

Resources

Safety matters

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Government of Western Australia
Department of Mines and Petroleum
Resources Safety

CHAMPIONING SAFETY

RENEWAL ALERT FOR
DANGEROUS GOODS
SECURITY CARD HOLDERS

PROSPECTOR SAFETY

MECHANICAL SAFETY DEVICE
TAKES CARE OF STORED ENERGY



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At the APPEA Conference held in Perth on 8 April 2014, many attending were fascinated by a paper presented by Sir Charles Haddon-Cave, the chair of a British inquiry that looked into the causes of an RAF aircraft fire and crash that killed 14 personnel in Afghanistan in 2006. This was the worst loss of life in a military accident since the Falklands War in 1982. Sir Charles explained how it was caused by serious technical failures and pointed to key learnings for all industries.

I want to share the findings he presented as they are relevant and topical to the Western Australian mining sector, and reinforce a number of issues that have been canvassed in recent times — leadership, culture and the setting of priorities around our management of occupational health and safety in our workplaces.

Sir Charles quoted Ernst Friedrich "Fritz" Schumacher, an internationally influential economic thinker, statistician and economist in Britain, who served as the Chief Economic Advisor to the UK National Coal Board for two decades. Fritz said "Any intelligent fool can make things bigger, more complex, and more violent. It takes a touch of genius — and a lot of courage — to move in the opposite direction."

The point being made was that, over time, we have made systems far too complicated for individuals to understand and implement. We should strive to make our safety management systems simpler so they are easily understood, and therefore used by those they are designed to protect.

The paper principally addressed issues related to the safety case methodology, at the heart of which is the safety management system, which is why the learnings and ideas put forward do apply to the mining industry.

Sir Charles described the key findings from the inquiry as follows:

It is vital to identify and promulgate the right principles and stick to them.

Franklin D. Roosevelt said, "Rules are not necessarily sacred, principles are."

In The Nimrod Review, I highlighted four principles which I regarded as of paradigm importance: leadership, independence, people (not just process and paper) and simplicity."

Principle of Leadership: *There must be strong leadership from the very top, demanding and demonstrating by example active and constant commitment to safety and risk management as overriding priorities.*

Principle of Independence: *There must be thorough independence throughout the regulatory regime, in particular in the setting of safety and risk policy, regulation, auditing and enforcement.*

Principle of People: *There must be a much greater focus on people in the delivery of high standards of safety and fitness for purpose (and not just on process and paper).*

Principle of Simplicity: *Regulatory structures, processes and rules must be as simple and straightforward as possible so that everyone can understand them.*

Sir Charles also stated that it is vital to foster the right safety culture and maintain it — every day, every week, and every month. A strong and effective safety culture is vital to reducing accidents.

This was summarised by taking James Reason's four-point approach and adding a fifth one:

- *A reporting culture:* an organisational climate where people readily report problems, errors and near misses.
- *A just culture:* strikes a sensible balance between a "blame culture" and a "blame-free culture"; that is, between holding people properly accountable for their acts or omissions and ensuring the right lessons are learned for the future.
- *A flexible culture:* a culture that can adapt to changing circumstances and demands while maintaining its focus on safety.
- *A learning culture:* the willingness and competence to draw the right conclusions from its safety information and the will to implement major safety reforms.
- *A questioning culture:* it is vital to ask "What if?" and "Why?" questions.

The fifth element proposed by Sir Charles Haddon-Cave is, I believe, the key to developing a strong safety culture.



Simon Ridge
Executive Director, Resources Safety
30 May 2014

MAPPING THE WAY

As part of the Department of Mines and Petroleum's commitment to stakeholder consultation, a new Ministerial Advisory Panel (MAP) was established at Resources Safety earlier this year to develop and implement major safety legislation amendments.

The first MAP meeting was held in March 2014, with former BHP Billiton External Affairs Vice-president Ian Fletcher appointed as the independent chairperson. Mr Fletcher has also recently been appointed as the chairperson of the State Government's Regional Development Council (RDC).

The panel comprises representatives from government, industry groups and unions. It provides advice to the Minister for Mines and Petroleum, Bill Marmion, on the safety legislation reform process. It also aims to increase stakeholder engagement and face-to-face briefings to ensure all stakeholders are informed and have the opportunity to provide input into the legislative change process.

It is anticipated that MAP will operate until December 2014 and meetings will be held every two months

Resources Safety Executive Director Simon Ridge said that the objective of the panel was to help deliver a best practice safety regulatory regime for the Western Australian resources sector based on practical risk management.

Advice to the Minister will focus on:

- legislative reform and the development of guidance material to support these changes
- strategies that will increase the safety capabilities of both industry and the regulator
- the process for communicating and implementing safety reforms to ensure a common understanding.



Ministerial Advisory Panel meeting held on 28 May 2014

MINISTERIAL ADVISORY PANEL

Independent Chairperson

Mr Ian Fletcher

Executive Officer

Ms Jennifer Shelton

Principal Policy Officer, Department of Mines and Petroleum

Members

Mr Justin Fromm Senior Policy Officer, Association of Mining and Exploration Companies (AMEC)

Mr Richard Kern Regional Manager, Asia Pacific Newmont, representing Chamber of Minerals and Energy WA (CMEWA)

Ms Karin Lee Manager Safety and Risk Services, Chamber of Commerce and Industry WA (CCI WA)

Mr Glenn McLaren State Organiser, OHS Advisor, Australian Manufacturing Workers' Union (AMWU)

Mr Chris Oughton Director, Kwinana Industries Council (KIC)

Mr Stephen Price State Secretary, Australian Workers Union (AWU)

Mr Lew Pritchard General Manager, Business Development, Department of Mines and Petroleum

Mr Simon Ridge Executive Director, Resources Safety Division, Department of Mines and Petroleum

Mr Greg Stagbouer Director, Australian Drilling Industry Association (ADIA)

Ms Miranda Jane Taylor Senior Policy Advisory, Australian Petroleum Production and Exploration Association (APPEA)

Mr Michael Tooma Partner, Norton Rose Fulbright

Mr Kevin Wolfe Business Development Manager, Monadelphous, representing Australian Pipeline Industry Association (APIA)

Mr Gary Wood Secretary, Mining and Energy Division WA District, Construction Forestry Mining and Energy Union (CFMEU)

Mr Nick Zovko Regulatory Policy Manager, Plastics and Chemicals Industries Association (PACIA)

GOLDFIELDS TRAGEDY SPARKS MINES SAFETY WARNING FROM MINISTER



Photo courtesy Chamber of Minerals and Energy WA

On 27 May, as Goldfields communities grieved the loss of a 63-year-old Boulder man in a mine accident south of Laverton, Mines and Petroleum Minister Bill Marmion called for a commitment to collective responsibility for resource industry safety.

“My thoughts go out to his family and friends,” Mr Marmion said.

“It’s every family’s right to be confident their loved ones will come home alive at the end of their shifts.

“Averting tragedies like this is my top priority but it’s very much the obligation of industry and industry organisations.”

In the wake of four mining deaths in five months, the Minister met with major stakeholders last month to

reiterate his concerns. Mr Marmion called on industry organisations to ensure all their members were on board.

“This fifth death is a tragic reminder there is absolutely no room for complacency,” he said following the Goldfields fatality.

“I make no comment on the circumstances of this incident but I will say in general that, with the resources sector facing tighter margins, it is the responsibility of industry to guarantee safety is never short-changed.

“Safety is an obligation on everyone in the mining industry, including contractors, but it’s incumbent on mining companies to drive the overall safety culture across their operations. Safety is not something you can outsource.”

SPARROW EXPLORES THE CHALLENGES OF RISK-BASED REGULATION

SETTING THE SCENE

As an internationally renowned expert on regulatory and enforcement agencies, Professor Malcolm Sparrow is held in high esteem by those charged with delivering legislative excellence. When the Resources Safety Division became aware that Professor Sparrow would be in Australia in May 2014, he was approached about adding Western Australia to his itinerary. The opportunity for the Department of Mines and Petroleum to engage Professor Sparrow's services was considered too good to miss. Fortunately, he had time in his hectic schedule to include Perth.

Attesting to the high regard in which the professor is held was the desire by the Public Sector Commission to collaborate with the Department to provide a wider opportunity to the Senior Executive Service across government. Consequently, a breakfast forum was arranged to precede the formal engagement by the Department. This was also attended by the Department's Executive and members of the Mining Industry Advisory Committee (MIAC) and Ministerial Advisory Panel (MAP) for safety legislation.

Professor Sparrow's topic at the Senior Executive Service breakfast presentation on 19 May was *A balanced agenda for risk control: better business and better protection, at the same time*.

He discussed how recent disasters, both man-made and natural, have sparked intense debate over the question "What should citizens expect from their governments with respect to risk control?"

How did he answer this question?

Citizens expect their governments to be:

- vigilant and quick to spot emerging threats
- nimble enough to organise around those threats
- skilful enough to suppress the threats before they do much harm.

At the same time, citizens expect regulatory policy and practice to be efficient, unobtrusive, and not to stand in the way of economic growth and prosperity.

The conundrum for regulators is how to deliver on both fronts simultaneously — providing better protection for society and a better business environment. Choosing one over the other is a political game. Delivering both at once is a serious professional and intellectual challenge.

Members of the Department's Executive, MIAC and MAP with Professor Sparrow



WHAT DOES THIS MEAN FOR THE SAFETY REGULATOR?

Professor Sparrow's visit came at a very opportune time for Resources Safety and other Divisions as the Department progresses towards risk-based regulatory frameworks for the resources sector in a number of areas. The transfer of experience and ideas around these topics will greatly assist staff involved in developing and implementing the accompanying legislation.

From 19 to 22 May, Professor Sparrow ran workshops for safety and environmental regulatory staff. He started the week with a high-level and broad-ranging lecture and discussion on recent developments in regulatory and supervisory strategies, and the challenges of effective risk-control. The challenges of organising around risks or “problems”, rather than functions and processes, were highlighted.

Professor Sparrow also examined the possible meanings of “risk-based regulation” and explored the relationship between reforms of law (e.g. red-tape reduction) and reforms of regulatory strategy and practice.

Some of the issues discussed included:

- What does it mean to adopt a risk-based approach to regulatory policy?
- What are the difficulties of performance management and measurement in the regulatory domain based on risk control?
- What is the full range of tools available to regulatory policy makers to identify and control risks?
- How can policy makers develop effective collaborative partnerships with diverse stakeholder groups?

The workshops focused on the journey to achieving regulatory excellence in risk control. There were far-ranging discussions about what this means for departmental divisions that administer risk-based legislation, such as the Resources Safety and Environment Divisions.

Discussions also covered the issues that arise when regulatory performance is measured assuming a traditional customer focus on processes or tasks, where key performance indicators (KPIs) typically measure number of actions performed (e.g. inspections, audits) as a proportion of the number planned.

The problem is that typical KPIs do not truly reflect the value of work done in controlling risk. Accounting for the performance of a risk control regulator is more about reporting how targets were chosen, what approach was adopted for projects, and how success was assessed. Ultimately, the regulator's work should help industry eliminate, reduce, mitigate, prevent and suppress threats or harms.

WHO IS MALCOLM SPARROW?



Professor Malcolm K. Sparrow is Professor of the Practice of Public Management at Harvard's John F. Kennedy School of Government. He is Faculty Chair of the School's executive program *Strategic Management of Regulatory and Enforcement Agencies*.

How did Malcolm Sparrow get started in this field? He served ten years with the British Police Service, rising to the rank of Detective Chief Inspector. He has conducted internal affairs investigations, commanded a tactical firearms unit, and has extensive experience with criminal investigation. He is also a patent-holding inventor in the area of computerised fingerprint analysis. He holds an MA in mathematics from Cambridge University, an MPA from the Kennedy School, and a PhD in Applied Mathematics from Kent University at Canterbury.

Professor Sparrow's current research interests relate to the risk-control functions of government, and the special managerial challenges that confront agencies of social regulation and law enforcement. In this work he has focused particularly on the fields of policing, environmental protection, tax administration, customs, occupational safety and health, fraud control, corruption control, financial regulation, and civil aviation safety. He has helped many regulatory agencies develop models of performance measurement, information management and analysis needed to support their risk-control operations.

His recent publications include:

- *The Character of Harms: Operational Challenges in Control* (Cambridge University Press, 2008)
- *The Regulatory Craft: Controlling Risks, Solving Problems, and Managing Compliance* (Brookings Press, 2000)
- *License to Steal: How Fraud Bleeds America's Health Care System* (Westview Press, 2000)



MORE STOPOVERS DURING 2014 EXPLORATION SAFETY ROADSHOW

One of the focuses of the Reform and Development at Resources Safety (RADARS) strategy, implemented in 2010, has been increased engagement with exploration companies through initiatives such as the Exploration Safety Roadshows. This roadshow series has been running since 2008.

The 2014 Exploration Safety Roadshow travelled to Newman for the first time, as well as its traditional stopovers in Kalgoorlie and Perth. A second Roadshow event was also added in Perth this year to accommodate the high demand. Around 200 people attended the Roadshow events held between 27 February and 10 March.

The opening presentation summarised annual exploration safety performance data reported to the Department of Mines and Petroleum's Resources Safety Division for the period covering 2008-09 to 2012-13. Some indicators have declined slightly while others have plateaued.

Regardless of the reasons for the performance trends, the Government, regulator and industry have committed to closing the gap to the aspirational goal of "zero harm", and pushing for positive cultural change. One way for companies to develop more resilient safety cultures is to audit their safety management systems — from how they are documented in head office through to their implementation in the field.

This year's Roadshow focused on the three-part mineral exploration audit first released in December 2012 following extensive industry consultation. This audit is used by mines

inspectors and is also publicly available. Resources Safety encourages self-auditing so that inspectors are auditing the auditor during site visits.

Some benefits of self-auditing include:

- an assurance that information is kept up-to-date
- identification of areas of non-compliance with legislation
- opportunity to determine targets for continued improvement
- increased knowledge and understanding of the organisation's safety management system for those involved in the audit process.

Interactive sessions covered each of the three parts of the audit — safety management systems, site operations, and drill rigs and other field activities. Resources Safety staff outlined the main findings of the last 13 audits conducted by inspectors, and clarified areas of concern raised by attendees.

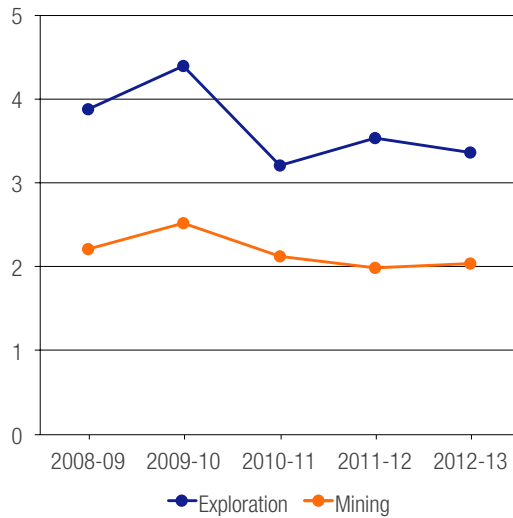
In response to requests following the 2013 Exploration Safety Roadshow, three themes ran through the discussions — management and supervision, remote travel and vehicle movement on site, and procedures and equipment.

The forum also emphasised the importance of the risk management approach for controlling the work environment, and the need for competent people, fit-for-purpose equipment and safe work practices.

Feedback collected from attendees showed that all four Roadshow events were well received, with the majority finding the sessions very worthwhile and informative.

EXPLORATION SAFETY PERFORMANCE FROM 2008-09 TO 2012-13

Serious LTIs



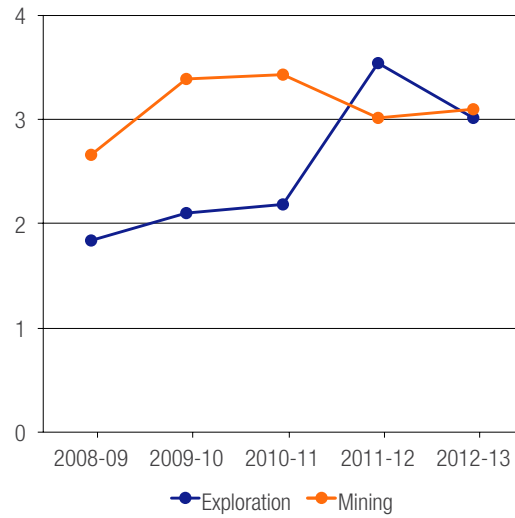
Lost time injuries (LTIs) are work injuries that result in an absence from work for at least one day or shift any time after the day or shift on which the injury occurred. For serious LTIs, the absence is for a period of two weeks or more.

In 2008-09, the serious lost time injury frequency rate (LTIFR) for exploration was 3.9 injuries per million hours worked. The rate peaked at 4.4 in 2009-10 and finished the five-year period at 3.4 injuries per million hours worked. In comparison, the serious LTIFR for mining workers fluctuated between 2.0 and 2.5 over the five-year period.

Why might the LTIFR for serious injuries be higher for exploration workers compared to mining workers? Is exploration work more dangerous than work on mines, are people less careful, or is reporting more accurate? It is not possible to answer these questions with the data set currently available, although a more detailed analysis suggests that large operations working thousands of hours per month have lower rates than those working tens to hundreds of hours per month.

It could be that most of the larger explorers are aligned with mining companies, with exploration activities directed at near-mine targets. In this situation, access to services is likely to be better than it would be for remote greenfields exploration, which is typically undertaken by small to medium explorers.

Disabling injuries



Disabling injuries are those that result in the injured person being unable to fully perform his or her ordinary occupation any time after the day or shift on which the injury occurred, and where alternative or light duties may be performed or hours restricted.

At the beginning of the five-year period, the disabling injury frequency rate was lower for exploration workers than mining workers – there were 1.8 disabling injuries per million hours worked in exploration compared to 2.6 in mining.

While the frequency rate remained similar over the period for mining workers, it increased for those working in exploration, peaking at 3.5 injuries per million hours worked in 2011-12 and ending the period at 3.0 in 2012-13, similar to that for mining.

Reporting has been a focus of the Exploration Safety Roadshows over the past few years and the increase in the disabling injuries frequency rate in exploration over the period may reflect a better understanding of reporting requirements, rather than an increase in actual injuries. However, as for serious LTIs, continued monitoring of this trend is required to establish the most likely explanation.

ROADSHOW TOOLBOX PRESENTATIONS NOW AVAILABLE

Two of the topics covered at the 2014 Exploration Safety Roadshow are now available for industry use within the workplace.

- What's happening in exploration safety in WA?
- Importance of auditing.

Visit www.dmp.wa.gov.au/8054.aspx for the complete list of toolbox presentations.

2014 EXPLORATION SAFETY ROADSHOW



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



LATEST NEWS ABOUT THE SAFETY REGULATION SYSTEM

Many processes are being streamlined for both industry and the Department of Mines and Petroleum through the Safety Regulation System (SRS). This online system allows the electronic lodgement of documents and data, providing industry with the ability to monitor the progress of submissions. About 2,000 industry users now have access to SRS.

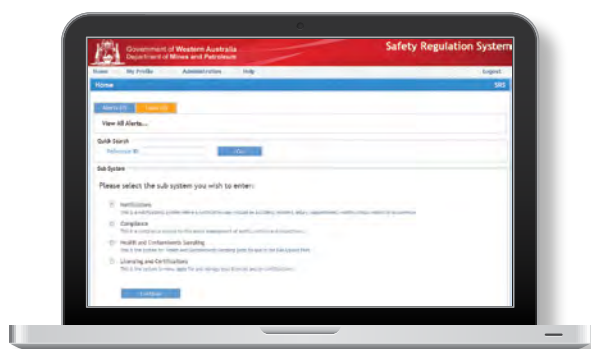
In late 2013, the Department Mines and Petroleum recruited two training officers, Stephen Best and Judy Castelino, who have initially focused on SRS training and improving communications regarding new functionality and enhancements.

Recent achievements have been the delivery of the SRS training program for Departmental staff, development of industry awareness sessions, and an update of the online help to reflect enhancements. Online video tutorials are in production to further assist SRS users.

WHAT IS CURRENTLY AVAILABLE FROM SRS?

- Notifications – online submission of injury, incident and monthly status reports
- Approvals – online submission and tracking of project management plans (PMPs) and radiation management plans (RMPs)
- Compliance – online management and response to audits, notices and inspections
- Publications – All fatality summaries released since 1943 as well as Mines Safety Bulletins and Significant Incident Reports published since 1 January 2014 are now housed within SRS, and may be searched using key words
- Other – SRS maintains the levy assessment process and is used to manage licensing and certifications

Future developments include the online reporting of statutory positions and notification of election results for safety and health representatives. These functions will deliver continued benefits to industry by simplifying and streamlining processes, and improving transparency.



