not be favourable.

Not done well?

- Again, the risk assessment may be inadequate.
- Control measures could be ineffective because they are based on insufficient or incorrect information.

Not followed up?

- No remedial action — there is still exposure to the hazard.

- People stop reporting because it is considered a waste of time — nothing happens.
- What about manufacturers — are they advised there could be an issue with their equipment or product? If they aren't aware there is a problem, how do they know to recall or redesign it?

Not recorded?

- Loss of operational knowledge.
- No opportunity to identify clusters or trends over time (i.e. lessons learnt may be lost).

Followed-up but outcomes not communicated?

- The workforce may not know that there have been changes in the safety system or they need to modify their work practices.
- No positive reinforcement indicating the value of reporting — and people stop reporting.



DANGEROUS GOODS AND PETROLEUM SAFETY

NEW FACES FOLLOWING STRUCTURAL CHANGE

Following a structural review of operational areas, the Dangerous Goods and Petroleum Safety Branches of Resources Safety were merged on 1 July 2014. The new Dangerous Goods and Petroleum Safety Branch brings together regulatory groups that manage similar safety issues, creating a more consistent and robust regulatory approach to the critical risk assessment of petroleum and major hazard facilities while retaining the focus on dangerous goods safety.

Five new positions were created in addition to the existing position of Manager Dangerous Goods.

At the same time, Philip Hine, former Director Dangerous Goods, was appointed as Principal Policy Advisor to provide strategic policy advice and project management across Resources Safety. This includes project coordination of the online Safety Regulation System (SRS) and representing the Department of Mines and Petroleum on national and State committees responsible for chemical security, explosives and emergency response.

DANGEROUS GOODS SAFETY ACTIVITIES RAMP UP

The quantities and types of dangerous goods that are being handled by Western Australian industry on any one day are significant, whether in a chemical plant, at a mine site or being transported on public roads.

The number and variety of inspections and audits conducted by Dangerous Goods Officers have increased this year, raising awareness among operators of their obligations under the *Dangerous Goods Safety Act 2004* and associated regulations. Compliance with the legislation is important to ensure dangerous goods can be safely manufactured, handled, transported and stored while minimising the risks to operations, neighbours and passers-by.

With this in mind, Resources Safety is holding a series of industry information sessions during Safe Work Australia Month in October. The sessions cover the so-called six pillars of dangerous goods transport:

- packaging – are the dangerous goods in the right container?
- restraint – what can happen if dangerous goods are not restrained?

- segregation – why is it important for dangerous goods?
- vehicle – what can be done to prevent dangerous goods incidents?
- placarding – what is it and why is it needed?
- documentation – what is required for transport documents and emergencies?

Training is the platform that binds these elements together to ensure drivers are aware of what is required, particularly when those working for small transport and haulage companies might only occasionally deal with dangerous goods. To better reach this stakeholder group, the information sessions are being run in the industrial locations of Kwinana, Welshpool and Malaga. Dangerous Goods Officers will be on hand to answer questions on transport issues.

Visit www.dmp.wa.gov.au/events for more information.

IS IT REASONABLE?

In the first of what is likely to become an annual event, the critical risk group at Resources Safety has organised an industry forum on *Reducing approval times – ALARP: What is “reasonably practicable”?*

As well as introducing new members of the management team, the forum on 14 November 2014 will discuss the concepts of “as low as reasonably practicable” (ALARP) and “so far as is reasonably practicable” (SFAIRP).

The aim is to provide operators of major hazard and petroleum facilities with an overview of the requirements to ensure risks are driven to ALARP, and how to demonstrate and document this process to the standards expected by the Department of Mines and Petroleum.

With a better understanding of what is considered to be reasonably practicable, the submission of safety cases and safety reports should be more efficient and effective for both industry and the regulator.

The program will finish with a reminder that people and systems are an integral part of facilities — and should not be overlooked in the risk management process.

Visit www.dmp.wa.gov.au/events for more information.

Ross Stidolph, Director Dangerous Goods and Petroleum Safety



**DIRECTOR
DANGEROUS
GOODS AND
PETROLEUM
SAFETY**

Ross Stidolph has over 30 years of engineering and executive experience in the oil and gas industry and power

generation. He has worked in senior positions for Forge Power, Verve Energy and BP. His experience includes operational management of major hazard facilities in Australia and the United Kingdom, as well as power stations. He has worked on major projects from the design and development phases through to construction, commissioning and operation, covering both new builds and retrofits.

MANAGER CRITICAL RISKS

Shane Daniel has over 20 years of experience in oil and gas as well as mining, and has worked for Santos, Bureau Veritas and TSRHorizons Consulting. As well as extensive experience in maintenance and reliability engineering, Shane has a postgraduate qualification in risk management. He has led major risk studies across a suite of resource projects and major hazard facilities.

MANAGER DANGEROUS GOODS

Iain Dainty remains as the Manager of Dangerous Goods, a position he has held since November 2011. He has more than 25 years' technical experience in the safe management and compliance of explosives and dangerous goods. Before joining the Department of Mines and Petroleum, Iain worked as a principal explosives engineer in Victoria and in multi-agency emergency management planning in the United Kingdom in the fields of chemical, biological, radiological, nuclear and explosive hazards. Iain was a member of the UK military Technical Response Force, which provides capability to civilian emergency services.

TEAM LEADER CRITICAL RISKS

Two team leader positions were created for the critical risks area. Marc Barnard has filled one of the new positions. With an Honours degree in chemistry and geology, and postgraduate qualifications in risk management, chemical technology and occupational safety and health, he has diverse safety, health and environmental (HSE) experience across construction, mining and smelting activities. Marc has more than 25 years' technical experience, having held operational roles for BHP and Rio Tinto in a number of major hazard facilities covering materials and chemical process control, and chemical technology development.

CALENDAR OF EVENTS



SAFE WORK AUSTRALIA MONTH
All of October



2014 MINES SAFETY ROADSHOW

10 October 2014, Geraldton

14 October 2014, Bunbury

16 October 2014, Kalgoorlie

21 October 2014, Newman

22 October 2014, Karratha

23 October 2014, Port Hedland

28 October 2014, Mandurah

29 October 2014, Perth

www.dmp.wa.gov.au/events



SIX PILLARS OF DANGEROUS GOODS TRANSPORT

7 October 2014, Kwinana

15 October 2014, Welshpool

23 October 2014, Malaga

www.dmp.wa.gov.au/events



SAFETY REGULATION SYSTEM (SRS)

Information session

10 October 2014, Geraldton

14 October 2014, Bunbury

16 October 2014, Kalgoorlie

21 October 2014, Newman

22 October 2014, Karratha

23 October 2014, Port Hedland

27 October 2014, Mandurah

28 October 2014, Perth

www.dmp.wa.gov.au/events



2014 UNDERGROUND MINE EMERGENCY RESPONSE COMPETITION

31 October - 2 November 2014

www.cmewa.com



REDUCING APPROVAL TIMES – ALARP: WHAT IS REASONABLY PRACTICABLE?

14 November 2014, Perth

www.dmp.wa.gov.au/events



THE MERC 2014

29 - 30 November 2014, Perth

www.themerc.com.au

Latest event information at www.dmp.wa.gov.au/events or use the QR link.





REDUCING APPROVAL TIMES

ALARP: WHAT IS 'REASONABLY PRACTICABLE'?

2014 INDUSTRY FORUM

Date and venue

Perth

Friday, 14 November 2014

Fraser Suites,
 10 Adelaide Terrace, East Perth

Invitation to attend

This industry forum is an inaugural event aimed at promoting a common understanding of the “as low as reasonably practicable” (ALARP) and “so far as is reasonably practicable” (SFAIRP) concepts.

The forum will provide the operators of major hazard and petroleum facilities with an overview of the requirements to ensure all risks are driven to ALARP, and how to demonstrate and document them to the standards expected by the Department of Mines and Petroleum.

This should make the submission of safety cases and safety reports more efficient and effective for both industry and the regulator.

Operators are encouraged to attend to meet members of Resources Safety’s Critical Risk Section and listen to our invited guest speakers.

Program

Time	Presentations	
8.00 am	Registration	
8.30 am	Welcome and introduction	Ross Stidolph Director, Dangerous Goods and Petroleum Safety
8.50 am	What is “reasonably practicable?”	Graham Bower-White Executive Director, Operations TSRhorizons Consulting
9.50 am	MORNING TEA	
10.15 am	Submission of a safety case or report – How do you demonstrate that risks are ALARP or SFAIRP?	Shane Daniel Manager Critical Risks, Dangerous Goods and Petroleum Safety
11.15 am	Human Safety and Risk Management: How to consider the People and the Systems	Melanie Freeman Registered Psychologist, Emergency Support Network
11.45 am	Where to now?	Shane Daniel
12.00 pm	Questions and answers	

Registration details

- Morning tea will be provided.
- Although there is no registration fee, pre-registration is required to reserve a place.
- Registration must be completed by emailing RSDComms@dmp.wa.gov.au indicating your name, company, contact details and any special requirements (e.g. dietary or other).
- Early registration is recommended. Late registrations (i.e. less than one week before the event) are subject to availability and a place is not guaranteed.
- If you register and subsequently are not able to attend, please advise us as soon as possible at RSDComms@dmp.wa.gov.au
- Queries: RSDComms@dmp.wa.gov.au or 08 9358 8154

NEW SAFETY LEGISLATION ON THE DRAWING BOARD

The Department of Mines and Petroleum has been given the green light to continue modernising safety legislation in Western Australia's resources industry.

In mid-August, Mines and Petroleum Minister Bill Marmion announced the State Government's support for a new resources safety bill, likely to be called the Work Health and Safety (Mines) Bill.

Resources Safety Division's Executive Director, Simon Ridge, said that the new Bill will modernise and harmonise the State's mine safety regulation with other jurisdictions

"The Bill will initially cover mines safety, replacing the *Mines Safety and Inspection Act 1994*," Mr Ridge said.

The potential for incorporating safety legislation for petroleum and major hazard facilities will be investigated towards the end of 2014, through a formal Regulatory Impact Statement consultation process.

"The new mines safety legislation will incorporate the best elements of the nationally developed model Work Health and Safety legislation and the National Mine Safety Framework," Mr Ridge said. "However, it is also important to recognise that some aspects that work in other jurisdictions may not apply to Western Australia. Aspects of the model laws that don't suit the Western Australian context will be amended or removed altogether."

In making the State Government's announcement, the Minister said that the new legislation was an important next step in further reducing the risk of harm in Western Australia's resources industry.

"The intention is to place a greater focus on risk management and to be less prescriptive," Mr Marmion said. "The onus will be placed on industry to demonstrate they understand the hazards and have control measures in place."

Mr Ridge said that the Ministerial Advisory Panel on Safety Legislation Reform set up with industry and the unions would ensure appropriate input into the decision-making process.

"The Panel has met five times since it was established in January 2014, making recommendations to the Department and the Minister on the development and implementation of the reforms," he said.

At the same time, the Work Health and Safety (WHS) legislation for general industry will be released for comment. The Commerce Minister, Michael Mischin, has announced that a Work Health and Safety "Green Bill" (Consultation Bill) would be introduced into State Parliament, with a three-month consultation period.

"Our Ministerial Advisory Panel will also monitor progress of the Green Bill, to ensure alignment between WHS legislation for resources and other industries," Mr Ridge said.

Those interested in keeping up-to-date with the consultation process should subscribe to Resources Safety's weekly news alert to receive the latest information.

DANGEROUS GOODS TRANSPORT GUIDANCE – WHAT'S NEW?

TRANSPORT OF DANGEROUS GOODS – NATIONAL AMENDMENT PACKAGE NO. 2

The national Transport of Dangerous Goods Amendment Package No. 2, prepared by the National Transport Commission, took effect in Western Australia on 1 July 2014 with the gazettal of amendments to the Dangerous Goods Safety (Road and Rail Transport of Non-explosives) Regulations 2007.

The single-most significant initiative of the Amendment Package is the implementation of an updated version of the Australian Code for the Transport of Dangerous Goods by Road and Rail (edition 7.3, ADG7.3), which replaces the seventh edition of the code (ADG7). The amendments contained in ADG7.3 must be fully complied with by 1 July 2015.

Other regulatory changes took effect on 1 July 2014 without a transition period because they are minor and do not pose an additional cost to industry.

An information sheet released on 18 August 2014 summarises the Amendment Package, highlighting:

- those issues most relevant to industry
- enforcement issues relevant to the safety regulator
- improvements that clarify the intent of the code and the State's dangerous goods transport regulations.



DESIGN APPROVAL REQUIREMENTS FOR BULK CONTAINERS

The regulatory requirements for the design approval of bulk containers used to transport solid dangerous goods are explained in an information sheet released on 14 August 2014. There are three types of bulk containers, but only the flexible bulk containers require design approval:

- sheeted bulk containers or BK1 – no approval required
- closed bulk containers or BK2 – no approval required
- flexible bulk containers or BK3 – approval required.

Chapter 6.8 of ADG7.3 deals with the requirements for the design, construction, inspection, testing and approval of bulk containers.

DANGEROUS GOODS SAFETY INFORMATION SHEETS

Visit www.dmp.wa.gov.au/17150.aspx for information sheets on:

- Transport of dangerous goods – National Amendment Package No. 2
- Design approval requirements for bulk containers used to transport solid dangerous goods



DON'T LET YOUR DANGEROUS GOODS SECURITY CARD LAPSE!

Not renewing a dangerous goods security card before it expires can lead to significant inconvenience or restrict business activity in some cases.

Dangerous goods security cards are required to be held by individuals who:

- transport ammonium nitrate and explosives
- hold explosives use licences
- have unsupervised access to ammonium nitrate and explosives
- hold certain responsible positions in companies using, transporting, manufacturing or storing ammonium nitrate and explosives.

The security cards were introduced to Western Australia in 2009 in response to counter-terrorism measures established by the Council of Australian Governments. They must be renewed every five years.

People holding the security cards are sent a renewal notice about ten weeks before their card's expiry. Card holders, especially fly-in fly-out workers, are also encouraged to check

the expiry date in case they have missed the letter arriving in the mail. Dangerous goods security cards may be renewed online using the security code referenced in the renewal notice.

If card holders do not renew their dangerous goods security card before it expires, their security clearance will be cancelled and certain licences, such as those held by shotfirers and explosives drivers, will be suspended. People whose work requires them to hold a dangerous goods security card cannot continue those activities. This includes drivers transporting ammonium nitrate and people with security clearance for unsupervised access to ammonium nitrate and explosives.

Once expired, dangerous goods security cards cannot be renewed. If a person still requires a security card after expiry, they must apply for a new one at Australia Post.

People re-applying for a security clearance need to allow about eight weeks because a full re-assessment by the police and other agencies is required. This could have a significant impact on people whose employment is contingent on them holding a valid dangerous goods security card.

