Resources Safety matters

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Government of **Western Australia**
Department of **Mines and Petroleum**
Resources Safety

Moving on from MineHealth assessments

INTRODUCING THE NEW-LOOK MIAC

FOCUS ON EXPLORATION SAFETY

ONE-STOP SHOPS FOR PETROLEUM SAFETY

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Welcome to the first issue of *Resources Safety Matters*. The Department of Mines and Petroleum's new flagship publication for the Resources Safety Division and covers mining, dangerous goods, petroleum and geothermal energy safety and health.


TYC

After 21 years of providing valuable information and guidance to the minerals sector, *MineSafe* magazine has been retired. This new magazine targets a broader resources audience, consistent with the scope of the Reform and Development at Resources Safety strategy (RADARS). However, the expanded scope does not mean that the mining contents have been diminished. Rather, there will be increased opportunities for information and lessons to be shared across industry boundaries.

Resources Safety Matters was chosen as the new title because it indicates that resources safety is important (i.e. *matters*) to the Department, and also reflects the magazine's link with the *Resources Safety* Division and *matters* considered important to the three regulatory areas it administers.

In this, my first foreword, I wish to highlight a significant milestone from our neighbours across the Tasman Sea.

We have previously reported on the Royal Commission on the Pike River Coal Mine Tragedy. The Commission handed its final report to New Zealand's Governor General on 30 October 2012. Although the accident happened in an underground coal mine, some of the findings that the Western Australian mining industry should consider carefully include:

- safety starts with design
- second means of egress in work places
- emergency procedures and provisions
- management and worker training and competency
- safety is everybody's business from the boardroom to shop floor.

As the authors of the report state, "The lessons learned from the Pike River tragedy must not be forgotten … Government, industry and workers need to work together. That would be the best way to show respect for the 29 men who never returned home on 19 November 2010, and for their loved ones who continue to suffer."

In wishing you a Happy New Year for 2013, I also confirm that the Department will continue working with industry to reduce the number and severity of incidents, and provide tangible support for positive cultural change. By working together, we will continue to see improvements in performance.

Enjoy your reading.

Simon Ridge
Executive Director, Resources Safety

▲ Mines Inspector Forum held on 6 and 7 November 2012

MINES SAFETY DIRECTOR APPOINTED

In November 2012, Andrew Chaplyn took up the position of Director Mines Safety left vacant after his predecessor, Simon Ridge, was promoted earlier in the year to Executive Director of Resources Safety.

Andrew's years in the mining industry have given him experience at many levels of mining engineering and management, and exposure to a variety of mines in Western Australia and New South Wales. He began his working life in the resources industry as a mining cadet at Griffin Coal's Muja open cut in the mid-1980s. After completing a Bachelor of Mining Engineering at the WA School of Mines, he joined WMC's Kambalda Nickel Operations in 1989 as a graduate mining engineer.

"I was attracted to mining because of the practical nature of the industry and chance to be out of the office. It also offers a diverse range of opportunities within the sector," Andrew said.

During the early 1990s, Andrew took a break from mining to travel the world, visiting 25 countries. It was during this time that he met his wife Jennifer in Canada.

By 1994 he had returned to the mines as a senior mining engineer. At the end of the 1990s, Andrew was a site manager and saw the important role that managers could play in implementing work practices and establishing a safety culture to benefit all workers.

The last decade saw Andrew work in some historic mining districts such as Mt Magnet, Leonora and Broken Hill. Operations have included extensions to mines dating from the early 1900s, as well as starting a new mine.

"Safety has always been an integral part of my life, both at home and work. Some of my experiences have only reinforced my belief that more can always be done to improve and ultimately change workplace behaviour and embed a safe work environment," he said.

TYC

▲ Left to right: Andrew Chaplyn and Simon Ridge (Executive Director, Resources Safety)

The Minister for Mines and Petroleum said that Andrew was an ideal fit as Director Mines Safety.

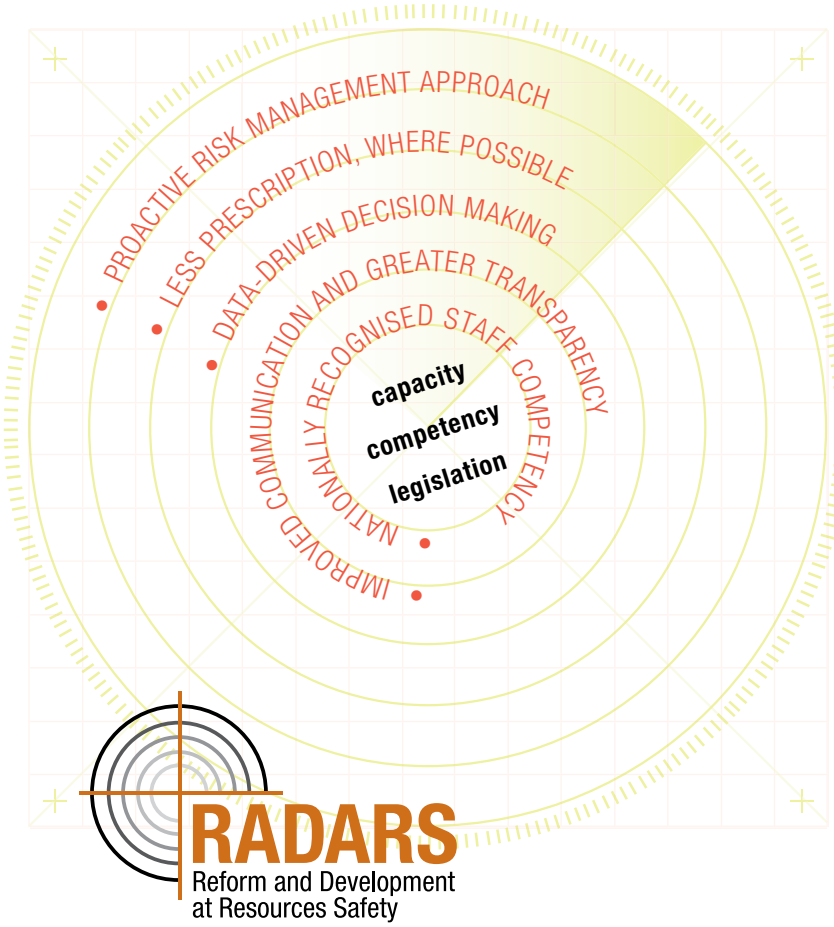
"Andrew has worked with the Department as a regional and district mines inspector for three years and has helped drive safety reform for the Western Australian safety regulator through the Reform and Development at Resources Safety (RADARS) strategy," Minister Norman Moore said.

"He has a strong commitment to safe working environments and has worked in many senior leadership roles across the industry.

"I am confident Andrew will continue to hold the industry to account, applying the highest standards through risk assessments, investigations, inspections, audits and safety interactions."

SAFETY HAS ALWAYS BEEN AN INTEGRAL PART OF MY LIFE, BOTH AT HOME AND WORK. SOME OF MY EXPERIENCES HAVE ONLY REINFORCED MY BELIEF THAT MORE CAN ALWAYS BE DONE TO IMPROVE AND ULTIMATELY CHANGE WORKPLACE BEHAVIOUR AND EMBED A SAFE WORK ENVIRONMENT.

ANDREW CHAPLYN



REFORM STRATEGY RECOGNISED NATIONALLY

The significance of the Reform and Development at Resources Safety (RADARS) strategy was recognised nationally in June 2012 when State Mining Engineer Simon Ridge received the prestigious Jim Torlach Health and Safety Award from The Australasian Institute of Mining and Metallurgy.

Further recognition followed in October 2012 when, as Executive Director of Resources Safety, Simon was named the national 2012 Occupational Health and Safety Leader of the Year at the Next Generation Mining Australia Summit in Adelaide.

Simon – who, at the time, was only two months into his new departmental role – was recognised for his tireless work in implementing RADARS.

In his previous role as the Department of Mines and Petroleum's Mines Safety Director, Simon was instrumental in the recruitment of additional inspectors, with a formalised induction program and introduction of a new team concept tailored to suit regulation of the State's diverse and geographically dispersed mining industry.

RADARS was established in 2010 as part of the State Government's response to independent reviews and inquiries, such as the 2009 Kenner Review of the *Mines Safety and Inspection Act 1994*, and a spate of mining fatalities.

"The Department now has over 60 safety inspectors who assess operations on a site by site and sector by sector basis, which is a great outcome," Simon said.

"But we're obviously doing so much more in the area of safety and health, so it is really humbling for me and the team behind me to be recognised in this way."

Simon was selected from the 27 industry leaders nominated by the Next Generation Mining Australia Summit's standing committee, an independent advisory board of 20 mining industry leaders.

PUBLIC COMMENT SOUGHT

TAILINGS CODE OF PRACTICE

The Department of Mines and Petroleum invites feedback on a new draft code of practice to assist those involved in designing, constructing, operating and decommissioning tailings storage facilities in Western Australia.

Following public consultation, the code will be submitted to the tripartite Mining Industry Advisory Committee (MIAC) for endorsement and then the Minister for Mines and Petroleum for approval. The code will complement the existing guideline on safe design and operating standards for tailings storage, which will be reviewed in 2013.

The draft code covers surface tailings storage, including in-pit facilities, but does not apply to waste dumps, heap or vat leaching facilities, or underground mine fill.

Andrew Chaplyn, Director Mines Safety at Resources Safety, said that a major aim of the code was to describe the variables operators must address when seeking approval for project management plans and mining plans under Western Australian mining-related legislation. The company needs to demonstrate that the facility will be safe and stable. It is important that industry provides feedback on the draft code to help achieve this aim.

"The draft code details the classification of tailings storage facilities in Western Australia, which is based on hazard rating, embankment height and location. It also covers the requirements throughout the life cycle of a tailings storage facility, including site selection, facility design, construction work, operations and emergency planning," Andrew said.

"The code promotes a proactive approach to monitoring during construction, operation, and prior to closure so it is possible to predict a facility's long-term performance and potential environmental impact after closure."

DIESEL EMISSIONS GUIDELINE

The Department is also seeking public comment on a new draft guideline to assist those managing diesel-powered plant and equipment to minimise exposure to diesel emissions.

The guideline describes the nature and production of diesel emissions and associated risks, and recommends ways to mitigate exposure.

Mike Rowe, Principal Health Advisor at Resources Safety, said that the guideline was important.

"The underground mining industry relies on diesel-powered plant, which means adequate ventilation, specialised sampling equipment and standardised analytical techniques are crucial," Mike said.

He urged mining industry professionals and health experts to provide feedback on the draft guideline, which was prepared by a joint Department–industry working group chaired by the Chamber of Minerals and Energy WA.

"We have already seeing strong participation from major companies and experts, which is positive," he said.

"This willingness to share ideas demonstrates that the Western Australian mining industry is actively seeking ways to continue to effectively manage diesel emissions in underground mines."

Guidelines are explanatory documents that provide additional information on the requirements of legislation, while also detailing good practice and explaining means of compliance with legislative standards.

The guideline will be submitted to MIAC for endorsement following public consultation.

PUBLIC COMMENT DETAILS

Visit www.dmp.wa.gov.au/12369.aspx#12381 to view the draft documents.

Submissions due 5 pm, Monday 4 February 2013

INTRODUCING THE NEW-LOOK MIAC

In October 2012, the State Government expanded a key advisory group for Western Australia's mining industry to include greater representation from the sector. The Mining Industry Advisory Committee (MIAC) was originally represented by seven members but four new experts have been appointed.

The committee provides advice on health and safety laws to the Minister for Mines and Petroleum, the Minister for Commerce and the Commission for Occupational Safety and Health. It also looks at codes of practice and guidelines to ensure industry's needs are being met.

The changes to MIAC's composition were prompted by the Hirte Review in late 2011, which recommended a reorganisation to broaden representation and therefore consultation.

"The restructure means MIAC not only has representation from the Chamber of Minerals and Energy, Association of Mining and Exploration Companies, and Unions WA, but also four independent health and safety specialists," Mines and Petroleum Minister Norman Moore said.

"Given the WA mining industry employs around 90,000 people, this committee's work is crucial", he added. "MIAC has an important role to advise the State Government on matters relating to occupational safety and health in the mining industry, so the more dedicated experts we have in one room, the better".

The newly appointed expert members are:

- Robert Allan – Principal Environmental Health and Safety Consultant, Riskmin
- Christopher Davis – Manager Coal, Creasy Group
- Peta Libby – Managing Director, Digirock Exploration Geologists
- Robert Mincham – Director, Exploration Safety Solutions.

Resources Safety's Executive Director Simon Ridge has replaced his predecessor Malcolm Russell as MIAC chairman.

Members are appointed for a three-year period, and MIAC meets bimonthly. Further information on the functions of MIAC is available at www.dmp.wa.gov.au/14390.aspx

MIAC

KEY OBJECTIVES OF MIAC

- Advise and make recommendations to the Ministers responsible for occupational safety and health (OSH) in Western Australia and the Commission for Occupational Safety and Health (the Commission) on OSH matters concerning the mining industry
- Liaise with the Commission to coordinate activities on related functions and maintain parallel standards
- Inquire into and report to the Ministers regarding any matter referred to it by the Ministers relating to OSH in the mining industry
- Make recommendations to the Minister for Mines and Petroleum regarding the formulation, amendment or repeal of laws relating to OSH for which that Minister is responsible
- Prepare or recommend the adoption of codes of practice, guidelines, standards and specifications or other forms of guidance for the purpose of assisting employers, self-employed persons, employees, manufacturers or other persons to maintain appropriate OSH standards in the mining industry
- Provide advice on education, publications, training and training courses with respect to OSH in the mining industry

▲ MIAC meeting held on 22 November 2012

Left to right: Simon Bennison (industry member), Robert Watson (industry member), David Todd (industry member), Peta Libby (expert member), Andrew Chaplyn (government member), Simon Ridge (chairman), Robert Mincham (expert member), Doug Brown (Executive Officer, MIAC), Robert Allan (expert member) and Tony Hall (union member)

Absent: Stephen Price (union member), Christopher Davis (expert member) and Gary Wood (union member)

MIAC MEMBERSHIP

Simon Ridge, Chairman
Department of Mines and Petroleum

Robert Allan, Expert
Riskmin

Simon Bennison, Industry
Association of Mining and Exploration Companies

Andrew Chaplyn, Government
Department of Mines and Petroleum

Christopher Davis, Expert
Creasy Group

Tony Hall, Union
Australian Manufacturing Workers' Union

Peta Libby, Expert
Digirock Exploration Geologists

Robert Mincham, Expert
Exploration Safety Solutions

Stephen Price, Union
The Australian Workers' Union

David Todd, Industry
Chamber of Minerals and Energy of Western Australia

Robert Watson, Industry
Fortescue Metals Group

Gary Wood, Union
CFMEU Mining & Energy Division

ROADSHOW NETWORK GROWS

In response to an industry request in 2011, the Mines Safety Roadshow series included Geraldton in its October 2012 itinerary. Although the audience was relatively small compared to other venues, it is anticipated that participation will grow with the assistance of the local Chamber of Minerals and Energy WA representative, Katherine Flower.

Some 600 registrations were received in total for Geraldton, Port Hedland, Karratha, Newman, Bunbury, Kalgoorlie and Perth. Excluding Geraldton, this represents an increase of eight per cent from the 2011 figures.

The focus of the 2012 roadshow was the need for industry and the regulator to continue working together to improve safety and health outcomes for Western Australian mining.

Survey results from past roadshows confirm that workshops are integral to engaging with participants. In 2012, three workshops sought input on issues associated with fatigue, management and supervision, and construction and maintenance safety. The results are being used by Resources Safety to guide the development of compliance strategies and resource materials that both achieve regulatory aims and address industry needs.