WANT TO KNOW MORE?

About 100 mining industry representatives attended the half-day SRS information sessions in March 2014. These sessions showcased the current functionality of SRS and provided a glimpse into the future, as well as sharing some practical tips on how to use the system more effectively.

Sessions are scheduled to continue throughout 2014. Events in regional areas will be timed to coincide with the annual Mines Safety Roadshows in October. Anyone who uses SRS is encouraged to attend.

See page 75 for information on how to sign up for Resources Safety's weekly news alerts to receive further information.



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MIAC UPDATE

The tripartite Mining Industry Advisory Committee (MIAC) was reconvened in October 2012. Its purpose is to advise the Minister for Mines and Petroleum and the Department on matters relating to occupational safety and health in the mining and exploration industries.

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

WANT TO KNOW MORE ABOUT MIAC?

Visit www.dmp.wa.gov.au/14390.aspx for detailed information about MIAC, including its statutory functions and confirmed minutes from meetings. The minutes provide an insight into the types of issues considered by MIAC. For example, the 20 February 2014 meeting discussed topics including:

- testing for synthetic drugs in the workplace
- confined spaces on mine sites
- conveyor guarding design
- publications dealing with fatigue in the workplace.

Queries about MIAC may be sent to its Executive Officer, Doug Brown (08 9358 8157, doug.brown@dmp.gov.wa.au).

CURRENT MEMBERS OF MIAC

Chairperson

Mr Simon Ridge

Executive Director, Resources Safety Division,
Department of Mines and Petroleum

Government member

Mr Andrew Chaplyn

Director Mines Safety, Department of Mines and
Petroleum

Industry members

Mr Simon Bennison

Chief Executive Officer, Association of Mining and
Exploration Companies (AMEC)

Ms Adrienne LaBombard

Manager Health and Safety, Chamber of Minerals and
Energy WA (CMEWA)

Mr Robert Watson

Health and Safety Manager – Operations, Fortescue
Metals Group, representing CMEWA

Union members

Mr Stephen Price

State Secretary, Australian Workers Union (AWU)

Mr Tony Hall

State President, Australian Manufacturing Workers Union
(AMWU)

Mr Gary Wood

Secretary, Mining and Energy Division WA District,
Construction Forestry Mining and Energy Union (CFMEU)

Expert members

Mr Robert Allan

Principal Environmental Health and Safety Consultant,
Riskmin

Mr Christopher Davis

Mining industry consultant, currently with Sinosteel
Channar

Ms Peta Libby

Managing Director, Digirock Exploration Geologists

Mr Robert Mincham

Director, Exploration Safety Solutions

STAFF NEWS

WHO LET THE DGOS OUT?

Two new Resources Safety staff members were recently gazetted as Dangerous Goods Officers and have joined a growing group of new officers who have benefitted from the Reform and Development at Resources Safety (RADARS) strategy.

Chris Kent and Dragana Vukmirovic recently completed their initial six-month training program and qualified as Dangerous Goods Officers. In line with the RADARS principle of continuous improvement, that training has been enhanced by experience gained with the previous batch of trainees.

Director Dangerous Goods, Philip Hine, said that both officers have demonstrated great interest, enthusiasm and a willingness to learn. Interestingly, they come from quite different backgrounds — Chris from mining and Dragana from project management. They join an already diverse group administering the dangerous goods safety legislation. The group is strengthened by its capacity to draw on a wider range of skills and experiences.

Chris and Dragana are now conducting their own solo inspections and expanding their expertise to more complex sites, dangerous goods transport, security risk substances and explosives.

GRADUATE TRAINEE ON THE JOB

The latest addition to the Dangerous Goods Safety Branch in Resources Safety is Michael Wolter, who joined the Department in January 2014 as part of the Department's Graduate Trainee program. His initial six-month training included being appointed as a Dangerous Goods Officer for dangerous goods transport so he could fully participate in on-road enforcement work. He will receive the remainder of his inspector training once he completes rotations to other parts of the Department and participating agencies.

NEW BLOOD BOOSTS MINES SAFETY

Five new mines inspectors have joined the Mines Safety Branch this year, bringing the inspectorate up to a near full complement under the RADARS strategy.

The new staff includes:

- Faye Akbar – Inspector of Mines (Geotechnical)
- Phillip Bryant – Inspector of Mines (Team Leader – Plant)
- Patrick Cashmore – Inspector of Mines (Team Leader – North)
- Anna Mclean – Inspector of Mines (Mining Engineer)
- John Stacpoole – Inspector of Mines (Team Leader – Kalgoorlie)

Director Mines Safety, Andrew Chaplyn, said that the new inspectors have a diverse range of mining industry experience in both Australia and overseas. They are all committed to making a difference in safety across the State's mining operations and are keen to work with Resources Safety's many stakeholders.



Left: Dangerous Goods Officers Chris Kent, Michael Wolter and Dragana Vukmirovic

Below: Inspectors of Mines Faye Akbar, Patrick Cashmore, Phillip Bryant, John Stacpoole and Anna Mclean





VALE ANDREW EXTRACT (1952-2014)

It is with sadness that Resources Safety Matters reports that long-serving mines inspector Andrew Extract passed away on 16 February 2014.

Simon Ridge, Resources Safety's Executive Director, expressed condolences to Andrew's family, and his many friends within the Department of Mines and Petroleum, and throughout industry.

"Andrew had been with the Department for nearly 24 years, and was a well-respected member of the Mines Safety Branch," Mr Ridge said.

During this time, Andrew was a District Inspector of Mines, working in all areas of the State. Prior to joining the Department,

he had more than 15 years of industry experience in various roles. These included stints in Collie, Queensland, West Papua, and the United States, from where he originally hailed.

Andrew held qualifications in mining engineering and risk management, with a BSc degree in Mining Engineering, an MSc in Mineral Economics, and a graduate certificate in Mineral Industry Risk Management.

"He was a close friend and colleague to many of us here and will be missed for his efforts in contributing to safety in the mining industry," said Andrew Chaplyn, Director Mines Safety. "Our thoughts are with his family in Australia and the United States."

Andrew was married with two children.

EXCERPT FROM SIMON RIDGE'S EULOGY AT MEMORIAL SERVICE FOR ANDREW EXTRACT

Andrew commenced work as a District Inspector of Mines in Kalgoorlie with the then-Department of Mines during 1990.

He had up to that point worked around the world including his United States homeland, West Papua, Queensland and in Collie Western Australia.

A highly intelligent man who continued his education throughout his life, he was well suited to the role of an inspector by education, experience and ability.

Andrew was a good communicator, whether it was the mine receptionist with whom he would have a chat or the manager who needed a little direction to correct the error of his or her ways.

His relationships were based on mutual respect and a common understanding of the role of the inspector. This was particularly true of the small operators, with whom Andrew loved to engage.

He had a keen interest in the role of risk management and auditing — areas of work in which he gained postgraduate qualifications and drove the establishment of inspectorate standards.

Andrew's respect had to be earned and with that came a responsibility to be consistent, honest and open in your dealings with him. Notwithstanding this, he was still a pragmatist; he knew which battles could be won.



RESOURCES SAFETY ON THE MOVE

The Department of Mines and Petroleum's Resources Safety office is relocating to 1 Adelaide Terrace in East Perth, across the road from the department's head office.

The move is effective as of Tuesday 3 June 2014.

People who regularly do business with Resources Safety are reminded the Cannington office will be closed from 30 May 2014.

Visitors attending meetings or applying for a licence with Resources Safety must report to the Level 1 reception desk at 1 Adelaide Terrace.

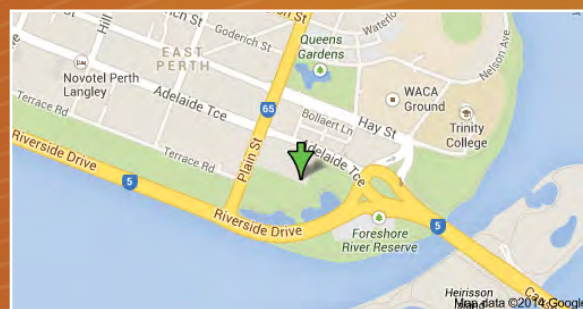
The postal address and telephone and fax numbers for staff will remain the same.

New street address:

Level 1, 1 Adelaide Terrace
East Perth WA 6004

Postal address:

Mineral House
100 Plain Street
East Perth WA 6004



Google maps



DANGEROUS GOODS AND PETROLEUM SAFETY

Over the next few months, safety reforms for dangerous goods safety regulation will be focused on:

- implementing a new branch structure within the Resources Safety Division of the Department of Mines and Petroleum
- completing the roll-out of the latest dangerous goods regulatory reforms
- completing the statutory review of the *Dangerous Goods Safety Act 2004*.

BRANCH RESTRUCTURE

Following a structural review of the Division, the Dangerous Goods Safety and Petroleum Safety Branches have been amalgamated to form a new Dangerous Goods and Petroleum Safety Branch. A key part of this change is to amalgamate the Major Hazard Facilities and Petroleum Safety staff into a new Critical Risks Section. The plan is for the new Section to formally come into being from 1 July 2014.

The change will bring together two regulatory groups that apply safety case regimes and frequently deal with similar process safety issues. The aims are to achieve a greater critical mass of expertise and a more consistent regulatory style.

Alan Gooch, the previous Director Petroleum Safety, has left the Department and I extend my thanks to him for the more than ten years' service he provided to Resources Safety. Alan was a key player behind drafting of the major hazard facility regulations and implementation of the cost recovery approach for petroleum safety services. He established the Petroleum Safety Branch in its current form and headed it for over two years.



REGULATORY REFORMS

A significant element of the dangerous goods legislative reforms that came into effect in January 2014 was the widening of scope for accredited consultants to endorse explosives and security risk substances licence applications.

Resources Safety has already conducted two intensive three-day training courses for consultants wishing to be accredited for these licence types. The objective is to ensure that consultants provide the same rigor of assessment as Departmental officers — noting that this is a condition of a consultant's accreditation. As a supplement to the training, the first few consultant submissions will be audited and feedback provided where improvements are required. Depending on demand, another training course is planned for June or July this year.

Anyone wishing to do this training should contact Resources Safety at dgconsultant@dmp.wa.gov.au

Resources Safety is heavily involved in a Safe Work Australia initiative to develop harmonised explosives legislation that will dovetail with the national model workplace health and safety legislation. It is planned to complete this process within three years, with the initial focus on developing an agreed policy framework. This approach should streamline the drafting and acceptance of the resulting legislation and supporting codes of practice.

A Strategic Issues Group (SIG) has been established to steer this project. The group has representation from all states and territories, industry and unions. I am the Department's representative on SIG.

This is a once in a generation opportunity to recast the way we think about and regulate explosives. The explosives industry has come a long way from the days of black powder and nitro glycerine, and the regulatory framework should better reflect the contemporary reality.

Western Australia is taking a lead role in drafting a code of practice to support the model act and regulations. The code will replace both Australian Standard AS 2187 *Explosives – Storage, transport and use* and the *Australian Code for the Transport of Explosives by Road and Rail* (Australian Explosives Code).

STATUTORY REVIEW OF THE DANGEROUS GOODS SAFETY ACT 2004

The statutory review of the *Dangerous Goods Safety Act 2004* commenced in February 2014 and the consultation stage is nearly complete. It included:

- letters to all facility licence holders, key government agencies and industry associations
- an on-line survey
- one-on-one meetings with key stakeholders.

Information about the review can be found on the Resources Safety webpage at www.dmp.wa.gov.au/6626.aspx

The next step is to prepare a report for the Minister for Mines and Petroleum for tabling in Parliament.

The Department would like to thank everyone who has contributed to this review.

Philip Hine, Director Dangerous Goods



TYC

MINES SAFETY

PROMOTING CONSISTENCY

The biannual Mines Safety Inspectors Forum continues to be an important element in the development of better regulatory practices in Western Australia's minerals sector. This event gives mines inspectors an opportunity to meet with colleagues from across the State to discuss their concerns and challenges, and talk about the latest developments in industry and the Department of Mines and Petroleum.

The first of the 2014 forums ran over two days in March. The general theme running through proceedings was the need for regulatory consistency across the State and throughout the resources sector.

The forum was opened by the Minister for Mines and Petroleum, Bill Marmion. The Minister acknowledged the tragedies faced by industry in the last ten months, but also recognised the good work the Department has done over the past ten years.

Mr Marmion said that, while zero harm is the ultimate goal, it is still important to recognise the ground that has been gained by both industry and the inspectorate, and also the significant milestones that have been achieved along the way.

He noted that the injury frequency rate for the resources industry has more than halved over the ten years between

2001-02 and 2011-12 — falling from 10.8 to 5. While this is an indication that the industry's safety performance is improving, it brings small comfort to those who are still being injured while working on mine sites.

Mr Marmion also spoke about the importance of Resources Safety striking a balance between encouraging better safety outcomes through educational strategies, monitoring compliance, and undertaking enforcement activities.

By identifying and championing the characteristics of resilient safety cultures, regulators can encourage operators to make the necessary changes to help ensure they are operating as safely as possible.

The second day of the forum was opened by Department of Mines and Petroleum Director General, Richard Sellers, and Resource Safety Executive Director, Simon Ridge.

Mr Sellers praised Resources Safety on its continued efforts to improve the delivery of safety regulation services. He also commended the State on being identified in the *Fraser Institute Annual Survey of Mining Companies 2013* as the world's top-rated jurisdiction for investment attractiveness, while touching base on the focus of the future for Resources Safety and the resources sector.

RESOURCES SAFETY'S FOCUS



Improving hazard awareness and control selection

Areas of concern

- Maintenance and service activities
- Hazardous manual tasks
- Fit-for-purpose



Promoting the adoption of appropriate risk management strategies

Areas of concern

- Principal hazard management plans
- Safety in design
- Assessment of competence
- Traffic management
- Job risk assessment tools (e.g. JHAs, JSAs)



Supporting effective leadership and positive cultural change

Areas of concern

- Fitness-for-work
- Management and supervision
- Safety and health representatives

The Department of Mines and Petroleum is committed to working with industry to reduce serious accidents and incidents, and provide tangible support in achieving a positive cultural change

Mr Sellers indicated that a main focus of the agency over the next five years will be to better engage with industry, community and other government agencies. By doing this, there should be increased community confidence in the Department's regulatory system, and operational practices and projects.

The Chamber of Minerals and Energy also discussed its role in the mining industry with a presentation from Adrienne LaBombard, Manager Workplace Health and Safety. Her talk covered the ways that the Department and Chamber have been working together on various events and meetings to drive safety outcomes for the mining industry.

The next Mines Safety Inspectors Forum for 2014 will be held in late August.

WHAT'S ON THE HORIZON?

At the March 2014 forum, inspectors discussed progress on the ten priority targets for mines safety in 2013-14 and what concerns need to be addressed in the next few years.

The main areas identified were:

- improving hazard awareness and control selection
- promoting the adoption of appropriate risk management strategies
- supporting effective safety leadership and positive cultural change.

These key elements will help the Department sharpen its focus on a number of important and vital targets through the 2014-15 operational plan for the mines inspectorate.

Strategies will be developed and implemented to promote consistency among the mines inspectors and explain the Department's approach to safety compliance in a practical way for industry.

Workers, employers, industry groups, regulators and government need to continue working together to make real, significant and sustained improvements to safety.

Andrew Chaplyn, Director Mines Safety

CALENDAR OF EVENTS



G-MIRM RISK MANAGEMENT
23 -27 June 2014, Perth
www.dmp.wa.gov.au/events



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



REGISTRATION OF CRANES
Industry information session
22 July 2014, Perth
www.dmp.wa.gov.au/events



DIESEL PARTICULATE FORUM
24 July 2014, Kalgoorlie
www.dmp.wa.gov.au/events



**2014 UNDERGROUND MINE
EMERGENCY RESPONSE
COMPETITION**
31 October - 2 November 2014
www.cmewa.com



THE MERC 2014
www.themerc.com.au





Registration of cranes

industry information session

Tuesday, 22 July 2014

Time: 8.30 am - 12.00 pm

Venue: Fraser Suites Perth,
 10 Adelaide Terrace, East Perth

In July 2013, the Department of Mines and Petroleum ran its first information session for industry regarding crane design issues and problems with non-compliant applications for the registration of classified plant.

Feedback was positive and Resources Safety is pleased to present the second event on 22 July 2014. It is hoped this will become an annual series.

Presenters will include the following Resources Safety staff:

- **Andrew Chaplyn**, Director Mines Safety
- **Cristina Hatton**, Inspector of Mines (Mechanical Engineer)
- **Craig Little**, Inspector of Mines (Mechanical Engineer)
- **Richard Shedlock**, Inspector of Mines (Structural)
- **Neil Woodward**, Regional Inspector Mines (North)

as well as WorkSafe representatives Lex McCulloch, Ruban Rajah and John Innes.



Program

Time	Presentations
8.30 am	Registration
9.00 am	Welcome and introduction
9.10 am	Part 1 – Regulatory framework and industry performance
9.30 am	Part 2 – Current process for registration
10.15 am	Part 3 – Incidents
10.30 am	MORNING TEA
11.00 am	Part 4 – Common non-compliances
11.30 am	Part 5 – Moving forward



Registration details

- 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
- Morning tea will be provided.



Who should attend?

The presentations are aimed at the designated persons for mining operations (i.e. those responsible for crane registration), the designers of cranes and crane-supporting structures, and crane manufacturers, who often deal with the application on behalf of the mine site.

Topics to be discussed include:

- Regulatory requirements
- Overview of crane incidents in Western Australia in past year – what have we learnt?
- Review of compliance process
- Risk identification – what is being missed in design and operations

Contact details

Resources Safety, Department of Mines and Petroleum

Telephone: 08 9358 8154 (event enquiries and publication orders)

Email: RSDComms@dmp.wa.gov.au



Diesel particulate forum

The journey to effective emissions management

Thursday, 24 July 2014

Time: 7.45 am - 4.00 pm

Venue: Kalgoorlie Overland Motel, 566 Hannan Street, Kalgoorlie

>> What's it about?

Resources Safety is pleased to host this forum to discuss the challenges associated with reducing diesel emissions and workers' exposure to diesel particulate matter (DPM). Issues associated with ventilation in underground mines will also be discussed in this context.

>> Registration details

- 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
- Morning tea and lunch will be provided.

>> Program

Time	Topic	Presenter
7.45 am	Registration	
8.15 am	Opening address	Doug Barclay, <i>Regional Inspector of Mines (East)</i>
8.30 am	Diesel particulate study of underground mines	Greg McCauley, <i>Inspector of Mines – OSH</i>
9.00 am	Diesel particulate guideline and 10 point checklist	Terry Siefken, <i>Inspector of Mines – OSH</i>
9.30 am	Diesel particulate management	Andrew Duddy, <i>Manager Occupational Health, Barrick Gold Corporation</i>
10.00 am	MORNING TEA	
10.30 am	Diesel particulate management	Greg Oldfield, <i>Manager Corporate Health, Newcrest Mining Limited</i>
11.00 am	Tracer pilot study	Silvia Black, <i>Senior Chemist and Research Officer, ChemCentre</i>
11.30 am	Emission testing	Nicholas Coplin, <i>Orbital Australia</i>
12.00 pm	LUNCH	
1.00 pm	State of play for New South Wales	Peter Sunol, <i>Senior Inspector of Mechanical Engineering, Trade and Investment (NSW)</i>
1.30 pm	State of play for Queensland	Bruce McKinnon, <i>Inspector of Mines, Department of Natural Resources and Mines (QLD)</i>
2.00 pm	Diesel particulate management	Open forum
3.30 pm	Ventilation management plans	Junior Oding, <i>Inspector of Mines – Mining Engineer</i>
4.00 pm	Close	

RENEWAL ALERT FOR DANGEROUS GOODS SECURITY CARD HOLDERS

Some 6,000 dangerous goods security cards will be due for renewal starting from 1 July this year. About 3,000 cards will expire in July alone, so the Department of Mines and Petroleum has developed an online system to make the renewal process for Dangerous Goods Security Cards as simple as possible.

WHAT HAPPENS WHEN YOUR SECURITY CARD IS DUE FOR RENEWAL?