Please contact Resources Safety for more information on 08 9358 8002 or rsdcustomerservices@dmp.wa.gov.au

AVOID OUTDATED REFERENCES

Mines inspectors have recently reported that some mining operations have multiple copies of outdated versions of the *Mines Safety and Inspection Act 1994* and accompanying regulations in various offices. This can lead to incorrect interpretation of requirements as the legislation has been amended over the years.

To minimise inconsistencies, it is recommended that managers recall superseded versions on their sites. The latest versions of legislation are available on the State Law Publisher's website at www.slp.wa.gov.au and it may be more effective for staff to access these directly online. If hardcopy versions are still required, implement a process to ensure affected pages are replaced when there are legislative changes, which are published in the Government Gazette.

Similar issues can arise with out-of-date copies of Australian Standards.

STAYING CURRENT

Communication in an emergency is critical and relies on sites having up-to-date information about who to contact (e.g. partner, designated family members).

Is your data current? It doesn't take long to check the information on file and update it if your circumstances have changed.

IDENTIFYING FACTORS THAT PROTECT WORKER MENTAL HEALTH

While the cause of mental health problems is complex and includes a wide range of individual factors, studies have consistently shown that workplace stress can contribute to impaired mental health.

According to the World Health Organization, mental health is conceptualised as a state of wellbeing in which an individual realises his or her own capabilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community.

A group of Australian researchers, led by Dr Kathryn Page, has investigated whether positive mental health might protect an individual from the negative impact of work stress. In this study, positive mental health is defined as when a person has high levels of positive emotional, social and psychological wellbeing.

Why is this study important? Identifying the variables that might protect mental health will help in developing and refining occupational health strategies.

Overall, the researchers concluded that positive mental health may help protect workers from the effect of workplace stress, but probably only those with the highest levels of positive mental health. They suggested that, if workplaces want to improve workplace mental health, there needs to be a focus on both preventing stress and promoting positive mental health.

How might this be achieved? The researchers suggest that workplaces could:

- adopt initiatives or policies that promote social inclusion and reduce discrimination
- use awareness campaigns and workshops to educate employers and employees about the importance of positive mental health — and what can be done to improve this for individuals
- develop effective leaders, with authentic leadership styles, who can help employees to find meaning in their work, feel a sense of achievement, and develop positive relationships.

WANT TO KNOW MORE?

K.M. Page, A.J. Milner, A. Martin, G. Turrell, B. Giles-Corti and A.D. LaMontagne, 2014, Workplace stress: What is the role of positive mental health? *Journal of Occupational & Environmental Medicine*, Vol. 56, Issue 8, 814-819.

The full article is available at journals.lww.com/joem



*MiningFM directors Alicia Ranford (left) and Lainie Anderson
Photo courtesy MiningFM*

WHAT'S NEW AT MINING FAMILY MATTERS?

Mining Family Matters (MiningFM) was launched in February 2010 to provide free professional support and practical advice to Australian families in mining, and oil and gas, particularly those involved in fly-in fly-out (FIFO) or drive-in drive-out (DIDO), or living in remote towns.

As well as the website at www.miningfm.com.au, which has a monthly readership of up to 16,000, two of MiningFM's most successful resources are a self-help book called *Mining Families Rock*, and *The Survival Guide for Mining Families*, which companies can distribute to their workforce. Over 100,000 guides have been sold in Australia.

The latest offering from MiningFM is a 20-minute induction tool, *Making Life Work When You Work Away*. It features professional advice from MiningFM's psychologist Angie Willcocks and practical tips for keeping employees happy and healthy despite regular separation from loved ones.

Created in conjunction with Perth-based international online training company Health Safety Works, the induction tool

is specifically tailored to ensure information is relevant to individual FIFO workers, whether they are single, in a relationship or have children.

It offers proactive advice and simple strategies on the most common issues faced by employees who work away, including:

- overcoming mood swings and "black days"
- avoiding arguments about how free time is spent
- staying connected without round-the-clock phone access
- helping children to cope
- the importance of setting goals and staying fit and healthy.

The induction tool features a short welcome video, easy-to-read content, a series of worker testimonials, and fun and engaging multiple-choice questions to ensure employees understand the key messages. It can be used as a stand-alone emotional resilience program, or as an accompaniment to the survival guides to increase support for new and existing workers and their families.

Visit www.onlineinduction.com/miningfm/index.php for a demonstration, click on *First time here* and follow the prompts.



SO YOU THINK YOU'RE TOUGH

Barry Healy is Resources Safety's Senior Education and Training Officer. He regularly contributes to the magazine's "Barry's bookshelf" series. Here he reviews a new book on gender in mining by Dr Dean Laplonge, a researcher and consultant with Factive dealing with cultural issues in the workplace.

"So You Think You're Tough? Getting Serious About Gender in Mining" is available as a download (www.tinyurl.com/factive) or in paperback format (www.tinyurl.com/factive2).

Should the mining industry be a "man's world" with "toughen up, princess" as its motto?

"No," says Dr Laplonge, who makes his living as an international consultant working with mining companies and others. He helps them lift their safety game by understanding that a macho workplace culture is a dangerous workplace culture producing "bullying, harassment, inequalities, injuries, low morale and inefficiency."

What he has seen derives from assumptions that masculine men need to:

- work longer hours
- cope on their own
- complete tough work tasks, particularly those that involve physical strength
- stay dirty.

He traces the roots of this as far back as the Industrial Revolution, the emergence of the modern nation state and a greater interest in defining separate and distinctive roles of men and women in society.

Laplonge asks about the risks of this so-called normal masculinity to the mining industry and its people. The prevailing notion is the "masculine workplace culture" must be a macho culture, that other types of masculinity have no place in mining. However, Laplonge believes that the mining industry needs a greater diversity of employee skills, innovations and ideas. He sees much inefficiency and waste currently throughout the industry.

"A stagnation of new ideas and a repetition of inefficient practices in mining are the results of a myopic view of the kind of person who is a good fit for the industry today," he says.

For industry, the way out of this limited outlook is through broadening the discussion of gender.

There are a number of projects and networks attempting to get more women into mining, correcting the imbalance in numbers employed and ensuring equality. For Laplonge, achieving gender equality is more complex than just getting more women on site.

"When senior managers in mining agree to start talking about gender in their workplaces, invariably they focus only on women," Laplonge writes. "Primarily, they talk about numbers of women. The problem of gender quickly becomes a problem of women and for women."

That thinking carries the assumption that "women are there to help change — or tame — our masculine workplace cultures".

In fact, he believes that by scrambling together the notions of sex equality with gender equality, the women-in-mining movement ends up reinforcing gender non-diversity. It seeks to deliver to the industry the kind of woman it wishes; that is, a woman who does not threaten, and is not threatened by, its existing, narrowly defined type of masculinity.

Gender and its behaviours are socially constructed, not innate in us at birth. So, women workers don't bring natural and shared gender behaviours to a mine site. Just like men on site, they "perform" gender roles when they are there. And the ways they will do that will depend on the culture of the mine site.

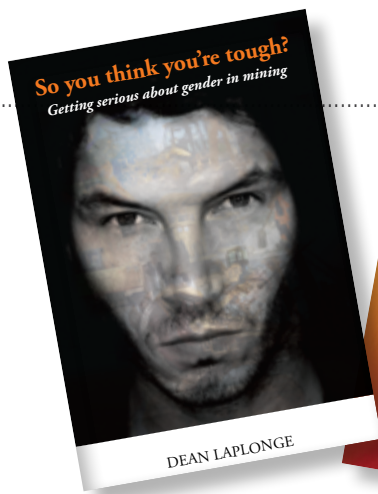
Laplonge believes that it is factually wrong to assume that women are weak and lack the capacity to do what men do. Women don't need more help, he argues.

"The debate about women in the workforce in general often seeks to emphasise deficiencies in women. We keep talking about what women don't have and what we need to give them to help them make it. Are we saying that, after at least forty years of seeking to address the role of women in the workplace, they are still lacking the tools to be successful?" he writes.

He similarly believes that it is wrong to assume that men are naturally strong and do what they do with no help at all.

"The reality is that men rely on the masculine structures of their organisations to provide them with a workplace in which they can thrive," he says.

This is true of management as much as the people in the workplace. So, the presence of women in mining is neither a problem nor a solution.



“If we want to see changes in the gender culture of an industry like mining, which is historically masculinised,” Laplonge writes, “we need to look at masculinity in this industry and on the mine sites.”

He is interested in why certain masculine practices exist on particular sites. Who or what supports that? Which parts of the organisation tolerate those actions, either openly or not, and what happens to men or women who don't buy into what is considered normal?

But he is not interested in developing a list of characteristics of good behaviours that men should follow. There is no “good man” who will solve the gender problems in the industry.

“The reality is that there are always different ways of doing masculinity, and whether any particular way is good or bad will always depend on context,” he says.

Some questions that offer a way forward are:

- What cultural assumptions about gender encourage men to take risks?
- How have these cultural assumptions impacted the development of the industry of mining?

- In what ways does the masculinised space of a mine site promote practices which may in fact be in opposition to the proclaimed safety standards?
- How does an organisation's preference for particular gender behaviours encourage greater risk-taking by men and women as they seek to become what the workplace culture defines as normal men and women?

Laplonge offers ideas on how to lead discussions on gender and link it to safety. There is also a whole chapter of guidelines for gender and leadership, and how to conduct an organisational gender review.

As a bonus, the book includes the five workshop plans (see breakout below) produced for Resources Safety:

- Gendered behaviours and workplace safety
- Women and safety
- Sexual harassment and safety
- Homophobia and safety
- Aggression and safety.

All in all, this informative, straight-talking book achieves its goal of helping us to start getting tough and serious about gender in mining.

GENDER AND SAFETY IN MINING – REPORT AND WORKSHOP PLANS

In 2010, Dr Dean Laplonge ran a series of roadshow workshops for Resources Safety. Industry input was sought to understand:

- how widely accepted “tough” behaviours and communication styles affect safety in the workplace
- how toughness might be redefined
- what resources and training are required to support positive cultural change.

In response to Dr Laplonge's findings and recommendations, Resources Safety published a workshop planner series exploring the relationship between gender and safety in mining. Cultural change should be driven from the top and must engage the workforce to ensure its effectiveness.

Hence, the planner series is specifically designed for use by senior managers, including the board of directors.

It provides a good starting point to initiate discussions about gender and safety, and can be used to identify gender-related issues that may affect an organisation's health and safety performance. This information can then be drawn upon to develop a strategy to address any workplace issues, ranging from the boardroom to individual work areas.

A summary of Dr Laplonge's report and the workshop planner series are available in the online one-stop shop on safety culture and human factors at www.dmp.wa.gov.au/16259.aspx

INVESTIGATING ALLEGATIONS OF BULLYING

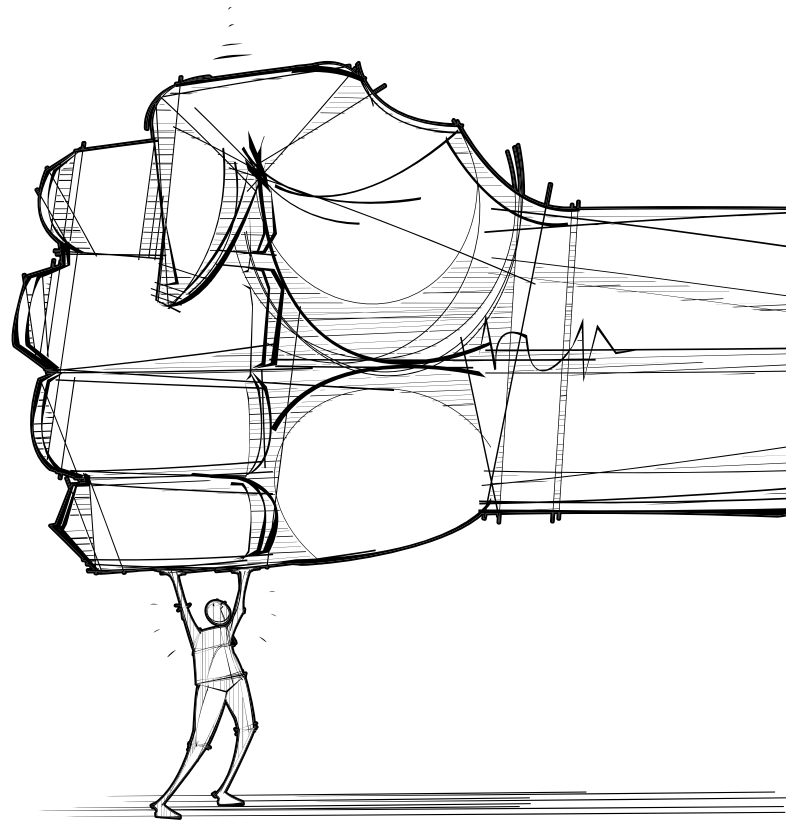
Experience shows that allegations of bullying are more likely to be resolved if they are addressed at the workplace using internal grievance procedures.

When cases of alleged bullying at mining operations are reported to the Department of Mines and Petroleum, an inspector will first contact the person who has lodged the report and obtain further details about the alleged bullying behaviour. If an investigation is deemed appropriate, it is the inspector's role to establish if the employer and workers concerned have met their obligations under the legislation.

Depending on the circumstances, it can be difficult to investigate allegations from an occupational health and safety perspective. Dealing with workplace bullying may also involve laws other than the *Mines Safety and Inspection Act 1994*.

To allow the Department to respond more efficiently and effectively where there is a risk to health and safety, a core group of inspectors will be undertaking specialised training in the next few months to better equip them to handle more serious and complex allegations of bullying from industry.

Further information about the Department's approach to handling allegations of workplace bullying is available at www.dmp.wa.gov.au/16878.aspx



ENGAGING SHREPS

Resources Safety has a series of posters to support and promote the role of safety and health representatives, as well as encourage people to nominate for election. These can be downloaded at www.dmp.wa.gov.au/8018.aspx or request hard copies using the order form at www.dmp.wa.gov.au/8195.aspx

Resources Safety has added two posters to the series:

- Safety and health representatives are the key – to encourage people to think about nominating
- Safety and health representatives are a vital link – to promote the importance of representatives as the link between workers and management, and their contribution to site safety

The new posters are based on ideas submitted at a workshop during IFAP's 2013 Safety and Health Representatives Forum. Workshop participants Michael Chapman, Leilani Coe, Terry Hart, Sandy Hilera, Simon O'Neill, Tim Sherry and Ruth Ward are acknowledged for their contributions to concept development.



HEALTHIER WORKPLACE WA

Did you know that Western Australian workplaces have access to a range of free services to help them support and encourage their workers to make positive lifestyle changes?