Regional Inspector of Mines for the West Region, Andrew Harris, said that the Bunbury roadshow had been hugely beneficial to both the Department of Mines and Petroleum and industry operators and employees in his region.

"It brought together people from different mining operations, including safety and health representatives and mine managers – and everybody really got involved in the process," Andrew said.

"They were able to discuss how different safety issues, like fatigue management and high-risk work activities, should be addressed and what tools might be required for practical guidance in the workplace and boardroom.

"Feedback from the fatigue workshop has since been sent to Safe Work Australia to consider when finalising the draft model code of practice on the prevention and management of fatigue in the workplace. Workshop contributors identified some specific issues faced by Western Australia, including commuting arrangements, climatic conditions and work rosters.

"We also asked people to tell us what effective management and supervision looks like when high safety standards are being met," Andrew said.

"These surveys will be used to provide information to industry on the current situation and develop relevant guidance for supervisors and managers, including senior management."

The roadshow was also used to invite feedback on a new construction safety audit tool that is now being developed.

"We really wanted to gauge industry's response to this new audit tool, which inspectors will use when assessing construction safety at mine sites," he said.

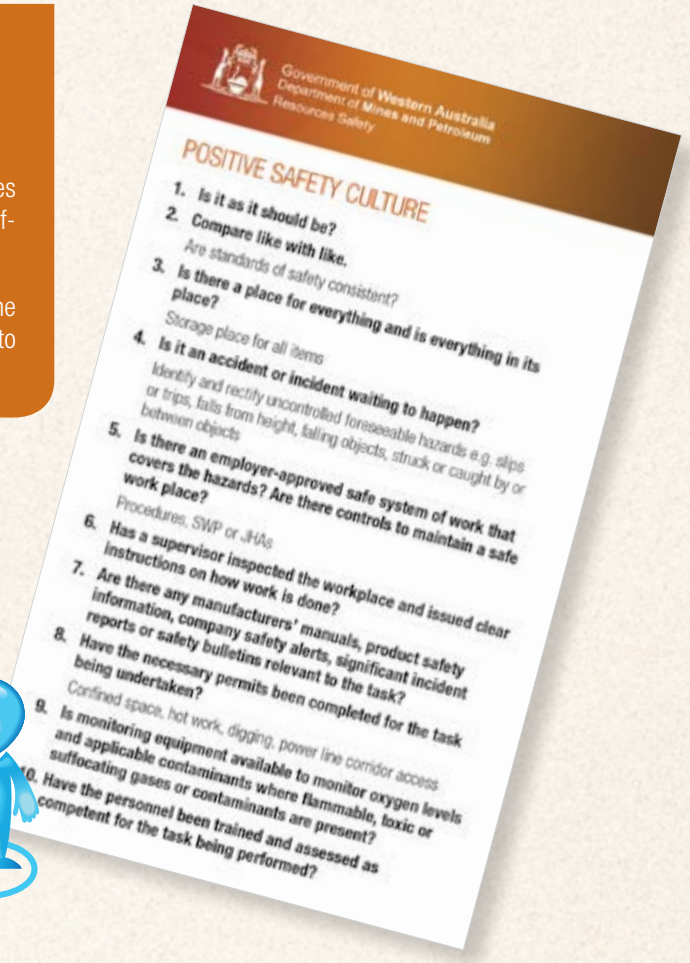
"Industry's feedback is important because we will also be releasing this audit tool to mining operators – they can use it when assessing safety during construction activity.

"We need to erase the so-called 'blue line' between construction and more traditional mining activities at mine sites to improve overall safety performance. This means recognising that construction is part of the mining operation, and we need to apply the same standards and management attention."

KEEP UP THE GOOD WORK

The positive safety culture checklist that accompanies the toolbox presentation on the benefits of good self-regulation is now available.

Visit www.dmp.wa.gov.au/8195.aspx to order the checklist and www.dmp.wa.gov.au/8054.aspx to download the PowerPoint presentation.



FATIGUE WORKSHOP

One of the activities during the fatigue workshop was to review Safe Work Australia's draft model code of practice on preventing and managing fatigue. Overall, the feedback was positive, with the applicability of the background information and appendices particularly highlighted, as well as the inclusion of employee consultation. The risk-based approach was also regarded favourably in relation to a company's ability to structure its own fatigue management plan.

There were many suggestions on how the code might be improved. While some are relevant to the national code of practice, others would be better reflected in a dedicated Western Australian mining guideline, which Resources Safety will develop to replace existing somewhat-dated guidance. In particular, the factors listed below specifically relate to current mining practices in Western Australia with its large travelling distances, remote workplaces and extreme environmental conditions (i.e. heat).

- Commute times before first day and after last day of shift, including fly-in, fly-out (FIFO) and drive-in, drive-out (DIDO) arrangements, may include interstate and international travel, followed by a full working day onsite. Guidance on specific risk factors in these situations is required for employers and employees.
- Information is needed on how the guidance presented can be extrapolated to the variety of rosters currently used so specific risk factors in Western Australian mining can be targeted. Extended roster lengths (e.g. two weeks) and work days (e.g. 12 hours) may include more than the four consecutive night shifts referenced in the code.
- Recognition that long periods of high ambient temperatures (with or without humidity) may affect fatigue, and guidance to reduce the risk of fatigue in varying environmental conditions. For example, break provisions may need to be altered or more frequent job rotations required.

MANAGEMENT AND SUPERVISION WORKSHOP

Workshop participants were asked to consider what is likely to happen when management and supervision are not as effective as they could be. They were then asked to consider the characteristics of effective management and supervision, and how to achieve this.

The responses were consistent across the venues and are listed below in order of frequency.

Q. How do you know when management and supervision are not as effective as they could be, and what are the potential consequences?

- Increase in incidents and accidents
- Low morale
- Decreased productivity
- Disconnect between managers, contractors and employees
- High staff turnover
- Poor housekeeping
- Increased rates of absenteeism
- Discord between rhetoric and action
- Poor safety culture
- Management and supervisors arrive after an accident or incident to assign blame
- Decisions are made on the run and not necessarily by the right people

Q. What are some contributing factors that lead to inadequate management and supervision?

- Inexperience and lack of training
- Poor recruiting practices or people promoted for wrong reasons
- Administrative workload too high
- Poor safety culture
- Staff turnover
- Poor communication
- Lack of leadership and no chain of command
- Too large an area of control (either geographical or number of people)
- Production prioritised over safety
- “Purple circle” (i.e. elite group that congregates to the exclusion of others)
- Inadequate resources
- Accountabilities and responsibilities not adequately defined
- No supervision during high-risk activities or when new equipment or processes are introduced
- Poor operational planning
- Supervisor’s close relationship with workers affects decision making

Q. What is effective management and supervision?

- Clear communication
- Leading by example (i.e. walk the talk)
- Active listening
- Visible and approachable – in the field and attending meetings
- Ability to empower team members
- Trust and respect
- Constructive feedback provided
- Skills of team are used and gaps addressed by training
- Ability to delegate effectively
- Ability to plan effectively
- Transparent decision making as well as accountability
- Consistency
- Someone who doesn’t micro-manage
- Clear understanding of role and responsibilities
- Ability to make sound judgement calls and decisions
- Depth of knowledge and skills (i.e. experience)
- Clear, concise and practical training provided

Q. What can companies do to help their managers and supervisors to do their jobs effectively?

- Provide relevant training and support
- Adopt a recruitment strategy that selects the right person for the role
- Have clearly defined roles, responsibilities and key performance indicators
- Provide mentoring
- Build teams
- Reduce administration (i.e. paperwork)
- Clearly communicate policies and procedures
- Establish adequate resources, tools and systems
- Ensure planning is effective
- Empower and promote ownership

CONSTRUCTION AND MAINTENANCE SAFETY WORKSHOP

This workshop compared and contrasted the safety performance of construction and mining activities, discussed the regulatory requirements for construction work on mine sites, explored roles and responsibilities for high-risk work, and then asked workshop participants to suggest ways in which the situation could be improved.

Many respondents combined their answers to the first and second question, or gave responses to the second question that were more suited to the first or were the same. As such, there are far fewer responses listed for the second question. Responses are listed in order of frequency.

Q. Why do you think there are more incidents in construction than mining?

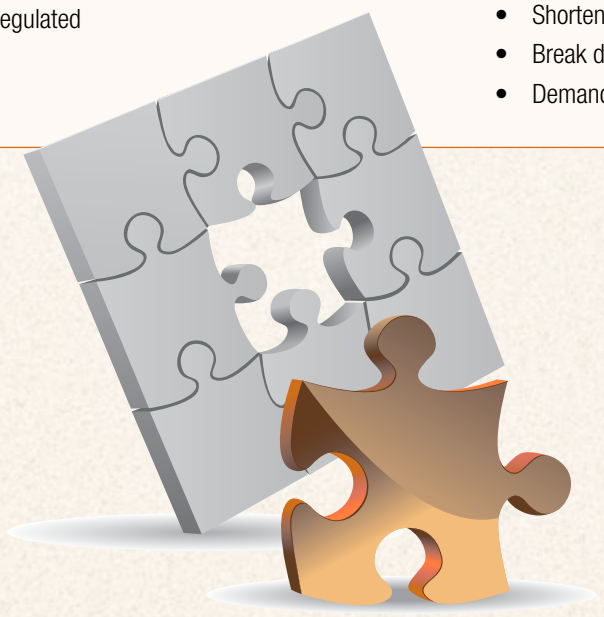
- Time and cost pressures due to short-term projects
- More transient workforce
- Higher risk work
- Less resilient safety culture
- Constantly changing worksite with different rules
- Large number of trades involved
- More dynamic work and manual labour
- Younger or less experienced workforce
- High concentration of workers in smaller area
- More work is conducted at height
- More small construction companies
- Longer swings on roster
- Less training
- Less media attention or public outcry
- Less or poorer supervision
- Less regulated

Q. What are the main differences between construction and mining?

- Different regulatory body and legislative requirements
- Construction has more of a risk-taking culture
- Mining has a more stable workforce
- Construction uses contractors rather than a permanent workforce
- Greater sense of ownership in mining
- Constantly changing construction worksites
- Construction work is higher risk
- Mining has a more in-depth induction process
- Construction is driven by money before safety
- There were fewer and more varied responses to the third question. The suggestions below were received from multiple participants at different locations.

Q. What can we do to improve the situation for construction on mine sites?

- Apply uniform, consistent industry standards across mining and construction (erase the “blue line”)
- Improve onsite training and induction practices
- Mining companies need to take ownership of construction on their sites
- Foster a better safety culture
- Increase supervision
- Adopt more realistic timeframes for projects
- Schedule better and more frequent auditing
- Establish a better chain of command
- Encourage more safety and health representatives
- Shorten rosters
- Break down the “us and them” mentality
- Demand more accountability



2012 MINES SAFETY ROADSHOW


Geraldton


Port Hedland


Karratha


Karratha


Newman


Bunbury


Kalgoorlie


Perth

All photos TYC

2013 ROADSHOW DATES

Dates are provisional. Details will be provided at **www.dmp.wa.gov.au/events** and in Resources Safety's news alerts.

24 July — **Exploration Safety Roadshow** — **Kalgoorlie**

26 July — **Exploration Safety Roadshow** — **Perth**

04 October — **Mines Safety Roadshow** — **Geraldton**

08 October — **Mines Safety Roadshow** — **Port Hedland**

09 October — **Mines Safety Roadshow** — **Karratha**

10 October — **Mines Safety Roadshow** — **Newman**

15 October — **Mines Safety Roadshow** — **Bunbury**

17 October — **Mines Safety Roadshow** — **Kalgoorlie**

22 October — **Mines Safety Roadshow** — **Perth**

INDUSTRY INVITED TO RISK MANAGEMENT TRAINING

In 2011, the Resources Safety Division of the Department of Mines and Petroleum conducted a series of lead auditor OHS management systems training courses for its inspectors.

Places on the courses were offered, on a cost-recovery basis, to industry participants in Kalgoorlie, Bunbury and Perth.

The auditor courses provided a unique learning experience for industry and the regulator where each party could gain an appreciation of the issues the other faced, and a conducive environment to discuss how these might be addressed.

Resources Safety is taking a similar approach for risk management training in 2013. Risk management has been used by industry for some time but, as identified in last year's industry survey regarding priority targets for mines safety regulation in Western Australia, a better understanding of operational risk management and its practice is required.

JKTech Pty Ltd has been engaged by the Department to provide the training for about 60 mines safety managers, team leaders and inspectors at Resources Safety. A similar number of positions will be offered to industry representatives.

JKTech's Global Minerals Industry Risk Management (G-MIRM) education and training programs are delivered in four courses:

- G1 for everyone – personal planning skills
- G2 for supervisors – task planning skills
- G3 for managers – site safety and health risk improvement plans
- G4 for executives – strategic understanding and support.

The G-MIRM suite was developed jointly by Professor Jim Joy during his tenure as Director of the Minerals Industry Safety and Health Centre within the Sustainable Minerals Institute, The University of Queensland, as part of an Anglo American global risk management initiative. Jim joined KTech in 2011 to manage the global delivery of the G-MIRM courses and associated services.

Resources Safety is undertaking the G3 and G4 courses, which will be delivered from April 2013. Sign up to Resources Safety's news alert service to receive further information as it becomes available.

▲ Left to right: Greg McCauley and Marshall Tigere

KALGOORLIE WELCOMES NEW MINES INSPECTORS

Mines safety regulation across the Goldfields has been further strengthened following the Department of Mines and Petroleum's appointment of two new Inspector of Mines in late 2012.

Joining seven other inspectors in the Kalgoorlie office, Greg McCauley and Marshall Tigere are now encouraging the region's 80 operational mines to meet high safety standards.

With 23 years of experience in the mining industry and a Bachelor's degree in Occupational Health and Safety, Greg has worked in mining and safety roles across Tasmania, South Australia and New South Wales. Four years ago, he and his family decided to settle in Kalgoorlie.

"When I moved to Kalgoorlie, I took on a safety training coordinator role at La Mancha's Frog's Leg gold mine, which was really enjoyable" Greg said. "But I have to say, being an inspector is such a rewarding job."

"I find my safety and mining background gives me a good understanding from both perspectives. I know the difficulties operators and workers can face when dealing with safety issues, but I also understand the rewards that can flow when improvements are made."

Greg said that his main aim was to develop good relationships with industry operators and workers across the Goldfields.

"I'm getting out there and developing some close relationships with local industry, which really helps when you're promoting positive change," he said. "It means I am able to listen to people's concerns and discuss with them what can be done to prevent accidents."

Greg's colleague Marshall echoed these comments. The 24-year mining industry veteran said that he was ready for the challenge of being an inspector in the Goldfields, where he previously worked as a mine surveyor at Norilsk Nickel's Black Swan Nickel Mine.

"I have also worked as an engineer in open pit and underground mines across Zimbabwe and Australia, and had a stint in civil engineering surveying and minerals planning in England," Marshall said. "As such, I have mine engineering and safety knowledge I can share with the Goldfields mining industry."

Marshall said that he entered a career in safety after witnessing too many accidents, and some of which could have been prevented had adequate safety standards and procedures been in place.

"I kept seeing accidents occur on mines for the same reason — complacency," he said. "Whether it was in Queensland, Zimbabwe or England, the end cause was usually people paying little attention to the hazards, and thinking it wouldn't happen to them."

He was also spurred on by incidents that had affected him personally.

"I lost two of my close friends, which was a terrible experience," Marshall said. "I don't want that to happen to anyone else, so that's why I am here trying to make a difference. One death or injury really is one too many."

These latest appointments follow the recent recruitment of three mines inspectors covering the North West and one for the South West.