About two months before your dangerous goods security card expires, the Department will send you a renewal notice that includes a verification code, which is required to renew your card online.

You may still renew the card by post or in person at Resources Safety's office at Level 1, 1 Adelaide Terrace, East Perth.

Provided the renewal application is received before the security card expires, the security clearance will remain valid, even if you have not received the new card before the expiry date of the existing card.

Note: If your card is about to expire and you have not received a renewal notice from the Department, please contact Resources Safety (08 9358 8002, rsdcustomerservices@dmp.wa.gov.au).

IS AUSTRALIA POST INVOLVED IN THE RENEWAL PROCESS?

Australia Post is not involved in security card renewals as there is no requirement for identification or photographs of the card holder.

Note: The current Australia Post arrangement remains for new applications.

WHAT HAPPENS IF YOU DON'T RENEW YOUR SECURITY CARD IN TIME?

If you do not submit your security card renewal by the expiry date, your security clearance will expire. To obtain a new one, you must apply through Australia Post and pay the new card application fee.

The new application will require the full WA Police and ASIO security checking procedure, which takes at least eight weeks. As listed below, this can have significant consequences for your employment, or business activities.

- All licences held by the individual for explosives and security risk substances will be automatically cancelled.
- Any cancelled licences will need to be reapplied for after a new dangerous goods security card has been obtained.
- All authorisations for unsupervised access to explosives and security risk substances will lapse. For example, you would not be able to transport ammonium nitrate.





TYC

FAQS ON ELECTRICAL APPOINTMENTS ON WESTERN AUSTRALIAN MINES

In response to queries about the legislative requirements when making electrical appointments on Western Australian mining operations, Resources Safety has released an information sheet of frequently asked questions — and answers! The questions and answers are reproduced below and the information sheet may be downloaded from the publications section of the Resources Safety website.

1. What sections of the Act and regulations apply to electrical appointments at a Western Australian mine?

Under Section 44 of the *Mines Safety and Inspection Act 1994*, the Registered Manager must appoint such competent persons as are necessary to assist the Registered Manager to carry out his or her duties.

Regulations 5.10, 5.11 and 5.18 of the *Mines Safety and Inspection Regulations 1995* refer to electrical appointments, including electrical supervisors, high voltage operators, issuers of permits to excavate and issuers of permits to enter powerline corridors.

2. Is it necessary to issue separate letters for each appointment, or may one letter be used to cover all appointments?

Each appointment has different responsibilities and obligations, and must be accepted separately by the appointee. Separate letters are recommended because the same person might not be appointed to all positions, and it is unlikely that all appointments will be made at the same time.

All letters of appointment must refer to standard operating procedures and relevant Australian Standards. Copies of the letters must be attached to the mine record book.

3. What information should be contained in the letter of appointment of an electrical supervisor?

The appointment should clearly:

- identify areas of responsibility
- identify details of the crews to be supervised
- summarise duties, obligations and responsibilities
- identify requirement for adequate supervision of electrical work
- define duty to stop the use of any electrical equipment or installation at the mine considered to be dangerous
- identify requirement to maintain the electrical log book and ensure all electrical installing work is certified before being placed in service
- identify requirement to investigate and record electric shocks, electrical fires and dangerous occurrences involving electricity in the electrical log book
- identify requirement to maintain knowledge of electrical safety and understanding of applicable legislation and standards

and contain

- details of qualifications and experience
- signature confirming understanding and acceptance of the appointment.



4. What information should be contained in the letter of appointment of a high voltage operator?

The appointment should clearly:

- identify types of switchgear authorised (e.g. fully metal clad, bulk or minimum oil, open air break switches, SF6, Ring main units, earthing switches)
- identify voltage levels authorised
- summarise duties, obligations and responsibilities

and contain

- details of qualifications and experience
- signature confirming understanding and acceptance of the appointment.

5. What information should be contained in the letter of appointment of person issuing high voltage access permits?

The appointment should clearly:

- identify details of the areas
- identify boundaries and equipment to be accessed
- identify work to be performed
- identify details of isolation and precautions to be observed
- summarise duties, obligations and responsibilities

and contain

- details of qualifications and experience
- signature confirming understanding and acceptance of the appointment.

6. What information should be contained in the letter of appointment of person issuing permits to excavate?

The appointment should clearly:

- identify details of the different buried services installed on site
- summarise duties, obligations and responsibilities

and contain

- details of qualifications and experience
- signature confirming understanding and acceptance of the appointment.

7. What information should be contained in the letter of appointment of person issuing permits to enter powerline corridors?

The application should clearly:

- identify details of voltage levels on overhead lines and clearances to be maintained
- define safe working conditions where machinery is operated within power line corridors
- prohibit the operation of machinery or any other activity within powerline corridors when safe operation is not possible
- summarise duties, obligations and responsibilities

and contain

- signature confirming understanding and acceptance of the appointment.

CHAIN OF RESPONSIBILITY — WHAT DOES IT MEAN FOR THE RESOURCES INDUSTRY?

In May 2012, the Western Australian Parliament passed laws on the new legal concept of “chain of responsibility” for road transport. The laws are expected to commence operating in October 2014 following the drafting of supporting regulations. Importantly, this legislation will directly affect dangerous goods transport companies and also resources operators who rely on the use of transport providers to support their petroleum and minerals operations throughout the State.

In this contribution, Paul Sofield, Manager – Safety Division with the Barbaro Group, argues that the chain of responsibility approach will introduce a number of new offences that will hold accountable a broad range of people across the transportation and logistics industry. Responsibility also extends into all industries that use land transportation services. The resources industry relies extensively on the transport industry to support its operations and these laws will impact on those operations. The laws place a clear onus on all companies to ensure their staff and contractors are doing business in a safe manner. Furthermore, senior managers can no longer rely on the corporate veil of a company for legal protection and will have a personal incentive to ensure transport operations are conducted safely.

CHAIN OF RESPONSIBILITY PRINCIPLE

A decade ago, the Council of Commonwealth, State and Territory Transport Ministers recognised that the trucking industry had a poor safety record. This record continues today, with a recent Safe Work Australia report identifying that fatality rates in the road freight industry, over an eight-year period, were about ten times higher than any other industry in Australia.¹ The Council drafted a model Act providing for uniform offences for speeding, fatigue, mass, dimensions and loading. The model Act is aimed directly at the trucking industry and users of its services. The Council recognised that a number of people in the logistics chain, other than the driver, had responsibility for conducting and influencing safe transport operations.

The model Act extends responsibility beyond the transport industry to include parties who are sending freight (consignor) and those who are receiving freight (consignee). Packers, loaders, schedulers, operators, contract managers, procurement officers, managers and anyone else with influence on transport operations may also be held accountable for a breach of the Act.

WESTERN AUSTRALIAN LEGISLATION

In Western Australia, the *Road Traffic (Administration) Act 2008* and the *Road Traffic (Vehicles) Act 2012* provide the legislative arrangements for the introduction of the chain of responsibility with the aim of making the State’s transport industry safer.² If an employee such as a packer, loader or driver is charged then their employer may also be automatically charged and convicted for the same offence.³

The broad scope of this extended responsibility will have an impact on every industry that utilises road transport. For example, a petroleum explorer or a mining operator might be held accountable, in their capacity as a consignee, for a piece of their plant or equipment falling from a contractor’s long haul truck while en route to their project. The same operator might also be held accountable, in their capacity as a consignor, for a piece of machinery that falls from a truck during demobilisation from their project.

OFFICER’S PERSONAL LIABILITY

The extended responsibility concept reaches up to company management. The *Road Traffic (Vehicles) Act 2012* is aligned to section 27 of the Model Work Health and Safety Act and makes the officers of a corporation personally liable for breaches of the legislation. The new laws also specify that when a body corporate is charged with an offence, any person who was an officer at the time of the offence may also be individually charged with the same offence.⁴

An officer is defined as having the same meaning as given in the *Commonwealth Corporations Act 2001*, which essentially states that an officer is anyone who makes or participates in decisions that affect the whole or a substantial part of the business.

The chain of responsibility has been operating in New South Wales for a number of years, over which time the Roads and Maritime Services has laid 523 charges against directors to February 2014, out of 4,251 charges in total.⁵

REGULATOR'S INVESTIGATIVE POWERS

Main Roads WA currently has the lead role in regulating the new laws and will be supported by a number of other State agencies in enforcing the new laws, including the Department of Transport and WA Police. *The Road Traffic (Administration) Act 2008* provides regulators with strong investigative powers when investigating chain of responsibility breaches, including:

- A regulator may order a driver to stop, move or leave a vehicle.⁶
- A vehicle or business may be entered and searched without the consent of the occupier. During the search any relevant records may be inspected and copied.⁷
- A regulator may also demand a person to produce records, provide information or to provide reasonable assistance in locating records or information.⁸ Failure to comply may make a person liable to prosecution.

STATUTORY PENALTIES

The penalties detailed in the new laws are unique and far reaching. Pursuant to section 123 of the *Road Traffic (Vehicles) Act 2012*, a court may impose a commercial benefit penalty order. This order may require a convicted party to pay a fine up to three times the commercial benefit that was received or receivable from the commission of the offence.

The courts may also impose supervisory intervention orders. These orders may require the offending entity to remove staff, appoint staff, install equipment or implement operational or managerial practices.⁹ Similarly, the court may also impose a prohibition order on a convicted person to prevent them from filling a role or holding responsibilities associated with road transport.¹⁰ This type of order could conceivably prevent a person from continuing in their chosen occupation. Both these order types are potentially invasive with severe impacts on a company's operations.

STATUTORY DEFENCE — ALL REASONABLE STEPS

In an effort to balance the offences provided in the *Road Traffic (Vehicles) Act 2012*, a statutory defence has also been incorporated. In section 113 of the Act, a person who has been charged with a chain of responsibility offence may rely upon this defence if they can prove, on the balance of probabilities, that they did not know the offence was being committed. Further, the accused must also show that they had either:

- taken all reasonable steps to prevent the offence, or
- there were no reasonable steps they could have taken to prevent the offence.

The requirement is very different to the traditional approach of reducing a risk to as low as reasonably practicable. Here the defence is only complete once all reasonable steps are taken. The challenge will be identifying all the steps that the court might conceive are reasonable. Any safety professional can attest that identifying each and every strategy to mitigate an identified risk can be an extremely difficult and often subjective task.

To form an effective defence, a person will need to show that they have taken steps to do all things reasonable in the circumstances to ensure that those parties they can influence were acting in accordance with the law. This will include, at a minimum:

- conducting thorough risk assessments
- implementing policies and procedures based on the known risks
- enacting safe work practices
- training and educating staff
- engaging experienced and competent contractors,
- ensuring effective contractor management.

1. *Safe Work Australia, 2013, Work health and safety in the road freight transport industry, p. 4. www.safeworkaustralia.gov.au*
2. *Main Roads Western Australia, 2013, "Chain of Responsibility" legislation. Fact Sheet 1 – Overview. www.mainroads.wa.gov.au*
3. *Road Traffic (Vehicles) Act 2012, s. 111.*
4. *Road Traffic (Vehicles) Act 2012, s. 108.*
5. *Roads and Maritime Services, New South Wales. Enforcement statistics – Chain of responsibility investigation outcomes since 2005. www.rms.nsw.gov.au/heavyvehicles/cor/enforcement_statistics [viewed 12 May 2014]*
6. *Road Traffic (Administration) Act 2008, Part 4, Division 3.*
7. *Road Traffic (Administration) Act 2008, ss. 54-55.*
8. *Road Traffic (Administration) Act 2008, ss. 56-58.*
9. *Road Traffic (Vehicles) Act 2012, Part 11, Division 5*
10. *Road Traffic (Vehicles) Act 2012, Part 11, Division 6*

WANT TO KNOW MORE?

Visit the heavy vehicles section of the Main Roads WA website at www.mainroads.wa.gov.au/UsingRoads for the latest information on the chain of responsibility.

ONSITE MANAGEMENT COVERAGE AT WA MINES

A focus on management and supervision in late 2013 by the Department of Mines and Petroleum revealed an issue with onsite management coverage at some mining operations in Western Australia.

It was found that Registered Managers, Quarry Managers and Underground Managers, or their alternates, had not always been present on their operations in accordance with the requirements of the *Mines Safety and Inspection Act 1994*. This finding confirms a Departmental survey of the mining industry in May 2013.

Following further reviews and discussions with industry associations, it was determined that it was appropriate to inform mine management of these concerns in writing, and this was done earlier this year. The information is reproduced here to raise broader industry awareness of the issue.

During site visits this year, mines inspectors have been reviewing management rosters to confirm that onsite coverage complies with the legislative requirements. The support and cooperation of mining operations have facilitated this task, which is part of a broader campaign to ensure Western Australia's mines are managed in a safe and effective manner.

WHAT IS REQUIRED?

To ensure statutory compliance, a mine's Registered Manager, Quarry Manager and Underground Manager, as applicable, must be present at the mine on a daily basis except when alternate managers are on duty, in accordance with a commute schedule. A deputy manager needs to be appointed and present at the mine if the required statutory manager is incapacitated or expected to be absent.

A statutory manager who is not on the mining tenement or present at a part of the mining operation is deemed to be absent from the mine.

WHAT IS EFFECTIVE MANAGEMENT AND SUPERVISION?

The Department of Mines and Petroleum review of mining fatality reports from 2000 to 2012 for Western Australia showed that almost a third of fatalities happened when the workers had been in the position for less than one year. The risk was also higher where the supervisor had less than three years of experience in the role. In many of the fatalities, work was being undertaken largely unsupervised or outside the scope of established procedures. These findings for fatalities are consistent with the outcomes of serious incident investigations undertaken by the mines safety inspectorate.

Supervision is a fundamental function that applies to all levels of an organisation. For mining operations, supervision complements the provision of information, instruction and training, and influences how well companies achieve the safety and health objectives of the *Mines Safety and Inspection Act 1994* and maintain standards of performance, the physical aspects of the work environment, and the desired safety culture.

To support effective leadership, Resources Safety has drafted a guideline on effective management and supervision in Western Australian mines. The content was developed following consultation with industry. In particular, Chapter 5 and Appendix 1 reflect the outcomes of workshops conducted at the 2012 Mines Safety Roadshow.

The guideline outlines the key safety roles for each level of management but focuses on frontline supervision. It promotes a systematic approach of planning, doing, checking and acting to assist in the application of a resilient system of work that supports a risk-based approach to safety and health.

Chapter 2 discusses the organisational elements that support effective supervision. The roles, responsibilities and desirable interactions between the various management levels are described.

Chapter 3 discusses some of the key parameters to be considered for supervision.

Chapter 4 provides a framework for effective supervision.

Chapter 5 covers the skills and knowledge that will help a supervisor to be effective.

Chapter 6 discusses the supervisory attributes that give rise to unsafe acts and conditions in mining.

Resources that may be useful are listed in Chapter 7, while Appendix 1 describes some of the warning signs that should alert management when supervision requires attention.

HAVE YOUR SAY

The Department of Mines and Petroleum is seeking industry feedback on the draft guideline.

Interested in providing feedback?

Visit www.dmp.wa.gov.au/12369.aspx to download a copy. **Submissions close 12 noon, Friday 11 July 2014.**

Subscribe to Resources Safety's email alert service to receive safety alerts as they are issued, and find out about new publications, coming events, and how to provide industry feedback on safety and health initiatives.

Visit www.dmp.wa.gov.au/ResourcesSafety and look for the "news alert" invitation, or use the QR link to subscribe.





Left to right: Christina Folley and members of RNO's Health and Safety Team, Katie Barr, Jenni Pratt, Jody Webber and Scott Robertson
Photo courtesy First Quantum Minerals Ltd

"I BELIEVE EVERY PERSON HAS THE RIGHT TO GO TO WORK AND NOT GET HURT, AND I'M COMMITTED TO FINDING PRACTICAL AND SENSIBLE WAYS TO MAKE THIS A REALITY"

CHAMPIONING SAFETY

During site visits, mines inspectors are always pleased to meet the many dedicated people working across the State to make a difference to safety in their workplace. Resources Safety Matters cannot feature all these safety champions but we would like to share some of their experiences and find out what motivates them. Here is one person's story, as told to Resources Safety Matters' Heather McNeill.

Christina Folley is the Health and Safety Manager for FQM Australia's Ravensthorpe Nickel Operation (RNO). She describes RNO's safety and management teams as relentless and determined to drive change to facilitate a strong safety culture on-site through empowering employees and delivering exciting safety programs.

Heather: How did you get into workplace health and safety?

Christina: I started my career as a Medic/Security Officer where, driven by a desire to learn, I asked to participate in incident investigations. This exposed me to experienced safety professionals and inspired me to move into health and safety in 2005.

Since then, I have worked in a variety of safety-related roles at the Kalgoorlie Super Pit, Norilsk Nickel at Cawse and Goldfields Crane Hire.

I took up my position at Ravensthorpe Nickel Operations in Hopetoun in 2010.

I believe every person has the right to go to work and not get hurt, and I'm committed to finding practical and sensible ways to make this a reality.

Heather: What activities take place at RNO?

Christina: Operations at RNO include open pit mining, beneficiation of nickel laterite ore, pressure acid leaching, atmospheric leaching, counter-current decantation, and precipitation and filtration to produce a mixed hydroxide precipitate product.

Heather: What is RNO's safety mantra?

Christina: Our approach, while considered unconventional by some, is to empower our people to think for themselves.

Heather: How many health and safety representatives does RNO have?

Christina: We have 427 employees at RNO. Of these, 27 workers have been elected as health and safety representatives and they form our Health and Safety Committee. The committee has a definite sense of camaraderie, which helps the representatives to collaborate to resolve concerns raised by their crews. To support the group, our General Manager will often attend committee meetings.

I meet with the representatives once a week for an informal session where we discuss current issues and develop strategies for how they can best be managed.

Heather: What safety challenges do you and your team face in your roles?

Christina: RNO has transitioned through various stages of construction and commissioning then into full operations. As such, we have had to modify our approach numerous times to fit the business needs at the time. While it can be tiring to continually modify our approach, the payoff is seeing our operations move a step higher in the safety culture maturity model.

As with most organisations, it is rare that change is enthusiastically embraced, but the health and safety and management teams are united and relentlessly determined to drive change. We find various challenges such as outright resistance to change to a lack of understanding arising from fear or apprehension. This continues to challenge us but we dedicate time to listening to people's concerns and then finding real solutions.



Left to right: Safety and health representatives John Dolan, Allan Waide, Brenton Smith, JJ De Beer, Carmen Potito, Kelly Button, Don Holm and Renier Koekemoer with FQM Ravensthorpe's General Manager Morrie Rowe (centre)

"THE UNDERPINNING MESSAGE IS THAT WE MAKE BETTER DECISIONS WHEN WE USE ALL THE RESOURCES AVAILABLE TO US"

Left to right: RNO's Emergency Services Officers Allan Sharpe, James Duffus, Brad Stewart and Rob Paddock



Heather: How have safety initiatives improved safety standards at your mine?

Christina: We invested time in running trials of various products, initiatives and tools to find something that would fit with our approach to practical and sensible safety.

Crew Resources Management (CRM) was introduced into our safety processes in 2011. CRM is an external program that uses lessons learnt from the aviation industry to reduce incidents caused by human error. The underpinning message is that we make better decisions when we use all the resources available to us.

It's an exciting and fast-paced program where we weave aviation and mining together to achieve group participation, and open and honest dialogue.

Heather: What results have come from your CRM program?

Christina: CRM provided the platform for dialogue between all levels of operation, which resulted in some quick wins with issues being raised and resolved. However, longer term, our safety culture development needs a strategic approach driven by our entire workforce. Over the coming years, we will work towards this goal and endeavour to provide a safe workplace where there is a clear understanding of the beliefs and duties required to create a fair and just culture.

Annual survey results indicate the overall attitude towards health and safety management has improved in recent years, with a large proportion of employees stating CRM and subsequent follow-up actions are the cause.

Heather: What is your advice to other safety managers?

Christina: Surround yourself with talented people. Finding a technically proficient safety professional can be straightforward, but finding a person who can handle criticism and really sell a safety idea with passion can be more difficult.



SAFETY IS MY WAY

Georgiou Group is a national civil engineering, building and property development company with more than 800 employees across Western Australia, Queensland, Victoria and New South Wales. The company was a finalist in the People category of the 2014 CME Safety and Health Innovation Awards for its Safety is My Way strategy. Here, Alisha Glenny, Georgiou's Communications Coordinator, shares how this approach is helping to fundamentally improve the company's safety culture — and safety performance.