The Healthier Workplace WA services are part of the Healthy Workers Initiative, which is a joint Federal, State and Territory Government initiative under the National Partnership Agreement on Preventive Health. The main objectives of the agreement are:

- an increase in:
 - adults at a healthy weight
 - adults consuming fruit and vegetables
 - adults doing 30 minutes of moderate physical activity on five or more days a week
- a decrease in:
 - adults smoking daily
 - adults drinking too much alcohol.

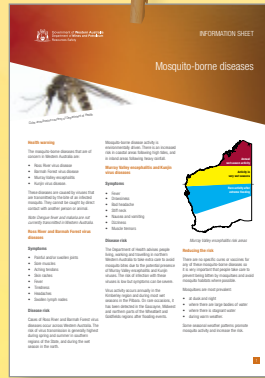
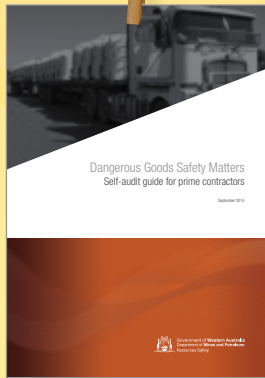
Healthier Workplace WA is delivered by the Heart Foundation WA in conjunction with Cancer Council WA and The University of Western Australia.

Visit at www.healthierworkplacewa.com.au to receive one-to-one support to get started, and implement and evaluate a workplace health and wellbeing policy.

Free programs and resources are available online for workplaces ready to implement changes and encourage healthy behaviour. They include help to develop policies, action plans and strategies, and the opportunity for health workplaces to be recognised.

The Recognised Healthy Workplace program celebrates the achievements of workplaces in Western Australia that have demonstrated a commitment to creating a healthy workplace. The program was developed in collaboration with Unions WA and the Chamber of Commerce and Industry WA.





WHAT'S NEW FROM RESOURCES SAFETY?

In the months since the last issue of Resources Safety Matters, Resources Safety has been busy producing publications and other resources to provide information and guidance to industry. The catalogue of new resources is summarised below, and all are available at www.dmp.wa.gov.au/ResourcesSafety

GENERAL EXEMPTION

On 17 September 2014, the State Mining Engineer revoked the previously issued general exemption for regulation 3.53, issued 28 May 2007 regarding the submission of mine plans, and issued a new general exemption that allows mine plans to be submitted in PDF rather than hard copy. More information regarding this general exemption is available online in the legislation and policy section, and also in the online one-stop shop for mine surveyors.

ONLINE ONE-STOP SHOPS

Resources Safety's online one-stop shops provide fast access to key safety and health resources for specific stakeholder groups, topics or activities. The catalogue of one-stop shops has expanded with the latest topic covering training and competency. There are links to key guidance material and information designed to assist in understanding the requirements for training and competency in Western Australian mines. Matters covered include:

- training management systems
- inductions
- trainers and assessors
- training and assessment process
- refreshers, reviews and record keeping.

CRANE REGISTRATION TOOLBOX PRESENTATIONS

Following the information session on the registration of bridge and gantry cranes held this July, the following presentations were made available for industry use:

- Crane incidents in Western Australia – Recent learnings
- Crane registrations in Western Australia – Common non-compliances
- Crane registrations in Western Australia – The state-of-play and verification.

MINES SAFETY AND HEALTH INFORMATION SHEETS

Resources Safety's medical bulletin series has been discontinued and the last topic reviewed and re-issued as an information sheet about health hazards associated with mosquitoes:

- Mosquito-borne diseases.

Another information sheet issued in the last few months deals with investigations:

- Frequently asked questions on legal professional privilege.

STAY ALERT

The safety alerts described below are reproduced in full at the back of this magazine, and can be downloaded from the publications section at www.dmp.wa.gov.au/ResourcesSafety

LARGE BOULDER FALLS ONTO ACTIVE HAUL ROAD

Mines Safety Significant Incident Report No. 198 was issued following a potentially serious incident at a mine when a boulder weighing about 50 tonnes rolled down a steep slope and came to rest on an active haul road.

The report emphasises the importance of conducting detailed hazard identification and risk assessments during stockpile planning, design and construction.

LOADER DRIVES INTO OPEN STOPE

In April 2010, a loader fell about 25 m and landed on the lower level of a stope. The operator suffered fatal injuries as a result of this accident.

Mines Safety Significant Incident Report No. 199 was issued following the coronial inquest into the accident held in February 2014, and highlights the findings and recommendations as documented in the Coroner's record of investigation.

FALL OF GROUND IN UNDERGROUND MINE

A worker was fatally injured in a fall of ground accident at an underground mine, when a hangingwall collapsed onto him while he was on foot in the drive.

Mines Safety Significant Incident Report No. 200 was issued to highlight the importance of conducting detailed hazard identification and risk assessments during mine design, planning and scheduling with appropriate input from competent persons.

WORKING WITH MOBILE PLANT

The following three reports were issued to highlight potential risks when working with mobile plant, as well as the importance of developing and maintaining safe systems of work.

The incident reported in *Mines Safety Significant Incident Report No. 201* involved an elevating work platform (EWP) being driven at low speed on a flat hard surface inside a construction compound. The EWP was in motion when the steering tie rod coupling on a boom lift failed and the operator lost control of the steering.

Mines Safety Significant Incident Report No. 202 was issued after a worker fell almost 2 metres from the deck of a mobile crane.

Mines Safety Significant Incident Report No. 203 was issued after a worker was fatally injured when he was trapped between the mast and frame of a forklift truck.

WORKERS INJURED BY MOVING PARTS

Both *Mines Safety Significant Incident Report No. 204* and *205* were issued after workers were injured by the moving parts of plant.

In the first incident, a worker, seeing that the material from a stemming bucket had stopped flowing, tried to loosen the blockage by placing his hand inside the discharge outlet. The discharge device activated and several of the worker's fingers were severed.

The second incident involved a 12-canister automatic rotary sample collector in an outload facility. A worker, noticing a mispositioned bag inside one of the sample canisters, put his left arm into the canister to adjust the bag. At this point the sampler automatically rotated one increment, trapping his arm between the fixed frame of the sampler and the moving canister.



FORKLIFT STRUCK BY TRUCK WHILE UNLOADING

Mines Safety Significant Incident Report No.206 was issued following an incident in which a roadtrain struck the forklift that was being used to unload bulka bags. The report emphasises the need to maintain clear communication, review procedures and ensure contractors are inducted before undertaking work on site.

RECLASSIFYING CONFINED SPACE

Safety inspections by the Department of Mines and Petroleum had revealed that some sites have reclassified their confined spaces to non-confined spaces. *Mines Safety Bulletin No. 111* was issued to clarify the issue of reclassifying confined spaces, and assist sites with identifying unsafe and hence non-compliant practices.

The bulletin highlights the importance of considering all inherent and introduced hazards and associated risks when undertaking the reclassification process. A set of requirements is provided for the Western Australian mining industry to follow when reclassifying confined spaces.

INSTALLATION OF FRICTION ROCK STABILISERS WITH AIRLEG DRILLS

Site inspections of airleg-installed friction stabilisers had highlighted issues with the quality of components supplied and installation practices, including quality control testing.

Mines Safety Bulletin No. 112 was issued to emphasise to both suppliers and mine operators their responsibilities for ensuring the quality control of product supplied and installed to meet mine design requirements.

FALL-BACK ARRESTER ARMS ON TYRE HANDLERS

Tyre handlers are commonly used to assist with the repair and replacement of tyres on earth-moving equipment. The stored energy released when the arrester arm fails can propel components several hundred metres.

Mines Safety Bulletin No. 113 was issued to remind mine operators and maintenance supervisors of the risks presented by failed fall-back arrester arms and to recommend measures to mitigate those risks.

COMPLIANCE REQUIREMENTS FOR MULTI-PURPOSE MOBILE PLANT

While purpose-built mobile cranes and mobile elevating work platforms are designed, manufactured, tested, approved and maintained for a single purpose, multi-purpose mobile plant presents additional issues for duty holders to ensure they fully comply with the requirements of the legislation. *Mines Safety Bulletin No. 114* was issued to provide duty holders with further information on what the Department considers as enforceable in terms of compliance with the regulations, and the Department's policy and approach to enforcement.

WORKER FALLS FROM HEIGHT DURING TRANSFER TO SUPPORT VESSEL

Petroleum Safety Significant Incident Report No. 01/2014 was issued following an incident where a worker fell about 4 metres after a handrail broke away from its support brackets on the lower access landing on which he had been standing. The worker struck the starboard aft gunwale of the support vessel before falling into the sea with chest injuries and a fractured lower leg. To compound matters, his personal flotation device failed to inflate on contact with water.

SULPHURIC ACID LEAK DAMAGES STORAGE FACILITY

The risks associated with the failure of storage facilities for dangerous goods are highlighted in *Dangerous Goods Safety Significant Incident Report No. 0114*. A mine site in care and maintenance for several years had an onsite tank farm comprising four 2 million litre tanks containing 98% sulphuric acid. After a number of leaks at the facility, the sulphuric acid was removed from site and the whole facility was decontaminated. The report contains recommendations for mines sites under care and maintenance, including eliminating hazards associated with dangerous goods inventories.

DRUM SAFETY BACK IN SPOTLIGHT AFTER QUEENSLAND TRAGEDY

Western Australians are known for being resourceful. Cut an old 44-gallon drum in half lengthways and it transforms into a feed trough. Add a stand and a grill plate and it becomes a bush barbecue – there are many potential uses. Unfortunately, however, if an angle grinder is used to cut through a drum that has not been thoroughly cleaned of flammable or combustible liquids or gases, the consequences can be serious or even fatal.

In July this year, the Department of Mines and Petroleum issued a safety reminder about people handling used dangerous goods drums following a death in Queensland the previous month. A 60 year-old man died on a cattle station in western Cape York when a petrol drum he was welding exploded.

While used drums can be re-purposed after their initial use for transporting and storing fuel or other dangerous goods, the practice can be dangerous. This is starkly demonstrated by some incidents in Western Australia over the last five years.

In March 2010, a plant operator was instructed to fill metal drums with scrap metal for crushing. None of the drums had removable lids, so he was instructed to cut triangular holes in the lids with an angle grinder. He had safely cut holes in four of the drum lids, but when he cut into the fifth lid, the drum exploded. The man had serious burn injuries to both forearms and injured his wrist, which required surgery.

In November the same year, a worker was carrying out cleaning and maintenance duties, including replacing the scrap metal bin. He used an angle grinder to cut into a metal drum that

had previously contained methylated spirits. A spark from the angle grinder ignited residual vapours in the drum, causing a large explosion that blew part of the drum 20 metres over a fence into a neighbouring property. The worker received fatal head injuries.

In separate incidents in 2011, two Western Australians died and another was seriously injured as a result of using an angle grinder to cut up 205-litre drums. Sparks from the angle grinder ignited residual flammable vapour inside one of the drums, causing an explosion.

In January 2013, a worker in the Goldfields narrowly escaped death when a drum he was cutting with an oxy torch exploded. The lid struck his forehead and he was seriously injured, but if he had been standing in a slightly different position he probably would not have survived. In April the same year, a South West man was seriously injured when a fuel tank he was cutting with an oxy torch exploded.

As these incident summaries show, recycling drums is a serious matter. People considering re-purposing a drum previously used to store dangerous goods should ensure there are no residual chemicals inside. Only use or purchase drums that:

- have been thoroughly cleaned so there are no residual vapours
- no longer have a dangerous goods label on them.

If there is any doubt about the drum's previous contents, do not cut them with equipment that produces sparks or heat, such as angle grinders and welders.

WANT TO KNOW MORE?

Empty drums – potential bombs is the title of a useful online publication available at www.worksafe.wa.gov.au

It describes the problem with empty dangerous goods drums, and provides safety information that includes a checklist and recommendations regarding specialised drum recycling companies.

CALLING SMALL MINES

Some operators of small quarry and sand pit operations in Western Australia may be unaware that their operations – specifically those that produce products for sale or commercial use – are considered to be “small mines” and may therefore fall under the *Mines Safety and Inspection Act 1994*.

Any operation subject to this Act must have an approved project management plan (PMP) in place in order to operate. The PMP is used to identify potential major safety risks for the proposed operations, and acts as a starting point for developing ongoing safety management strategies to address those risks.

If such a plan is not in place, the safety of workers may be compromised and the Department of Mines and Petroleum will suspend operations until a PMP is approved. However, resources have been developed by Resources Safety to help operators of small mines to comply.

Simon Ridge, Resources Safety's Executive Director, said that raising awareness of this issue was part of the Department's drive to remain proactive in promoting improved safety and health outcomes for everyone in the mining industry.

“It is our duty to ensure operators understand and adhere to the mines safety legislation, foremost to protect the people involved in these small mine operations,” he said.

“A PMP has a three-fold benefit — it sets up a system to help keep people safe, it can improve workplace efficiency, and it fulfils the legal obligations for mining operations.

“Our inspectors do have the power to temporarily shut down operations until these plans have been submitted and approved.”

All small mines are also required to notify Resources Safety before commencing, recommencing, suspending or closing site works. In addition, local government authorities expect some quarries and sandpits to apply for an extractive industry licence, depending on the site's location.

For more information, visit www.dmp.wa.gov.au/14695.aspx



AVOIDING COLLISIONS

Interaction between light vehicles, heavy vehicles and plant is currently the principal hazard workers are exposed to in surface mining. Collision avoidance technologies are a known control measure to address this hazard, and the Department of Mines and Petroleum is working with mining companies to encourage their implementation to reduce the risk of injuries and fatalities.

Collision avoidance systems for use on mine sites are readily available from a number of manufacturers. Several mine sites in Western Australia already use such systems. Some sites are preparing to trial collision avoidance systems and have contacted mines inspectors for guidance. These queries indicate a gap in the guidance material provided by Resources Safety.

Rather than draft new guidance, a review of available literature identified *MDG 2007: Guideline for the Selection and Implementation of Collision Management Systems in Mining* as being well written with appropriate technical advice. Dated February 2014, the guideline was the result of work by the Mining Equipment/Personnel Interaction Advisory Group, which comprised representatives from industry, unions, suppliers and regulators from New South Wales and Queensland. Development of the guideline was co-ordinated by NSW Trade & Investment.

The Mining Industry Advisory Committee has endorsed a proposal to adapt this guideline for Western Australian use. This process needs to be formalised. In the meantime, the New South Wales guideline is available online at www.resourcesandenergy.nsw.gov.au in the publications section under *Miners & explorers – Safety & health*.

 Trade & Investment
Mine Safety

GUIDELINE

MDG 2007

Guideline for the selection and implementation of collision management systems for mining

February 2014

NEW WA INSTITUTE FOR MINERALS RESEARCH



One of Western Australia's premier research institutes has been renamed. Minister for Mines and Petroleum Bill Marmion officially launched the Minerals Research Institute of Western Australia (MRIWA) on 1 May 2014.

MRIWA was previously known as the Minerals and Energy Research Institute of Western Australia (MERIWA), which was a statutory body established by the *Minerals and Energy Research Act 1987*.