Resources Safety's Executive Director Simon Ridge said that these appointments marked another major achievement in the Department's commitment towards the Reform and Development at Resources Safety (RADARS) strategy.

The Department's mines inspectors come from varying backgrounds, with expertise in geotechnical, mechanical, process engineering and mining engineering fields.

"You have to remember that these inspectors hold a huge amount of responsibility and power, so they go through a tough selection and training process," Simon said. "I am pleased to welcome aboard Greg and Marshall, who I know will make a huge difference to mines safety regulation in the Goldfields."

DANGEROUS GOODS SAFETY

2012 WAS A YEAR FOR IMPLEMENTATION

The Reform and Development at Resources Safety (RADARS) strategy was actively implemented for dangerous goods regulation in 2012, with significant advances in the three core areas of legislative reform, improving capability and developing capacity.

Achievements in 2012 included:

- implementation of the first phase of a comprehensive regulatory and licensing reform program for dangerous goods
- significant contributions to national bodies dealing with dangerous goods and security matters
- increased attention to dangerous goods transport compliance
- production of several high-quality guidance documents
- first post-approval audits of major hazard facilities.

THE YEAR AHEAD

A key aim of the reform agenda is to ensure sustainable, high-quality regulatory services for all users of dangerous goods. In 2013, this requires:

- an increased focus on providing direct regulation via inspections, audits and incident response
- further reductions in the administrative burden for both licensees and the Department of Mines and Petroleum, and a realignment of licensing fees across licence types to reduce complexity
- the provision of education and information services targeted at specific high-risk groups so higher standards of dangerous goods safety can be achieved throughout the community.

Further reforms may arise from the statutory review of the *Dangerous Goods Safety Act 2004* to be conducted mid-year, and there may be further changes to align the Act and regulations with national occupational safety and health legislation.

The Department will also continue contributing to national legislative reform agendas, including work on harmonised explosives regulations.

New dangerous goods auditing and notices software will be introduced in 2013 to improve the quality, consistency and efficiency of inspections and follow-up enforcement. Once developed, online dangerous goods licence application forms should simplify the process for applicants and reduce administration costs for the Department.

The dangerous goods officer training program will be expanded to ensure officers have the required knowledge and skills to perform their functions professionally, efficiently and effectively. This will be supplemented by improved training for accredited consultants to ensure better industry performance.

2013 will see a renewed push to review and reform internal administrative and technical assessment processes to drive further efficiency and quality improvements.

This year's recruitment program will be aimed at attracting and retaining high-calibre staff and achieving a sustainable balance of youth and experience.

The agenda for 2013 is ambitious but achievable, and supports the safety regulator's commitment to improved safety outcomes.

Philip Hine, Director Dangerous Goods

PETROLEUM SAFETY

2012 WAS A YEAR FOR CHANGE

Last year was certainly challenging for the petroleum safety regulators as RADARS was rolled out.

At the start of the year, a more client-focused approach was introduced to the operational structure. A significant recruitment campaign was undertaken to ensure the three new teams were properly resourced with appropriate competencies and skills. This was supported by an extensive training regime implemented during the year.

On 1 January 2012, Resources Safety also assumed the safety regulatory responsibilities for all State coastal water offshore petroleum operations from the National Offshore Petroleum Safety Authority (NOPSA), the Commonwealth regulator. This presented additional challenges given the number of major projects underway on and around Barrow Island and adjacent Onslow, and the complexity of water activities in the area.

During the year, the cost recovery model for onshore safety regulatory services was reviewed and refined to incorporate cost recovery in relation to coastal waters activities and improve operation of the levy system. The legislative amendments were introduced on 1 October 2012. The legislation will be reviewed annually to ensure the costs recovered reflect the level and quality of regulatory service provided.

THE YEAR AHEAD

In 2013, the petroleum safety regulator is striving for increased efficiencies and improvement in overall service delivery to industry.

To achieve this, further recruitment is underway to complete the resourcing requirements envisaged for the immediate future, and the staff training program will be expanded following a review of last year's performance and an evaluation of future needs.

Once the three teams have been fully staffed and trained, the number of desktop and site audits will be increased to verify legislative compliance.

Regular consultation with industry last year highlighted a number of anomalies with the existing regulations, issues of overlap and interference between the petroleum acts, and misalignment with Commonwealth offshore legislation. There have also been requests for additional information to be provided to assist in the interpretation and application of the occupational safety and health laws. The focus in 2013 is therefore to:

- develop online guidelines, templates and checklists to assist industry in complying with legislative requirements
- produce enhanced safety performance information and significant incident reports
- consider legislative amendments to deal with the issues that have emerged
- better align the State legislation with the Commonwealth offshore legislation to allow a smooth transition between jurisdictional boundaries
- review the cost recovery model to verify equitable and appropriate application.

Over time, Resources Safety's Safety Regulation System (SRS) will provide an online interactive interface for petroleum safety regulatory services such as the lodgement, assessment and review of safety documentation. There will be a concurrent review of internal administrative procedures, guidelines and systems to ensure consistency.

Alan Gooch, Director Petroleum Safety

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MINES SAFETY

2012 WAS A YEAR FOR CONSOLIDATION

The RADARS strategy was well imbedded for the minerals sector during 2012. It included a significant increase in the capacity and competency of the inspectorate when interacting with the industry on various levels.

Achievements included:

- a complement of over 60 inspectors now appointed
- re-establishment of the Mining Industry Advisory Committee (MIAC) with increased membership as recommended by the Hirte Review
- a commitment to risk management training for inspectors and industry to national competency standards
- an increased number of project management plans and industry submissions processed in a timely manner
- increased consultation with industry and the production of guidance material in key areas such as construction, mineral exploration and drilling
- participation in the harmonised legislation process and contributions to national model codes of practice
- progression of work by mines safety focus groups to address to specific mine hazards and develop safety compliance strategies
- presentation of the fifth annual Exploration Safety Roadshow and eighth annual Mines Safety Roadshow, with increased industry participation.

THE YEAR AHEAD

As for last year, 2013 will be challenging with the high number of mines currently operating and construction activities continuing for new operations.

Key areas of focus include:

- working with mining companies to understand their operations and provide guidance as required to ensure hazards are controlled effectively
- increased engagement with exploration activities
- continued work on the harmonised legislation and the development of guidance material to deliver effective changes
- final recruitment and consolidation of the team-based matrix management approach for the mines safety regulator to enable a seamless and effective service to the mining industry
- further development and use of the online Safety Regulation System (SRS) as the main communication tool and source of information for both industry and the inspectorate
- continued consultation with industry and the provision of information and advice, including the identification of emerging issues and their impacts (e.g. automation).

We are all striving to achieve a positive safety culture across the minerals sector and will only get there by listening and working with each other.

Andrew Chaplyn, Director Mines Safety

MOVING ON FROM MINEHEALTH ASSESSMENTS

The requirement for health assessments under the Mines Safety and Inspection Regulations 1995 has been repealed following two comprehensive epidemiological reviews conducted by the Department of Mines and Petroleum.

The Department conducted the reviews to determine whether the objectives of the health surveillance system were being achieved. The system was designed to:

- assess the health status of all mining industry employees on a regular basis
- analyse collected data to detect adverse health effects at the earliest opportunity
- enable appropriate and timely corrective action to be taken in order to safeguard the health and well-being of mining industry employees
- provide data for future epidemiological studies.

The Department found no evidence that undertaking these health assessments was either preventing or detecting ill health at an early stage. For example, no cases of silicosis have been confirmed in Western Australian miners who commenced work in the industry since 1974.

The epidemiological reviews confirmed that lifestyle factors such as smoking are more likely to have adverse health effects than current mining activities.

The proposal to repeal the requirement for health assessments was endorsed by both industry and unions under the auspices of the tripartite Mining Industry Advisory Committee (MIAC). The Minister for Mines and Petroleum approved the regulatory amendments as the repeal enables the application of a more risk-based approach to health surveillance, which supports government commitments regarding best practice safety regulation of the Western Australian resources industry.

The deletion of Regulations 3.25 *Initial Health Assessment* and 3.26 *Periodic Health Assessment* of the Mines Safety and Inspection Regulations 1995 was included in the recent Mines Safety and Inspection Amendment Regulations 2012.

Consequently, from 12 January 2013, workers on Western Australian mine sites are no longer required to undergo initial and periodic health assessments (commonly known as MineHealth assessments).

However, the requirements to report occupational diseases, and undertake specified health assessments and biological monitoring remains in Part 3 of the regulations.

The reviews showed no evidence of early health changes resulting from occupational exposure to atmospheric contaminants, such as dust and respirable silica, and exposures have steadily decreased over the past few decades. Nevertheless, the Department will continue to require industry to monitor and report workplace contaminants, including diesel emissions, to ensure workers remain protected. This information is recorded in the CONTAM database.

Under Western Australia's workers' compensation system, all workers employed for the first time in a prescribed workplace on a mine must still have a WorkCover WA baseline hearing test within twelve months of commencing employment. A prescribed workplace is one where workers receive a personal noise dose of 90dB(A) or above during an eight hour day, or its equivalent, and where such a day is representative of the worker's typical work practices. Any workers who receive noise above the peak exposure of 140dB(lin) on one or more occasions, even for a short time, must also be tested.

Pre-employment medical tests are widespread throughout the mining industry and the repeal of the requirement for health assessments does not affect an employer's right to request pre-employment medical checks.

The existing MineHealth database has been retained and current employees may still request access to their own personal data. The database will also continue to be used to provide the Commonwealth, State agencies and approved researchers with de-identified data for bona fide health-related research.

To find out more, visit the occupational health section at **www.dmp.wa.gov.au/ResourcesSafety** or contact Mike Rowe, Principal Health Advisor, Resources Safety (telephone 9358 8091, **mike.rowe@dmp.wa.gov.au**)

FRAMING THE HARMONISED MINING REGULATIONS

The proposed mining work health and safety regulations are a step closer to being released. The National Mine Safety Framework (NMSF) group has completed its discussions on the model "non-core" regulations to supplement the general work health and safety regulations.

Based on these discussions, the independent chair of the NMSF's working group has finalised the drafting instructions for the regulations and established the operational mechanisms for a new Tri-State Competency Advisory Committee (TCAC). The proposed non-core regulations would apply to the three mining states of Western Australia, New South Wales and Queensland.

Following WorkSafe WA's public consultation on the draft work health and safety regulations applicable to general industry in Western Australia, the regulatory impact statement (RIS) is now being prepared. Resources Safety's Executive Director and State Mining Engineer, Simon Ridge, thanked industry stakeholders who had provided feedback during this process.

"In the interests of harmonisation across all Western Australian workplaces, the regulations developed for general industry by the RIS process will be mirrored within the mining work health and safety regulations", Simon said. "However, the mining-specific requirements within Chapter 10 of the new regulations will be subject to a separate RIS process.

"This process will be managed by the Department of Mines and Petroleum, but won't get underway until WorkSafe WA releases the RIS report on the general regulations — and certainly won't commence until after the State election," Simon explained. "The idea is that minerals sector stakeholders will receive the proposed mining regulations, including the general regulations, so they can evaluate the impact of the whole regulation package on their activities."

Simon was careful to point out that any significant changes are unlikely to be allowed for in the general regulations that will form chapters one to nine of the mining package because industry has already had the opportunity to comment during the WorkSafe WA process.

Sign up to Resources Safety's news alert service to ensure you are notified when consultation opens for the mining RIS process.

AMENDMENTS IMPROVE MINES SAFETY PRACTICE

The Mines Safety and Inspection Amendment Regulations 2012 came into effect on 11 February 2013 when they were gazetted. Pages 49 to 53 of the Government Gazette issued that day list the regulatory amendments, some of which are described below.

MANDATORY STANDARDS

Previously, the regulations listed specific editions of standards. The amendments mean that the latest version of a referenced standard must now be used for:

- electrical work
- plant
- confined space
- noise
- construction.

This change ensures that activities are conducted in line with current practice.

The amendment to regulation 4.22 will particularly interest those managing construction or demolition on mine sites. This regulation now requires such work to be carried out in accordance with the Australian or Australian/New Zealand Standards listed below.

- AS/NZS 1576 Scaffolding
- AS/NZS 1562.3 Design and installation of sheet roof and wall cladding — Plastic
- AS 1674 Safety in welding and allied processes
- AS/NZS 1801 Occupational protective helmets
- AS/NZS 1873 Powder-actuated (PA) hand-held fastening tools
- AS/NZS 1891 Industrial fall-arrest systems and devices
- AS/NZS 1892 Portable ladders
- AS 2601 The demolition of structures
- AS 2865 Confined spaces
- AS/NZS 3012 Electrical installations – Construction and demolition sites.

REVOCATION OF TWO GENERAL EXEMPTIONS

From time to time, the State Mining Engineer grants industry-wide exemptions from a provision of the Mines Safety and Inspection Regulations 1995. A general exemption means that the State Mining Engineer is satisfied that compliance with the requirement would be unnecessary or impracticable.

Conditions may be applied to the exemption, and exemptions may be amended or revoked at any time.

On 11 February 2013, the State Mining Engineer revoked previously issued general exemptions for:

- regulation 4.2, issued 23 November 2009 regarding the Australian Standard for safe working in a confined space
- regulation 6.33, issued 18 December 2007 regarding Australian Standards for boilers, cranes, hoists, pressure vessels and lifts.

These exemptions are no longer necessary following amendment of regulation 1.3, which changed the definition of Australian Standards.

WHERE DO I FIND CURRENT INFORMATION ABOUT LEGISLATION?

www.dmp.wa.gov.au/ResourcesSafety

Visit the legal and policy section of the Resources Safety website for:

- links to the latest versions of the safety legislation for mining, dangerous goods, petroleum and geothermal energy
- information about exemptions and how to seek one under the Mines Safety and Inspection Regulations 1995
- a list of general exemptions from the Mines Safety and Inspection Regulations 1995 for all mining operations.

www.slp.wa.gov.au

The State Law Publisher is the official publisher of Western Australian legislation and statutory information, including the Government Gazette.

IS IT TIME TO RENEW YOUR HIGH RISK WORK LICENCE?

Are you a scaffolder, rigger, dogger, crane driver or forklift operator? Is it time to renew your licence to perform high risk work? Check the expiry date on your licence card.

Licences are valid for five years, and the licensing system is administered by WorkSafe WA. If your licence expires, you will not be able to continue doing this type of work and must be retrained and reassessed to be relicensed.

WorkSafe WA sends out licence renewal packs but you will only receive yours if your postal address is current. You need to advise WorkSafe WA if your contact details have changed.

CONTACT WORKSAFE WA IF UNCERTAIN

wslicensing@commerce.wa.gov.au

High Risk Work Hotline 1300 424 091

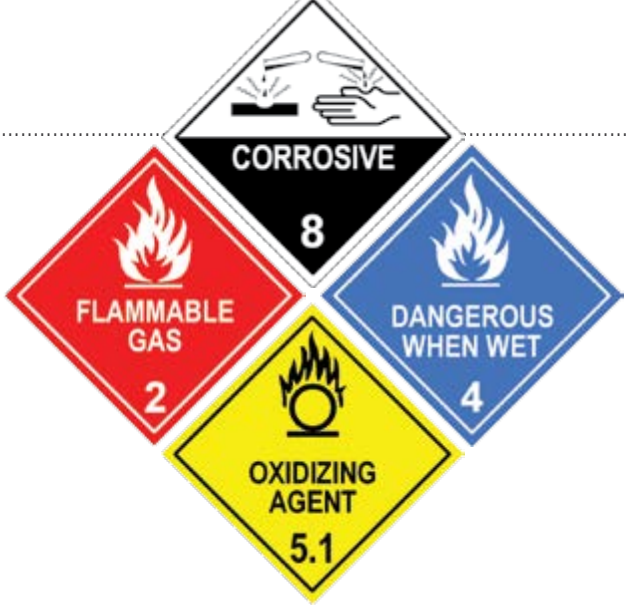
www.worksafe.wa.gov.au > Services > Licensing and registration of plant > High risk work

VERIFICATION OF COMPETENCY

Competency is an important component of any job, and even more so for high-risk work requiring specific skills and knowledge. Managers and supervisors should be familiar with the specific verification of competency and training requirements in regulation 4.13 of the Mines Safety and Inspection Regulations 1995.