Over the years, Georgiou has invested resources, time and money in implementing safety frameworks to improve performance. This investment saw solid results in not only meeting its client's requirements but also achieving accreditation with the Office of the Federal Safety Commission.

Despite this, Georgiou could not bring its total recordable injury frequency rate (TRIFR) below 10 injuries per million hours worked. Even with the systems, frameworks and compliance in place, there were still accidents and the next step change in safety performance was not materialising.

To improve the safety performance across all sectors in which Georgiou operates, the company needed a model that was simple to implement, sustainable and would create an exemplary safety culture. The missing piece of the puzzle was the personalisation of safety. For that to happen, each employee's core belief in their safety values had to be understood, fostered and encouraged.

The key principle behind the Safety is My Way strategy was to engage people's hearts and drive home the importance of safety. How did it work? Every month, every employee's behaviour at every project was reviewed by their project manager and safety advisor.

The results were recorded in the Safety is My Way dashboard report. This report contains information that helps Georgiou to understand the correlation between exemplary safety behaviour and accidents and incidents on projects.

Using Safety Is My Way as an engagement tool, senior management began visiting project sites around Australia in August 2013, recognising employees who demonstrated exemplary behaviour. At toolbox and pre-start meetings, senior managers would present exemplary staff with Safety is My Way branded caps, similar to the traditional "baggy greens" presented to Australian cricketers. These presentations influenced colleagues to embrace safety as a way of life, and highlighted the recipients as safety leaders. The presentations also serve as a symbol and reminder to everyone that safety starts with them — whether they are at work or home.

The company has seen a direct correlation between its decreasing TRIFR and the take-up of the Safety is My Way strategy. As this approach continues to transform Georgiou's safety culture from compliance and prescription to core belief and value, the TRIFR has decreased by more than 10 over a 12-month period. In April 2014, 30 employees were acknowledged as exemplary. The aspirational aim is to have all staff deemed as exemplary by December 2014.

BLUEPRINT FOR MENTAL HEALTH AND WELLBEING

The topic of mental wellness was last covered in *MineSafe* vol. 20 no. 1 published in July 2011. Workers' mental health has traditionally received limited attention in the mining industry. Despite significant investments in creating a safe physical work environment, mental health and wellbeing at work is often overlooked or taken for granted. However, this is changing.

According to the *Blueprint for Mental Health and Wellbeing*, published recently by NSW Minerals Council, mental ill-health costs the resource industry between \$320 and \$450 million each year. Based on Australian figures, it is estimated that over a 12-month period between 8,000 and 10,000 employees are likely to experience a common mental ill-health such as anxiety, depression or substance-use disorder. Mental ill-health does not discriminate — all mining employment categories are affected, including managers, professional occupations, machinery operators and drivers.

The NSW Minerals Council's blueprint was produced by a team of experts at the University of Newcastle and Hunter Institute of Mental Health, with the support of the Newcastle Institute for Energy and Resources.

The blueprint aims to provide guidance for the mining industry, as a whole, as well as individual mines and workers to:

- promote mental health
- prevent mental ill-health
- build capacity and culture in the industry to effectively address mental health and mental ill-health in the workplace
- respond early and effectively reduce the impact of mental ill-health on people working in mining and their families
- create new knowledge through research into mental health and ill-health in the industry.

WHERE DO I FIND THE BLUEPRINT?

The guide is available from the Hunter Institute of Mental Health's website at www.himh.org.au in the research reports page in the mining and mental health section.

Further information on the Institute's mining and mental health program is available in the programs section of the website.



NSW Mining

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GAS BOTTLE EXPLOSION REINFORCES PUBLIC SAFETY CAMPAIGN

A gas bottle explosion at a camping ground in Collie earlier this year was a timely reminder to the public of what can go wrong when using dangerous goods in everyday situations. The explosion, which happened when a group was cooking on a portable barbecue, injured three adults and one child. All required hospital treatment for burns.

The Department of Mines and Petroleum's Director Dangerous Good, Philip Hine, said that the Department is continuing to roll out its "separate and ventilate" awareness campaign to educate the public on the safe transport of commonly used dangerous goods. The campaign, which commenced in 2012, targets items such as gas bottles, jerry cans, pool chemicals and insecticides.

"A common mistake people make is to transport gas bottles in car boots, as it is as far away as possible from passengers," Mr Hine said. "However, the boot is enclosed and therefore does not allow for the ventilation required to protect passengers from a potential gas leak. The safest place to store a gas bottle is upright, securely on the vehicle floor with the windows down."

Mr Hine said that another error often made is transporting more than one chemical in the same vehicle.

"Most people are not going to know which chemicals are not compatible, so it's best to assume that none are and keep them separated at all times," he said.

If incompatible dangerous goods come into contact with each other, or are subject to temperature increases, they can be dangerous. Depending on the chemicals, they could produce toxic gases, explode or combust.

Following requests from community members for more information, Resources Safety recently distributed thousands of posters to businesses and tradespeople throughout Western Australia to spread the "separate and ventilate" message.

Visit www.dmp.wa.gov.au/16387.aspx for information specifically designed for:

- couriers
- tradesmen
- grain growers
- the general public.

Email RSDComms@dmp.wa.gov.au to request copies of the posters.



WHAT'S DIFFERENT ABOUT WORKING AT HEIGHT UNDERGROUND?

Recent workforce figures for the minerals sector, calculated as full-time equivalent (FTE) positions, indicate that there were about 92,000 workers involved in mining and exploration activities in Western Australia in December 2013. Of these, about 7,300 or 8 per cent were underground workers. It is likely that most people working on the surface will not have experienced the underground environment, so they might not recognise some of the risk factors associated with a dark, restricted workplace.

IS WORKING AT HEIGHT THE SAME WHETHER THE WORK IS CARRIED OUT ON THE SURFACE OR UNDERGROUND?

The response from most mines inspectors and underground workers will be a resounding "No!".

Working at height refers to any work activity undertaken at an elevated position where people are at risk of falling from, into or through one level to another.

Working at height is one of the biggest causes of injuries and fatalities in the mining industry in Western Australia. Workers have died or been seriously injured after falling down ore passes and rises in underground mines, or falling from plant or ladders. Falls from heights as low as 1.5 metres have resulted in permanent disabilities.

As well as people falling, equipment or displaced material can also fall on people working below.

So, why is the underground environment so different?

The underground environment evolves as the mine develops, and those working at height need to be aware of this changing three-dimensional situation. A worker may be travelling through workings with rock above and below — and suddenly lose sight of the floor or roof because their depth perception and spatial awareness are affected.

Mining levels frequently vary and a worker does not usually have a visible horizon for orientation.

Underground workers may need to work in or near vertical openings (including rills of rock) such as stopes, rises, ore passes, escapeways, shafts, sumps and winzes, each of which has its own unique risks.

Apart from falls and dropped objects, an additional risk to those workers using work platforms underground is that they can be injured if caught between the rising platform and backs (i.e. roof or upper part) or walls of the drive.

In an underground environment, the application of standard operating procedures for working at height can be affected by limited visibility, workspace constraints and poor ground conditions.

INDUSTRY INPUT SOUGHT

The Department of Mines and Petroleum has drafted a guideline for working at height in underground mines. Early drafts involved input from industry experts.

The guideline is not intended as a training manual on how to work at height or use fall protection systems, nor is it a summary of the relevant Australian Standards. It aims to assist employers and mine operators to:

- identify the risks associated with working at height in underground mines
- develop and implement a safe system of work to minimise those risks.

The focus is on common working-at-height scenarios and the control measures to consider when working in an underground mine.

The draft guideline will be available in June 2014 for an eight-week public review period. Comments from all stakeholders will be sought to ensure the guideline meets industry and inspectorate needs, and will be used in underground mines to improve safety standards for workers working at height.

Interested in reviewing the draft guideline? If you are not already a subscriber to Resources Safety's weekly news alerts, sign up today. That way you will be advised as soon as the document is available online.



AN INVISIBLE HAZARD – RAISING RADIOLOGICAL AWARENESS

Ionising radiation comprises particles, X-rays or gamma rays with sufficient energy to ionise the medium through which it is passing. When this radiation interacts with an atom, it can remove tightly bound electrons from the atom’s orbit, leaving a charged or ionised atom.

Why is this dangerous? If that medium is a living thing, such as a person, the internal structures of cells can be damaged. The potential harm to health depends not only on the amount of the absorbed dose but also on the intensity of ionisation in the living cells caused by the radiation.

When most people think of ionising radiation in the mining industry, uranium ore is the first source that springs to mind. However, uranium minerals are not the only naturally occurring radioactive material that might be encountered when exploring for or extracting minerals in Western Australia. The mineral monazite, which is found in heavy-mineral sands, is an important source of thorium, another radioactive element.

Other radioactive minerals found in Western Australia include those containing rare earth elements (REEs) such as scandium, yttrium and dysprosium, which are used in optical coatings, electronics and green technologies.

There are also man-made sources of ionising radiation that people should be aware of when working in the resources sector. In particular, the oil and gas industry utilises many radiation-based technologies.

Examples of items that may have a radioactive source are:

- exploration – downhole or well logging tools; portable or handheld XRF analysers (used to determine chemical composition)
- mineral processing and refineries – nuclear moisture or density gauges; nuclear level gauges; ore or material grading devices

- oil and gas production – multiphase flow meters; radioactive tracers
- construction and maintenance – industrial radiography, which is a non-destructive testing (NDT) technique.

Unlike dust or noise, you cannot see or hear ionising radiation. Radioactive sources are sealed or shielded to minimise exposure so the equipment is safe to use. However, people not aware that they are dealing with this invisible hazard may accidentally compromise the engineering controls put in place to protect them.

Radioactivity can also be carried in dust and gases from activities where radioactive materials are present, and will contribute to the radioactive doses recorded for workers in Western Australian industry. Minimising the generation and dispersal of dust are important at any time, but particularly in this scenario.

Under the duty of care requirements, any source of radioactivity should be managed as a hazard and understood by the workforce on your site.

A radiation management plan (RMP) is required for sites where naturally occurring radioactive materials are likely to be encountered, or radioactive sources are used in equipment. Part 16 of the Mines Safety and Inspection Regulations 1995 provides specific guidance for some sources of radiation.

Does your site have an RMP? Do you need to know about it as part of your work? If you use equipment with a radioactive source, do you know the proper operating procedures and radiation protection measures? How is exposure to ionising radiation monitored? If uncertain, ask your supervisor or manager.

WANT TO KNOW MORE?

The World Health Organization has information on ionising radiation at www.who.int/ionizing_radiation

FIGHTING FATIGUE

Did you know that Resources Safety has an online one-stop shop to assist organisations with the prevention and management of fatigue at their workplaces?

Visit www.dmp.wa.gov.au/19207.aspx or use the QR code for links to:

- codes of practice
- information sheets
- toolbox presentations
- safety alerts
- other sources of guidance material.



SIX PILLARS OF DANGEROUS GOODS TRANSPORT

The merits of mandatory training for commercial transport of any quantity of dangerous goods and implementing driver licensing for placard loads of dangerous goods were debated vigorously at forums hosted earlier this year by Transafe WA and IDC Technologies. The lack of industry familiarity with the Australian Dangerous Goods Code and the quality of internal supervision were common concerns expressed by operators, consultants and regulators.

The *Six Pillars* model presented here addresses six visible elements of packaged dangerous goods transport, where the risk carried by general freighters is greatest because they accept dangerous goods packages from a multitude of consignors with limited dangerous goods safety knowledge. Training is essential to attend to these elements.

MARKING OF DANGEROUS GOODS PACKAGING

When packages of dangerous goods are transported by road and rail, they must be marked to:

- ensure accurate information is available about the dangerous goods
- allow effective response in an emergency.

Did you know that Resources Safety has released a new guidance note to assist with this?

Visit www.dmp.wa.gov.au/17146.aspx to download your copy.

WHAT IS TRANSAFE WA?

Transafe WA is a not-for-profit industry initiative with the vision of aiding the delivery of safer transport industry workplaces and roads by fostering and promoting safer practices. Formed in 2012 by a passionate volunteer committee, Transafe WA moved from concept to reality during 2013 due to the support of seed funding received from the Western Australian State Government through Main Roads WA.

The core objectives of Transafe WA for the road transport industry are to:

- identify industry needs and risks
- process and administrate identified problems

- identify, promote and advance training and accreditation
- deliver safer working standards and in turn a safer environment for all Western Australian road users
- act as a conduit between operators, industry and government, providing an effective information exchange for all stakeholders that will lead to stronger relationships, continuous improvement and a reduction of incidents.

Transafe WA aims to present two industry safety forums in the Perth metropolitan area and two in regional Western Australia each year.

Visit www.transafewa.com.au for more information.



CAN YOUR COMPANY USE THE SIX PILLARS MODEL TO SUPPORT THE SAFE TRANSPORT OF DANGEROUS GOODS?



TRAINING

- Does the company's training and instruction cover all the tasks associated with the transport of dangerous goods?
- Does the company have appropriately qualified trainers, either third-party or in-house?
- Are supervisors sufficiently well trained and experienced to manage other employees?
- Are drivers assessed for competency in each of the six pillars?
- Does the company's training regime meet regulatory requirements for dangerous goods safety?

PACKAGING

- Is the packaging suitable?
- Is it labelled and marked correctly?
- Does it show signs of damage or defects?

RESTRAINT

- Is the company's load restraint guide compliant?
- Are loaders and drivers aware of the risks associated with a moving load?

SEGREGATION

- Will incompatible dangerous goods packages be carried?
- Can multiple trailers be used to segregate incompatible packages?
- Can segregation packaging and segregation devices be used?
- Has the trailer load plan used by loaders been communicated to the driver?

VEHICLE

- Roadworthiness – is the vehicle fit for purpose?
- Is ventilation of the load adequate?
- Is the necessary safety equipment carried, including mandatory personal protective equipment (PPE) and clothing?

PLACARDING

- Are appropriate front and rear labels affixed?
- Are mixed class labels used appropriately?
- Have emergency information panels (EIPs) been fixed to both sides of the vehicle and the rear?
- Have EIPs been fixed on intermediate bulk containers (IBCs)?

DOCUMENTATION

- Does the transport document contain the mandatory dangerous goods information?
- Has the emergency procedure guide been prepared?
- Are the necessary documents available in the vehicle's door holder?
- Are those involved in the transport process familiar with the company's emergency response plan?

GUIDANCE GROWING

LATEST PUBLICATIONS

Fatal accidents in the Western Australian mining industry 2000-2012 report

A study undertaken by the Department of Mines and Petroleum (DMP) in 2013 reviewed mining fatality reports for Western Australia from 2000 to 2012. The aim was to identify key activities and areas where improvements can be made. In the 13 years covered by the review, there were 52 mining-related deaths, with an average of four deaths per annum. Over this period, the industry workforce increased by 60,000. The formal report has now been finalised and is available online and in hard copy.

New publications

- Frequently asked questions on electrical appointments on Western Australian mines – information sheet
- Safety performance in the Western Australian mineral industry 2012-2013 – report
- Safety performance in WA mineral industry 2012-13 – poster
- Overview of dangerous goods reportable situations and incidents 2013 – report
- Marking of dangerous goods packaging – guidance note

Revised publications

- Frequently asked questions on mines safety levy audit – information sheet
- Frequently asked questions on Mines Safety and Inspection Levy – information sheet



INTRODUCING PRODUCT SAFETY ALERTS

Alerts from manufacturers regarding their products can be mislaid, particularly if a piece of equipment is years old, or staff may not be aware that an alert has been issued since purchasing or hiring equipment.

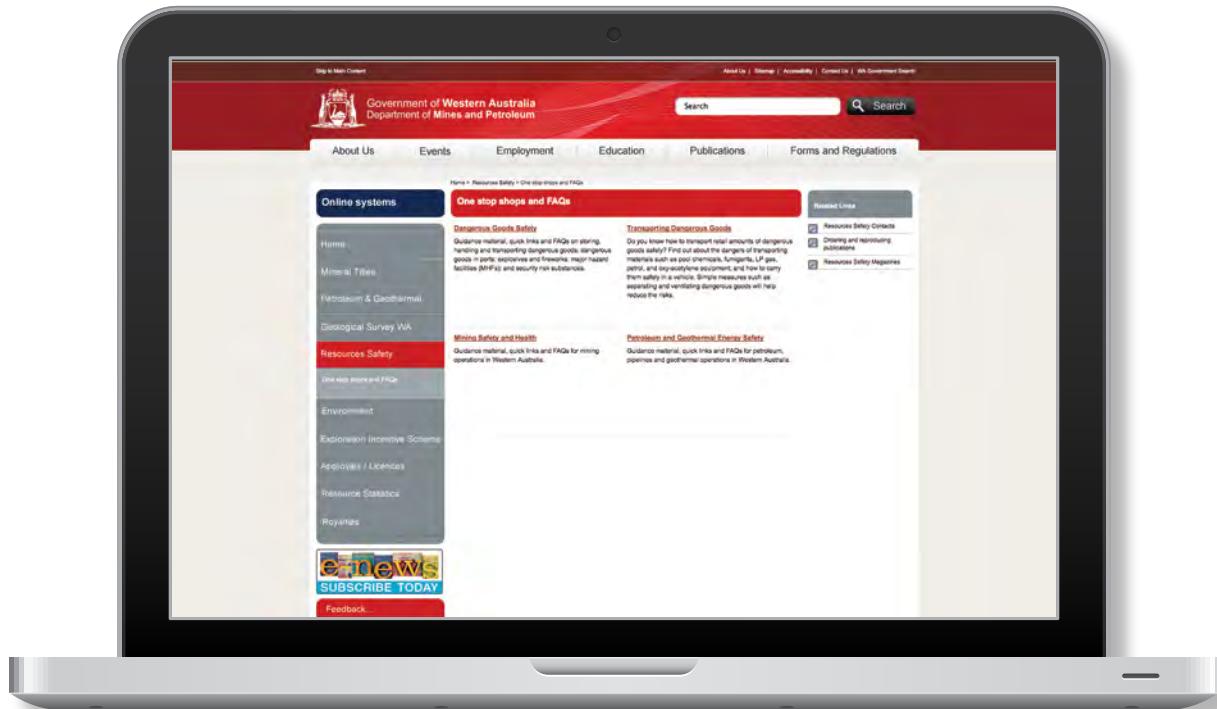
In May this year, Resources Safety launched a product safety alert section as a public service to raise industry awareness of potential issues that have ongoing implications or have been the subject of Resources Safety publications.

To view the product safety alerts currently available, visit www.dmp.wa.gov.au/19954.aspx

The alerts include:

- Terex information bulletin – Operating on side slopes
Note: Explanatory notes also available
- 3M – Versaflo powered air purifying respirator (PAPR), TR-300
- Ridgid – Proper use of pipe wrenches

For any queries related to an alert, please contact the manufacturer directly.



ONE-STOP SHOP DIRECTORY

Resources Safety's online one-stop shops provide fast access to key safety and health resources for specific stakeholder groups, topics or activities.

Two new one-stop shops will be launched in June 2014 following industry calls for more guidance on:

- mobile equipment
- training and competency.

The complete list of mining safety and health one-stop shops is available at www.dmp.wa.gov.au/14668.aspx

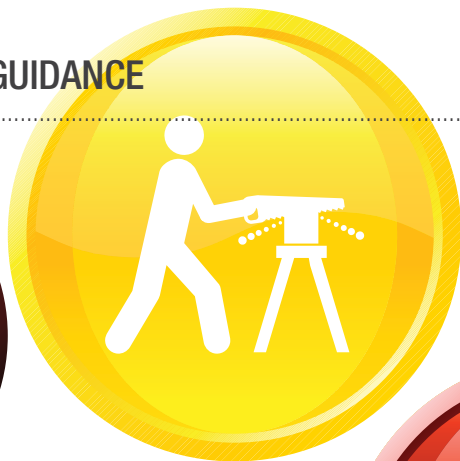
Mobile equipment one-stop shop

- Compilation of Resources Safety guidance materials such as:
 - four-part mobile equipment audit guideline and template
 - information sheets
 - magazine articles
 - toolbox presentations
 - safety alerts.

- Links to external resources such as:
 - Australian Standards
 - guidance produced by other local and interstate regulatory bodies.

Training and competence one-stop shop

- Five topic areas:
 - training management systems
 - inductions
 - trainers and assessors
 - training and assessment process
 - refreshers, reviews and record keeping.
- Links to key guidance material.