"While the name of the institute may have changed over the last 33 years, the ultimate goal has not," Mr Marmion said. "And it is organisations such as MRIWA that help ensure Western Australia's reputation for world-class research and development in the resources industry continues to be recognised across the globe."

The Institute has a vital role in establishing Western Australia as an international centre of excellence for minerals research. Since it was established, the Institute has published more than 300 research reports.

Success in the modern minerals industry requires the application of multi-disciplinary expertise to navigate the wide range of opportunities and challenges presented to the minerals industry. As MRIWA has limited resources, its grants program focuses on areas that are most likely to deliver tangible benefits to the industry and the State.

Visit www.mriwa.wa.gov.au for more information.

RESEARCH PRIORITY THEMES FOR MRIWA

Theme 1: Find More Resources

- 1.1 Mapping of the depth and character of cover progressing from shallow to deeper cover
- 1.2 Distal footprints research
- 1.3 Development and deployment of tools that provide improved understanding of the sub-regolith geology in Western Australia
- 1.4 Advanced analysis and correlation of existing geological and geophysical

Theme 2: Expand the Mining Envelope

- 2.1 Deep extraction systems
- 2.2 Engineering in highly stressed and complex rock masses
- 2.3 Productive and safe deep in-mine environments

Theme 3: Increase recoverable value

- 3.1 Modelling and simulation of processing circuits
- 3.2 Accelerated technology development frameworks

Theme 4: Improve productivity

- 4.1 Productivity optimisation

Theme 5: Develop new products and markets

- 5.1 New mineral products exports from Western Australia



CCAA AWARDS PROMOTE INNOVATION AND BEST PRACTICE

Over 140 guests, including the Department of Mines and Petroleum's Director General Richard Sellers and Resources Safety Executive Director Simon Ridge, attended the 2014 WA Construction Materials Industry Dinner held in August.

Hosted by Cement Concrete and Aggregates Australia (CCAA), the peak body for the heavy construction materials industry, the dinner included the annual Environment, Health and Safety (EHS) Awards. These awards are the premier industry awards for the promotion of innovation and best practice in the heavy construction materials industry. There are four categories recognising both innovation and performance in health and safety, and environmental activities.

Mr Ridge said that the health and safety awards recognised the Western Australian industry's commitment to safety.

"The awards are not just about the winners. They are also about the nominated companies making safety a priority," Mr Ridge said. "Just as important, the innovations being developed can have widespread benefits for all of industry."

Harry Backes, CCAA State Director Western Australia, said that the awards were designed to promote best practice in heavy construction materials industry.

"The WA EHS awards celebrate creative and practical solutions to environment, health and safety issues," he said. "They also help to promote these solutions across the industry."

Every two years, State winners compete for national awards in the innovation categories for environment, and health and safety.

CCAA WA HEALTH AND SAFETY AWARDS

Health & Safety Innovation (joint winners)

Boral Construction Materials & Cement

B3 Program to assess driver well-being and injury risk, all WA concrete sites

Hanson Red Hill Quarry

Surge Tunnel Isolation Safety Gates

Health & Safety Best Performance, Concrete

Holcim Perth Concrete Transport

DriveSafe Computerised Driver Monitoring System

Health & Safety Best Performance, Extractive

Hanson Red Hill Quarry

Surge Pile & Feedback Tunnel Safety Initiatives





CCAA NATIONAL HEALTH AND SAFETY AWARDS

A specially designed stand that makes the task of removing the ripper boot on a bulldozer much safer has been named as the heavy construction materials industry's top health and safety initiative for 2014.

The winners of the 2014 CCAA Environmental, Health and Safety (EHS) Awards were announced during the Construction Materials Industry Conference held in Brisbane in September.

The Health and Safety Innovation Award went to Hanson Construction Materials for its ripper boot change-out stand and winch handling system, developed at its Central Coast sands quarry in New South Wales.

Ordinarily, changing the ripper boot beneath a dozer is an extremely high-risk activity, as workers must work below a raised nine tonne ripper attachment and manually change a 45-kilogram ripper boot that can be extremely hot after ripping sand for extraction.

The ripper stand safely supports the raised attachment, eliminating the falling ripper boot hazard. At the same time, the battery-operated winch allows a single operator to safely and easily handle the ripper boot.

Full details on the winners and finalists can be found on the CCAA website at www.ccaa.com.au



*Hanson Construction Materials' innovative ripper boot change-out stand and winch handling system
Photo courtesy CCAA*



PROSECUTIONS

DANGEROUS GOODS

Big fine for Perth fireworks company

Cardile International Fireworks Pty Ltd pleaded guilty on 8 September 2014 to a string of charges in Perth Magistrate's Court following an investigation by the Department of Mines and Petroleum. The investigation found the company had breached a number of safeguards relating to the storage and supply of dangerous goods.

Ross Stidolph, Resources Safety's Director Dangerous Goods and Petroleum Safety, said that officers from the Department inspected the company's storage area at an explosives reserve in late 2012 and conducted a follow-up inspection in early 2013.

"The inspection uncovered some serious breaches," Mr Stidolph said. "Incompatible substances and goods, such as loose black powder, nails, screws and aerosol cans containing flammable gases were stored incorrectly with the fireworks."

Over 25 kg of loose black powder was seized from two of the company's explosive storage buildings on the explosives reserve.

Mr Stidolph said that the court's decision, which included a \$34,000 fine, sent an important message to companies storing, handling and managing dangerous goods.

"All companies working with dangerous goods need to take their responsibilities to safety seriously," Mr Stidolph said. "Notably, the company has now made significant improvements to its storage, handling and record keeping practices, and is committed to achieving and maintaining regulatory compliance."

Transport company fined \$31,000 for safety breaches

The Department is urging dangerous goods transport companies to adhere to high safety standards after one company received \$31,000 in court fines for a number of safety breaches.

The Western Australian transport company faced Northam Magistrate's Court in April after pleading guilty to 14 dangerous goods offences that occurred between February and May last year.

The charges related to five different occasions where trucks were stopped by traffic police for dangerous goods inspections in Wubin, Karratha, Bindoon and Northam. Among the 14 offences, the company was found to have incorrect placarding, inadequate safety equipment and no transport documentation.

Then-Director Dangerous Goods Philip Hine said at the time that transport companies have a responsibility to ensure dangerous goods are transported safely.

"This enforcement should send a strong message to dangerous goods transport companies that, for the safety of all concerned, regulations must be followed at all times," he said. "Those who disregard dangerous goods transport regulations not only put their own lives in danger but also those of other road users and emergency response personnel."

MINES SAFETY

Company pleads guilty over Pilbara mine death

On 11 August 2014, Crushing Services International Pty Ltd (CSI) entered a guilty plea in South Hedland Magistrates Court during the Department of Mines and Petroleum's prosecution hearing relating to the death of a Pilbara mine worker on 14 August last year. CSI was charged under the *Mines and Safety Inspection Act 1994* with failing to provide a safe working environment.

Mr Kurt Williams, a contracted electrician with CSI at Fortescue Metal Group's Christmas Creek mine, was greasing a motor when he was fatally crushed by a ladder attached to a tripper unit at the top of the ore processing facility.

Resources Safety Executive Director Simon Ridge said that the guilty plea was a pleasing result for a very tragic matter.

"I am sure it will be a relief to the victim's family that this court matter will not continue to be a protracted process," he said. "It should also serve as a reminder that safety needs to be the number one priority for everyone, especially mine operators. There is no room for complacency, every fatality or serious injury is one too many."

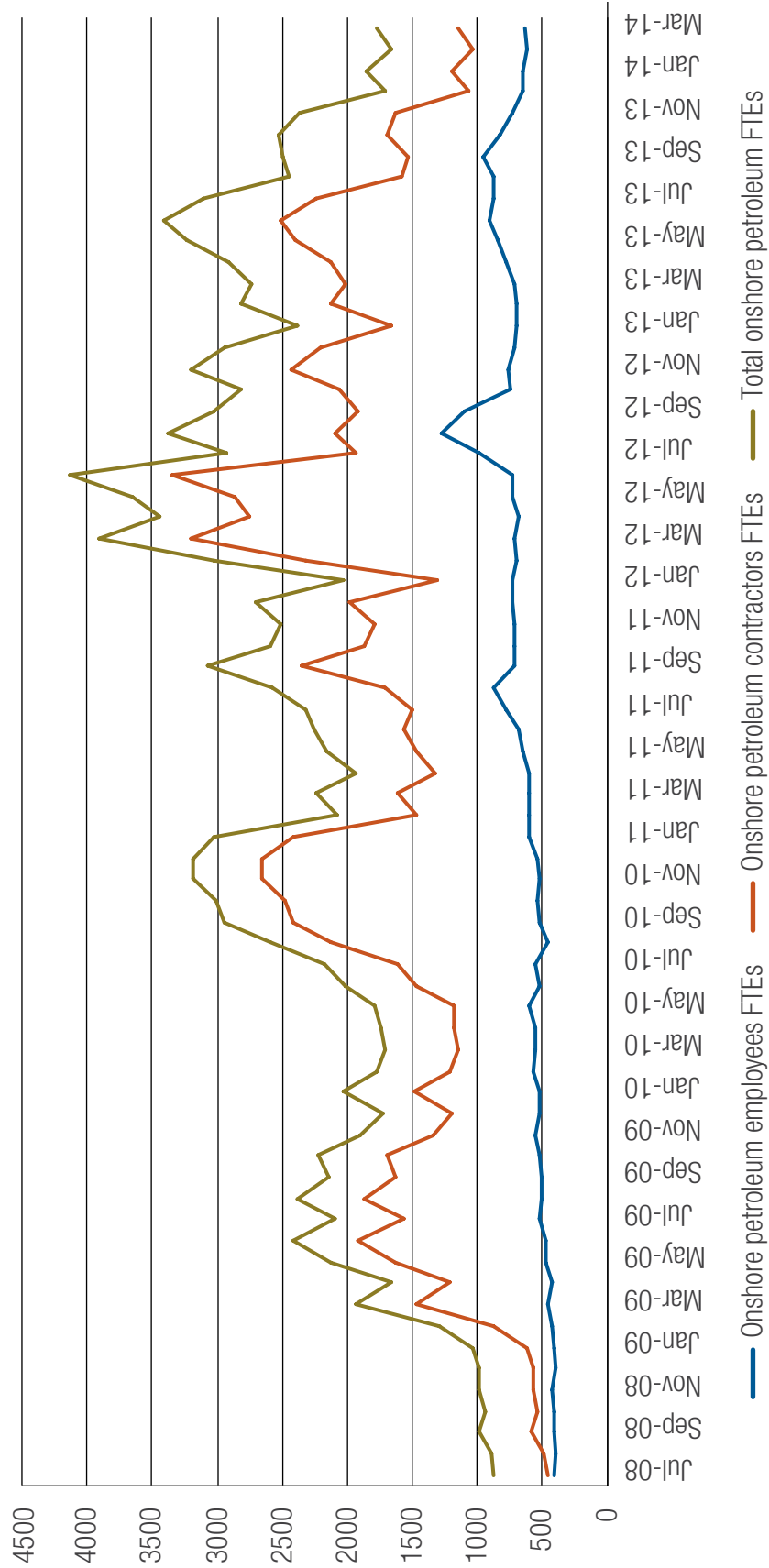
"The Department will continue to work with mining operators to ensure Western Australia operates to high safety standards, but in any instance where that is found not to be the case, the Department will hold those responsible to account."

The matter has been adjourned for sentencing.



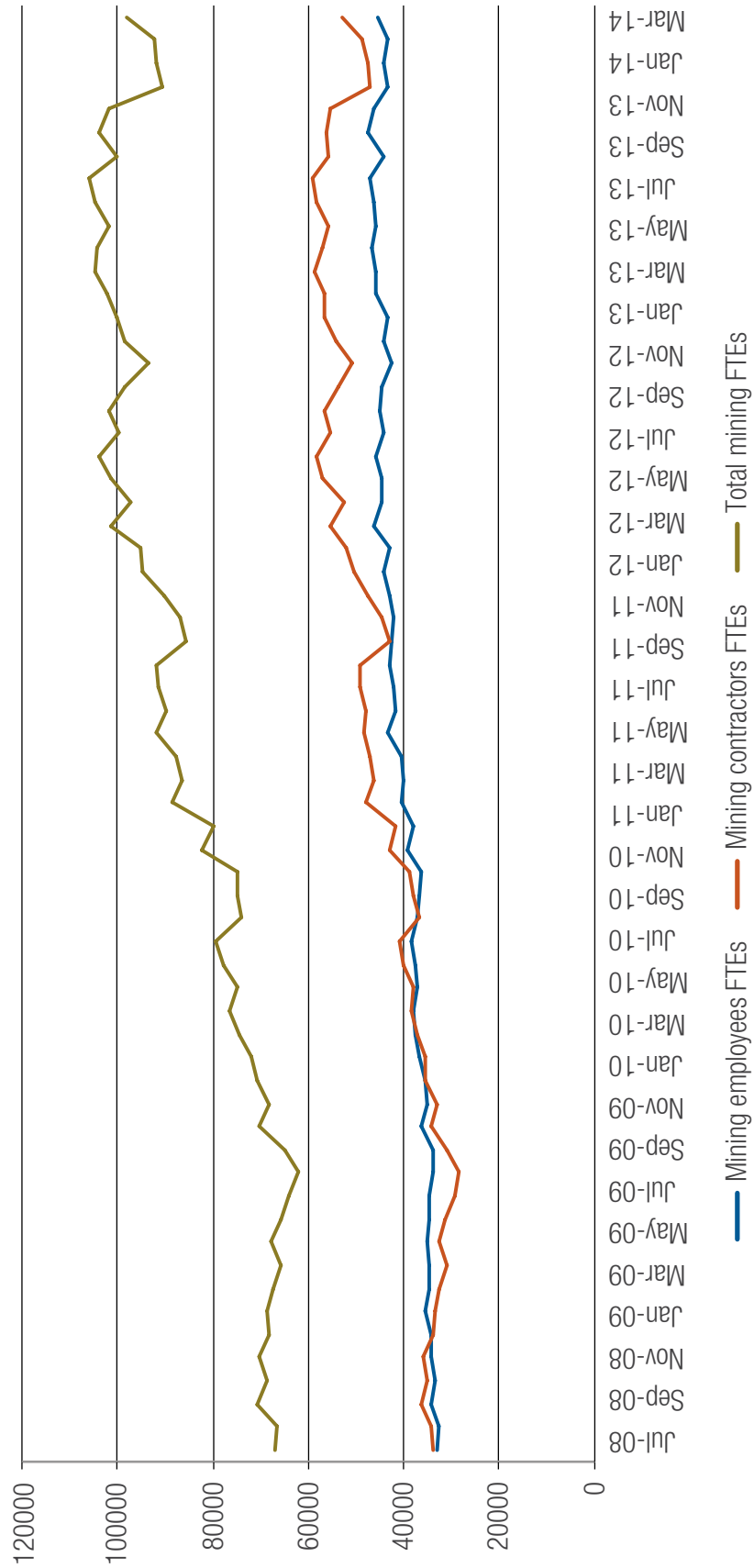
WA'S MONTHLY ONSHORE PETROLEUM WORKFORCE (MARCH 2014)