An employee must be assessed as competent before he or she starts working at the site. The assessment level for high risk work is not prescribed, but a “tick and flick” list checking if the person has the licence is not enough.

It is also important to ensure the assessment is done for the specific plant or equipment the operator is expected to operate. For example, it is not appropriate to have an assessment done using an elevated work platform if the operator is expected to operate a crane.



LICENSING CHANGES FOR DANGEROUS GOODS TRANSPORT

As part of its Reform and Development at Resources Safety (RADARS) strategy, the Department of Mines and Petroleum is engaged in a comprehensive regulatory reform program for dangerous goods.

In August 2012, the Dangerous Goods Safety (Road and Rail Transport of Non-explosives) Regulations 2007 were amended as follows.

- The duration of dangerous goods driver and vehicle licences is now five years to align with other dangerous goods and equivalent interstate licence durations.
- There has been a small change in the packaging testing requirements to align with national model regulations. The words "performance test" are replaced by "test" in regulation 55(1) so the types of tests that can apply are not unduly restricted.
- The new national driver licence medical requirements have been adopted. Assessment should now be done in accordance with *Assessing fitness to drive for commercial and private vehicle drivers*, released in March 2012.

  Note: Until August 2013, assessments done under the old standard will still be accepted.

- Licensing for dangerous goods vehicles is now limited to tanker vehicles where the tank forms part of the vehicle.

  Note: Non-tanker vehicles based in Western Australia that travel interstate may still obtain a licence if required for transport of dangerous goods in other States.

The change to dangerous goods vehicle licensing is a major reform that eliminates licensing of vehicles transporting dangerous goods where the vehicle has no specific dangerous goods safety design features. Transporters should note, however, that all other requirements set out in the *Australian Code for the Transport of Dangerous Goods by Road and Rail, 7th edition* (commonly known as the Australian Dangerous Goods Code or ADG7) still apply when transporting dangerous goods.

Vehicle licensing now only applies in two cases. The first is when the tank is an intrinsic part of the vehicle but is not detachable. For example, trucks carrying isotainers or portable tanks that are bolted to the tray do not need to be licensed. The second case, which is voluntary, is when the vehicle is used to transport dangerous goods in another State that requires the vehicle to be licensed.

For further information about licensing and other transport requirements, visit the dangerous goods safety guidance section at **www.dmp.wa.gov.au/ResourcesSafety** or email **rsdclientservices@dmp.wa.gov.au**

WHERE DO I GET THE TRANSPORT PUBLICATIONS?

AUSTROADS

Assessing fitness to drive for commercial and private vehicle drivers, March 2012

www.austroads.com.au/assessing-fitness-to-drive

NATIONAL TRANSPORT COMMISSION

Australian Code for the Transport of Dangerous Goods by Road and Rail, 7th edition

www.ntc.gov.au

NEXT TEN-YEAR STRATEGY FOR AUSTRALIAN WORK HEALTH AND SAFETY

In 2002, the Workplace Relations Ministers' Council, Australian Council of Trade Unions and Australian Chamber of Commerce and Industry endorsed the National Occupational Health and Safety Strategy 2002–2012 (National OHS Strategy), which provided a framework for a broad range of national activities to improve the health and safety of workers in Australia.

The National OHS Strategy set ambitious targets and there were significant reductions in work-related traumatic fatalities and injuries over the ten years to 2012. Governments, unions and industry worked in partnership to improve work health and safety awareness and skills, and develop nationally consistent legislation.

Reviews of the strategy found that, to achieve continued improvement, sustained attention and effort would be required in key areas. They also highlighted the importance of developing and monitoring the effectiveness of the implementation process. Another finding was the need to extend the scope of the National OHS Strategy's implementation beyond government regulators and collaborate with all interested parties.

While work health and safety performance improved during the National OHS Strategy, on average over 250 workers in Australia still die each year from an injury sustained at work and over 2,000 workers die from a work-related illness. In 2009–10, some 640,000 workers reported experiencing a work-related injury or illness. In the same year, about 303,000 workers were compensated for an injury or illness.

The next phase, Australian Strategy 2012–2022, promotes the vision of healthy, safe and productive working lives, and sets four outcomes to be achieved by 2022. The strategy identifies seven action areas that will contribute to delivering these outcomes.

Factors that will determine the most effective courses of action include:

- prevention activities being directed to where there is the greatest potential for reducing harm
- hazards and risks most effectively controlled at the source
- prevention efforts focused on eliminating or minimising exposure to serious hazards and risks and progressively improving controls, and, where elimination is not practical, mitigating risks according to the hierarchy of control.

The strategy for the next decade is sufficiently broad and high-level that governments, industry, unions and other organisations can undertake activities to help achieve the desired outcomes. Those responsible for regulating work health and safety, public health, energy and transport will need to work collaboratively to achieve its vision and outcomes. Individual organisations and workplaces, professional associations and interest groups are encouraged to participate in the process.

TARGETS TO BE ACHIEVED BY 2022

- A reduction in the number of worker fatalities due to injury of at least 20 per cent.
- A reduction in the incidence rate of claims resulting in one or more weeks off work of at least 30 per cent.
- A reduction in the incidence rate of claims for musculoskeletal disorders resulting in one or more weeks off work of at least 30 per cent.

Action areas	Strategic outcomes to be achieved by 2022	
Healthy and safe by design	Hazards are eliminated or minimised by design	• Structures, plant and substances are designed to eliminate or minimise hazards and risks before they are introduced into the workplace. • Work, work processes and systems of work are designed and managed to eliminate or minimise hazards and risks.
Supply chains and networks	Improved work health and safety through supply chains and networks	• Supply chain and network participants understand their cumulative impact and actively improve the health and safety of the supply chain. • Commercial relationships within supply chains and networks are used to improve work health and safety. • Industry leaders champion work health and safety in supply chains and networks.
Health and safety capabilities	Improved work health and safety capabilities	• Everyone in a workplace has the work health and safety capabilities they require. • Those providing work health and safety education, training and advice have the appropriate capabilities. • Inspectors and other staff of work health and safety regulators have the work health and safety capabilities to effectively perform their role. • Work health and safety skills development is integrated effectively into relevant education and training programs.
Leadership and culture	Leaders in communities and organisations promote a positive culture for health and safety	• Communities and their leaders drive improved work health and safety. • Organisational leaders foster a culture of consultation and collaboration which actively improves work health and safety. • Health and safety is given priority in all work processes and decisions.
Research and evaluation	Evidence-informed policy, programs and practice	• Research and evaluation are targeted to provide the evidence to prioritise and progress areas of national interest. • Australia has an effective research and evaluation infrastructure and capacity. • Evidence is translated to assist practical application. • The results of research and evaluation are disseminated and implemented.
Government	Governments improve work health and safety	• Work health and safety is actively considered in the development, implementation and evaluation of government policy. • Governments use their investment and purchasing power to improve work health and safety. • Governments exemplify good work health and safety.
Responsive and effective regulatory framework	The regulatory framework improves effectiveness by responding and adapting to changing circumstances	• Legislation, policies and regulatory practice are reviewed and monitored to ensure they are responsive and effective. • Relationships between regulators and all who have a stake in work health and safety are effective, constructive, transparent and accountable.

From www.safeworkaustralia.gov.au

HOW SELF-REGULATION CAN LEAD TO A POSITIVE SAFETY CULTURE

WHAT IS A POSITIVE CULTURE?

High performance cultures are characterised by:

- a can-do spirit with mutual support
- a bias towards action
- collaborative and positive attitudes
- creativeness and innovation
- a willingness to change.

HOW IS A POSITIVE CULTURE CREATED?

Changing a culture requires systematic effort over time. Moving too fast or too slow may interfere with daily operations and may not be sustainable. For change to be effective, it needs to:

- involve everyone
- focus on results
- take a total systems approach
- maintain the commitment — do not merely pay lip service.

The safety culture spectrum shows the attributes of different organisations, starting with the most prone to failure and moving to the right in increasing levels of trust and systems development.

Ideally, operations should aspire to be resilient. To achieve this, an organisation needs to develop avenues for effective self-regulation.

WHAT IS MEANT BY "SELF-REGULATION"?

Self-regulation in mining is a means by which a company operates in accordance with the guidance provided by the *Mines Safety and Inspection Act 1994* and the Mines Safety and Inspection Regulations 1995, and maintains good practice without the regulator having to wield influence. The primary object of the legislation is for companies to protect employees by eliminating the risk or implementing effective controls.

Approval must be obtained from the Department of Mines and Petroleum before mining may commence. Principal employers and employers then develop and implement systems of work and procedures to operate the mine safely. In effect, this forms the basis of self-regulation in accordance with the approval to operate.

Mines inspectors undertake checks that evaluate the safety standards being used at the mine, and provide feedback where improvements are required. However, the regulator cannot be at every workplace in Western Australia overseeing all work activities. It is the employers and employees based at the mine who are best placed to ensure the requirements of the legislation are met. They could be considered the "inspectors on the mine".

The better the standard of self-regulation, the less the regulator will intervene. Conversely, poor self-regulation will attract the regulator's attention and involvement.

WHAT DOES IT MEAN IN PRACTICE?

Self-regulation can be improved by applying some simple concepts such as:

- ensure employer-approved procedures and instructions are in place before starting work and when changes are made
- be risk-focused not task-driven
- be hands-on when managing and supervising
- be hands-off when dealing with danger
- match the control to the risk, and apply the hierarchy of control.

Anecdotally, the findings of recent inspections and investigations indicate that the mining industry currently places a great deal of responsibility on employees, who are required to undertake the risk analysis, determine and apply the controls, and carry out the work largely unsupervised. Companies that place responsibility for safety management and control entirely in the hands of employees potentially fall within the vulnerable area of the safety culture spectrum.

To be resilient, companies should take more of a leadership role in the development, management and control of safety and health matters. Questions to ask are:

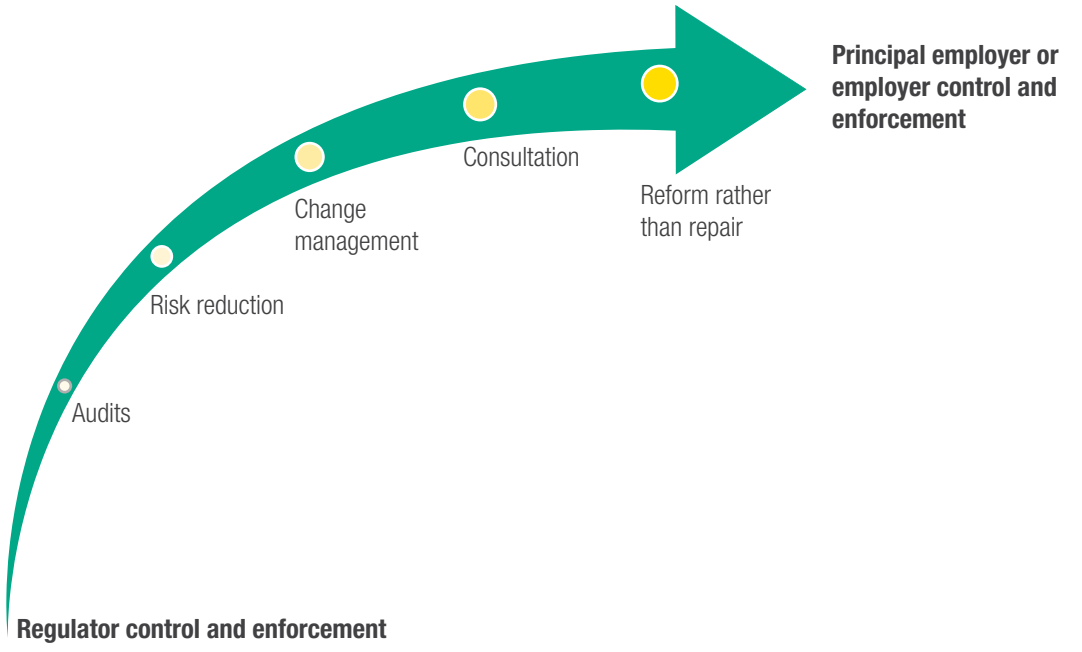
- What can kill or seriously hurt my people?
- What are the key controls that will keep them safe?
- Are these controls in place and will they work when needed?

These questions can be expanded by an organisation to develop a positive safety culture. Companies and individuals could benefit by following this self-regulatory philosophy, which is proactive and promotes a mindset of constant wariness. The ultimate aim is to have a resilient safety culture right across industry — one built on trust and shared responsibility.

SAFETY CULTURE SPECTRUM

Vulnerable	Rule followers	Robust	Enlightened	Resilient
In denial Messengers "shot" Whistleblowers dismissed or discredited Protection of the powerful Information hoarded Responsibility shirked Failure punished or covered up New ideas crushed	Deal "by the book" Conform to rules Target = "zero" Reactive Repair not reform Information neglected Responsibility compartmentalised New ideas = "problems"	Develop risk management capacity Enhance systems Improve suite of performance measures Develop action plans Monitor and review progress Clarify/refine objectives	Active leadership Safety management plan widely known Competent people with experience Accountabilities understood Advanced performance measures Regular reviews Range of emergency responses catered for	**Strive for resilience of systems** **Reform rather than repair** **Responsibility shared** **Actively seek new ideas** **Messengers rewarded** **Proactive as well as reactive** **Failures prompt far-reaching inquiries** **Flexibility of operation** **Consistent mindset is "wariness"**
"in disarray" pathological	"organised" reactive	"credible" calculative	"trusting" proactive	**"disciplined" generative**
Sanction	Direct	Encourage	Partner	**Champion**

THE PATH TO SELF-REGULATION



HOW DO YOUR WORK PRACTICES STACK UP?