TACKLING HAZARDOUS MANUAL TASKS

In 2009, Resources Safety released a number of information products to help mining workplaces implement effective risk management plans for manual tasks. It is timely to remind industry of the availability of these useful resources since work-related musculoskeletal disorders continue to be significant contributors to annual safety performance statistics for the Western Australian minerals sector.

WHAT IS A MUSCULOSKELETAL DISORDER?

It is an injury or damage to the muscles, ligaments, tendons, joints or other tissues in the upper or lower limbs or back. They include sprains, strains, back ache and hernia, and the more colloquial “stiff back”, “frozen shoulder” and “tennis elbow”.

WHY ARE MUSCULOSKELETAL DISORDERS A PROBLEM?

Their impact may range from minor inconvenience, to being off work for a day or so, to living with a permanent debilitating injury. In addition to the direct cost of compensation claims, these injuries incur costs such as lost productivity, staff replacement and training costs, loss of expertise and administrative overheads. The cost to the injured worker includes pain and stress, loss of income and possible long term disability.

Clearly, reducing the extent and severity of such injuries would be of considerable cost benefit to all.

WHY FOCUS ON MANUAL TASKS?

Manual tasks are physical work such as lifting, lowering, pushing, pulling, carrying, moving, holding or restraining anything. They also include work with repetitive actions (e.g. hammering), sustained postures (e.g. operating plant) and concurrent exposure to vibration (e.g. driving a truck).

If a manual task has characteristics that could result in an injury — such as awkward postures, repetitive movements or handling heavy objects — then it is a problem and is considered to be hazardous.

Injuries to the musculoskeletal system happen when the forces on the structures, such as muscles, tendons, ligaments and bones, are greater than the structure can tolerate.

Acute injuries, causing sudden damage to the musculoskeletal system, are a consequence of a single exposure to high force. For example, lifting an item that is heavier than expected can require an unexpected exertion and result in an acute musculoskeletal disorder.

Many injuries are the result of cumulative “wear and tear” on the musculoskeletal system, caused by repeated or prolonged exposure to lower levels of force. Even low levels of force can cause damage to structures but this damage is typically repaired before an injury is recognised. However, if the rate of damage is greater than the rate of repair then an injury results.



WANT TO KNOW MORE?

The webpage at www.dmp.wa.gov.au/7221.aspx is dedicated to hazardous manual tasks and includes:

- a review of manual tasks in the Western Australian mining industry
- a training package on how to run a workshop on the topic
- guidance for implementing an effective program to manage the risks associated with manual tasks, including links to an audit guideline and template
- information sheets on manual tasks in mining
- toolbox presentations.

WHAT ARE THE BENEFITS OF A PARTICIPATIVE RISK MANAGEMENT APPROACH?

The most effective way to tackle hazards is to adopt a risk management approach, and this also applies to hazardous manual tasks. The risk management approach can address both the safety (i.e. acute injuries) and health (i.e. cumulative injuries) aspects of this hazard. In essence, applying the hierarchy of control means determining what it is about the manual task that makes it hazardous, and eliminating it if possible. If it cannot be eliminated, then the risks need to be reduced.

Each workplace is different and there will be variation in the most suitable approach to implementing and running a program to effectively manage the risks associated with manual tasks.

Experience shows that this is most effectively done in consultation with the people who do the work. All those affected should be consulted, which may mean maintenance staff as well as operators. A participative approach also engenders a sense of ownership of any changes — and should increase the likelihood of success.

AGE AWARENESS TRAINING

Research indicates that the aging of the musculoskeletal systems usually begins after age 30. Some years ago, the US-based Mine Safety and Health Administration (MSHA) published data showing that the effects of musculoskeletal disorders on older mining workers appeared to be more extreme than for the younger generation.

The US-based National Institute for Occupational Safety and Health subsequently published *Age Awareness Training for Miners* as a guide.

When developing a site's risk management plans for manual tasks, the guide may be a useful source for tips on how to recognise and address issues associated with the normal physiological changes experienced as people age.

The guide was published in 2008 as the Centres for Disease Control's Information Circular 9505/2008. It is available at www.msha.gov/Accident_Prevention/ideas/2008-133.pdf

The training package can be downloaded at www.cdc.gov/niosh/mining/works/coversheet637.html



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

MOBILE AUTONOMOUS MINING EQUIPMENT

A number of incidents involving autonomous mobile equipment over the past few years in Australia and overseas led to the release of *Mines Safety Bulletin No. 110*. In light of these incidents, the alert discusses the issue of introducing mobile autonomous and semi-autonomous vehicles onto Western Australian mine sites. The importance of ongoing risk management activities such as hazard identification, risk assessments and worker competence, is emphasised.

The bulletin recommends implementing a safe system of work for autonomous mobile equipment, including designing all equipment to be fit-for-purpose, implementing rigorous equipment test programs and inspection regimes, and developing and delivering comprehensive worker training and assessment programs.

NON-REFILLABLE GAS CYLINDERS

Dangerous Goods Safety Bulletin No. 0114 discusses the dangers of re-using non-refillable gas cylinders that are fitted with burst discs, to transport and store flammable and toxic gases.

The alert emphasises the dangers posed if the cylinder over-pressurises and the burst disc opens. The disc will not reseal, resulting in a hazardous and extensive flammable gas atmosphere.

WORKING WITH A SUSPENDED LOAD – FATAL INJURY

Mines Safety Significant Incident Report No. 194 was issued following a fatal crush injury sustained when a suspended load fell in an arc after the lift rigging failed.

The report emphasises the need for safe systems of work when working with suspended loads. These include identifying and controlling all stored energy hazards,

implementing comprehensive risk assessments of areas that could be in the line of fire, and ensuring a competent supervisor reviews and signs off on jobs.

DOLLY WHEEL RETRACTION

A worker was seriously injured during a dolly wheel retraction manoeuvre. This incident led to the issuing of *Mines Safety Significant Incident Report No. 195*, which recommends discussing and clearly allocating tasks where there is a change to the way a job is done.

LIGHT VEHICLE TYRES OVER OPEN EDGE

The incident reported in *Mines Safety Significant Incident Report No. 196* involved a blasting supervisor inspecting locations for road blocks for a planned blast. Travelling slowly through broken ground following a blast, the supervisor was able to stop his vehicle before driving completely over an open edge that had been left exposed.

The report highlights the importance of a comprehensive up-to-date site traffic management plan with respect to use of light vehicle tracks, demarcation of mining areas, and how changes are captured and communicated to those affected. A number of measures are suggested to help improve traffic management at surface mining operations, particularly for light vehicles.

DOZER LOADING ONTO TRAILER

Mines Safety Significant Incident Report No. 197 was issued following an incident where a dozer was being loaded onto a trailer for transportation. As a result of the loading ramp being higher than the trailer, incorrect connection of the brake hose, and wheel chocks not being used, the prime mover and trailer moved and then jack-knifed under the weight of the dozer.

The report emphasises the importance of safe work instructions that identify hazards and their controls for jobs being undertaken. For loading and unloading operations it is especially important to be aware of the position of the centre of gravity of objects and how movement affects stability.

A number of actions are recommended for consideration when developing procedures for the transport of plant.

PROSPECTOR SAFETY

While prospector safety is not covered by the *Mines Safety and Inspection Act 1994*, which applies to those working on mining operations, the Department of Mines and Petroleum does have a role to play in prospecting activities in Western Australia. Mining Registrars are responsible for Miner's Rights under the *Mining Act 1978* and *Mining Regulations 1981*. They expect to issue over 3,000 Miner's Rights this year. These prospecting licences allow the holder to prospect on Crown land, and take and keep samples and specimens of any ore or material up to 20 kilograms.

Although not responsible for prospector safety, following the December 2013 inquest into the death of a prospector near Menzies earlier that year, the Department undertook to help educate prospectors about the importance of being prepared before they go into the field. In particular, prospectors are urged to carry personal locator beacons (PLBs) when exploring in remote areas. This message is repeated here following two recent police searches for missing prospectors.

Eighty year-old prospector Ralph Craig sparked a search in late May when he failed to return to Coolgardie while exploring with a friend. Earlier in the month Peter O'Shaughnessy, 76, also went missing in the goldfields. Both were found the following day in good health.

"Experienced and amateur prospectors need to take responsibly for their own safety by carrying a personal locator beacon," said Dr Ivor Roberts, Executive Director for Mineral Titles at the Department.

"The personal locator beacon is a small device that, when activated, transmits a message via satellite to emergency services. The device, which can be purchased from most outdoor stores, is ideal for use in remote areas as it does not rely on telecommunication networks to send a signal."

Dr Roberts said that while the two recent incidents ended happily, that was not the case for Michael Graham, who went missing and perished near Menzies last year. The month-long search for Mr Graham was the largest ever undertaken in Western Australia and covered more than 1,500 square kilometres.

During testimony given at the inquest into Mr Graham's death, a WA Police representative said that carrying a PLB would help guarantee a person's survival, as well as reduce the resources required for such searches. A GPS, which is carried by many prospectors, allows the carrier to locate themselves but does not assist any would-be rescuers. It is the PLB that provides information via satellite to searchers, and often initiates the search itself upon activation.

"In 2013, nine prospectors were reported missing to the WA Police. Only one was carrying a PLB — and that person was found within four hours," Dr Roberts said. "Although the Department cannot compel prospectors to carry a PLB, carrying one could help avoid future tragedies like Mr Graham's death."

The Department has updated its guide *Prospecting in Western Australia* to include information about PLBs and safety while prospecting. This reference guide can be downloaded at www.dmp.wa.gov.au/413.aspx or pick up a copy from any Mining Registrar in the State.



COMPETING AT THREE MILE HILL

The Surface Mine Emergency Response Competitions are hosted annually in the Goldfields by the Eastern Regional Council of the Chamber of Minerals and Energy of Western Australia.

There was a refreshing change of scenery for the competition in 2014, when it moved from Kalgoorlie to Coolgardie. Held at Focus Minerals' Three Mile Hill operations, currently under care and maintenance, this was the first time since 2007 that the competition had been run entirely at a mine site.

Seven teams participated over the first weekend in May, competing in eight challenging 45-minute events and an individual theory assessment. These events tested their emergency response skills in simulated, yet realistic, emergency situations.

Although the number of competing teams was down on previous years, the level of enthusiasm and dedication of participating companies, volunteers and event organisers remained high. Tim Campbell, Chairman of the Mine Rescue Committee for the Chamber's Eastern Regional Council, thanked the competing companies for the continued support of the event, recognising the financial costs of sending teams to the competition.

"The lower number of competing teams highlights the trying time economically in mining at present. We thank those companies involved for understanding the importance of the event." Mr Campbell said.

Kalgoorlie Consolidated Gold Mine (KCGM) entered two teams in the competition this year. The double-act proved very successful, with KCGM 1 taking out overall winner and KCGM 2 coming in third. La Mancha Resources split the leader board by taking up the second position.

In addition to the Best Team award, KCGM 1 was awarded the mantle of Best New Team, and won the Vehicle Extrication, Team Safety and First Aid events. KCGM 1's Bill Randall was recognised as Best New Captain.

Drew Miller, from KCGM 2, received the award as overall Best Captain, following up on his win at the 2013 Underground Mine Emergency Response Competition.

Most of this year's events were held within walking distance, making travel to and from events much easier. Events included HazChem, Rope Rescue, Confined Space Rescue, First Aid, Incident Management Scenario and Theory. The Vehicle Extrication and Fire Fighting events were held nearby at other Focus Minerals sites.

In response to feedback from previous competitions, the Best Scenario award was split into two components. Competing teams voted for the scenario that they thought was best. The Chief Adjudicators, Sean Monaghan, Mark Pannewig and Vic Simpson, assessed how events were managed both before and during the competition to make their award for event management, which went to Team Skills.

Vehicle Extrication took out best scenario as voted by competing teams. In the scenario, two salesmen in a car have taken a wrong turn and a haul truck has driven over their vehicle. The accident has resulted in a fatality, an injured car driver with multiple injuries, and a haul truck driver in shock. Competitors were required to use whatever means necessary, including the "jaws of life", to cut open the car and remove the injured driver, while assisting the haul truck driver, being mindful not to expose the driver to the casualties.

At the presentation evening, Tim Campbell reminded the audience that the event is not just a competition. It is also a fantastic opportunity to promote the importance of emergency response within the industry, exchange ideas and raise awareness of the importance of the skills and dedication required by emergency responders.

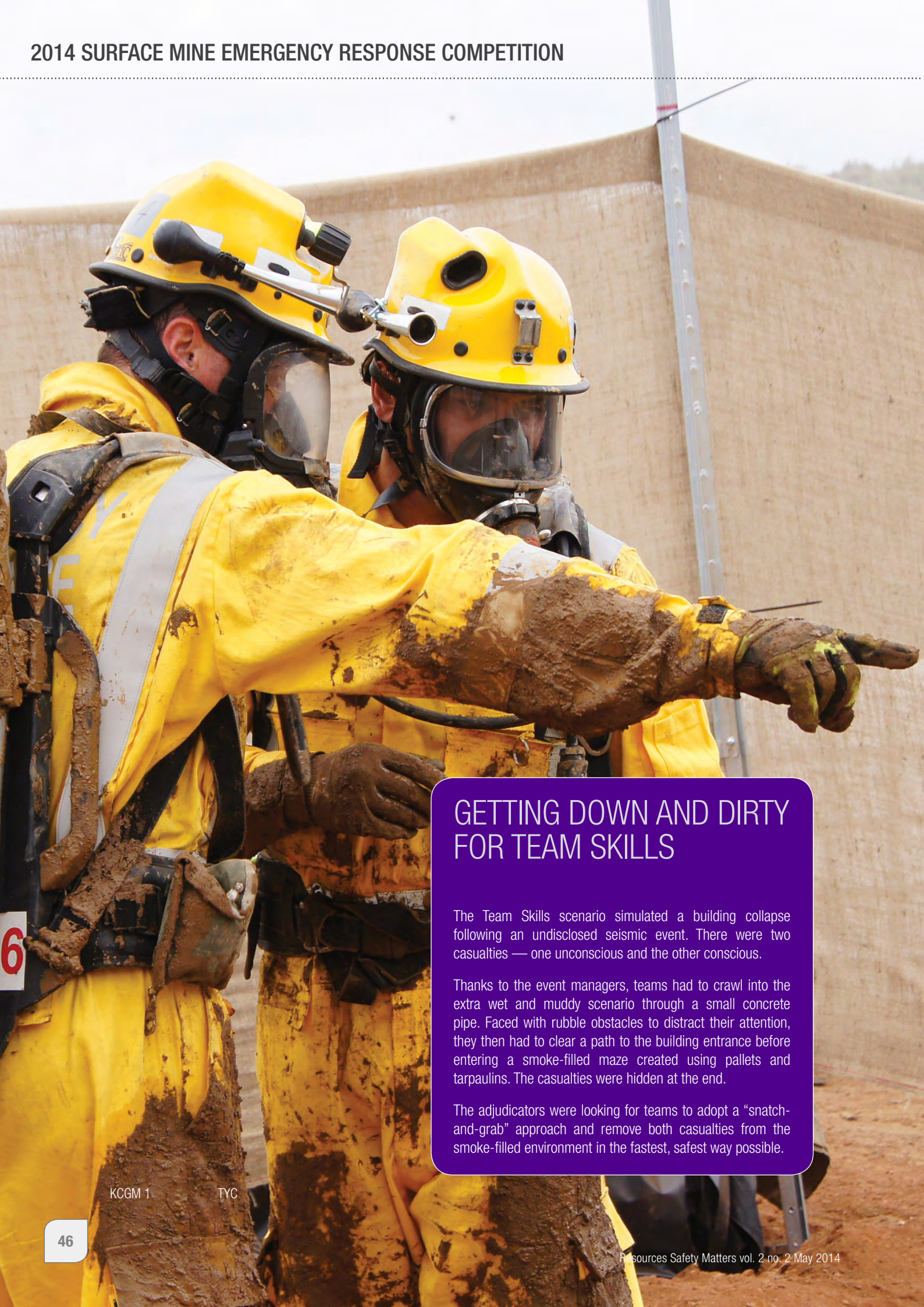


HONOUR BOARD

1st best team	KCGM 1
2nd best team	La Mancha Resources
3rd best team	KCGM 2
Confined space rescue	La Mancha Resources
Fire fighting	KCGM 2
First aid	KCGM 1
Hazchem	La Mancha Resources
Incident management scenario	Graham Bailey, MMG Golden Grove
Rope rescue	KCGM 2
Team skills	La Mancha Resources
Theory	Norton Gold Fields
Theory individual	Steve D'Souza, Norton Gold Fields
Vehicle extrication	KCGM 1
Team safety	KCGM 1
Overall BA skills	La Mancha Resources
Overall first aid	La Mancha Resources
Chief adjudicator's award for event management	Team skills
Best scenario - team vote	Vehicle extrication
Best captain	Drew Miller (KCGM 2)
Best new captain	Bill Randall (KCGM 1)
Best new team	KCGM 1

COMPETING TEAMS

St. Ives Lions, Gold Fields Australia
 KCGM 1, Kalgoorlie Consolidated Gold Mine
 KCGM 2, Kalgoorlie Consolidated Gold Mine
 La Mancha Resources
 MMG Golden Grove
 Northern Star Kalgoorlie
 Norton Gold Fields



GETTING DOWN AND DIRTY FOR TEAM SKILLS

The Team Skills scenario simulated a building collapse following an undisclosed seismic event. There were two casualties — one unconscious and the other conscious.

Thanks to the event managers, teams had to crawl into the extra wet and muddy scenario through a small concrete pipe. Faced with rubble obstacles to distract their attention, they then had to clear a path to the building entrance before entering a smoke-filled maze created using pallets and tarpaulins. The casualties were hidden at the end.

The adjudicators were looking for teams to adopt a “snatch-and-grab” approach and remove both casualties from the smoke-filled environment in the fastest, safest way possible.

KCGM 1

TYC



MMG Group

BM

TURNING BLUE AT HAZCHEM SCENARIO

The theme running throughout the 2014 Surface Mine Emergency Response Competition was realism — and the HazChem event was no different. This was reinforced by the safety messages delivered to teams reminding them all that the hazards presented were to be treated as real, and they were not to travel past any danger or caution tape.

For the HazChem event, teams could only touch designated coloured valves once they were inside the bunded area.

“When I was told that the competition was being held at a mine site, I knew we would be able to do something really good. Trying to simulate a hazardous chemical emergency off a mine site can sometimes be difficult. Being able to utilise the inside of a storage facility meant we could create a realistic scenario,” said HazChem event manager, Travis Pringle.

Travis has been involved in emergency response competitions for a number of years, as both a competitor and as an adjudicator.

“This was my first time as an event manager, so it was a whole new experience for me,” Travis said.

Cue the background story for the scenario. An electrician has entered a cyanide solution storage area to fix and replace electrical wiring above the cyanide solution lines. Upon climbing down from the ladder, the electrician has stood on a valve and broken it off. Due to incorrect isolation, this break has caused an uncontrolled release of cyanide solution. Teams were required to assist the main casualty inside the storage area, as well as the distressed spotter who had activated the emergency call and rendered the scene safe.

A special mention must go to the two volunteer casualties for this scenario. Donning wetsuits under their costumes, they were put under safety showers by competing teams, submerged in a decontamination pool, scrubbed down then hosed again. Part-acting, part-real, the two volunteers shivered their way through the first day of the competition. With chilly temperatures and rain forecast for the second day, an executive decision was made that use of the decontamination pool would be simulated, much to the delight of the blue-lipped volunteers.

Travis explained how months of planning goes into developing the scenarios. From brainstorming ideas to working with industry experts to ensure the event is both realistic and safe, it takes a lot of work from many people for the final scenario to come to fruition.

Based on previous incidents and near-misses, cyanide was the chemical of choice as it is found at most mine sites, and yet many workers may not be aware of the potential danger from exposure.

“It was really about bringing cyanide to their attention, and providing teams with the opportunity to work through the situation. To ensure the teams could prepare for the scenario, we told them in the pre-competition information that it was the chemical involved in this event. Our hope was that the teams would do some research on cyanide and come prepared,” Travis said.

“Overall, teams responded well in the scenario. It would be great to see the HazChem event change its structure over the next couple of years to keep teams on their toes,” he added.