NOTE: Monthly petroleum workforce figures reported as hours but plotted as full-time equivalent (FTE), where 1 FTE = 2,000 hours worked per year

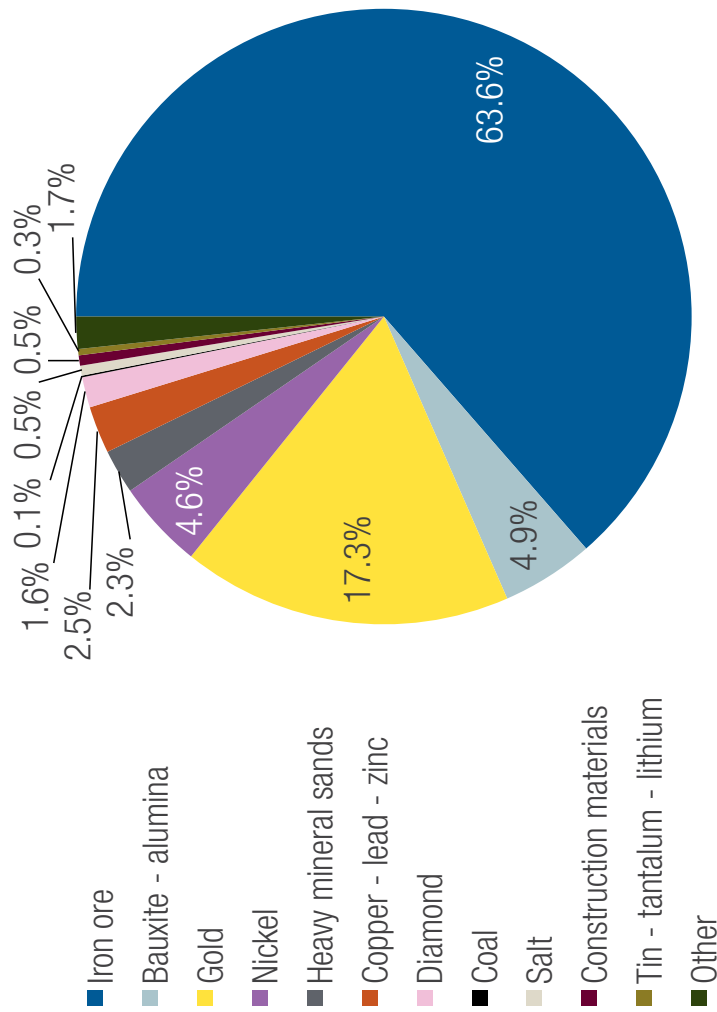


WA'S MONTHLY MINING WORKFORCE (MARCH 2014)

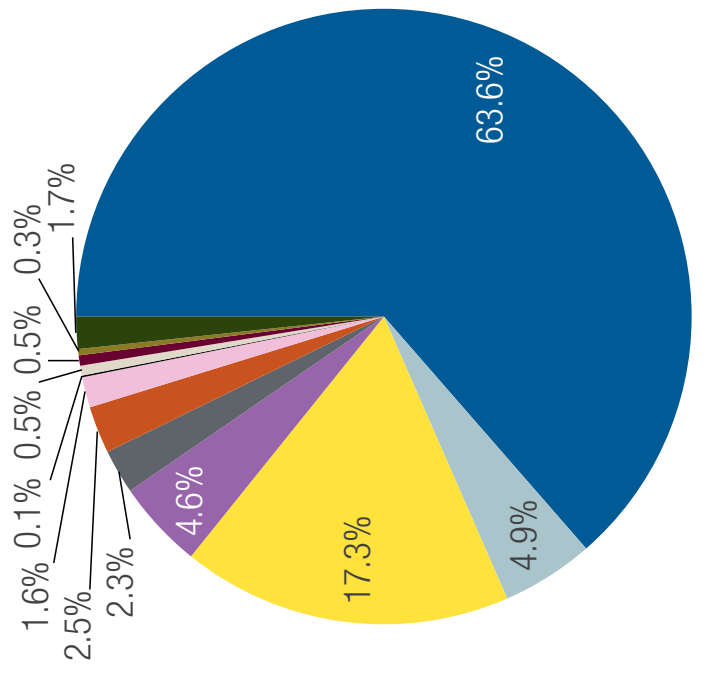
NOTE: From 1 July 2009, monthly mining workforce figures are plotted as full-time equivalent (FTE), where 1 FTE = 2,000 hours worked per year



WA'S MINING WORKFORCE – PERCENTAGE BY COMMODITY (MARCH 2014)



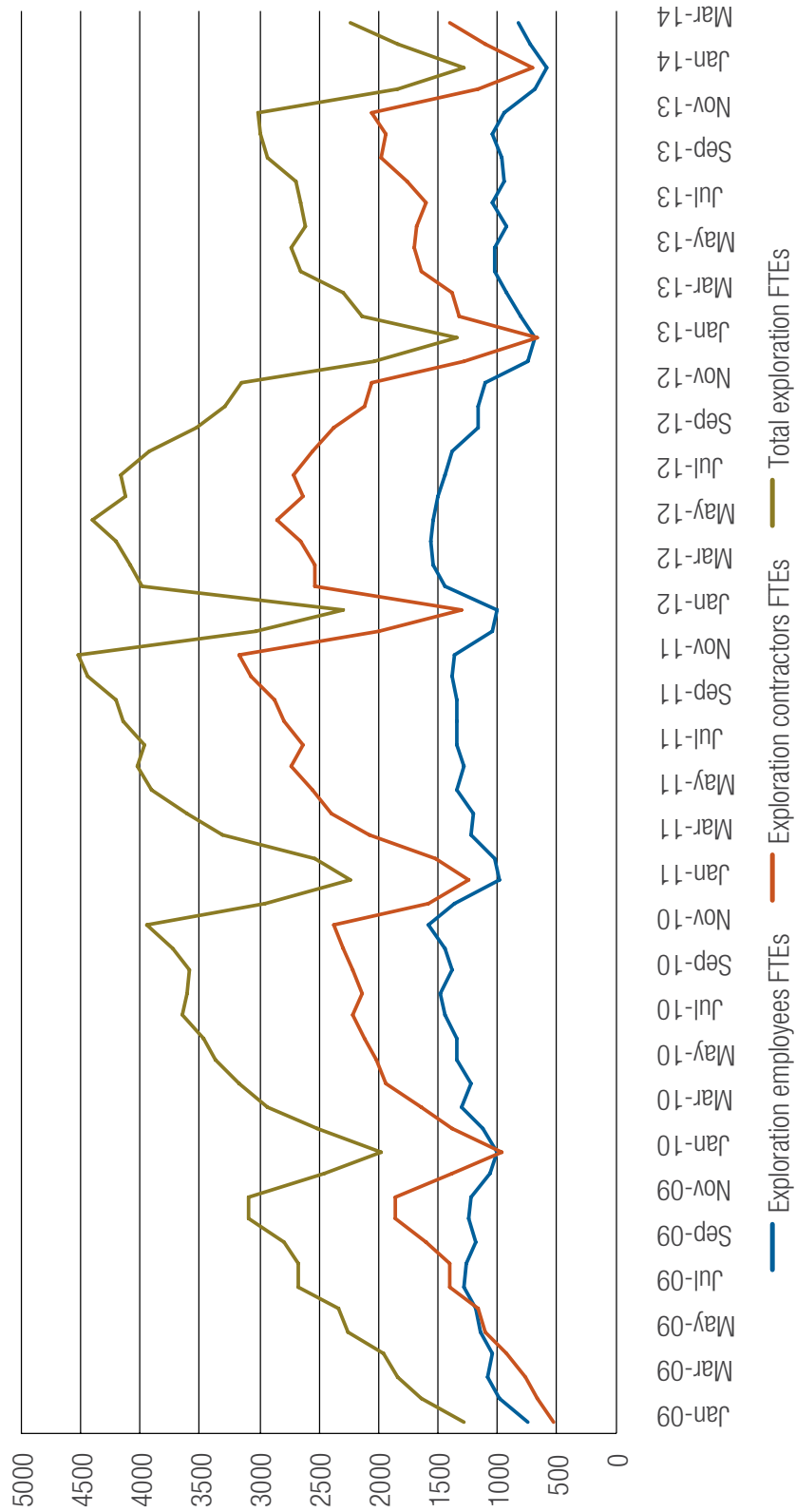
Mining employees FTEs



Mining contractors FTEs

WA'S MONTHLY MINERAL EXPLORATION WORKFORCE (MARCH 2014)

NOTE: From 1 July 2009, monthly mining workforce figures are plotted as full-time equivalent (FTE), where 1 FTE = 2,000 hours worked per year



MINES SAFETY SIGNIFICANT INCIDENT REPORT NO. 198

LARGE BOULDER FALLS ONTO ACTIVE HAUL ROAD

ISSUED: 16 JUNE 2014

Summary of incident

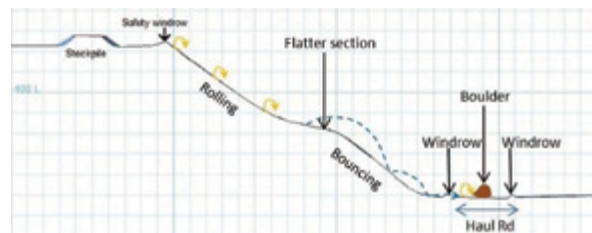
There was a potentially serious incident at a mine when a boulder weighing about 50 tonnes rolled down a steep slope and came to rest on an active haul road.

A loader operator working on a stockpile about 70 metres above the haul road had dislodged the boulder from the edge of the stockpile during night work. The boulder rolled down the slope, bounced over a roadside windrow and landed on the haul road. It had travelled about 100 metres in horizontal distance from its original position. Fortunately, there were no vehicles operating on the road at the time and no one was injured.

Probable causes

Direct

- The loader pushed into material causing the boulder to move.
- The safety windrow was inadequate to prevent rocks falling over the edge of the slope.



Cross section of work area showing locations of stockpile, safety windrow and boulder on the haul road



Photographs showing boulder's original and final positions; and size of boulder

Mines Safety Significant Incident Report No. 198 continued

Contributory

The hazards associated with rocks falling from the stockpile were not identified during its planning, design, construction and operational phases. This meant that:

- the stockpile was built too close to the edge of the slope
- a haul road was built directly beneath the stockpile following mine expansion
- the control measures that were in place were inadequate.

Actions required

Managers and supervisors are reminded of the importance of conducting detailed hazard identification and risk assessments during stockpile planning, design and construction. Factors to consider include:

- potential for rocks to fall from stockpiles onto other infrastructure
- use of control measures such as windrows to redirect or contain moving rocks
- measures to restrict access below a working area
- relevance of planned shift inspections to the hazards of work areas of the mine.

Further information

Visit www.dmp.wa.gov.au/ResourcesSafety for information on occupational safety and health in the resources sector.

MINES SAFETY SIGNIFICANT INCIDENT REPORT NO. 199

MANNED LOADER DRIVES INTO OPEN STOPE — FATAL ACCIDENT

ISSUED: 17 JUNE 2014

Summary of incident

In April 2010, an operator was driving a loader in an ore drive in an underground mine when the loader fell over the edge of an open stope. The loader fell about 25 m and landed on the lower level of the stope. The operator suffered fatal injuries as a result of this accident.

It is likely that the operator was in the process of building a rock bund at the edge of the stope at the time of the accident, as he had removed warning signage and wall bollards before operating the loader in the drive. There was no other physical barrier in place to prevent access to the void.

This accident was the subject of a coronial inquest held in February 2014, with findings and recommendations documented in the Coroner's record of investigation.

Probable causes

Direct

- There was no physical barrier in place near the edge of the stope void.
- The loader operator did not detect the location of the stope void.

Contributory

- Warning controls had been removed without implementing alternative temporary methods of delineating the stope void.
- Warning controls were able to be removed by the operator without the presence and approval of nominated persons authorised to remove the controls.
- The field-level risk assessment performed by the operator did not assign the correct level of risk for work in this location.
- The supervisor was delayed from inspecting the workplace due to the need to attend a production meeting.
- Operator visibility from loaders operating in ore drives was severely limited due to the position of the cabin and obstructions to fields of view.
- Changes to operating procedures and practices may not have been clearly understood by all relevant workers working at the mine.
- There may have been a misunderstanding about job requirements by workers involved.

Mines Safety Significant Incident Report No. 199 continued

Actions required

Mine operators are reminded of the importance of developing safe systems of work that identify hazards and risk controls for work near open holes underground.

- Where equipment and operators, and especially manned loaders, are required to work near open holes, complete formal team-based risk assessments to determine appropriate controls for the hazards associated with the tasks. Higher order controls (i.e. elimination, engineering) are more effective than lower order administrative controls (e.g. procedures, signage) and are therefore preferred.
- Do not rely solely on lower level risk assessments (e.g. field level risk assessments, Task Hazard Analysis) performed by workers to identify and control hazards associated with high risk tasks near open holes. Quality control and management support is required to ensure such field level risk assessments are effective and correctly identify levels of risk and required actions.
- Critically examine the circumstances under which there is a need for a manned loader to be operated near an open hole, and assess whether a manned loader is fit-for-purpose for the planned task. Alternative equipment or techniques should be considered, including application of remote controlled technology to keep the operator away from the open hole.

- The appointed responsible persons should manage the hazard of open holes in mines by designing, constructing and locating physical hard barriers to prevent equipment from having access to the edge of such open holes. The barriers should be used in conjunction with lower level access control systems such as demarcation and lockable barriers controlled by supervisors or managers. Wherever possible, install hard barriers before creating an open hole.
- Clearly communicate changes to operating procedures and practices to the workforce, including supervisors, with reinforcement and monitoring from management to ensure adherence to the new standards and procedures.
- Ensure work instructions given to operators are clear, unambiguous and understood so that there is no misinterpretation of job requirements.

Further information

The full Coroner's report is available at www.coronerscourt.wa.gov.au

Visit www.dmp.wa.gov.au/ResourcesSafety for information on occupational safety and health in the resources sector.

MINES SAFETY SIGNIFICANT INCIDENT REPORT NO. 200

FALL OF GROUND IN UNDERGROUND MINE — FATAL ACCIDENT

ISSUED: 20 JUNE 2014

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Summary of incident

A worker was fatally injured in an accident at an underground mine.