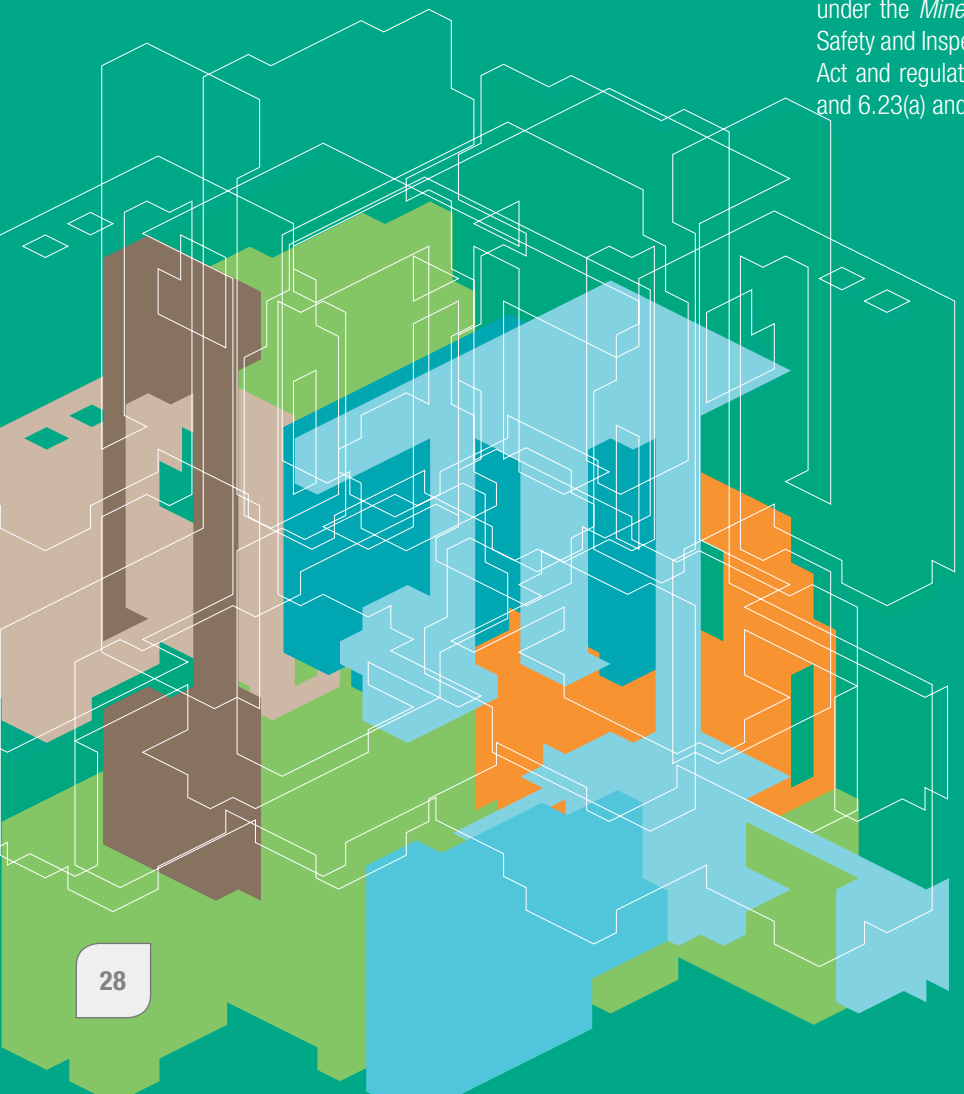
Look around your workplace. Do you have the equipment you need and is it fit-for-purpose? Do the procedures and maintenance schedules follow those set out by the original equipment manufacturer (OEM)?

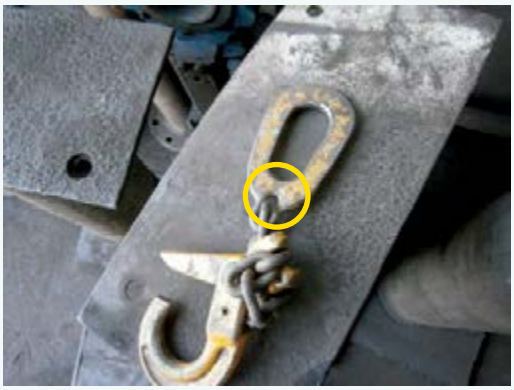
If you answered "no" to either of these questions, how safe is the equipment you are using or what you are doing?

Although we admire Australian ingenuity and make-do attitude, these attributes do not always serve us well. Unfortunately, Resources Safety regularly receives reports of incidents and injuries, some serious, where people have used:

- homemade, modified or improvised (non-engineered) tools
- homemade or improvised lifting equipment
- homemade or improvised stands
- modified or non-OEM procedures.

It is not only good practice to use the right tools and equipment for the job, it is also necessary to satisfy legislative requirements under the *Mines Safety and Inspection Act 1994* and Mines Safety and Inspection Regulations 1994. See section 14 of the Act and regulations 6.20(e), 6.21(a) and (b), 6.22(b) and (c), and 6.23(a) and (b) for guidance.

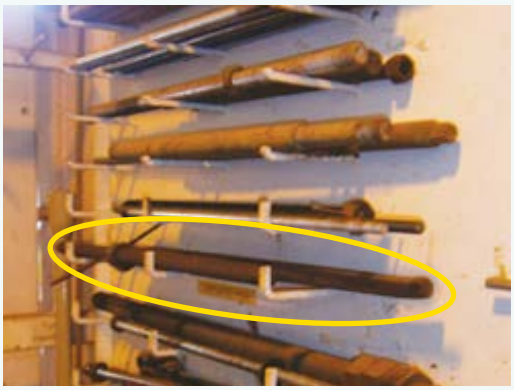




▲ An improvised lifting hook with non-OEM welding – how do you know it will hold?

▲ Improvised stands – how stable are they and what is their safe working load (SWL)?

▲ Improvised overhead crane – how was the SWL determined, if at all?



▲ Threaded bar used as a puller – what is its rated capacity?

▲ Homemade spanner – how much torque can be applied before it breaks?

▲ Improvised wooden prop – would you trust it to hold?

All photos NW

GOLDFIELDS SAFETY REPS TELL US HOW IT IS

There are over 2,300 safety and health representatives on mining operations in Western Australia and they make an important contribution to the resolution of workplace safety and health issues.

Resources Safety has a dedicated group of mines inspectors focused on raising awareness of this role in the minerals sector and providing tangible support for those elected to the position. The inspectorate focus group has developed a questionnaire to seek information from representatives to assist in providing appropriate services and guidance material. In late 2012, Kalgoorlie-based Inspector of Mines Jock Watson processed the results of 70 questionnaires returned from the Goldfields region.

Over half the respondents had worked in mining for five or more years. Only ten per cent had been in the role for more than two years. Fourteen per cent had been a safety and health representative for more than one site.

The most common reasons given for becoming a safety and health representative were to improve workplace safety, increase their personal knowledge of workplace safety issues, increase their crew's knowledge of workplace safety issues and wanting to have a say in how things were done. Just over 20 per cent took on the role because no-one else wanted to.

It is pleasing to see that almost 70 per cent had attended an introductory training course within six months of being elected the first time, and most were within three months. Only one respondent did not find the training to be useful. Many thought that having a trainer with mining experience would have been beneficial. It is concerning that 15 per cent said they had never attended introductory training.

About 65 per cent were able to spend one to four hours during their roster attending to safety and health matters. A quarter said they spent less than an hour in each roster period fulfilling their role.

The tasks that respondents spent the most time on were:

- encouraging safe work practices
- identifying, reporting and controlling hazards
- holding crew safety meetings
- attending site safety committee meetings.

The tasks that they spent less time on were:

- accompanying a mines inspector on a workplace inspection or audit
- investigating accidents and hazardous incidents
- interacting with the mines inspectorate
- conducting monthly workplace inspections.

When asked what could be done to help safety and health representatives in their role, suggestions for Resources Safety included more contact during inspectors' site visits and regular safety updates.

The respondents thought their companies could assist by enrolling managers and supervisors in the introductory training course so they better understood the role and what was required in terms of time and support. Respondents also wanted to receive training in investigation techniques and spend more time with their safety departments, as well as networking with other safety and health representatives.

What were some of the worst things about being a safety and health representative? The answers were many and varied, and are listed below in no particular order:

- people being afraid to bring up safety and health issues
- meeting people who couldn't care less about safety
- workmates who bring up issues that have nothing to do with safety or are trivial
- not being acknowledged for the role
- having their input overlooked or ignored
- not being given the time to do the role properly or learn more about the role
- lack of management support
- having to do incident reports when they know those involved.

What were the best things about being a safety and health representative? Answers included being involved in developing a safer work environment by having input into safer ways to do jobs. There was also the satisfaction of providing a link between workmates and management in relation to safety issues, particularly as a spokesperson for those who are too shy or nervous to say anything. About 65 per cent said that they were prepared to take on the role again if elected.

Thank you to all those who take on this critical role and contribute to positive cultural change.

▲ Jock Watson (left) chats with Colin Harkins, a KCGM safety and health representative

SAFETY AND HEALTH COORDINATORS AND REPRESENTATIVES

Do you want to know whether election notification forms have been received by Resources Safety?

Do you need to confirm election dates or terms of office or have another query about safety and health representation on your site?

The best way to get your query answered is to email **mineshreps@dmp.wa.gov.au**

You can also telephone 9358 8083 for queries.

SHORTCUTS – ARE THEY REALLY WORTH IT?

The Department of Mines and Petroleum has identified a worrying trend in some incident reports submitted to the online Safety Regulation System (SRS) over the last three months of 2012. It appears that some mine workers are still willing to take chances to supposedly save time.

Other incident reports provide strong evidence that the best approach is to follow the systems employers put in place for your safety so you and fellow workers are not injured. These reports describe incidents where a failure occurred but what could have easily resulted in death was avoided. Why? The employees were following the correct system of work, and using the appropriate tools and safety devices. They weren't taking any shortcuts.

In one incident, a tyre burst while being inflated in a tyre cage. The tyre cage was damaged and had to be replaced afterwards — but it did its job. The safe procedure had been followed, no-one took shortcuts and no-one was injured.

What about you? Have you ever thought of shortcutting your employer's safety systems? Consider what could happen if it goes wrong. The end result could be:

- loss of life — yours or someone else's, or both
- a permanent disability
- amputation
- disfigurement
- adverse health effects — either short term or chronic.

How much is your life or wellbeing really worth to save time? When you decide to take a shortcut, you are placing a value on the outcome when or if it goes wrong. Although somewhat simplistic, we can do a rough calculation assuming the shortcut might save 30 seconds and your hourly pay rate is $60.

Hourly rate divided by 60 = dollars per minute ($1 per minute)

Dollars per minute divided by 60 = dollars per second ($0.017 per second)

Dollars per second multiplied by 100 = cents for second (1.7 cents per second)

Multiply the cents by the number of seconds that the shortcut will supposedly save.

So, at $60 per hour, the value you placed on your life or wellbeing for a 30-second saving using a shortcut is 51 cents. Surely you value your quality of life and your family more than that?

▲ Resources Safety mines inspectors with participants at the exploration audit feedback session in Kalgoorlie

FOCUS ON EXPLORATION SAFETY

Do you manage or supervise exploration activities? Do you know your responsibilities for exploration safety? How safe and healthy are your camps and drill sites?

Resources Safety's code of practice for mineral exploration drilling and the mineral exploration high impact function (HIF) audit 2012 are now available.

If you are involved in the management of mineral exploration, including drilling remotely or on mine sites, these publications provide vital information that will help ensure safety standards are upheld.

The code of practice provides a practical and accessible guide to assist in the identification of hazards and risk factors associated with drilling operations. It was developed with extensive industry consultation and is written to be used by anyone involved in drilling operations, from the driller's offsider to the managing director.

The major categories of hazards associated with the drilling methods commonly used in Western Australian exploration are addressed systematically using a risk management approach that encourages all personnel to:

- anticipate and recognise hazards
- assess the probability and severity of harm that may arise
- identify and implement appropriate controls.

Hazard categories covered include:

- rotating and moving parts
- compressed air systems
- hydraulic systems
- manual tasks
- working in hot environments
- fatigue and mental wellbeing
- extreme weather and bushfire
- heavy vehicle movement
- remoteness of exploration.

Although specifically targeting mineral exploration drilling, the code may also be a useful source of information for other drilling applications.

Production of the audit tool benefited from industry input at the 2012 Exploration Safety Roadshows last July, as well as feedback sessions in Perth and Kalgoorlie in November 2012.

The audit guideline covers the safety standards associated with mineral exploration and comprises three parts addressing overall safety and health management, the field sites, and drilling operations. The audit template is structured so that operators can select those aspects relevant to the size and complexity of their operations, and the activities undertaken.

Visit **www.dmp.wa.gov.au/ResourcesSafety** to obtain copies of the code and audit or use the QR link to go to the online one-stop shop for mineral exploration.

STAY ALERT

CONVEYOR GUARDING

Mines inspectorate concern about the increasing number of serious incidents involving conveyors with no or inadequate guarding led to the revision and re-issue of *Mines Safety Bulletin No. 96*, which was originally issued in 2011. It appeared that insufficient attention was being paid to this hazard, and further serious incidents were reported in the three months preceding the bulletin's re-issue on 30 November 2012.

The bulletin recommends that sites audit their conveyor systems to ensure that all practical measures have been taken to prevent inadvertent contact with "nip" points and moving parts where there is a risk of entrapment or entanglement.

Where inadvertent contact is possible, a risk assessment should be undertaken to identify priorities for installing, modifying or replacing guarding. Areas of particular concern to the inspectorate are the adequacy of measures to prevent access and reduce risk to an acceptable level where there are carry side rollers along walkways, or conveyors are remote and visited infrequently.

The bulletin notes that some sites are using Australian Standard AS 1755:2000 *Conveyors – Safety requirement* as a guide to practical measures to reduce risks associated with conveyor systems. However, an employer's duty of care obligations under the *Mines Safety and Inspection Act 1994* and Mines Safety and Inspection Regulations 1995 are paramount and, in some circumstances, compliance with the standard may not be sufficient.

Other recommendations relate to the systems of work and application of isolation procedures, what sort of training is provided, how competency is assessed and the adequacy of supervision.

WORKING UNDERNEATH MOVING VEHICLES

Over the 18 months to the end of 2012, three open-pit incidents were reported to Resources Safety where a truck had been driven off while a fitter was working beneath it. Although the fitters were not injured, there was significant potential for serious or fatal injuries. This hazard was tackled by *Mines Safety Bulletin No. 101*, issued on 6 December 2012.

Recommendations in the bulletin include reviewing the systems of work for the maintenance of trucks at mining operations to ensure they cover work on live equipment and working at night, and the application of procedures for isolation, tagging and personal locks.

PICK-AND-CARRY CRANES ON MINE SITES

Mines Safety Bulletin No. 102 addresses the potential for mobile or pick-and-carry cranes to topple sideways. Resources Safety received six reports of side-toppling of pick-and-carry cranes at Western Australian mine sites in the six months between May and October 2012. Fortunately, no-one was injured.

Issued on 21 December 2012, the bulletin describes a number of contributory factors, including the observation that mobile cranes at mine sites are often used on uneven ground. The safe margins for operating parameters may not be known by crane operators, and can be adversely affected by small variations in ground conditions, exacerbated by a swinging load and the side loading from prevailing winds.

The bulletin recommends a more rigorous approach when assessing the safe operating conditions for mobile cranes to help reduce the potential for sideways-toppling accidents in the field. Actions that can be taken are listed for manufacturers and suppliers, mine managers and operators.

DRILLING

The three significant incident reports issued on 22 November 2012 for the petroleum industry all dealt with drilling incidents.

Petroleum Safety Significant Incident Report No. 01/2012 describes how poorly designed flooring led to a slip and scalding by hot drilling fluid. The worker suffered second degree burns to his foot. The incident could have been avoided if the drilling rig had properly designed flooring that:

- did not become slippery when wet
- extended to cover all gaps through which a worker's limbs could protrude if they fell.

This incident also illustrates the importance of regular inspections and maintenance.

The other two safety alerts relate to component failure, one involving a repaired turnbuckle and the other a substituted fitting.

The incident reported in *Petroleum Safety Significant Incident Report No. 02/2012* illustrates the importance of having robust systems in place to prevent or reduce the effects of poor decision-making — in this case, the decision to make ad hoc repairs to a failed turnbuckle. The repaired turnbuckle subsequently failed during drilling operations and the console handle for the side brake suddenly became non-responsive, causing the travelling block and drill-string to fall to the floor of the drilling rig. Fortunately, no injuries were sustained.

In the third incident, a hydraulic cylinder used to lower and raise a rig's derrick was found to be faulty and was replaced with a substituted part, rather than that supplied by the original equipment manufacturer (OEM). The location of the hose connections on the replacement cylinder was different from that on the original component. When the derrick was being lowered, the hose fittings became fouled with another part of the derrick and were sheared off. The rig manager was not in attendance. Fortunately, no-one was hurt.