2014 SURFACE MINE EMERGENCY RESPONSE COMPETITION

CONFINED SPACE RESCUE



FIRE FIGHTING



FIRST AID



HAZCHEM

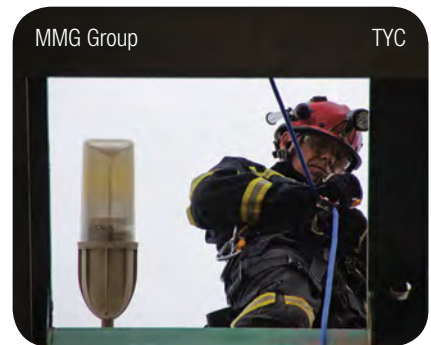


2014 SURFACE MINE EMERGENCY RESPONSE COMPETITION

INCIDENT MANAGEMENT SCENARIO



ROPE RESCUE

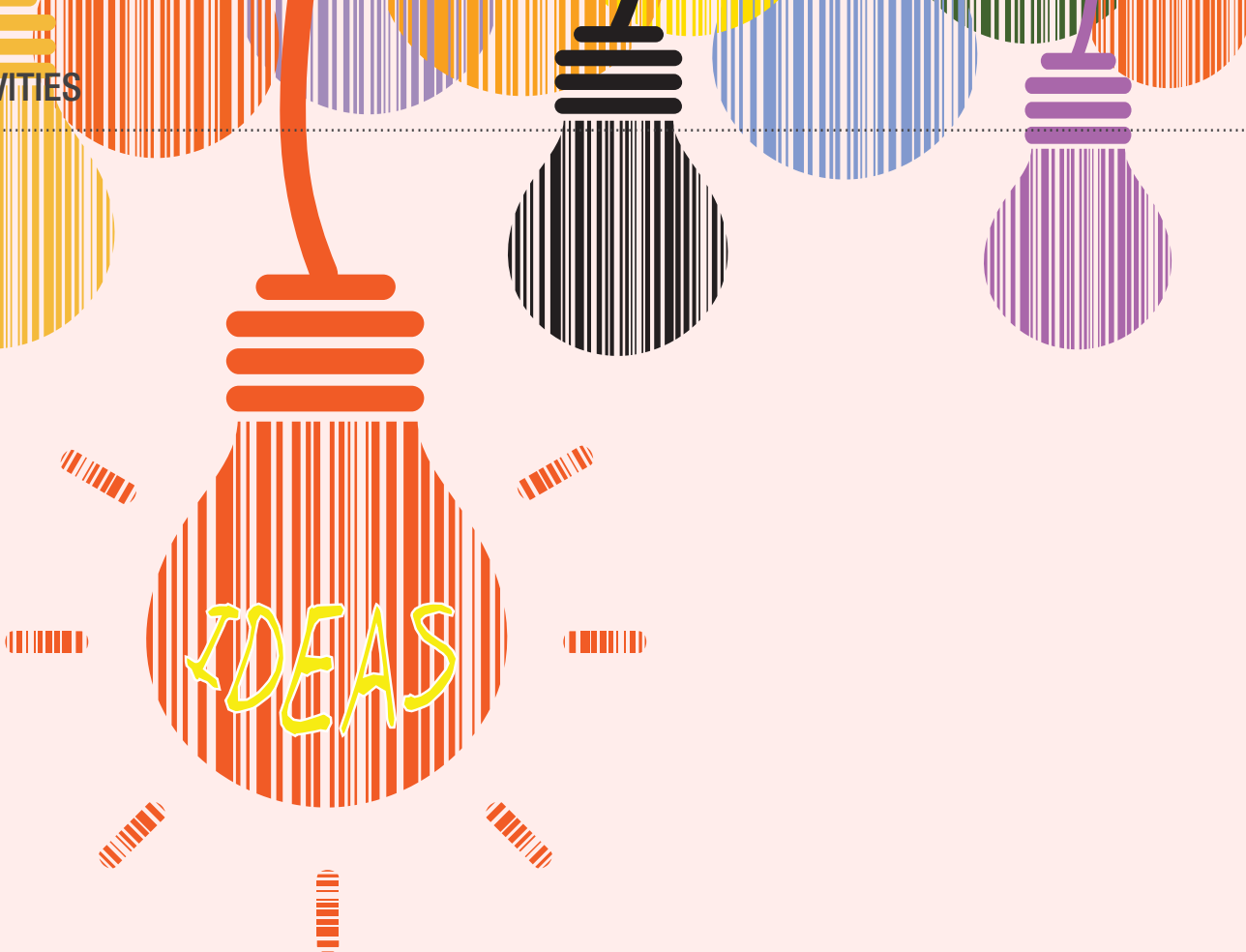


TEAM SKILLS



VEHICLE EXTRICATION





CME EVENT FOCUSES ON MINES SAFETY

The State's chief resources safety regulator used the 2014 CME Safety & Health Conference to share the Department of Mines and Petroleum's safety focus areas with industry members.

The two-day annual event, held in April and officially opened by the Minister for Mines and Petroleum, champions workplace safety and health initiatives through presentations, workshops and the Safety and Health Innovation Awards.

"This premier event presented by the Chamber of Minerals and Energy WA is an invaluable opportunity for industry to share experiences and innovations with each other which will further strengthen Western Australia's mines safety culture," said Resources Safety's Executive Director, Simon Ridge.

"By proactively working together, industry and the regulator have shown what we can achieve when the mining sector had its first fatality-free year on record in 2012, when some 100,000 people were employed in the industry.

"We did it in 2012, and I'm confident we can do it again," he told the audience of several hundred.

With new safety legislative reforms expected to be rolled out next year, the Department is focusing on three key areas to improve safety.

"As a safety regulator, we are focused on the effective adoption of a risk-based approach to safety management across industry, supporting positive safety leadership and cultural change, and pro-actively working with stakeholders as we strive to achieve the aspirational goal of zero-harm."

Mr Ridge said that this year's innovation award winners were an excellent example of how safety outcomes can be improved when a hazard is identified, and a company makes a commitment to create a solution to address the associated risk.

"I would like to congratulate the winning companies — Leighton Contractors, Rio Tinto Iron Ore and Toxfree Solutions — as well as all of this year's nominees for their contributions to improving the safety outcomes of our sector," he said.

"It is very pleasing to see companies being vigilant, knowing the hazards in their workplace and employing innovative risk management processes to control them."

SAFETY AND HEALTH INNOVATION AWARDS 2014 RECOGNISE INDUSTRY CREATIVITY AND INGENUITY

Engineering Category

Winner (also Industry Choice Award Winner)

Leighton Contractors, Safety Pressure Locking Device
See the feature article on page 53 for details.

Other finalists

Rio Tinto Iron Ore – Transfer Door and Inspection Hatch Modification Project

Following a recent incident where a maintainer injured his finger while opening an inspection hatch, the project team developed a taxonomy of similar incidents. The team reviewed, prioritised and recommended modifications to all transfer doors and inspection hatches within the plant at Dampier to prevent injuries when personnel are performing routine duties requiring them to open and close transfer doors and inspection hatches. The solution was simple but effective, tackling the problem at its source by changing the way that transfer doors and inspection hatches are secured.

Rio Tinto Iron Ore – Online Tank Robotics Inspection

This innovation uses a combination of robotics to replace workers when inspecting the degradation of water tanks while the tanks are still online. This methodology mitigates the hazards of working at heights, confined space and the risk of drowning, making the tank inspection task safer, more efficient and more cost effective.

People Category

Winner

Rio Tinto Iron Ore, The Yandicoogina Safety and Health Representative Development Program

A staged and multi-faceted development program for Yandicoogina's safety and health representatives comprises modular group training based on adult learning principles, individual up-skilling of representatives, increased exposure to site management, increased exposure to high level safety and health processes on site, and social events. The overall goal of this program is to develop a cohesive and industry best standard team of representatives on the shop floor who can address team and site issues confidently and professionally. It has been so successful that supervisors have asked to attend some modules.

Other finalists

Georgiou Group, Safety is My Way

Georgiou has implemented a process that transforms safety culture by focusing on the personalisation of safety. It engages and holds project teams accountable for the implementation of measures to create exemplary people in safety, supported by a powerful brand "Safety is My Way". Further information on this strategy is provided on page 30 of this issue of Resources Safety Matters.

Newmont Asia Pacific, Vital Behaviours

This program is initiated by informal crew leaders who use employees' stories to identify less-safe behaviours and to specify the three to four vital behaviours that would greatly reduce injuries and fatalities. These employees also create six sources-of-influence strategies to motivate and enable all employees to choose the vital behaviours. They meet regularly with management to implement the strategies and assess their impact on behaviours. The leaders, along with their workmates, help ensure vital behaviours become part of the site's culture by enrolling new employees, helping others to speak up, and providing unfiltered feedback to management about what is working and what is not.

Systems Category

Winner

Toxfree Solutions, Confined Space I-Surveillance

The idea for this innovation came about from workers who ride dirt bikes in their spare time and use GoPro digital cameras to record their exploits. The cameras, which can be attached to a hard hat, chest harness or telescopic pole, are used to view tanks about to be cleaned so workers can obtain a true appreciation of the conditions they face, associated risks and the changing work environment. Wi-Fi capabilities allow the transmission of video or camera footage to smart phones or tablets outside the confined space environment, allowing operators and others to evaluate and address any concerns identified and communicate via handheld radio.

This approach is also ideal for training as footage can be reviewed in a safe environment.

Other finalists

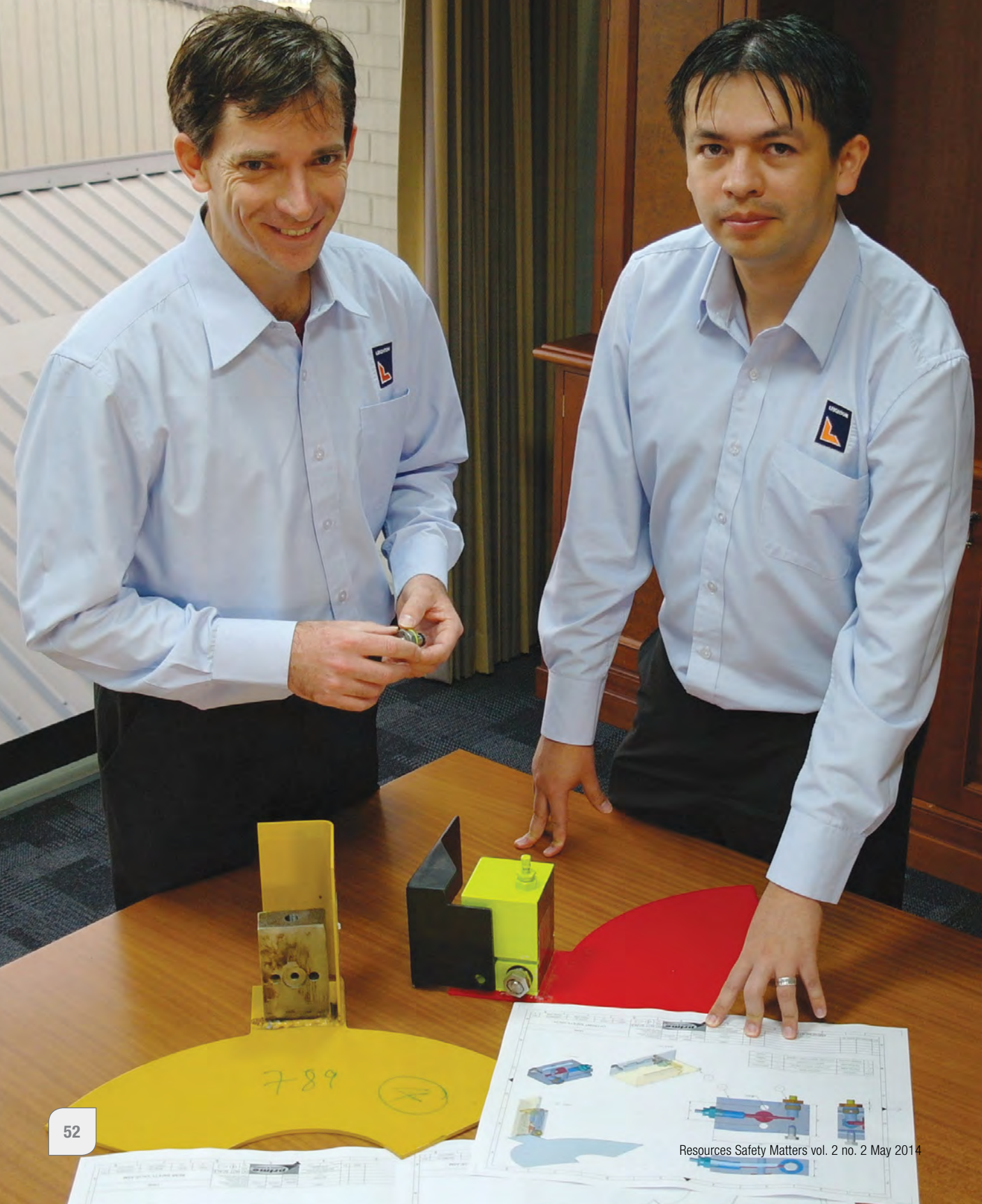
Argyle Diamonds, Mudrush Hazard Management

Mudrush is a critical risk for many underground mines. Recognising this risk, Argyle Diamonds created a robust process for assessing, classifying, communicating and managing the level of risk for each drawpoint in its underground block cave mine, including the remote bogging of high risk drawpoints. In consultation with the Department of Mines and Petroleum, Argyle also paved the way for a clear process of classifying, reporting and managing incidents where there has been an uncontrolled flow of material.

Fortescue Metals Group, Vehicle Segregation and Hierarchy Rules

The implementation of a traffic management system based on hierarchy road rules and vehicle segregation was proposed at Fortescue's risk assessment workshops, to address risk associated with vehicle interaction and lower the risk profile. The hierarchy road rules assign right-of-way priority to different classes of vehicles to reduce the risk associated with vehicle crossings or blind spots. Vehicle segregation focuses on eliminating a significant portion of vehicle interaction in the mining area.

Mining Division plant engineers Andrew Houlding (left) and Junior Gomez Riega
Photo courtesy Leighton Contractors



MECHANICAL SAFETY DEVICE TAKES CARE OF STORED ENERGY

A simple but effective device received double accolades at the Safety and Health Innovation Awards 2014, winning not only the Engineering category but also the Industry Choice category after receiving the most votes from attendees at the 2014 CME Safety & Health Conference.

Leighton Contractors' safety pressure locking device isolates residual or potential energy in dump trucks when they are locked-out for inspections or servicing. The device was developed after a number of serious incidents involving the unplanned release of stored energy from pressure vessels on dump trucks.

Dump trucks hold residual energy in their suspension legs. The purpose of the locking device is to prevent personnel from inadvertently removing the suspension cylinder manifold from a dump truck when the suspension cylinder is pressurised. Leighton Contractors' device adds a pressure-sensitive locking pin, guaranteeing the energy in these legs remains isolated until it is released in a planned safe manner.

The previous approach relied on tradespeople to check that all pressure had been vented from a dump truck's suspension cylinders before the pressure manifold was removed. A pressure-sensitive locking pin has been added that locks a fitted guard in place if there is any pressure in the cylinder. This ensures the manifold can only be removed when the pressure has been released, allowing the locking pin to disengage the guard.

Leighton Contractors' Executive General Manager (Mining Division) Steven Keyser said that, despite lock-out procedures requiring the isolation of all energy in a machine, large amounts of residual or potential energy could remain on many machines.

"Although Leighton Contractors designed the safety pressure locking device for dump trucks, the same principle could be applied to other components of machinery that retain stored energy when the machine is isolated," said Mr Keyser.

Leighton Contractors' Mining Safety Essentials program encourages its people to devise above-the-line solutions that engineer out critical risk.

Mr Keyser said that the company encouraged its people to use their experience and knowledge to transform ideas into lifesaving realities.

"It is this type of innovative thinking that continues to put better controls in place around critical risks at our mine sites," he explained.

"This is a great example of how by working smarter and with a solutions focus, we can not only add value for our people, clients and projects, but have a significant and positive impact on the industry as a whole," he said.

For more information on the locking device, contact Leighton Contractors' General Manager Plant (Mining Division) at Steve.McDonald@leicon.com.au

Note: Australian Innovation Patent Number AU 2013101642 covers this invention.



Locking pin engaged



Locking pin disengaged

Photos courtesy Leighton Contractors

MANAGING BULLYING – A MANAGER’S PERSPECTIVE

On 1 January 2014, the way that claims of alleged bullying are tackled changed nationally, such that the Commonwealth process may be running concurrently with that of Western Australia’s safety regulators.

To assess how this apparent duplication of legislation may affect business in the State, the Chamber of Commerce and Industry of Western Australia (CCI) conducted an opinion survey of managers, general managers, directors and owners from the business community in November 2013. The results of that survey are reported here by CCI’s Karin Lee, Manager Safety and Risk Services, and Jennifer Low, Adviser OSH and Workers’ Compensation.

Note: Resources Safety has a system to handle reports of alleged bullying under the Mines Safety and Inspection Act 1994

Historically, bullying has been an occupational safety and health (OSH) issue. However, that changed when anti-bullying amendments to the *Fair Work Act 2009* (Commonwealth) came into effect on 1 January 2014. Bullying now traverses both the OSH and industrial relations arenas.

The *Fair Work Act 2009* provisions enable a worker with a bullying complaint to take the matter to the Fair Work Commission for an order to stop the behaviour. A worker in Western Australia may do this at the same time as:

- lodging a complaint with WorkSafe or Resources Safety, depending on the workplace
- making a worker’s compensation claim through WorkCover WA if they have been injured as a result of the bullying.

It is unclear to CCI how these various approaches to the same issue will be managed in practice, and how employers can navigate through the various requirements relating to one area of management. For those employers facing claims of alleged

bullying, there may be investigations by several regulators, as well as their insurers, at the same time as they are undertaking their own activities to identify and manage the workplace issues.

The survey conducted by CCI was designed to capture the views of managers and business owners regarding bullying behaviours and their prevalence, and the likely impact in the workplace of the additional legislation. More than 200 managers and business owners completed the survey.

The survey indicated that, on the whole, managers and business owners were aware of the need to manage bullying in the context of occupational safety and health and the *Fair Work Act 2009* amendments (which were not yet implemented at the time of the survey). When asked about prevalence rates, managers and business owners indicated that they believed bullying behaviours occurred in almost half of all workplaces.

Most managers and business owners considered that there is an increased awareness of bullying in the workplace. Some 63 per cent of respondents indicated a likelihood of their business incurring additional costs associated with managing bullying in the workplace for:

- additional training about the new legislation and technical requirements of the different regulators
- training to identify and manage bullying behaviours in the workplace
- time costs associated with addressing the various claims and investigations
- updating of policy and procedures.

For further information about the survey or related matters, please contact Jennifer Low (08 9365 7456, Jennifer.Low@cciwa.com).

DEMOGRAPHICS

- 61% of respondents were aged 46 or over, followed by the 36-45 year old age group with 24%.
- 45% of respondents had been in the workforce for over 31 years, with only 3% indicating less than 5 years.
- 40% of respondents had worked for between 4 and 6 companies over their career.
- There were slightly more female than male participants.

KEY FINDINGS

- Respondents indicated that, based on their own experiences, they believed bullying behaviour occurred in almost 50% of all workplaces.
- 96% of respondents considered bullying to be a risk to the safety and health of an individual. However, 65% indicated that they would report bullying to their HR department rather than to their HSE or OSH department.
- 63% indicated a likelihood of incurring additional costs associated with managing bullying under the new legislation.
- 66% indicated they are likely to personally request more training around relationship management, HR practices or leadership skills in the future.

DANGEROUS GOODS PROSECUTIONS

EXPENSIVE LOAD FOR TRANSPORT COMPANY

A Western Australian transport company was found guilty of committing dangerous goods offences under the *Dangerous Goods Safety Act 2004* and was fined \$35,500 at the Northam Magistrate's Court on 20 January 2014.

The company was charged with 16 offences:

- six counts of failing to comply with a remediation notice
- four counts of allowing a person to drive a vehicle transporting dangerous goods without compliant transport documentation
- three counts of using a road vehicle to transport a placard load of dangerous goods without the appropriate fire extinguishers and personal protective equipment.
- one count of using a road vehicle that was not equipped with an emergency information holder.
- two counts of transporting an incorrectly placarded (marked) load containing dangerous goods.

Remediation notices are written directions and are mainly used to instruct a company or individual to take steps to correct safety issues. Failing to comply with a remediation notice carries a maximum penalty of \$50,000 per offence. Of the \$35,000 fine issued to the company, \$15,000 related to its failure to comply with remediation notices.