An ore drive was being developed by air-leg mining methods. After partially bogging a face that had been fired a day earlier, it appears that the worker had dismounted from the load haul dump machine (bogger) he had been using.

The hangingwall of a shanty back excavation, dipping at about 70 to 80 degrees and partially supported by split-set bolts, collapsed onto the worker while he was on foot in the drive. His body was recovered from beneath the fall of ground some hours after he was reported missing.

Probable causes

Direct

- The installed ground support (spot bolting, split-set bolts) was not effective in preventing the collapse of the hangingwall in the drive.

Contributory

- The system of work did not identify the geotechnical risks of mining in the complex domain in that part of the drive.

Mines Safety Significant Incident Report No. 200 continued

Actions required

Managers and supervisors are reminded of the importance of conducting detailed hazard identification and risk assessments during planning, including ground control measures.

It is essential, at all stages of mining, that mine design, planning and scheduling, including the design of ground stabilisation, is undertaken with appropriate input from competent persons.

A safe system of operation includes:

- adopting an adequate factor of safety to the design of support systems for excavations in the different geotechnical domains, taking into account the variability of the various input factors that may influence the factor of safety
- identifying, by routine geotechnical mapping, changes in rock-mass conditions
- risk-based performance monitoring and control of the quality of installed ground support systems risk-based performance monitoring and assessment of the behaviour of underground excavations and installed support systems under the influence of stress in varying geotechnical domains

- only commencing development or stoping work once written workplans, instructions and standards are issued, approved and signed off by relevant competent persons
- training all underground workers and assessing their understanding of the concepts of “supported” and “unsupported” ground.

Note: Underground inspections by shift bosses and supervisors are only one part of the monitoring process at an underground mine, and such inspections cannot be considered to be the only means of monitoring excavations. Daily inspections will not always detect the underlying geological structures that can affect ground stability.

Further information

Visit www.dmp.wa.gov.au/ResourcesSafety for information on occupational safety and health in the resources sector.

MINES SAFETY SIGNIFICANT INCIDENT REPORT NO. 201

LOSS OF CONTROL FOLLOWING FAILURE OF STEERING TIE ROD COUPLING ON EWP

ISSUED: 30 JUNE 2014

Summary of incident

The steering tie rod coupling on a boom lift elevating work platform (EWP) failed while being driven at low speed on a flat hard surface inside a construction compound. The EWP was in motion when the operator heard a popping noise and noticed he had lost control of the steering. Fortunately, there were no injuries.

Detailed metallurgical analysis and examination of the steering component showed that it was made of low quality steel containing internal defects, and this had significantly reduced the strength and toughness of the tie rod coupling.

During a subsequent investigation, it was found that an identical steering coupling on a similar machine had failed at the base of a ramp when the EWP was being off-loaded from a truck. The investigation also found that the tie rod couplings on similar EWPs on site had been replaced several times over the past few years.



Damaged steering tie rod coupling from the EWP

Probable causes

Direct

- An inferior tie rod coupling was used as a replacement component on the steering arm of the EWP.

Contributory

- The third-party tie rod coupling used was visually matched to the size and thread requirements of the original part, but not to the rating specification or part number of the original equipment manufacturer (OEM).

Mines Safety Significant Incident Report No. 201 continued

Actions required

EWPs are routinely loaded on and off the back of trucks, and there is the potential for a significant incident if a steering component fails during this process. To reduce this and other risks associated with loss of control, the procedures for maintenance and repair of plant should:

- indicate a means of checking the rating of original or third-party components to ensure:
 - OEM's specifications are met and the spare parts supplied are fit for purpose
 - where specifications are not met, there is a system to remove plant from use until the part has been replaced
- require the investigation of recurrences of similar incidents or repairs to plant to establish whether there is a common underlying cause that should be addressed.

Employers are reminded of their obligations under the Mines Safety and Inspection Regulations 1995:

- Under r. 6.21 (b), an employer must ensure that measures are provided to prevent, as far as practicable, unauthorised interference, alteration or use of plant that is capable of making the plant hazardous or a greater hazard.
- An employer also has duties under r. 6.22 when plant is damaged or repaired.

Further information

Visit www.dmp.wa.gov.au/ResourcesSafety for information on occupational safety and health in the resources sector.

MINES SAFETY SIGNIFICANT INCIDENT REPORT NO. 202

FALL FROM CRANE DECK RESULTS IN SERIOUS INJURY

ISSUED: 30 JUNE 2014

Summary of incident

A crane operator and worker were installing counterweights on a mobile crane, which had been moved into position for a maintenance task. The worker climbed the access ladder to the deck of the crane to guide the counterweight. He lost his balance and fell almost 2 metres from the deck to the ground below, breaking his collarbone.



The ladder used to access the crane deck

Probable causes

Direct

- The worker was working at height.

Contributory

- Access to the deck of the crane was poorly designed. The ladder was narrow and there were limited hand holds above the deck.
- The risk of falling from height was not identified for the task.
- There was no training in the safe work procedure for working at heights.

Actions required

Mine operators are reminded of the potential risks of falling from height, including those associated with mobile plant.

- Review equipment, tasks and site practices to identify working at height hazards.
- Apply the hierarchy of control to ensure the most effective controls are implemented.

Further information

Visit www.dmp.wa.gov.au/ResourcesSafety for information on occupational safety and health in the resources sector.

MINES SAFETY SIGNIFICANT INCIDENT REPORT NO. 203

OPERATOR CRUSHED BY MAST OF FORKLIFT TRUCK - FATAL ACCIDENT

ISSUED: 21 JULY 2014

Summary of incident

A worker was fatally injured when he was trapped between the mast and frame of a forklift truck.

The forklift had bottomed-out and was stuck on the crest of a ramp that provided pedestrian access into a process building. The worker, who had a high risk work licence for operating a forklift truck, planned to lift the front of the forklift with a mobile crane to release it. He had positioned himself between the mast and frame of the forklift truck to attach a lifting sling to the mast. He was not using the marked slinging points.

It appears that the control level for the mast's tilt cylinder was inadvertently activated, causing the mast to close and crush him.

Probable causes

Direct

- The worker positioned himself between the mast and the frame of the forklift, in a marked crush point.

Contributory

- The forklift became stuck after it was driven onto a location where there was inadequate clearance to operate.
- The sling was not positioned on the marked slinging points.

Actions required

Mine operators are reminded of the importance of maintaining safe systems of work when operating mobile plant. They should ensure that:

- all tasks are risk assessed and controls are implemented
- management plans are in place for the safe operation of mobile plant
- workers are made aware of site-specific conditions in addition to holding the relevant high risk licence, where required.

Further information

Worksafe WA has prepared a guidance note for working safely with forklifts, available at www.commerce.wa.gov.au/worksafe

The general standards and operation of forklift trucks is addressed in Australian Standard AS 2359 *Powered industrial trucks*.

MINES SAFETY SIGNIFICANT INCIDENT REPORT NO. 204

WORKER SERIOUSLY INJURED BY MOVING PARTS

ISSUED: 30 JULY 2014

Summary of incident

A stemming bucket mounted on an integrated tool carrier (ITC) was being used to backfill drill holes. A worker in the area saw that the material from the bucket had stopped flowing. Using hand signals to communicate his intentions to the operator, he approached the machine to examine the discharge outlet on the bucket. The operator remained in the ITC cab with the machine running.

During the examination, the worker placed his hand inside the discharge outlet. The device controlling material flow through the outlet activated and several of the worker's fingers were severed by moving parts.

Probable causes

Direct

- The worker's hand was exposed to moving parts in the flow control device.

Contributory

- No mechanism was fitted to prevent oversized material from blocking the discharge outlet.
- The flow control device was not isolated.
- Potential pinch points were unguarded.
- There was no procedure for clearing blockages.

Actions required

Mine operators are reminded of the importance of maintaining safe systems of work for tasks carried out near energised plant. They should ensure that:

- all potential pinch points are effectively guarded
- procedures for energy isolation are complied with.

Further information

Visit www.dmp.wa.gov.au/ResourcesSafety for information on occupational safety and health in the resources sector.

MINES SAFETY SIGNIFICANT INCIDENT REPORT NO. 205

WORKER INJURED BY MOVING PARTS ON AUTOMATIC ROTARY SAMPLE COLLECTOR

ISSUED: 19 AUGUST 2014

Summary of incident

A worker operating a 12-canister automatic rotary sample collector in an outload facility identified that the bag inside one of the sample canisters was not in the correct position. The worker opened the top inspection hatch and put his left arm into the canister to adjust the bag. At this point the sampler automatically rotated one increment. The worker activated the emergency stop button using his right hand when he heard the sampler start. However, his left arm was trapped between the fixed frame of the sampler and the moving canister, and he received crush injuries.



Example of 12-canister automatic rotary sample collector showing the top inspection hatch

Probable causes

Direct

- The worker inserted his arm into the sample collector where it was exposed to moving parts.

Contributory

- Although there was an automatic isolating switch on the door to the canister recess, the top inspection hatch was not similarly protected. This inspection hatch (guard) was not locked as required in the manufacturer's instructions.
- The worker was new to this plant and was not under direct supervision at the time of the incident.
- The worker had not been assessed as competent before being assigned to operate the sampler.

Actions required

Mine operators are reminded of the importance of maintaining a safe system of work for tasks carried out in the vicinity of energised plant. They should ensure that:

- all reasonably foreseeable hazards associated with the plant are identified and, so far as is practicable, workers are not exposed to those hazards
- manufacturer's instructions for the safe use of plant are available and understood by those using them
- workers are adequately supervised to enable them to perform their work safely
- workers are assessed as competent before operating plant.

Further information

Visit www.dmp.wa.gov.au/ResourcesSafety for information on occupational safety and health in the resources sector.

MINES SAFETY SIGNIFICANT INCIDENT REPORT NO. 206

FORKLIFT STRUCK BY TRUCK WHILE UNLOADING

ISSUED: 22 SEPTEMBER 2014

Summary of incident

Two forklift operators were tasked with unloading 1.2 tonne ammonium nitrate bulka bags from a triple roadtrain. As one of the forklift operators was unloading the final bulka bag from the second trailer, the roadtrain was moved forward at the request of the other forklift operator. The rear gate of the second trailer collided with the bulka bag and forklift tyres, and the forklift rolled onto its side.

The forklift operator was wearing his seat belt and, fortunately, received only minor injuries.



Probable causes

Direct

- The roadtrain was moved while being unloaded.

Contributory

- The forklift was in the roadtrain's path.
- A communications protocol had not been established between the roadtrain driver and the forklift operators, and between individual forklift operators.
- The forklift operators did not comply with the site's standard work procedures (SWPs) for unloading a roadtrain.
- The roadtrain driver had not been site inducted.

Actions required

Mine operators and supervisors are reminded of the importance of maintaining safe work procedures for tasks involving mobile plant. They should ensure that:

- communication is maintained when using mobile plant for loading and unloading tasks
- site SWPs are reviewed and training is provided for tasks relating to loading and unloading of delivery trucks
- contractors are inducted before undertaking work on site.

Further information

Visit www.dmp.wa.gov.au/ResourcesSafety for information on occupational safety and health in the resources sector.

DANGEROUS GOODS SAFETY SIGNIFICANT INCIDENT REPORT NO. **01-14**

SULPHURIC ACID LEAK DAMAGES STORAGE FACILITY

ISSUED: 22 AUGUST 2014

Summary of incident

A mine site in care and maintenance for several years had an onsite tank farm comprising four 2 million litre tanks containing 98% sulphuric acid. Over time, a slight weep of acid from a tank's nozzle flange leaked about 250 L of sulphuric acid into the concrete secondary containment bund. The bund sump dissolved, leaking acid into the underlying soil. The soil reacted with the acid and expanded, with an increase in the ground level of up to 500 mm, severely damaging parts of the bund and its walls, and the pipework foundations. The bund wall was repaired, and damaged areas of the bund floor sealed with limestone. The pipework between tanks was interconnected to allow acid to be diverted between tanks in an emergency. The frequency of facility inspections was increased. However, hidden damage to the storage tank was revealed about 11 months later when the tank floor apparently split from the wall and there were leaks from the structure's ring beam. About 3,000 L of sulphuric acid was released in the second spill and contained in the bund. The spill was neutralised using limestone, and the reaction product (gypsum) removed and disposed of.

About four weeks later, corrosion and the physical stress from the heaving of the foundations and supports appears to have caused a valve linking the four tanks in the farm to fracture.



Limestone (piles of pale material) was used to neutralise the second acid spill and support the bund walls

Between 250,000 and 500,000 L of sulphuric acid escaped into the secondary containment. Again, the acid spill was neutralised and the reaction product removed and disposed of.

A sulphuric acid loading gantry was installed at the facility and the remaining sulphuric acid removed from site. The facility was decontaminated, and significant remediation is now required. As well as the environmental impact, this series of incidents had the potential to cause serious harm to anyone in the vicinity if they inadvertently came into contact with spilled acid or there had been a catastrophic failure of tank components.

Dangerous Goods Safety Significant Incident Report No. 01-14 continued



Valve damaged during third acid spill

Probable causes

Direct

- Sulphuric acid was kept in long-term storage when not required for on-site use.
- The integrity of the storage facility was compromised.

Contributory causes

- The tank and valve design lives were exceeded, and the inspection, testing and maintenance regimes were inadequate to manage the asset's integrity.
- The material used to construct the secondary containment bund was not fit-for-purpose.
- There was no system to detect leaks.

Recommendations

The risks associated with the potential failure of storage facilities for dangerous goods should be assessed on site and addressed by applying the hierarchy of control. For mines sites under care and maintenance, consider the following actions.

Eliminate the hazard

- Remove or dispose of excess or unnecessary inventory of dangerous goods.

Isolate the hazard

- Ensure construction materials used in infrastructure to contain dangerous goods are compatible and resistant to the intrinsic hazards posed by the substance.

Note: Concrete without an acid-proof coating is not sufficient to contain acids. Some bitumen products are effective, and there are propriety products designed for the same purpose.

Use engineering controls

- Implement a risk-based inspection, testing and maintenance regime to ensure infrastructure containing dangerous goods is fully operational at all times.
- Install means to monitor for leaks (e.g. undertank monitoring, measure liquid levels in tanks).

Further information

Visit Resources Safety's website at www.dmp.wa.gov.au/ResourcesSafety for a guide to evaluating asset integrity management systems (AIMSs) that may be useful, as well as information on the reporting of dangerous goods incidents.

PETROLEUM SAFETY SIGNIFICANT INCIDENT REPORT NO. **01/2014**

WORKER INJURED IN FALL FROM HEIGHT DURING TRANSFER FROM OFFSHORE PLATFORM TO SUPPORT VESSEL

ISSUED: 14 AUGUST 2014

Summary of incident

A worker fell about 4 metres after a handrail broke away from its support brackets. He had been standing on the lower access landing of the normally unmanned offshore platform, awaiting transfer from the platform to the support vessel.