Petroleum Safety Significant Incident Report No. 03/2012 lists actions that could prevent a recurrence of this type of incident, including:

- developing and implementing a system for maintaining a stock of correct parts to be available to the drilling site when required
- adopting safety procedures that require lowering operations to be directly controlled by a senior supervisor, whose experience could help identify safety issues sooner.

Want to receive safety alerts when they are issued? Subscribe to Resources Safety's news alert service.

KEEP A WARY EYE ON NATURAL HAZARDS

Summer is in full swing, with all its attendant natural hazards, and it is important to remain vigilant. Cyclones, bushfires, lightning strikes and heat stress are all possible at this time of the year. The potential for exposure to mosquito-borne viruses and Legionnaires' disease should also be assessed.

Severe thunderstorms are localised events. They usually affect smaller areas than cyclones and so their effect may be underestimated.

Flash flooding may occur when thunderstorms pass over an area.

Lightning is associated with thunderstorms and workers should be aware of the risk of lightning strikes. In late October 2012, two construction workers were struck by lightning south-east of Port Hedland. Fortunately, both men survived with only minor injuries.

Find out how to be prepared.

See the Queensland Department of Natural Resources and Mines' Safety Bulletin No. 126, which discusses preparing for the storm season.

Available at **www.mines.industry.qld.gov.au/assets/safety-and-health/safety-bulletin-126.pdf**

Workers should be aware of the risks associated with high temperatures, especially in summer. Heat stress may be experienced in varying degrees.

Dehydration can be associated with heat stress. Two recent incidents, while not related to mining, highlight the potential risks if a worker is not adequately prepared for working in hot environments.

- One man died and another was hospitalised suffering from extreme dehydration and heat exhaustion. They had bogged their vehicle while working on a station in outback Queensland and decided to walk back to the house. The victims were found with insufficient water supplies.
- A 14-year old boy died near Exmouth after suffering acute dehydration. He collapsed four hours into a hiking trip with temperatures above 40°C and later died in hospital.

Review past issues of *MineSafe* for information on heat-related illnesses.

Vol. 21, No. 1, April 2012 – *The heat is still on*

Information to remind workers of the potential risks of heat stress

Volume 19, no. 1, May 2010 – *Near-miss reinforces heat message*

Discussion of incidents involving dehydration

Volume 18, no. 3, December 2009 – *Revisiting the heat stress hazard*

Handy guide to heat stress terminology and risk factors, including a recommended acclimatisation schedule for hot working conditions

When temperatures rise, so too does the risk of bushfires. Slow moving bushfires in the north can suddenly flare and, depending on conditions, may pose a higher risk.

Make use of information and monitoring websites.

Department of Fire and Emergency Services at www.dfes.wa.gov.au

North Australian Fire Information at www.firenorth.org.au

The cyclone season is here. While this weather phenomenon is forecast and warnings are broadcast, cyclones are unpredictable as shown by Cyclone George.

The high winds may be destructive and extensive rainfall can be expected with possible flooding.

Find out more about this hazard in *MineSafe*.

Vol. 19, No. 3, December 2010 – *Is your site ready for the cyclone season?*

Also visit the Bureau of Meteorology website at www.bom.gov.au/cyclone

Workers should be wary of mosquitoes, another natural hazard. Mosquitoes thrive in warm water that may remain after rain or flooding.

The Western Australian Department of Health issued media releases in March and December 2012 warning of the threat of mosquito-borne diseases across the State.

Find out more about these diseases in *MineSafe*.

Vol. 20, No. 1, July 2011 – *Beware mozzie bites*

Information advising workers of the potential risks of Murray Valley encephalitis virus and the related Kunjin virus.

Legionella bacteria are natural inhabitants of fresh water systems such as ponds, streams, lakes, rivers, soil, mud and underground water.

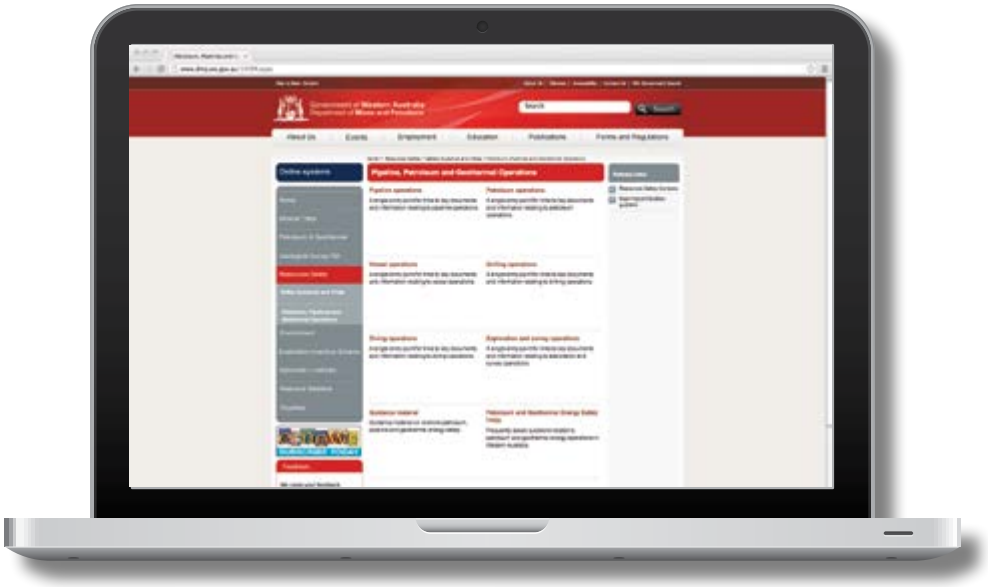
While low levels of bacteria are normal, *Legionella* can thrive in warm, moist conditions. In Australia, major outbreaks of Legionnaires' disease have been traced to cooling towers and to evaporative condensers associated with refrigeration systems.

A coal seam gas camp in central Queensland was recently closed following the discovery of the potentially fatal *Legionella* bacteria in its water supply.

Find out more about this disease in *MineSafe*.

Vol. 19, No. 2, October 2010 – *Legionnaires' disease*

Discussion of the infectious disease caused by bacteria belonging to the genus *Legionella*.



ONE-STOP SHOPS FOR PETROLEUM SAFETY

Resources Safety launched its online one-stop shops for mining and dangerous goods early last year. The one-stop shops provide fast access to key safety and health resources for specific stakeholder groups, topics or activities. Since their implementation, Resources Safety has seen a significant increase in users accessing this online information.

In line with this approach, one-stop shops are now available for petroleum and geothermal energy. With a focus on pipeline, petroleum and geothermal operations, single entry points to key documents and information are available for the following operations and activities:

- pipeline
- petroleum
- vessel
- drilling
- diving
- exploration and survey.

As well as accessing resources through the one-stop shops, guidance for petroleum and geothermal energy safety is available in the form of guidelines, guides, information sheets, registers and toolbox presentations. There is also a dedicated frequently asked questions section.

Access any of Resources Safety's online one-stop shops at **www.dmp.wa.gov.au/ResourcesSafety** through the "Can we help?" icons.

GOT A BRIGHT IDEA?

Do you have an idea for a one-stop shop, or an issue you would like to see tackled? Future one-stop shops are planned and the current pages are works-in-progress, but we welcome industry feedback on content.

Please send your suggestions and feedback to **RSDComms@dmp.wa.gov.au**

Subscribe to Resources Safety's email alert service to receive the latest news about our publications, safety alerts, events and safety reform progress.

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

WHAT'S THE STORY FOR SHIPLOADER DESIGN CHECKS?

While shiploader designs for Western Australia are not required to be submitted to the Department of Mines and Petroleum for checking or approval, port operations and mine sites are reminded of the duties of designers, manufacturers, importers, suppliers, installers and employers.

Under section 14 of the *Mine Safety and Inspection Act 1994* and regulations 6.3 to 6.5 of the Mines Safety and Inspection Regulations 1995, designers are required to identify hazards associated with plant and to assess risks. They are further required to reduce the identified risk of exposure.

In *Mines Safety Significant Incident Report No. 66*, issued in 1996, the then-State Mining Engineer recommended that owners and operators of bulk materials handling equipment such as reclaimers, stackers and shiploaders should undertake comprehensive design checks of their equipment over their operating life. This is particularly important where modifications have been carried out, to upgrade or increase the original design capacity of the equipment. The design checks should be used to identify critical components and the risks associated with the failure of those components.

In *Mines Safety Bulletin No. 43*, issued in 1998, the then-State Mining Engineer further recommended that design calculations prepared for a structure on a mine site should be independently checked by another appropriately qualified and experienced engineer. Design drawings for a structure should be carefully checked by the design engineer to ensure the intent of the design calculations has been fully complied with.

Although made over 14 years ago, these recommendations are sound advice and as relevant today as they were then. However, these practical measures do not constitute a design approval process by Resources Safety as the regulator. Rather, the duty to ensure the integrity and adequacy of the designs still rests solely with the designers, manufacturers, importers, suppliers, installers and persons who have custody and control of the plant.

Australian Standard AS 4324.1:1995 *Mobile equipment for continuous handling of bulk materials* is applicable to shiploaders. As such, the use of a design audit engineer is strongly recommended — although it is acknowledged that Appendix K of this standard is only informative and not normative.

Who should be selected to act as the design audit engineer for Western Australian designs? This is a matter for the design company and client to determine with respect to the independence of the offices. From the Department's perspective, the legislative requirements are to identify hazards, assess the risks and eliminate or reduce exposure to those risks.

SHARING INDUSTRY'S GOOD IDEAS

You have told us, via Resources Safety's roadshow surveys, that you want to share safety and health initiatives, and put the ideas into action at your site if applicable. The industry activities section of this magazine is a good place to start the networking and share some ideas.

READY ACCESS TO EMERGENCY PLAN

In an emergency, the response needs to be appropriate and timely. Knowing who to call, and when, is important given the situation is already likely to be stressful.

During the emergency response discussion at the 2012 Exploration Safety Roadshow in Kalgoorlie, a participant explained how the sun visors in their company vehicles provide a readily accessible location for emergency response information, particularly since their work is mostly field based. In an emergency or potentially serious situation, rather than rummaging through glove boxes or folders stuffed in the door, field staff can simply check out the card on the visor and contact the relevant person or organisation (e.g. seek assistance from nearby pastoral station).

This idea was taken up by a participant at the 2012 Mines Safety Roadshow in Perth, who reported that the feedback from her workmate was positive. You might like to consider this at your workplace – not everyone has a handy pin-up board for such information.

▲ Emergency information mounted on sun visor [photo courtesy Moreena Parkin]

REINFORCING SAFETY AND HEALTH MESSAGES

To reinforce safety messages and seek workforce involvement, many sites have safety and health days or even a week, or run competitions. The results are typically reported in the company's newsletter. Some go one step further and display the winning banners for everyone to see.

Another way to work towards a resilient safety culture is to report on positive outcomes for incidents, and acknowledge when people have done the right thing. For example, one company broadcast a safety notice following a tyre incident — not to say what went wrong but to say what went right, and to reinforce why controls are put in place. The notice is paraphrased below:

A tyre fitter was tasked with replacing a tyre on a three-piece split rim. The rim was stripped and inspected to see if any damage was visible. Apart from mud and dirt build-up, the fitter deemed the equipment was in good working order.

Once assembled, the wheel was placed into the safety cage and "seated". During the inflation process, the type burst at a pressure of about 35 to 40 psi [about 340 to 380 kPa]. The safety cage was purpose built and functioned according to design expectations, withstanding the force of the event.

The tyre fitter had implemented all the hazard controls required by the safe work instruction for the task. The fitter was not harmed and no other equipment in the vicinity was damaged.

In this instance, following the safe work procedures prevented possible injury.

▲ One of the safety banners resulting from an on-site safety slogan competition

ST BARBARA AND MINING

Saint Barbara is one of the best known of the saints associated with the minerals industry. There are various versions of her martyrdom in the third century.

Barbara was the teenaged daughter of a rich pagan living in the ancient city of Heliopolis. After converting to Christianity, she fled from her father to avoid forced marriage. In the account relevant to mining, it is said that she was sheltered in underground mine workings for two years.

She was eventually discovered and condemned to death. Her father carried out the sentence. As she was led to her execution, she apparently prayed for the safety of the miners who sheltered her, rather than herself.

St Barbara's Day is celebrated on 4 December. In Kalgoorlie-Boulder, it is marked by an annual festival and street parade. Visitors to Kalgoorlie's town square can see the Saint Barbara's statue and fountain commissioned in 1999 by the Eastern Regional Council of the Chamber of Minerals and Energy WA.

▲ St Barbara watching over the Yilgarn One team at the 2011 Underground Mine Emergency Response Competition

▲ Scenes from the 2012 St Barbara's Day Festival in Kalgoorlie-Boulder [photo courtesy Linda Crook, CMEWA]

▲ Scenes from the 2012 St Barbara's Day Festival in Kalgoorlie-Boulder [photo courtesy Linda Crook, CMEWA]

COMPETING TEAMS

BHP Iron Ore [BHP Billiton]

Birla Nifty Copper Operations [Aditya Birla Minerals]

FMG VEST [Fortescue Metals Group]

The Ore Bodies [Macmahon]

MMC Combined [Private combined team]

Newmont Combined Team [Newmont Asia Pacific]

Premier Coal [Yancoal Australia]

Saracen ERT [Saracen Mining]

Sunrise Dam [AngloGold Ashanti]

Telfer Gold Mine [Newcrest Mining]

HONOUR BOARD

Overall winners	Sunrise Dam
Overall second place	Saracen ERT
Overall third place	Birla Nifty Copper Operations
Confined space scenario	Sunrise Dam
Emergency response readiness scenario	Sunrise Dam
Fire fighting scenario	Saracen ERT
First aid scenario	Birla Nifty Copper Operations
Hazardous chemicals and breathing apparatus scenario	Newmont Combined
Rope rescue scenario	Birla Nifty Copper Operations
Vehicle extrication scenario	Sunrise Dam
Best captain	Travis Pringle (Sunrise Dam)
Overall team safety	Sunrise Dam
Overall first aid	Sunrise Dam
Overall breathing apparatus	FMG VEST
Outstanding volunteer	Andy French

▲ Dave Oliver (right) consults with his team during the confined space scenario

2012 MERC @ BURSWOOD PARK

The second annual Mining Emergency Response Competition (MERC) set the grounds of Burswood Park alight with anticipation as ten teams participated in seven events on the weekend of 6 and 7 October 2012.

This time, however, the fire brigade did not turn up to out proceedings, and the emergency response teams were able to tackle the fire scenario without official interest.

The competition simulates real-life emergency situations and assesses the skills of teams across a range of emergency and rescue disciplines. The seven scenarios provide invaluable training, skill development, networking and community recognition to emergency response teams. Skills stations were added to the program in 2012, providing competitors with the opportunity to learn the latest in vehicle stabilisation and defibrillation techniques.

The metropolitan location of the MERC competition is truly unique. It allows Perth-based industry representatives, mining families and the local community to view firsthand the skills of mining emergency response teams and their role helping workplaces and local communities in the event of emergency.

This year's MERC will be held at Langley Park Grounds on 21 and 22 September 2013. The venue has been changed to improve accessibility for the general public and raise the profile of the competition.

Miners Promise, a charitable organisation that provides assistance to families and individuals who are confronted with the death or permanent disability of a family member employed in the resources sector, receives all proceeds raised during the competitions. In 2012, $50,363 was raised, bringing the total donation to date to over $95,000.

CAPTAIN GETS REAL-LIFE PRACTICE

The Newmont Combined Team consisted of representatives from Australia, New Zealand and Indonesia. Team captain Dave Oliver, who hails from Newmont's Trio gold mine in Waihi, had helped evacuate 28 miners in July 2012 following a truck fire in the underground mine. The miners had followed the site's safety protocols and made their way to the three refuge chambers. Three rescue teams then went into action.