Philip Hine, Resources Safety's Director Dangerous Goods, said that the significant fines reflect the seriousness of the offences and the risk to public safety. He confirmed that the Department of Mines and Petroleum will continue to target transport companies not complying with remediation notices and mandatory requirements for the transport of dangerous goods.

TOUGH CALL FOR EXPLOSIVES COMPANY

On 11 March 2014, a Western Australian explosives company was fined \$5,000 in the Rockingham Magistrate's Court after a mobile phone was used inside an explosives storage magazine in a southern Perth suburb. The fine was reduced from \$8,000 after an early guilty plea was submitted and the company was ordered to pay court costs.

Mr Hine said that, despite the discount, this was a substantial monetary increase after the company elected to go to court rather than accept the initial infringement notice.

"Also, by not having paid the original infringement, the company now has a criminal conviction against its name," Mr Hine said. "The magistrate considered the offence as serious as there was the potential to endanger people and surrounding properties. It was also considered to demonstrate an inappropriate attitude toward safety."



NATIONAL WORKPLACE FATALITY STATISTICS RELEASED FOR 2013

There is no single national data collection system that identifies all work-related injury fatalities, so the exact number of people who die in any year as a result of work-related injuries in Australia is difficult to establish. To achieve the best estimate, Safe Work Australia examines three datasets that contain information on work-related fatalities. Each month, the agency publishes online reports on work-related deaths.

According to the data available in May 2014, there were 186 work-related fatalities in Australia in 2013. Of the ten mining fatalities in 2013, three were in Western Australia.

Industry of workplace	2013	2012
Transport, postal and warehousing	52	65
Agriculture, forestry and fishing	49	53
Construction	17	30
Manufacturing	14	18
Arts and recreation services	10	4
Mining	10	7
Electricity, gas, water and waste services	7	5
Retail trade	6	6
Public administration and safety	5	8
Other services	4	1
Wholesale trade	4	5
Accommodation and food services	3	1
Health care and social assistance	2	2
Administrative and support services	1	5
Government administration and defence	1	-
Information media and telecommunications	1	2
Education and training	0	4
Financial and insurance services	0	0
Professional, scientific and technical services	0	6
Rental, hiring and real estate services	0	1
TOTAL WORKER DEATHS	186	223

Source: www.safeworkaustralia.gov.au/sites/swa/statistics/work-related-fatalities/pages/worker-fatalities as at 30 May 2014

CLOSING THE GAP IN 2012-13

The Resources Safety Division of the Department of Mines and Petroleum recently released its *Safety Performance in Western Australian Mineral Industry: Accident and Injury Statistics* report for the 2012-13 financial year.

The report reveals that there were no work-related fatalities in the Western Australian mining industry in that year. However, Resources Safety Executive Director, Simon Ridge, said in his introduction to the report that this achievement was tempered against an increase in serious injuries and near misses.

“During 2012-13, there were 497 lost time injuries or LTIs, 40 more than the previous financial year,” Mr Ridge said. “Of those, 411 were serious LTIs. However, it is important to note that the rise in hours worked during this time resulted in overall serious LTI frequency rate remaining unchanged at 2.0.”

The rise in hours worked is a reflection of the increase in workers in the industry for the period covered by the report. Mining’s average workforce increased to 100,170 in 2012-13 compared to 94,012 the previous financial year.

The seven per cent workforce increase suggests a less experienced and more transient workforce, which creates new challenges for safety managers to ensure all employees are fully aware of their working environment and potential hazards.

“Research conducted by the Department last year showed almost a third of fatalities occurred when the worker had been in the position for less than one year,” Mr Ridge said. “Industry needs to remain vigilant on training and induction processes to ensure new starters are equipped to carry out their tasks safely.

“The pathway forward to the aspirational goal of ‘zero harm’ will require a determined move up the hierarchy of control using elimination, substitution and engineering to limit the risk of potential hazards.”

The annual industry safety performance reports include information on:

- fatal accidents
- serious injuries
- lost time injuries
- workers’ compensation premiums
- injuries by commodities
- disabling injuries

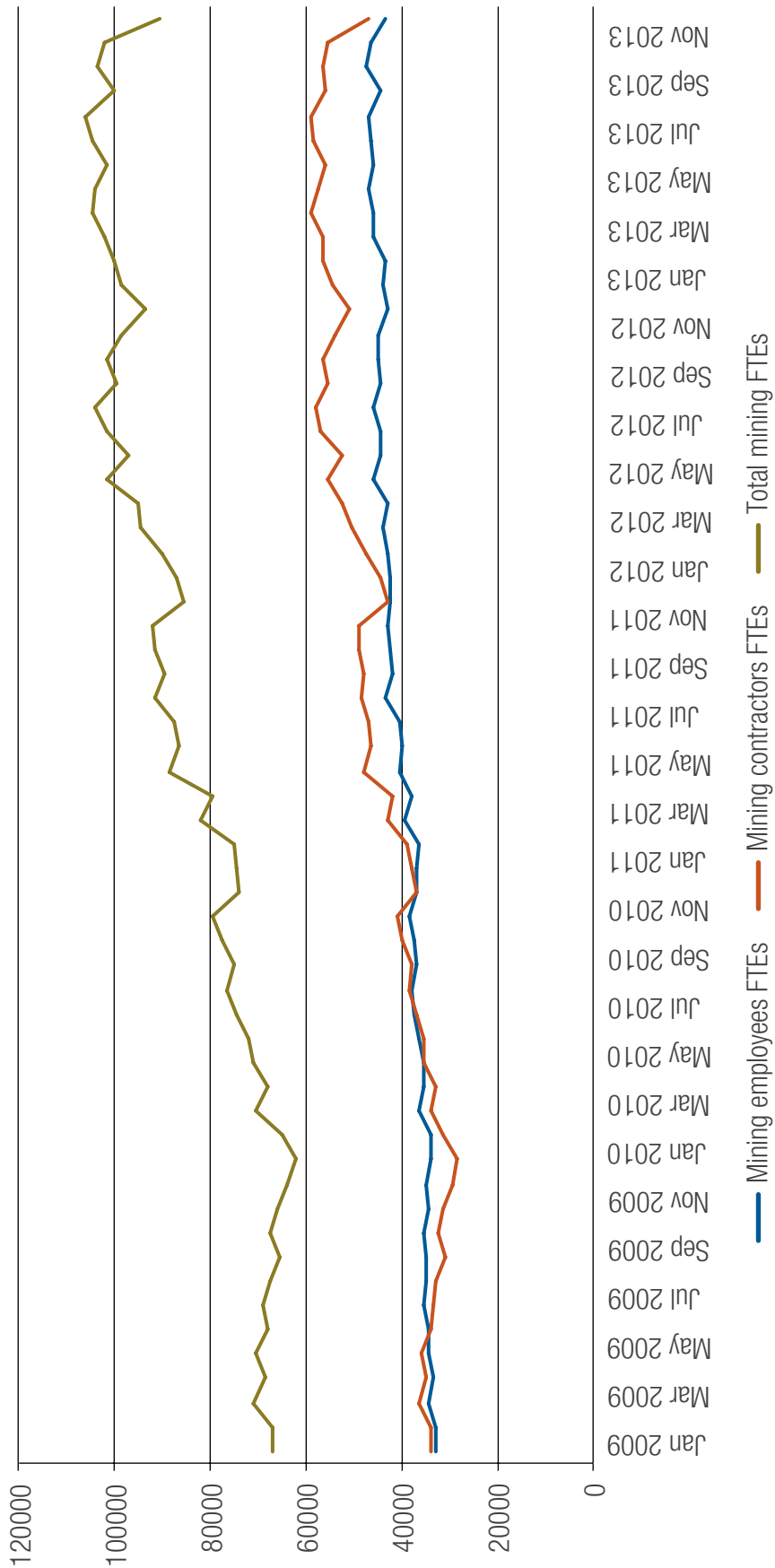
for mining, and some statistics for exploration activities.

To view the full report, visit the mining publications section at www.dmp.wa.gov.au/ResourcesSafety

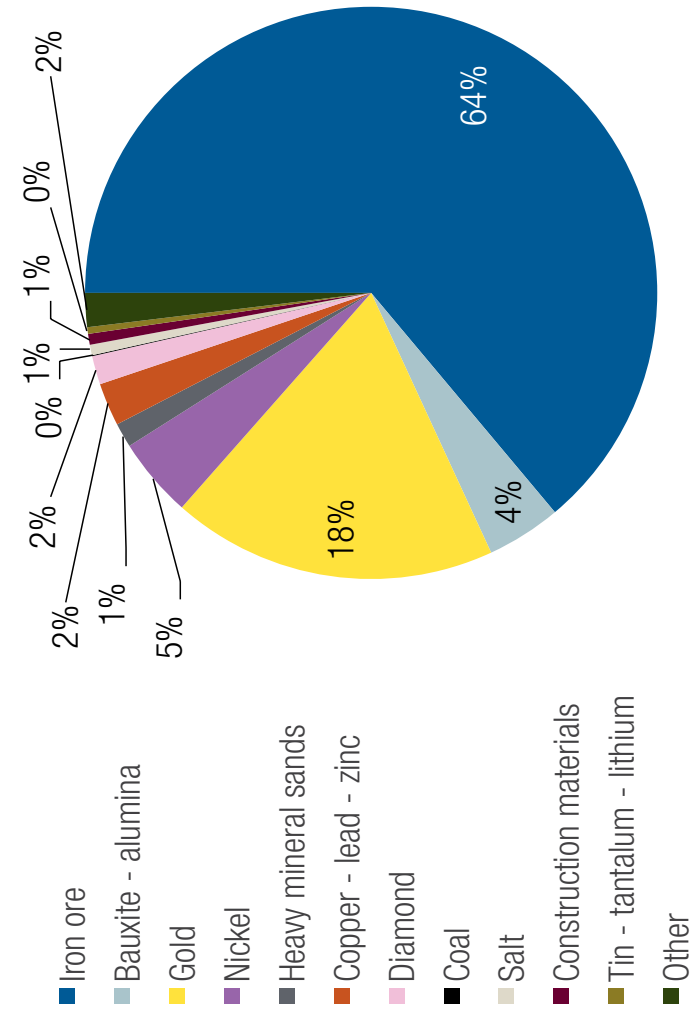


WA'S MONTHLY MINING WORKFORCE (DECEMBER 2013)

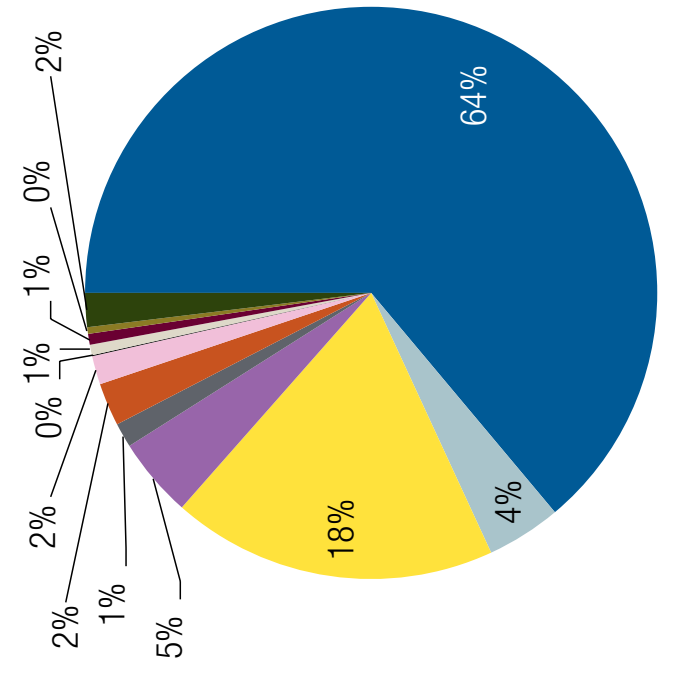
NOTE: From 1 July 2009, monthly mining workforce figures are plotted as full-time equivalent (FTE), where 1 FTE = 2,000 hours worked per year



WA'S MINING WORKFORCE – PERCENTAGE BY COMMODITY (DECEMBER 2013)



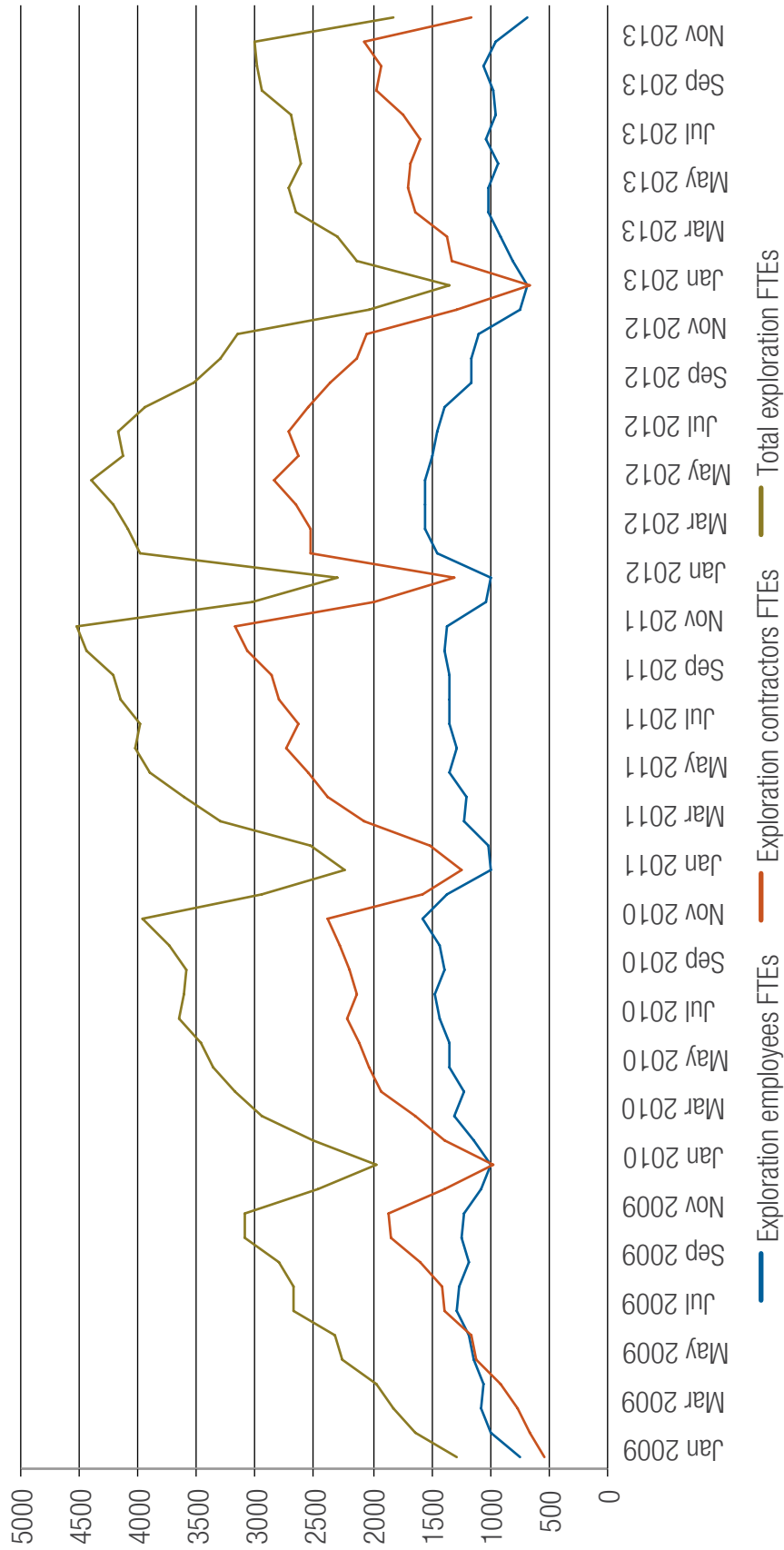
Mining employees FTEs



Mining contractors FTEs

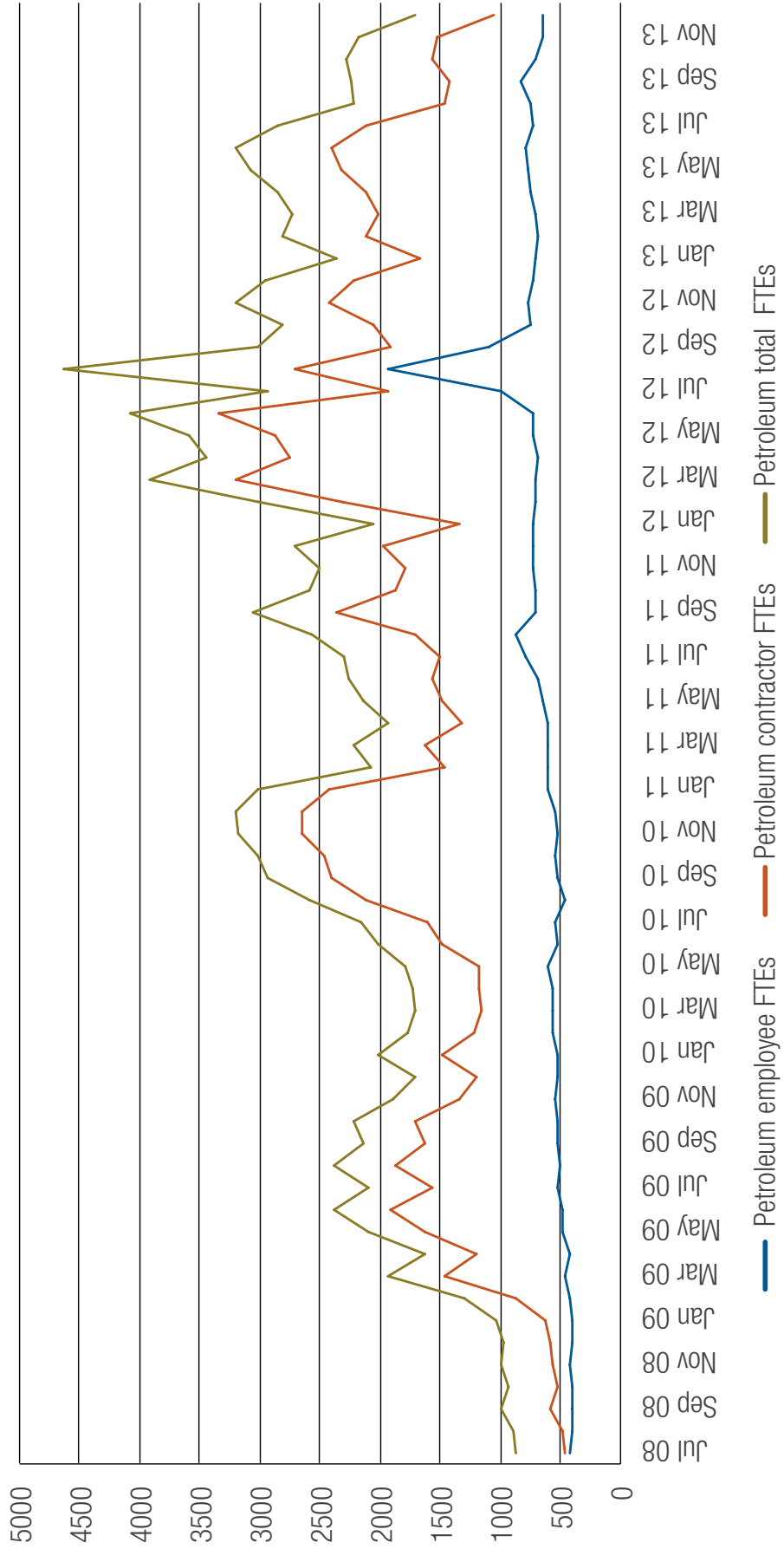
WA'S MONTHLY MINERAL EXPLORATION WORKFORCE (DECEMBER 2013)

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 MONTHLY PETROLEUM WORKFORCE (DECEMBER 2013)

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



CALL TO MANAGE OPEN HOLES UNDERGROUND

“ That, wherever possible, mine operators manage the hazard of open holes in mines by designing, constructing and locating physical hard barriers so as to prevent equipment from having access to the edge of such open holes, and that the barriers be used in conjunction with lower level access control systems such as signage, demarcation and lockable barriers controlled by persons in authority. ”

.....
This was the recommendation made by Coroner Barry King in March 2014 following the inquest into the death of a loader operator in an underground mine in April 2010.

The Perth Coroner's Court was told that Wayne Ross was driving an underground loader at BHP Billiton Nickel West's Perseverance mine near Leinster when the vehicle plunged 25 metres down a stope. The Coroner found that the deceased died from multiple injuries as a result of the fall and ruled the death an accident.