The worker struck the starboard aft gunwale of the support vessel before falling into the sea. His personal flotation device (PFD) failed to inflate on contact with water.

The worker was retrieved by the crew of the support vessel and taken to the local medical facility for assessment. He was then flown to a city hospital for treatment of chest injuries and a fractured lower leg.

A general visual inspection (GVI) to assess the structural integrity of the platform top side had been completed about 12 months before the incident and had identified moderate corrosion of the handrails.



Photographs showing location of handrail attachments that failed (top) and fall path from landing (bottom)

Petroleum Safety Significant Incident Report No. 01/2014 continued

Probable causes

Direct

- The handrail could not support the load imposed on it by an individual person. It failed at the point of attachment (weld) to the platform base, exposing the person to the hazard of falling from height.

Contributory

- Testing of the handrail had not been conducted in accordance with Australian Standard AS 1657:2013 *Fixed platforms, walkways, stairways and ladders – Design, construction and installation* therefore its true structural integrity was unknown.
- The PFD did not activate because a gas cylinder had not been screwed tightly into place following the last inspection of the device. The incorrect installation had not been detected.

Actions required

In this incident, two control measures failed:

- The handrail was designed to prevent falls from height.
- The PFD was provided as protective equipment to support the wearer should they fall into the sea. Fortunately, the worker remained conscious otherwise the consequences could have been more serious.

The following actions are recommended.

Steelwork

Although steelwork may be fit for purpose when it is newly installed, the corrosive conditions in the offshore operating environment mean that a more rigorous approach should be adopted when assessing structural integrity. This includes:

- the identification of potential risks associated with failure
- an appropriate inspection, testing and maintenance regime.

Using GVIs alone is not a suitable method for assessing the integrity of steelwork and attachments because it does not allow the structural material thickness to be determined.

Monitoring strategies for structural integrity should include thickness measurements using:

- non-destructive examination (NDE) technologies
- fit-for-purpose testing (e.g. load testing).

The testing apparatus and a suitable process are not defined in AS 1657 and therefore a suitable process and procedure should be developed, verified and implemented.

Personal flotation devices

The failure of PFDs to inflate due to incorrect installation of CO₂ cylinders is common, and has been documented by PFD manufacturers as well as the Australian and US military.

The problem is readily addressed by using a simple checklist to inspect PFDs before they are issued to workers.

MINES SAFETY BULLETIN NO. 111

WHEN CAN A CONFINED SPACE BE RECLASSIFIED?

ISSUED: 19 JUNE 2014

Background

Recent safety inspections by the Department of Mines and Petroleum have revealed that a number of sites have reclassified, or declassified, their confined spaces to non-confined spaces. While the process of reclassification is possible under the definition of Australian Standard AS 2865 *Confined spaces*, the Department has identified several cases of unsafe and hence non-compliant practices. It is extremely important that reclassification of confined spaces is undertaken with full consideration of all inherent and introduced hazards, and the risks associated with these spaces.

Note: In this bulletin, the terms reclassify and declassify are used interchangeably.

A confined space is a description of physical characteristics of a workspace not intended or designed for human occupancy. Confined spaces may be hazardous as a result of insufficient oxygen, toxic or poisonous air, or an explosive atmosphere. These hazards may not be obvious as some gases are odourless and colourless.

Confined spaces may also have physical hazards that cause a worker to fall, be crushed or buried, or drown. It is critical that tasks completed inside or around the confined spaces are managed appropriately to prevent harm or injury.

Any entry to a confined space must meet all the mandatory requirements set out in AS 2865. If not managed appropriately, entry to confined spaces can be extremely hazardous. The risk is even greater if a confined space is improperly reclassified as there is a general perception that once a confined space is reclassified the risks are eliminated - this may not be the case. For instance, irrespective of whether a space has been reclassified or not, toxic gases may be released from sludge or residue; or hazardous atmospheres may slowly build up over time inside the space, such as toxic carbon dioxide gas being produced as a steel vessel rusts.

While atmospheric hazards or engulfment are the major cause of serious injury and fatalities in confined spaces, other hazardous conditions may be present during entry or exit, or introduced by tasks being conducted inside the space.

Hazardous services associated with a vessel or confined space are a further factor that must be eliminated when reclassifying confined spaces. They include hydraulic, pneumatic, electrical, chemical, mechanical, thermal and other types of energy.

This bulletin provides a set of requirements for the Western Australian mining industry to follow when reclassifying a confined space.

Mines Safety Bulletin No. 111 continued

Summary of hazard

Some mine sites have incorrectly reclassified their confined spaces to non-confined spaces.

Contributory factors

When reclassifying confined spaces:

- AS 2865 *Confined spaces* is not always followed
- a safe system of work is not always maintained.

Actions required

Mine operators are reminded of the importance of developing safe systems of work that identify hazards and risk controls for work in and around confined spaces.

- Ensure any processes used to reclassify a confined space comply with the requirements and principles detailed in this bulletin.
- Ensure a safe system of work is in place and maintained, and arrangements for the use, cleaning and maintenance of plant do not expose employees to hazards, as imposed by the general duty of care requirements of section 9 of the *Mines Safety and Inspection Act 1994*.

For a confined space to be reclassified as a non-confined space:

- Eliminate all inherent hazards, including asphyxiation, fire or explosion, and engulfment.

Note: The control or temporary elimination of inherent hazards alone is not sufficient to reclassify a confined space.

- Remove all hazardous services.

For example, physically isolate devices with stored energy or reduce them to a zero-energy condition and disconnect from their power sources.

- Identify and eliminate or mitigate all other reasonably foreseeable hazards associated with the confined space and the tasks being conducted.

For example, complete a risk assessment for all tasks or activities to be conducted inside or around the confined space, and implement a safe system of work.

- Significantly change the physical characteristics of the space.

For example, eliminate the enclosed or partially enclosed nature of the vessel, such that a safe atmospheric condition is maintained without the need for any risk control measures (e.g. forced ventilation).

For example, modify any restricted entry and exit to improve access and reduce emergency response time.

Note: Vessels such as classified plant and pressure vessels are unlikely to be reclassified because they cannot be structurally modified. These vessels will remain confined spaces.

Further information

Visit www.dmp.wa.gov.au/ResourcesSafety for information on occupational safety and health in the resources sector.

MINES SAFETY BULLETIN NO. 112

QUALITY CONTROL ISSUES WHEN INSTALLING FRICTION ROCK STABILISERS WITH AIRLEG DRILLS

ISSUED: 30 JULY 2014

Summary of hazard

Ground reinforcement is applied to an excavation's perimeter to limit movement of the rock mass. Controlling the potential for hazardous ground movements is essential to prevent harm to anyone who enters an underground mining area and to prevent damage to plant and other infrastructure.

A friction rock stabiliser is a form of rock bolt that has a slotted high-strength steel tube and matching face plate. Once properly installed, friction stabilisers exert radial pressure against the surrounding rock over the length of the tube, reducing the potential for blocks of rock to detach and fall into the underground excavation.

Recent site inspections of airleg-installed friction stabilisers have highlighted issues with the quality of components supplied and installation practices, including quality control testing. As for any ground control measure, unplanned rockfalls can result if it is not supplied and installed to suppliers' recommendations and mine design requirements.

Contributory factors

The following issues have been identified.

Quality of components

- The diameter of some friction stabilisers exceeds the specified size by up to 2 mm.
- Drill bit gauges are not used consistently to ensure drill bits are the correct size to achieve the required hole diameters — some bit diameters are up to 2 mm larger than the specified size.

Installation issues

- The diameters of some holes are up to 3 mm larger than the tolerance limit set by the supplier — this could reflect variations in the bit size, rock properties, or drill's operating capacity (e.g. speed, pressure and flushing capacity).
- In some instances, although the size of the friction stabiliser and drill hole met the supplier's specifications, installation was unsuccessful — airleg drills may not have sufficient power.

Mines Safety Bulletin No. 112 continued

Testing practices

- Quality control testing (e.g. pull tests) of airleg-installed friction stabilisers is not always conducted to industry standards — possibly because it is a difficult task without appropriate resources. Without proper testing, however, mine operators have limited knowledge of the standard of work and potential for unplanned rockfalls.

Actions required

Suppliers

The suppliers of friction stabilisers and drill bits have a responsibility to provide:

- confirmation that the product, as supplied, has undergone quality control against manufacturing specifications
- correct information for each product.

Those supplying friction stabilisers also have a responsibility to indicate, with tolerance limits:

- how each product should be installed
- the methods that should be used to establish whether the supplied product has been properly installed.

Mine operators

The mine operator has primary responsibility for ensuring that the mine design and suppliers' requirements are met, and associated tasks are factored into safe systems of work.

Examples of actions to satisfy these requirements include:

- undertaking quality control checks of supplies (e.g. friction stabilisers, drill bits)
- issuing drill bit gauges to airleg drill operators with clear instructions on when and how to use them
- undertaking quality control checks of the final hole diameters
- undertaking quality control checks of operating airleg drills (e.g. supply of air and water, hardware function)
- undertaking appropriate pull testing of the installed friction stabilisers to determine that they meet the prescribed ground reinforcement design requirements
- ensuring that those conducting quality testing understand the hazards and have the capacity to follow associated safe systems of work.

Further information

Please refer to the Department's *Geotechnical considerations for underground mines – guideline* available at www.dmp.wa.gov.au/documents/Factsheets/MSH_G_GeotechnicalConsiderationsUGMines.pdf

MINES SAFETY BULLETIN NO. 113

REDUCING THE POTENTIAL FOR FALL- BACK ARRESTER ARMS ON TYRE HANDLERS TO BECOME PROJECTILES

ISSUED: 15 AUGUST 2014

Summary of hazard

Tyre handlers are commonly used to assist with the repair and replacement of tyres on earth-moving equipment. Over the last three years, four tyre handler incidents have been reported that involved failed components on fall-back arrester arms. Stored energy is released when the arrester arm fails and components may become projectiles. The trajectories and distances travelled by the components are unpredictable, and workers can be harmed and plant damaged several hundred metres away.



Example of fall-back arrester arm showing components that can become projectiles

Mines Safety Bulletin No. 113 continued

Contributory factors

Investigations into these incidents have identified a number of issues.

Equipment

- Poor design (e.g. positioning of fall-back arrester arms).
- Equipment not certified or rated.
- Poor material selection (e.g. material strength insufficient for task demands).
- Lack of quality control during fabrication leading to unpredictable weld penetration.
- Lack of measures (e.g. cable lanyard) to eliminate or reduce the risk of arrester arm components becoming projectiles following failure.

Working procedures and practices

- Instructions of original equipment manufacturer (OEM) not followed with respect to use and maintenance of the tyre handler, leading to localised structural damage and accelerated wear of fall-back arrester arm components and joints. Improper use of tyre handlers includes:
 - allowing tyres to fall back onto the grip release
 - using grip plates or arms to break the bead seal or manoeuvre tyres.
- Visual inspection alone is not sufficient to identify the potential for component failure.
- Lack of awareness of the hazard of stored energy associated with tyre handlers.

Actions required

Mine operators and maintenance supervisors are reminded of the importance of developing safe systems of work and appropriate maintenance and inspection regimes based on OEM guidance and a risk assessment.

The following measures are recommended:

- Ensure tyre handlers are fit for purpose.
- Define load ratings that reflect the risk assessment and site requirements.
- Follow OEM guidance for the use, maintenance and inspection of tyre handlers.
- Establish an inspection regime that includes non-destructive tests of welded attachments.
- Review tyre handler operating procedures and training requirements to ensure workers:
 - can recognise the hazard of stored energy
 - are competent to undertake assigned tasks safely.

Further information

Visit www.dmp.wa.gov.au/ResourcesSafety for further information on occupational safety and health in the resources sector, including the following mining safety alerts:

- *Mines Safety Significant Incident Report No. 175 Tyre handler's fall-back arms become projectiles*
- *Mines Safety Significant Incident Report No. 124 Tyre inflation – fatal accident*
- *Mines Safety Bulletin No. 89 Earth moving tyres and use of tyre handling machinery*
- *Mines Safety Bulletin No. 9 Off-highway mobile earth moving equipment – tyre maintenance practices*

MINES SAFETY BULLETIN NO. 114

COMPLIANCE REQUIREMENTS FOR MULTI-PURPOSE MOBILE PLANT

ISSUED: 22 SEPTEMBER 2014

Background

Purpose-built mobile cranes and mobile elevating work platforms (MEWPs) are designed, manufactured, tested, approved and maintained for a single purpose.

Telescopic handler machines (THMs), integrated tool carriers (ITCs) and other multi-purpose mobile plant can potentially be configured with jib attachments for lifting suspended loads or work platform attachments for lifting personnel.

Multi-purpose mobile plant presents additional issues for duty holders to ensure that they fully comply with the requirements of the *Mines Safety and Inspection Act 1994* (the Act) and Mines Safety and Inspection Regulations 1995 (the regulations).

The Department of Mines and Petroleum's current interpretation of duty holders obligations is outlined in articles in *Resources Safety Matters* magazine published in September 2013 and January 2014.

This mines safety bulletin provides duty holders with further information on:

- what the Department considers as enforceable in terms of compliance with the regulations
- the Department's policy and approach to enforcement.

Summary of hazard

Typically, incidents with multi-purpose mobile plant involve one or more of the following factors:

- interaction of moving machinery with personnel (e.g. crushing, shearing, entanglement, impacts)
- machine instability, particularly while under load (e.g. roll-over, overloading)
- loss of control of the load (e.g. attachments disengaging)
- release of high-pressure hydraulic fluids (e.g. failure of hoses or fittings)
- equipment fires (e.g. engine, hydraulics, electrical)
- contact with fixed structures
- contact with live electrical conductors (e.g. overhead power lines, cable trays, conduits)
- training and competency issues (e.g. operator errors)
- quality of job preparation (e.g. machine prestart checks, job hazard analysis, selection of fit-forpurpose machine).

By ensuring that machinery fully complies with the relevant Australian standards, duty holders should achieve the minimum required with regard to the "engineering" part of the "heirarchy of control". In most situations, but not necessarily all, this should ensure the equipment is fit for purpose. However, to ensure a safe working environment, duty holders must also address the need for safe systems of work (procedures) and competent personnel.

Mines Safety Bulletin No. 114 continued

Contributory factors

Non-compliant THMs and ITCs continue to be observed at some Western Australian mining operations. There also appears to be general confusion and uncertainty regarding the Department's minimum requirements for a variety of reasons.