Newspaper articles at the time reported that the miners had been very relaxed about the situation, knowing that they were going to get out and it was just a matter of time.

CONFINED SPACE SCENARIO

EMERGENCY RESPONSE READINESS SCENARIO

FIRE FIGHTING SCENARIO

FIRST AID SCENARIO

HAZARDOUS CHEMICALS AND BREATHING APPARATUS SCENARIO


The Ore Bodies SH


FMG VEST SH


Telfer Gold Mine SH

ROPE RESCUE SCENARIO


MMC Combined TYC


Birla Nifty TYC


Sunrise Dam TYC

VEHICLE EXTRICATION SCENARIO


Saracen ERT SH


The Ore Bodies SH


FMG VEST SH

BEHIND THE SCENES


SH

SH

COMPETING TEAMS

Agnew Gold Mine Rescue [Gold Fields Australia]

Barrick Kanowna [Barrick Gold of Australia]

Focus Minerals [Focus Minerals]

Kambalda Mutual Aid [Lightning Nickel, Mincor Resources, Silver Lake Resources]

KCGM [Kalgoorlie Consolidated Gold Mine]

La Mancha Resources, Frogs Leg [La Mancha Resources Australia]

Newcrest Telfer Operations [Newcrest Mining Limited]

Paddington Gold [Norton Gold Fields]

St Barbara ERT [St. Barbara Limited]

St Ives Gold Mine [Gold Fields Australia]

Sunrise Dam Gold Mine [AngloGold Ashanti Australia]

Wattle Dam ERT [Ramelius Resources]

Yilgarn One [Barrick Gold of Australia]

Yilgarn Two [Barrick Gold of Australia]

HONOUR BOARD

1st best team	Paddington Gold
2nd best team	Yilgarn Two
3rd best team	La Mancha Resources
Breathing apparatus skills	Sunrise Dam
Fire fighting	Yilgarn Two
First aid	KCGM
Incident management scenario	Justin De Meillon, Barrick Kanowna
Rope rescue	La Mancha Resources
Search and rescue	Kambalda Mutual Aid
Team skills	Yilgarn One

Theory	Paddington Gold
Theory individual	Alex Fincher, Yilgarn Two
Team safety	Yilgarn Two
Overall breathing apparatus skills	Sunrise Dam
Overall first aid	Yilgarn One
Best scenario	Team skills
Best captain	Michael Nugus, Sunrise Dam
Best new captain	Donny Rice, Barrick Kanowna
Best new team	Yilgarn One


Vic Simpson SH

2012 UNDERGROUND COMPETITION @ MT CHARLOTTE

The annual Underground Mine Emergency Response Competition is coordinated by the Eastern Regional Council of the Chamber of Minerals and Energy WA. Many months of planning culminate in this important activity on the mines safety calendar.

For the third year in a row, the Mt Charlotte gold mine hosted the underground competition from 9 to 11 November 2012. The logistics of dealing with 14 teams competing in seven events, as well as handling the requirements of the event managers with attendant adjudicators, casualties, scorers and other volunteers, made this a massive undertaking by KCGM management. The surface tag board personnel were kept busy, as were the winder drivers.

KCGM's Vic Simpson was specifically recognised at the awards night for his contribution to the competition over the last three years. Among the many tasks taken on by Vic was the selection of suitable event locations and ensuring they were set up ready for the event managers to create their scenarios.

Innovations at the 2012 competition included combining the search and rescue and rope events into a single scenario to test skills while wearing breathing apparatus (BA) the whole time. Teams were required to locate a person in a refuge chamber. They then made their way to another level, where ropework was required to lower a casualty down a ladderway. Just to keep team members on their toes, snap tests were conducted along the way, ranging from asking a particular team member to indicate their location on a map to requiring a "hot" cylinder change-out on a specific BA set.

In the team skills scenario, teams used mechanical spreaders and wedged timber to open up a crawl space to an airleg miner trapped by a rockfall. The main objective was to prevent the casualty being crushed further and keep him breathing while working to extricate him. In real life, the extrication would be a long and careful process to protect both the casualty and rescuers. At the end of this event, teams were offered a quick master class in timbering techniques with event manager Tobias Byrne. Tobias said that although timbering was "old school", it was a skill that should not be lost. Timber is easy to work with and usually readily available, so timbering could be a useful tool for emergency response teams dealing with a rockfall while waiting for specialised equipment.

Theory is an important but perhaps less exciting part of the competition program. For a setting with a difference, teams completed their theory papers underground — although tables and chairs were still provided.

As stated many times over the years, while incident prevention is the primary focus of mines safety, planning and being prepared for emergencies is a critical component of any safety management system. The emergency response competitions provide an opportunity for mine teams to test their knowledge and decision making under pressure, hone their skills and receive expert feedback. Thank you to all those who make this possible.

BREATHING APPARATUS SKILLS


Agnew Gold TYC


Kambalda Mutual Aid TYC


Sunrise Dam TYC

FIRE FIGHTING


St Ives SH


Telfer Gold Mine SH


Yilgarn Two SH

FIRST AID


Agnew Gold TYC


St Barbara TYC


Wattle Dam TYC

INCIDENT MANAGEMENT SCENARIO


Agnew Gold SH


Focus Minerals SH

SH

THEORY


St Ives TYC

ROPE RESCUE

La Mancha Resources SH


Paddington Gold SH

SEARCH AND RESCUE


Yilgarn One TYC


Barrick Kanowna SH

TEAM SKILLS

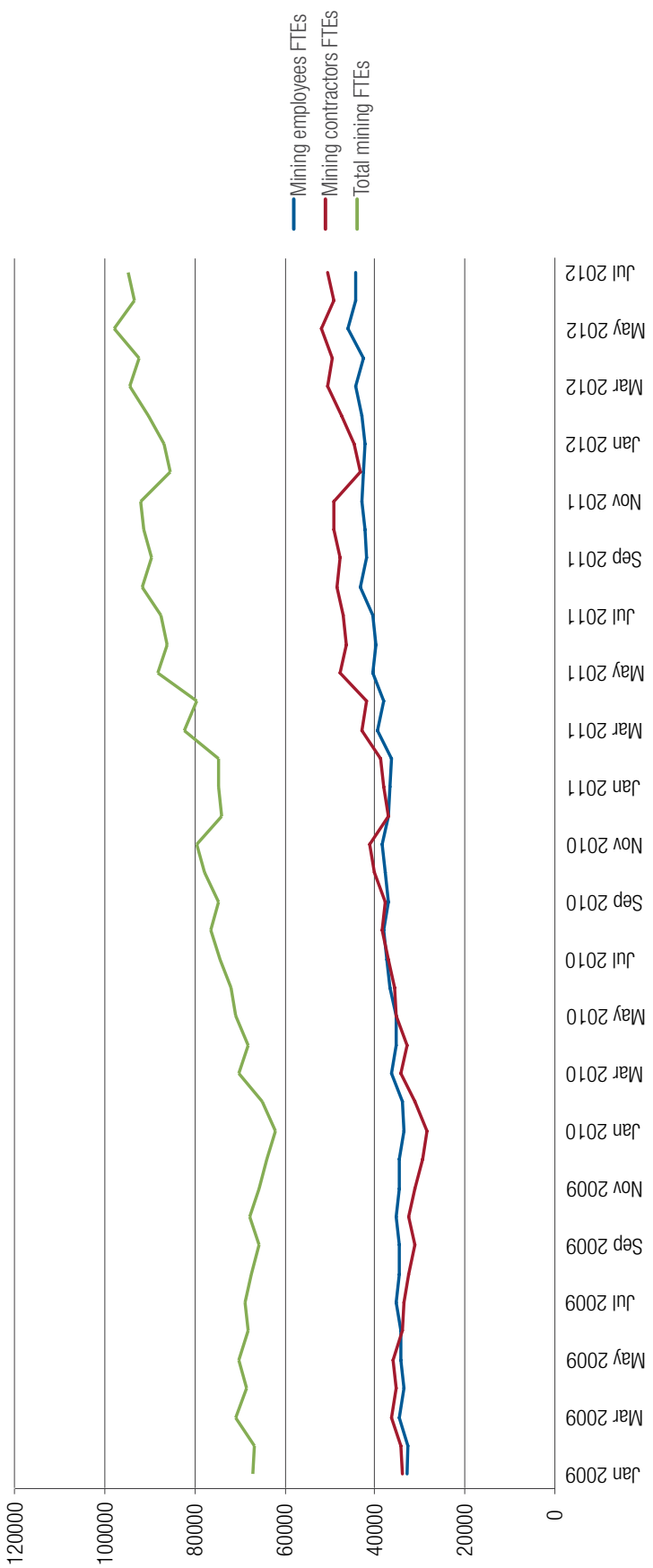

KCGM TYC


Wattle Dam TYC

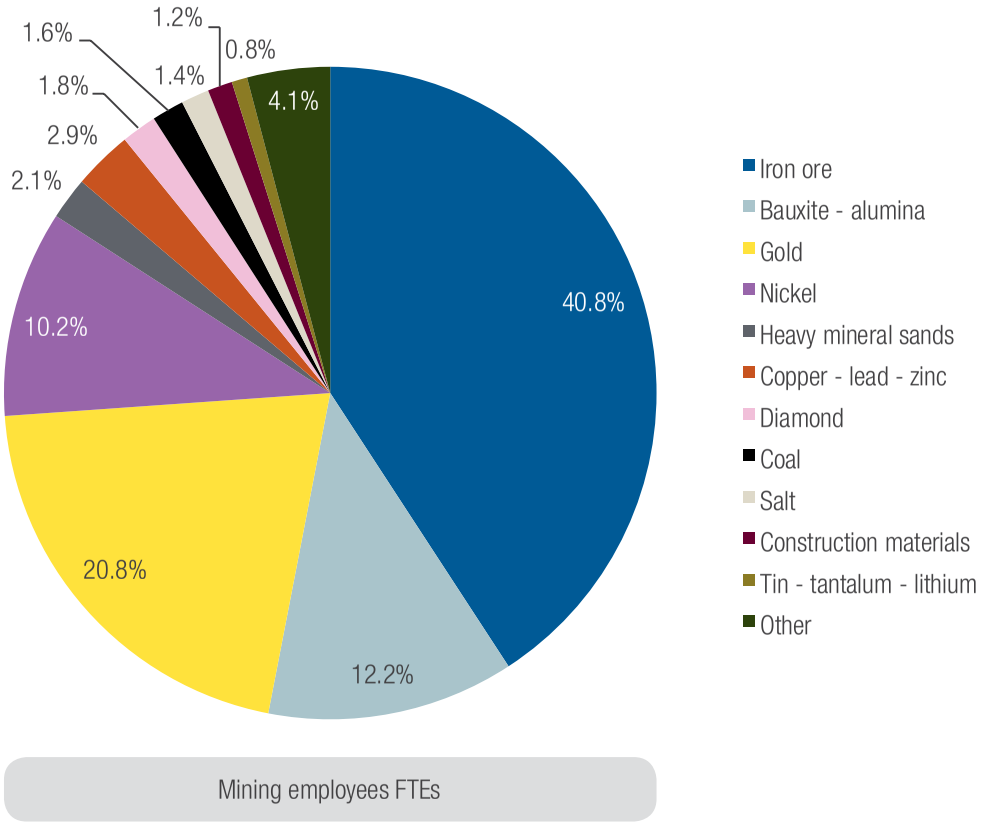

Kambalda Mutual Aid TYC

WA'S MONTHLY MINING WORKFORCE

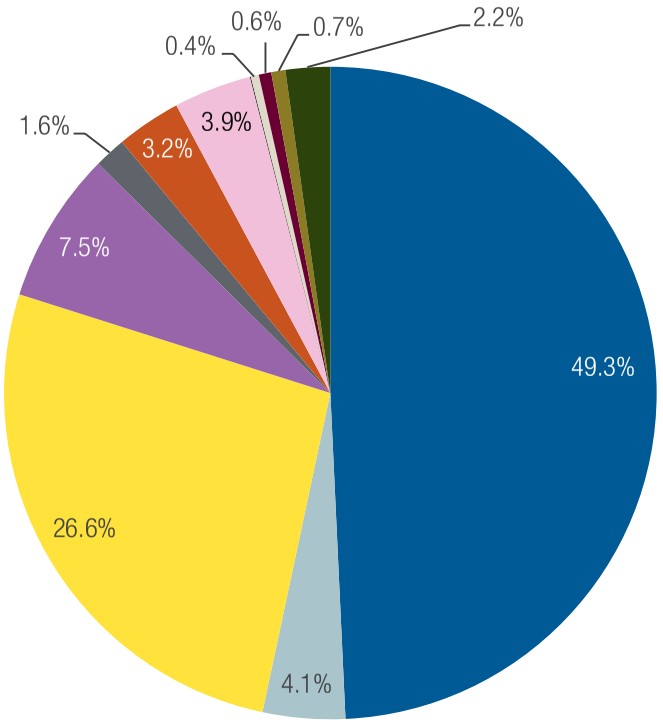
NOTE: From 1 July 2009, monthly mining workforce figures are plotted as full-time equivalent (FTE), where 1 FTE = 2,000 hours worked per year



WA'S MINING WORKFORCE – PERCENTAGE BY COMMODITY (JULY 2012)