The inquest was told that the deceased was an experienced and competent loader operator, who had assessed his activity on the day of his death as low-risk and not out of his normal scope of work, and therefore the mine site's risk management procedures had not been escalated.

The inquest was told that the deceased had gone to the top level with instructions from his supervisor to check and prepare it for a survey of the stope. Precise details of what happened leading up to the accident are not known as the deceased was working alone, but it is assumed he may have been trying to construct a safety bund at the edge of the stope in preparation for the survey.

The Department of Mines and Petroleum's investigating inspector Andrew Harris told the inquest that he saw two safety bollards about 10 metres from the edge of the stope, as well as two tyre imprints near the edge of the stope. There was no evidence to suggest that the loader's brakes had been applied before falling over the edge of the stope.

It appears that the deceased trammed his loader towards the edge of the stope and failed to stop the loader in time due to poor visibility from the loader, possibly exacerbated by airborne dust, a bend in the drive and illusion caused by the appearance of the far edge of the stope.

After the accident, the company filled in the stope and stopped mining at the 1A ore body at the mine. No further open stopes have been created at Perseverance mine. However, Inspector Harris advised the Coroner that the open stope method of mining is used in some form at about 35 operational mines in Western Australia.

Inspector Harris proposed four recommendations:

- using formal, team-based risk assessments where manned equipment is required to work near open holes
- not relying solely on lower level risk assessments performed by operators
- considering the use of alternative technology or techniques that remove the need for an operator to go near an open hole
- wherever possible, designing, constructing and locating physical hard barriers to prevent equipment from accessing the edge of an open hole, and such barriers being used in conjunction with lower level access controls such as signage, demarcations or mechanisms requiring the presence of an authorised person to remove them (e.g. lockable barriers where the keys would be held by supervisors or someone in authority).

The company agreed that demarcation and preventing access to open holes is critical, and a procedure had been implemented whereby bunds or hard barricades were always put in place prior to voids being created.

The company indicated support for the proposed recommendations in principle but made the point that team-based risk assessments are performed at the point of selecting the mining method in order to determine appropriate equipment and controls. It said that this risk assessment should consider the use of alternative equipment and technology. The company considered lower level risk assessment to be an important part of mines management system. However, Inspector Harris emphasised the need to monitor and reinforce the quality of such assessments to ensure they are being performed correctly.

FURTHER INFORMATION

The full Coroner's report, including details of the findings and recommendations, is available at www.coronerscourt.wa.gov.au

MINES SAFETY SIGNIFICANT INCIDENT REPORT NO. 194

CRUSH INJURIES SUSTAINED FROM WORKING WITH A SUSPENDED LOAD – FATAL ACCIDENT

ISSUED: 16 JANUARY 2014

Summary of incident

A worker was fatally injured, and another seriously injured, in an accident at a heavy equipment maintenance workshop. Two workers were completing the installation of the operator's cab for a surface miner after a rebuild. The cab weighed about 2.5 tonnes and was suspended from an overhead crane.

The pins that connected the four lifting arms to the cab had been fitted by the day shift workers. The day shift had then lowered the cab onto the machine and left it in the resting position against the bump stops. There was slack in the chains connecting the cab to the overhead crane. When the job was handed to the night shift workers, one pin had to be shimmed and the retaining bolts fitted to all four pins.

The accident happened about one hour into the night shift after the cab had been lifted from its resting position on the bump stops. Both workers were positioned in the cab's path as it fell in an arc.

Probable causes

Direct

- The two fitters were working in the vicinity of a load suspended from an overhead crane with rigging, and were along the descent path the load would follow if the rigging failed (i.e. they were in the "line of fire").
- The rigging arrangement between the cab and overhead crane failed.

Contributory

- There was no detailed safe work procedure (SWP) for the cab installation. The maintenance manual provided for the surface miner by the original equipment manufacturer (OEM) did not:
 - detail the weight of the cab
 - specify how to attach the lifting points to the cab
 - give a safe working load (SWL) or working load limit (WLL) for the lifting points.
- It appears the rigging practices were inadequate.

Mines Safety Significant Incident Report No. 194 continued

Actions required

Managers and supervisors are reminded of the importance of conducting detailed risk assessments for work associated with or near suspended loads. There are constant reminders in workplaces not to walk or work under a suspended load. However, where suspended loads are connected to other mechanical linkages, there is the potential for the load to not only drop straight down, but to swing and strike people who are not directly beneath it. Therefore:

- All stored energy hazards associated with suspended loads need to be identified and adequate control measures implemented.
- Areas that could be in the line of fire should be clearly identified during the risk assessment and dealt with using the hierarchy of control.
- When working with suspended loads, thoroughly check every component of the rigging system to ensure it is fit for purpose.
- If workers cannot see how to do the job safely, they should stop the job and advise their supervisor. Work should only continue once all hazards have been identified, controls put in place, and the job signed off by the appropriate competent person.
- At shift handover, provide the incoming shift with sufficient information for them to continue the job in a safe manner, including a review and acknowledgment of any job hazard analysis (JHA) or SWP.
- A competent supervisor should review and sign off on JHAs to ensure all job steps are adequately covered.

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. 195

SERIOUS INJURIES SUSTAINED DURING WHEEL RETRACTION OF HYDRAULICALLY EXTENDABLE LOW LOADER DOLLY

ISSUED: 24 FEBRUARY 2014

Summary of incident

A worker was seriously injured when his head and body were run over by a low loader dolly.

A truck was being driven slowly forward to assist with retraction of the dolly's extended wheels. As the worker approached the dolly to check the position of the hydraulic control levers, he entered the dolly's travel path and was caught by the extended wheels. He fell to the ground and was run over by the dual wheels sets, which weigh about 900 kg.



Example of a low loader dolly – note the position of the controls

Probable causes

Direct

- The worker entered the path of the extended wheels that were moving forward.

Contributory

- There was no communication between the worker and the truck driver before the worker approached the dolly.
- The worker was assisting with the task of retracting the wheels. This task is usually performed by the driver alone.

Actions required

Where there is a change to the way a job is done (e.g. a single operator is being assisted), the allocation of tasks needs to be discussed before the job proceeds to ensure all parties understand their roles. The procedure should be amended accordingly to minimise exposure to hazards that may not be evident when the job is done according to the standard operating procedure.

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. 196

FRONT TYRES OF LIGHT VEHICLE OVER OPEN EDGE

ISSUED: 27 MAY 2014

Summary of incident

To provide access to another location within a mine, a light vehicle track was pushed through broken ground following blasting. However, one week before the incident described here, part of the blasted area had been excavated.

A blasting supervisor was inspecting locations for suitable road block positions for a nearby planned blast. He called up to request permission to pass through the demarcated blasted area. Believing he was in a different work area, permission was granted.

The supervisor then drove towards the open edge that had been left exposed. His vehicle was travelling slowly enough to enable him to stop it before driving completely over the edge. Almost two metres of the vehicle, including the front wheels, were left perched about five metres above the excavated floor. The supervisor was able to exit the vehicle without further incident.



Light vehicle with front wheels hanging over open edge of excavated area

Probable causes

Direct

- A light vehicle track was constructed over blasted ground that was subsequently excavated.
- Area inspections had not identified the light vehicle track, nor the need to construct a bund to prevent access to the mined area.

Probable causes continued

Contributory

- The light vehicle track over blasted ground had not been:
 - approved by the Quarry Manager
 - surveyed
 - recorded on plans.
- The excavator operator did not know there was a site requirement to report the excavation of tracks to his supervisor. This requirement was not explicit in the training processes.
- Demarcation signs did not have specific location information that could be used during call ups.
- The inspection regime for mining areas did not match the rate of change in the work environment.

Actions required

Review the site's traffic management plan with respect to:

- the use of light vehicle tracks
- the demarcation of mining areas
- how changes will be captured and transmitted to those affected.

The following actions will help improve traffic management at surface mining operations, particularly for light vehicles:

- Eliminate the development of light vehicle access tracks or roads over blasted ground. If this is not possible, only the mine manager should be able to authorise the creation of such tracks or roads.
- Implement a system for reporting the creation of tracks and roads, including new intersections.
- Survey, demarcate and add all light vehicle tracks or roads to mine production plans.
- Implement an inspection schedule around mine areas to identify tracks and roads being used by light vehicles that may be affected by mining operations.
- Ensure tracks and roads that will be affected by mining operations are made inaccessible.
- Ensure the locations of tracks and roads are correctly identified on demarcation signs to assist with call ups when requesting access permission.

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. **197**

DOZER LOADING LEADS TO PRIME MOVER JACK-KNIFE AND FUEL TANK RUPTURE

ISSUED: 27 MAY 2014

Summary of incident

A dozer on a mine site was being driven up an earthen ramp onto a prime mover's trailer in readiness for transportation. The loading process was being spotted by the truck driver, who was standing on the trailer's gooseneck.

The rear of the trailer tilted down under the weight of the dozer as it was being loaded, and the drive wheels of the prime mover lifted off the ground. The prime mover, trailer and dozer moved forward 10 to 15 metres. The truck driver entered the cab of the prime mover while it was moving and attempted to steer the vehicle.

The dozer cantilevered backwards, digging its ripper tines into the ground, which stopped the forward movement of the trailer.

The prime mover, while lifted off the ground, swung into the trailer, rupturing the main fuel tank.

Fortunately, no-one was injured and the incident did not escalate when the fuel tank was ruptured.



Photographs showing prime mover, trailer and dozer after the incident; and jack-knifed prime mover and the spill from the ruptured fuel tank

Probable causes

Direct

- The loading ramp was higher than the trailer, leading to most of the dozer's weight being transferred onto the rear of the trailer as it was being loaded. The change in the trailer's centre of gravity made it unstable and the rear of the trailer tilted down while the front lifted.
- The configuration for connecting brake hoses to the trailer was not compatible with that for the prime mover, and only the emergency hose was connected. This allowed the trailer brakes to be released and, consequently, there was no braking capacity on the trailer to stop it moving.
- The wheel chocks stored on the trailer and prime mover were not used.

Contributory

- When the trailer tilted down, the prime mover was lifted at the trailer's gooseneck such that its rear wheels were no longer in contact with the ground. Consequently, the only brakes stopping the forward movement of the prime mover were rendered ineffective.
- There were no safe work instructions for loading the dozer, nor had a risk assessment been conducted.

Actions required

Managers and supervisors are reminded of the importance of safe work instructions that identify the hazards and controls for each job step. For loading and unloading operations, the position of the centre of gravity of an object affects its stability. Those involved in such operations should be aware of this hazard and know how to respond.

The following actions should be considered when developing procedures for the transport of plant.

- Those involved in the job receive competency-based training aligned to the tasks, including awareness of the increased potential for loads and vehicles to move.
- Transport contractors are inducted in the safe work instructions prior to commencing work on site.
- The controls to prevent the uncontrolled movement of vehicles during loading and unloading are defined and implemented, including the use of wheel chocks.
- Loading ramp designs and locations have been assessed as suitable by a competent person and are known to those responsible for loading and unloading activities.

Further information

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

MINES SAFETY BULLETIN NO. 110

SEEKING SAFE MOBILE AUTONOMOUS EQUIPMENT SYSTEMS

ISSUED: 14 MARCH 2014

Summary of hazard

With the introduction of mobile autonomous and semi-autonomous vehicles on some Western Australian mine sites, hazards have emerged that must be considered and managed.

Significant incidents involving autonomous mobile equipment over the past few years in Australia and overseas include:

- an autonomous haul truck reversing over a waste dump windrow during an autonomous edge-dumping operation
- a water truck colliding with an autonomous truck at an intersection after the autonomous system had identified the collision potential and the autonomous truck had stopped
- a blast hole autonomous drill rig reversing into the rear of a stationary blast hole drill rig while in remote control
- a grader colliding with an autonomous truck when the grader pulled out at an intersection
- an autonomous truck backing over an edge that had been undercut.

Fortunately, no-one was injured in these incidents but consequences could have been more serious.

Contributory factors

Investigations into these incidents have identified a number of contributing factors, including:

- specification and design of safety systems
 - detection systems not included in design
 - detection systems only monitoring forward motion
 - users remotely overriding safety systems
- human factor issues
 - failure to respond appropriately to system information or warnings
 - misinterpretation of system information or ignoring warnings
 - lack of system knowledge and understanding of how the autonomous equipment system works
 - not adhering to personnel or equipment exclusion zones
- process issues
 - personnel in active areas without having appropriate communication devices
 - visual inspections, verification and audits failing to identify deviations
 - information not displayed or unreadable.

Actions required

These incidents highlight the importance of ongoing comprehensive risk management activities that include:

- completion of structured hazard identification
- detailed risk assessments
- validation of employee training and competency
- provision of adequate supervision

when introducing autonomous or semi-autonomous mining technologies or systems.

Each employer at an autonomous mine has a duty of care to ensure processes and controls are adequately designed and implemented to minimise the risk of injury or harm to all workers on site.

Section 9 of the *Mines Safety and Inspection Act 1994* requires a safe system of work to be developed for mining operations. The following measures are recommended for autonomous mobile equipment operations.

- Design all equipment to:
 - be fit-for-purpose
 - comply with relevant standards, with layers of protection that recognise the potential for human error
 - provide effective warnings
 - detect critical issues and stop the system through fail-safe systems.

Consider the hierarchy of control and use elimination or substitution where possible to address hazards. Should engineering controls be necessary, robust systems and processes need to be developed to support operational use.

- Rigorously test structured programs that verify critical system safety features and associated procedural processes.

Pre-deployment testing and user acceptance testing cover scenarios where safety critical components are tested and fail-safe measures verified.

- Develop and deliver comprehensive training and assessment programs to ensure personnel are competent to undertake assigned tasks.

Competent and authorised personnel undertake task observations to check compliance with training standards and operating procedures.

Mines Safety Bulletin No. 110 continued

- Implement strict authorisation and access controls to maintain and ensure area security.
Set-up, delineate and validate exclusion zones before any work takes place in an autonomous mine.
- Formally describe and document processes for re-starting any autonomous mobile equipment that stops due to the system detecting a hazard.
Implement comprehensive protocols that allow any issues to be investigated, diagnosed and verified before re-starting any autonomous mobile equipment.
- Conduct regular inspections and audits to ensure the integrity of system data and suitability of the operational environment for autonomous mobile equipment.
Competent and authorised personnel undertake rigorous operational reviews of the autonomous mine to check that the recommendations of previous reviews have been actioned, confirm that appropriate responses have been made to any incidents or issues arising, verify compliance with specifications, validate the continued use of the autonomous system, and identify any system or operational defects. A record of review outcomes should be maintained by the mine operator, including any actions recommended and details of how they were addressed or implemented.
- Implement a change management process when any part of the autonomous system is updated or amended.
Competent and authorised personnel undertake rigorous assessment of the impact of changes and ensure effective controls are in place.
- Develop detailed emergency response procedures to allow operational personnel to effectively communicate and suspend operations should they detect an issue.
All operational personnel working within the autonomous mine have access to and are trained in the use of suitable communication and emergency devices.

Further information

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

DANGEROUS GOODS SAFETY BULLETIN NO. 0114

FLAMMABLE REFRIGERANTS IN NON-REFILLABLE GAS CYLINDERS

ISSUED: 6 JANUARY 2014

Background

Non-refillable gas cylinders that are fitted with burst discs, such as those shown in Figure 1, may not be used for flammable and toxic gases if they are more than 1.25 L water capacity. This is a requirement of:

- *International Maritime Dangerous Goods Code (IMDG Code)* covering the transport of dangerous goods by sea and

- section 4.1.6.1.9 of the *Australian Code for the Transport of Dangerous Goods by Road and Rail, 7th Edition (ADG7)*.

Some refrigerant vendors have imported flammable refrigerants in these cylinders, and a number have been sold to vehicle-servicing workshops and refrigeration mechanics across Australia. It is illegal for vendors to transport or supply flammable refrigerants in these cylinders.

Hazard

If the cylinder over-pressurises and the burst disc opens, the disc will not reseal. This results in the total loss of flammable gas from the cylinder, creating a very hazardous and extensive flammable gas atmosphere.



Figure 1 Examples of non-refillable gas cylinders fitted with burst disc

Dangerous Goods Safety Bulletin No. 0114 continued

Recommendations

Flammable refrigerants need to be packed in compliant gas cylinders that are fitted with spring-loaded pressure relief valves, such as cylinders used for LP gas.

Note: Compliant gas cylinders are those satisfying the requirements of Australian Standard AS 2030 for gas cylinders, or its equivalent.

Companies or people who have purchased flammable gas refrigerants in non-refillable gas cylinders have two options:

- use up the refrigerant in the cylinder and dispose of it appropriately
or
- contact the supplier of the refrigerant to arrange transfer of the gas into compliant cylinders and appropriate disposal of the empty cylinder.

Note: Flammable refrigerants in non-refillable cylinders may not be consigned for transport as they do not comply with dangerous goods transport requirements.

Further information

- *Australian Dangerous Goods Code 7th Edition*, available from www.ntc.gov.au
- Dangerous Goods Safety (Road and Rail Transport of Non-explosives) Regulations 2007, available from www.slp.wa.gov.au
- Dangerous Goods Safety (Storage and Handling of Non-explosives) Regulations 2007, available from www.slp.wa.gov.au



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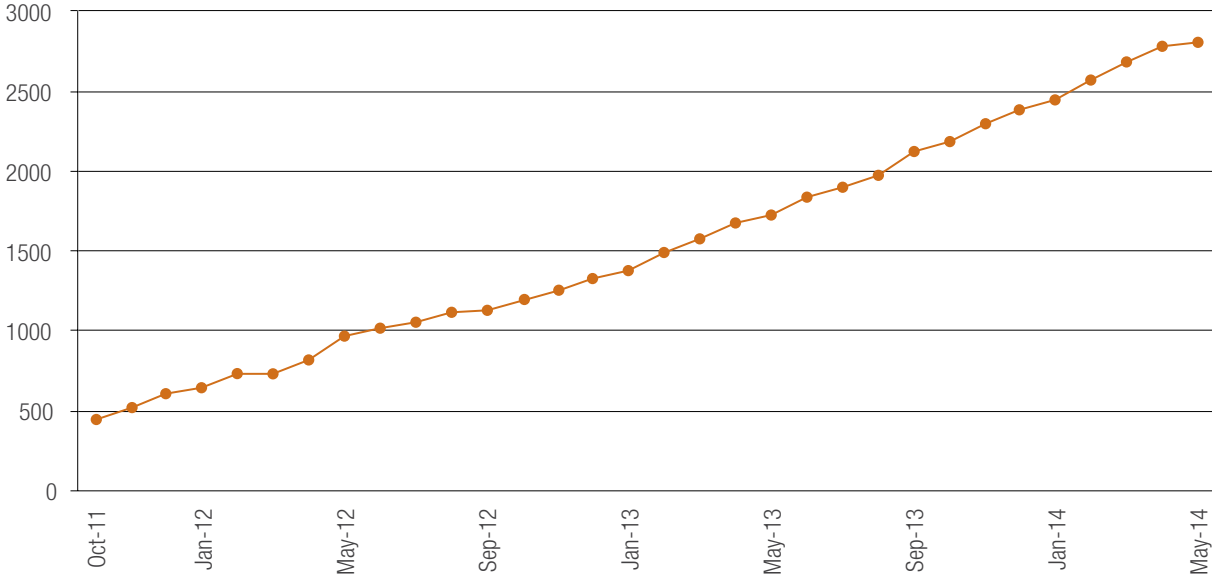
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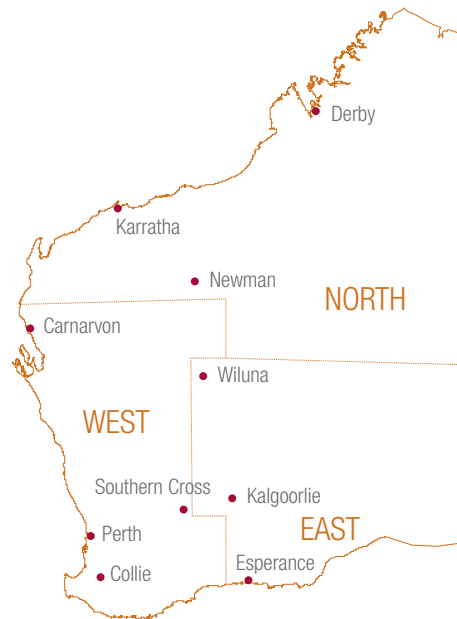
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