- The current legislation from 1994 and 1995 does not adequately address these classes of equipment. When the Act and regulations were being drafted, such equipment was relatively rare in the Western Australian mining industry.
- Indiscriminate and uncontrolled use of underground loader and bogger buckets as work platforms in the 1990s led to Mines Safety Bulletin No. 17 in April 1996. The bulletin promoted the use of purpose-designed elevating work platforms that comply with Australian Standard AS 1418.10 *Cranes, hoists and winches - Mobile elevating work platforms* but still allowed earthmoving buckets to be modified as work platforms under limited circumstances. The bulletin was withdrawn in 2013 since it no longer represented what was considered to be practicable.
- AS 2359.1 *Powered industrial trucks - General requirements* includes a definition for multipurpose machines but does not specify any requirements for them. Some duty holders have interpreted this reference to imply that THMs should be regulated as "duty of care" type plant rather than classified plant.
- The definition of a crane in the regulations excludes earthmoving equipment. Some duty holders have interpreted this reference to imply that an ITC fitted with a jib should be regulated as "duty of care" type plant rather than classified plant.
- AS 1418.8 *Cranes, hoists and winches - Special purpose appliances* allows earthmoving equipment to be used for lifting freely suspended loads, with or without a jib attachment, as a "secondary function" under limited circumstances. However, some duty holders have interpreted this loosely and use ITCs for routine crane operations, which is not the intent.
- In the past, fully compliant multi-purpose mobile plant and attachments were not readily available and therefore it was not considered practicable to fully comply. As technology has improved and new products have become commercially available, full compliance is now considered to be practicable in most circumstances.

Actions required

Mining operations operating multi-purpose mobile plant, whether permanently located on site or itinerant, are encouraged to adopt the following approach.

- Conduct a compliance audit of existing multi-purpose mobile plant, determine any gaps in compliance and develop a plan and schedule to move towards full compliance.
- Where the audit has determined that equipment does not fully comply, conduct an appropriate risk assessment to determine which interim controls can be put into effect to protect personnel from potential harm until full compliance is achieved.
- Review and, if necessary, update classified plant management systems and procedures to ensure that all multi-purpose mobile plant used at the mine is fully compliant if it is intended to be used with crane or elevating work platform type attachments.

As a minimum, the following criteria should be included in the compliance audit to ensure compliance with regulatory provisions.

Telescopic handler machines (THMs)

- All THMs manufactured after October 2007 must comply with AS 1418.19. Such machines must include a compliance plate and be provided with sufficient documentation to demonstrate compliance.
- THMs that can slew more than 5 degrees must comply with AS 1418.5 *Cranes, hoists and winches - Mobile cranes* (EN 13000:2010, MOD) as well as AS 1418.19.
- Any attachments used with THMs, including jibs and work platforms, must comply with the requirements of AS 1418.19 and be approved for use by the original equipment manufacturer (OEM) for the particular model of THM.
- THMs used to support work platform attachments must comply with AS 1418.10.
- When a THM is to support a work platform attachment, if the boom length is, or can be, greater than 11 metres then a WP class high risk work licence is required to operate. Furthermore, the regulations require the machine to be managed as registered classified plant. The requirements of AS 2550.10 *Cranes, hoists and winches - Safe use - Mobile elevating work platforms* should also apply.
- When a THM is used to support a jib for lifting suspended loads, if the rated capacity is greater than 3 tonnes then a CN class high risk work licence is required. Furthermore, if the rated capacity is greater than 10 tonnes, the regulations require the machine to be managed as registered classified plant. The requirements of AS 2550.5 *Cranes, hoists and winches - Safe use - Mobile cranes* should also apply.

Integrated tool carriers (ITCs)

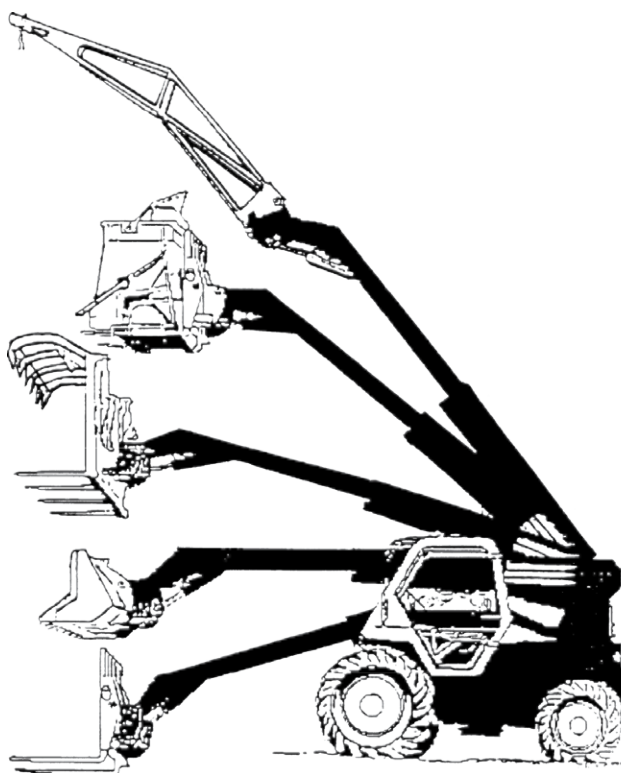
- Any attachments used with an ITC must be approved for use by the OEM for the particular model of ITC.
- ITCs used to support jib attachments for lifting freely suspended loads must comply with AS 1418.8.
- ITCs and earthmoving equipment should only be used for lifting freely suspended loads under limited circumstances (see AS 1418.8, clause 5.1). For routine crane operations, a purposebuilt mobile crane complying with AS 1418.5 should be used.
- When an ITC is used to lift freely suspended loads, if the rated capacity is greater than 3 tonnes then a CN class high risk work licence is required to operate. Furthermore, if the rated capacity is greater than 10 tonnes, the regulations require the machine to be managed as registered classified plant. The requirements of AS 2550.5 should also apply.
- When an ITC is used to support a work platform attachment, it must comply with AS 1418.10.
- When an ITC is used to support a work platform attachment, if the boom length is greater than 11 metres then a WP class high risk work licence is required to operate. Furthermore, the regulations require the machine to be managed as registered classified plant if the platform movement is more than 2.4 metres. The requirements of AS 2550.10 should also apply.

Mines Safety Bulletin No. 114 continued

- CN HRW licence if rated lifting capacity > 3 tonnes
- Registration of plant if rated lifting capacity is > 10 tonnes
- Duty of care applies if rated lifting capacity ≤ 10 tonnes
- Verification of competency

- WP HRW licence and registration of plant if boom length ≥ 11 metres
- Duty of care applies if boom length < 11 metres
- Verification of competency

- No HRW licence
- Duty of care applies
- Verification of competency



High risk work licence and other requirements for operators of telescopic handlers

Further information

Resources Safety Matters magazine,
www.dmp.wa.gov.au/ResourcesSafety

- Vol. 1 No. 3, September 2013, pages 30-31
- Vol. 2 No. 1, January 2014, pages 39-41

Australian Standards, www.standards.org.au

- AS 1418.5:2002 *Cranes, hoists and winches - Mobile cranes*
- AS 1418.8:2008 *Cranes, hoists and winches - Special purpose appliances*

- AS 1418.10:2011 *Cranes, hoists and winches - Mobile elevating work platforms*
- AS 1418.19:2007 *Cranes, hoists and winches - Telescopic handlers*
- AS 2550.5:2002 *Cranes, hoists and winches - Safe use - Mobile cranes*
- AS 2550.10:2006 *Cranes, hoist and winches - Safe use - Mobile elevating work platforms*

Telescopic Handler Association of Australia,
www.tsha.com.au

- Information sheets on a variety of topics



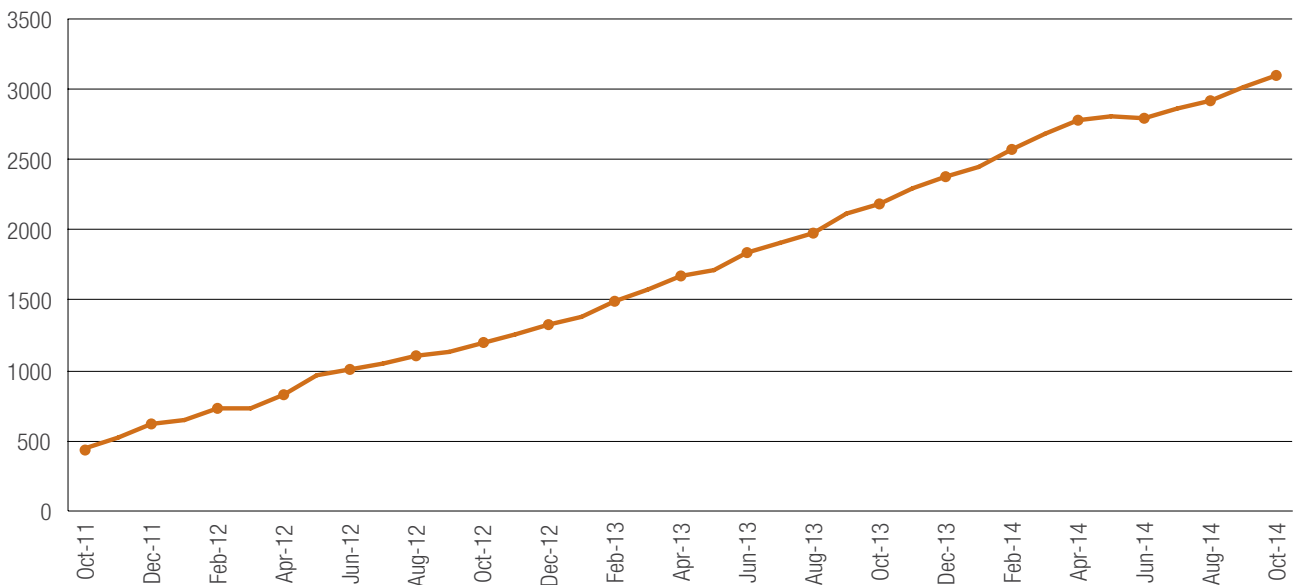
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HEAD OFFICE

RESOURCES SAFETY DIVISION, DEPARTMENT OF MINES AND PETROLEUM

Street address: Level 1, 1 Adelaide Tce, East Perth WA 6004

Postal address: Mineral House, 100 Plain St, East Perth WA 6004

Telephone: +61 8 9358 8002 (Monday-Friday, 8.30 am to 4.30 pm)

Facsimile: +61 8 9358 8000

Email: ResourcesSafety@dmp.wa.gov.au

NRS: 13 36 77 (the National Relay Service is an Australia-wide telephone access service available at no additional charge to people who are deaf or have a hearing or speech impairment)

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Telephone: +61 8 9358 8002

Facsimile: +61 8 9358 8000

Email: ResourcesSafety@dmp.wa.gov.au (licensing enquiries)

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Facsimile: +61 8 9358 8000

Email: psb@dmp.wa.gov.au

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Facsimile: +61 8 9358 8000

Email: RSDComms@dmp.wa.gov.au

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If you have moved or changed jobs and are not receiving *Resources Safety Matters*, or wish to be added to the mailing list, please contact:

Safety Communications
Resources Safety Division
Department of Mines and Petroleum
100 Plain St, East Perth WA 6004

Telephone: +61 8 9358 8154

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Email: MinesSafety@dmp.wa.gov.au (general enquiries)
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 occhealth@dmp.wa.gov.au (health surveillance and biological monitoring)
 plantregistrations@dmp.wa.gov.au (plant registrations)

For a serious mining accident or incident, the mine or exploration manager must advise their District Inspector as soon as practicable.

NORTH INSPECTORATE

Street address: Level 1, 1 Adelaide Tce, East Perth WA 6004
Postal address: Mineral House, 100 Plain St, East Perth WA 6004
Telephone: +61 8 9358 8079
Email: north.inspectorate@dmp.wa.gov.au

EAST INSPECTORATE

Street address: Cnr Broadwood and Hunter Sts, Kalgoorlie WA 6430
Postal address: Locked Bag 405, Kalgoorlie WA 6433
Telephone: +61 8 9021 9411
Email: east.inspectorate@dmp.wa.gov.au

WEST INSPECTORATE

Street address: Level 1, 1 Adelaide Tce, East Perth WA 6004
Postal address: Mineral House, 100 Plain St, East Perth WA 6004
Telephone: +61 8 9358 8079
Email: west.inspectorate@dmp.wa.gov.au

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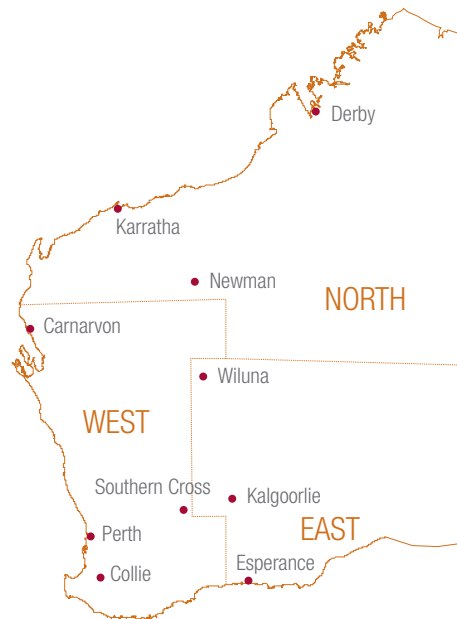
Street address: 66 Wittenoom St, Collie WA 6225
Postal address: PO Box 500, Collie WA 6225
Telephone: +61 8 9734 1222
Email: west.inspectorate@dmp.wa.gov.au

MINE PLANS

Telephone: +61 8 9358 8115
Facsimile: +61 8 9358 8000
Email: rsdmineplans@dmp.wa.gov.au

SAFETY REGULATION SYSTEM (SRS)

Telephone: +61 8 9358 8002 (select option 3)
Email: SRSManger@dmp.wa.gov.au



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Resources Safety Matters Editor
Resources Safety, DMP
Mineral House, 100 Plain Street
East Perth WA 6004

Editor: Dr Susan Ho
Enquiries: 08 9358 8149
Email: RSDComms@dmp.wa.gov.au

This publication is available on request in other formats for people with special needs.

LIST OF CONTRIBUTORS (FROM DMP UNLESS OTHERWISE INDICATED):

John Ahlin
Colin Boothroyd
Doug Brown
Tse Yin Chang
Andrew Chaplyn
Dean Cunningham
Shane Daniel
Conor Doherty
Peter Drygala
David Eyre
Aaron Graham
Marius Hanekom
Andrew Harris
Barry Healy
Phillip Hine
Su Ho
Alan Holmes
Graham James
Andrew Kempton
Greg McCauley
Pat McClusky
Mike McKay
Russell Miners
Ian Misich
Bec Moore
Junior Oding
Peter Payne
Beau Pearson
Lew Pritchard
Simon Ridge
Yadav Sharma
Richard Shedlock
Terry Siefken
Stephen Smith
Ross Stidolph
Amanda Thomson
Daisy Tristante
Neil Woodward

PHOTO ATTRIBUTION:

CD = Conor Doherty
ID = Iain Dainty
PP = Peter Payne
SH = Su Ho
TYC = Tse Yin Chang

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[ID]