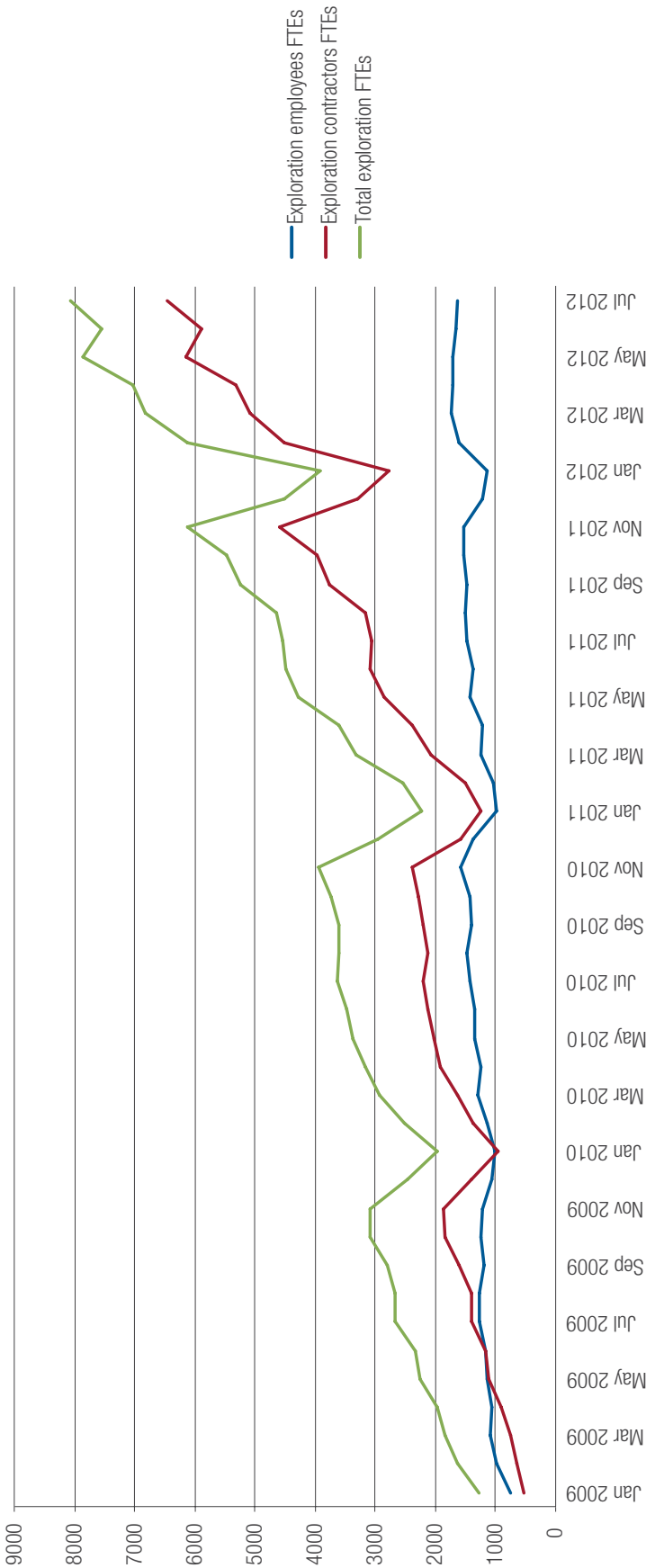


Mining employees FTEs

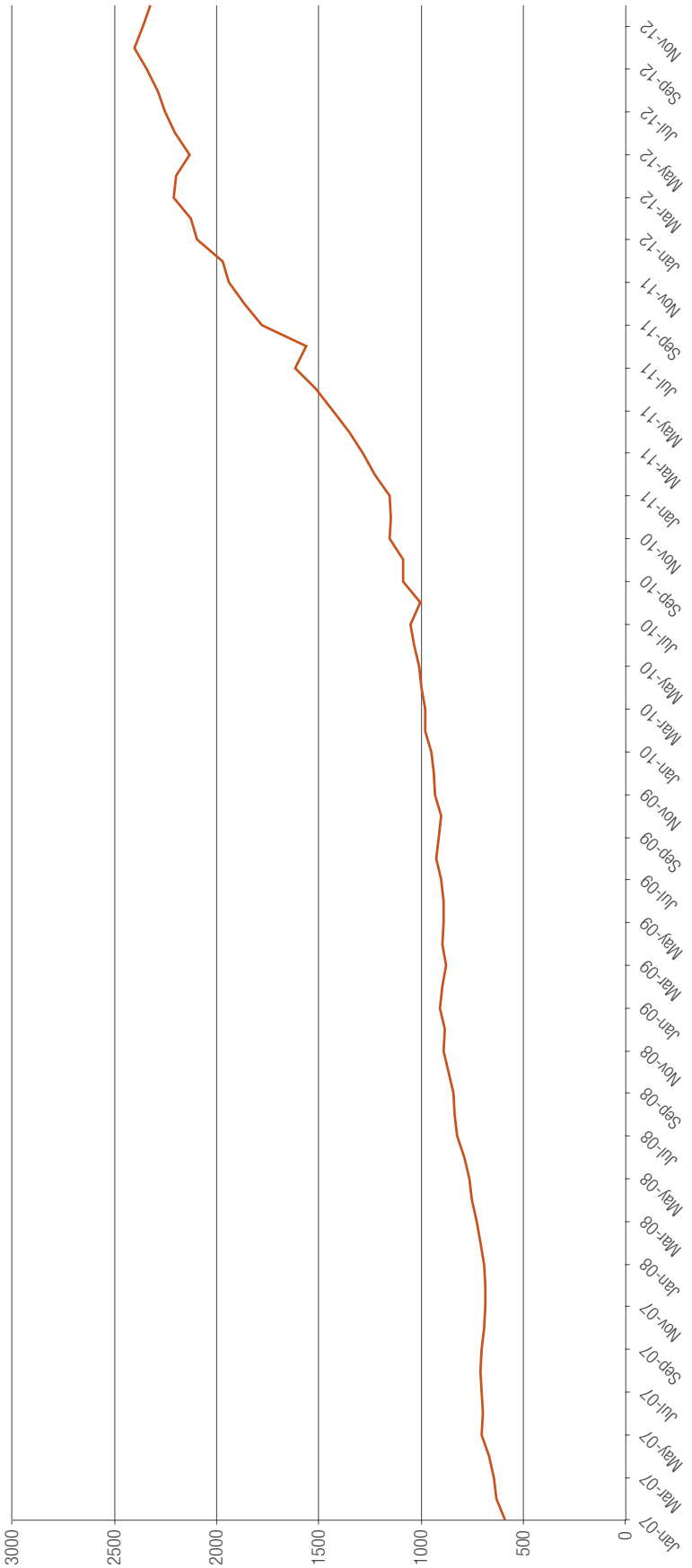


Mining contractors FTEs

WA'S MONTHLY MINERAL EXPLORATION WORKFORCE



NUMBER OF ELECTED SAFETY AND HEALTH REPRESENTATIVES FOR WA MINING



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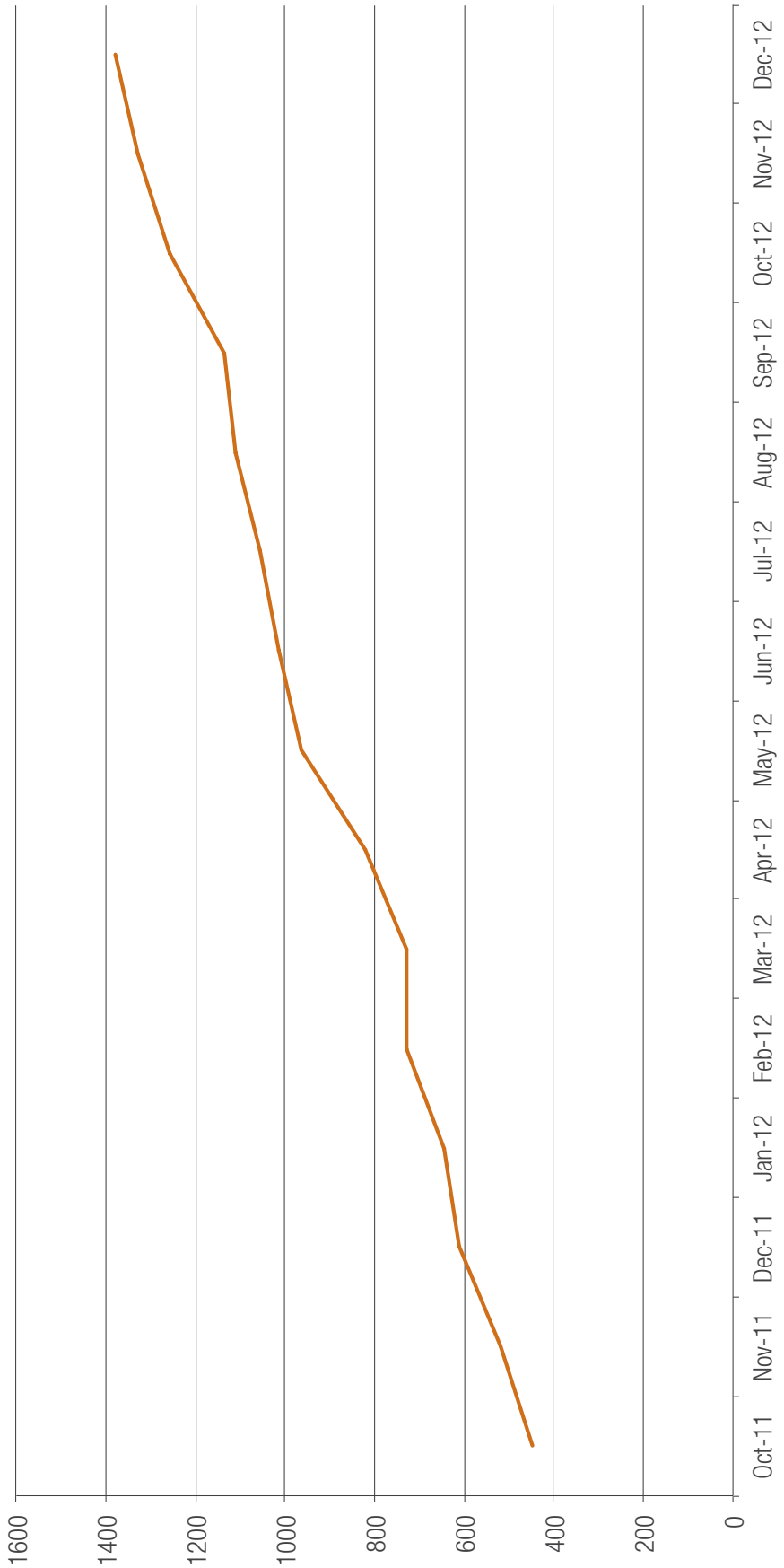

PETROLEUM SAFETY SIGNIFICANT INCIDENT REPORT NO. **01/2012**

POORLY DESIGNED FLOORING LEADS TO SLIP AND SCALDING BY HOT DRILLING FLUID

ISSUED: 22 NOVEMBER 2012

Incident

A new member of a drilling crew was asked to clear excess drill cuttings around a "possum belly". Also known as a distribution box or flowline trap, this part of a drilling rig slows the velocity of hot drilling fluid pumped from the bore hole to a storage tank.

When the worker moved to get a shovel for the task, he slipped on the rig's floor grating. His foot went through a gap on one side of the grating where his boot and foot came into contact with 63°C drilling fluid. The worker suffered second degree burns to his foot.

Contributory factors

The main contributor to this incident was inadequate hazard identification regarding this part of the drilling rig and therefore a lack of appropriate control measures.

There was also a lack of information communicated to new crew members about the hazards when working on wet and slippery surfaces above hot drilling fluids.

Comments and preventative actions

The incident could have been avoided if the drilling rig had properly designed flooring that:

- did not become slippery when wet
- extended to cover all gaps through which a worker's limbs could protrude if they fell.

This incident also illustrates the importance of regular inspections and maintenance.

Preventive actions taken by the operator included:

- undertaking a risk assessment of the area, which led to the redesign of the grating and its surrounds to remove any slip hazard
- closing gaps in the flooring that could present a fall hazard
- advising crews of the dangers of working with hot drilling fluid.

PETROLEUM SAFETY SIGNIFICANT INCIDENT REPORT NO. **02/2012**

TRAVELLING BLOCK ON DRILLING RIG FALLS FOLLOWING FAILURE OF REPAIRED TURNBUCKLE

ISSUED: 22 NOVEMBER 2012

Incident

During a mechanical inspection of the crown block on top of a drilling derrick, one of the turnbuckles on the side brake was found to be fractured. A decision was made to repair weld the turnbuckle as a replacement part was not available at the drilling site. The welder raised concerns that the turnbuckle was made from cast metal and could not be welded without special welding rods. He was advised by the mechanic on duty and the rig manager that, despite this, he should proceed with the repair. The repaired turnbuckle was then put back into service.

The repaired turnbuckle subsequently failed during drilling operations and the console handle for the side brake suddenly became non-responsive, causing the travelling block and drill-string to fall to the floor of the drilling rig. Fortunately, no injuries were sustained.

Contributory factors

- Inspection frequency inadequate for preventative maintenance of critical pieces of equipment.
- Inadequate system for managing supply of spare parts.
- Insufficient knowledge and expertise regarding the risks associated with the non-engineered repair of a critical part.
- Lack of information transmitted to the crew (particularly to replacement crews and new members) regarding the state of equipment.

Comments and preventative actions

This incident illustrates the importance of having robust systems in place to prevent or reduce the effects of poor decision making — in this case, the decision to make ad hoc repairs to the failed turnbuckle.

The incident could have been avoided by:

- having an effective system for maintaining stock and spare parts inventories on the drilling rig
- ensuring any modification, repair, inspection or testing of equipment is carried out by a competent person
- adhering to operating procedures for recording equipment failures and providing relevant information for handovers with new and replacement crews.

PETROLEUM SAFETY SIGNIFICANT INCIDENT REPORT NO. **03/2012**

FAILURE OF SUBSTITUTED FITTING ON DRILLING RIG CAUSES UNCONTROLLED DESCENT OF DERRICK

ISSUED: 22 NOVEMBER 2012

Incident

A hydraulic cylinder used to lower and raise a rig's derrick was found to be faulty and was replaced with a substituted part, rather than that supplied by the original equipment manufacturer (OEM). The location of the hose connections on the replacement cylinder was different from that on the original component. When the derrick was being lowered, the hose fittings became fouled with another part of the derrick and were sheared off.

The derrick's fall was partially controlled by the other still-functioning cylinder until the derrick rested on its cradle, wedging the drilling line beneath. Up to 40 litres of hydraulic oil were released over the rig during the incident. Fortunately, no injuries were sustained.

The rig manager was not in attendance when the derrick was being lowered.

Contributory factors

The key factors contributing to this incident include:

- the installation of a non-OEM part that proved to be incompatible with the design of the derrick
- there was no safety inspection of the newly installed hydraulic fittings to check for issues of non-compatibility
- the risk assessment of maintenance undertaken on the rig was inadequate
- no senior supervisor was present during the lowering operation to recognise the potential problem and stop the process.

Preventative actions

- Develop and implement a system of safety maintenance checks of equipment before and after maintenance or repair work is carried out.
- Develop and implement a system for maintaining a stock of correct parts to be available to the drilling site when required.
- Ensure the risk assessment for the drilling rig considers potential hazards and risk if the rig's original design is changed by using substitute parts.
- Adopt safety procedures that require lowering operations to be directly controlled by a senior supervisor, whose experience could help identify safety issues sooner.

MINES SAFETY BULLETIN NO. **96**

CONVEYOR GUARDING (RE-ISSUED)

ISSUED: 30 NOVEMBER 2012

Summary of hazard

This safety bulletin replaces Mines Safety Bulletin No. 96 dated 12 December 2011, which was prompted by inspectorate concern at the increasing number of serious incidents involving conveyors where guarding was inadequate or absent. The bulletin has been revised and re-issued because of ongoing concern that insufficient attention is being paid to this hazard, resulting in further injuries.

The following serious incidents have occurred on Western Australian mine sites in the last three months.

- An employee was spraying a conveyor belt with belt grip when his arm was pulled into a conveyor system.
- An employee was cleaning a conveyor roller when his hand slipped between a roller and the slat conveyor, resulting in his arm being pulled into the conveyor.
- An employee's finger was crushed when his glove caught between a bracket and a roller on a conveyor.

These incidents did not result in a fatality. However, in a recent incident in Queensland, an employee was fatally injured when he was dragged into a conveyor where guards were not fitted adjacent to the gravity take-up rollers and grease points.

This revised safety alert includes additional recommendations for industry to reduce exposure to this significant hazard.

Contributory factors

- Personnel working around conveyors are not always sufficiently aware of the hazards associated with conveyor systems.
- Conveyor "nip" points are not always sufficiently guarded to prevent inadvertent contact with moving parts.
- A lack of safe work procedures for tasks that involve working close to unguarded moving parts.
- Maintenance work being undertaken on or close to dangerous moving parts without isolating the equipment.

Action required

Provision and maintenance of a safe working environment

Employers have a duty of care not to expose employees to hazards — this is an ongoing obligation. Employers have a duty to provide and maintain a safe working environment in relation to plant. For this to be done effectively, the principal employer and every other employer at a mine must ensure that, in respect to any plant in the mine, a system is implemented to:

- identify any hazards associated with the plant
- assess the risks of an employee being exposed to those hazards

- ensure all practical measures are taken to reduce those risks to an acceptable level.

One of the measures that could be used to confirm that the obligation to maintain a safe working environment around conveyors is being met would be for a competent person to:

- audit the site's conveyor systems to ensure that all practical measures have been taken to prevent inadvertent contact with "nip" points and moving parts where there is a risk of entrapment or entanglement
- where inadvertent contact is possible, undertake a risk assessment to identify priorities for installing, modifying or replacing guarding
- based on the risk assessment, develop and implement an action plan, with due dates and responsibilities, for the installation, modification or replacement of guarding.

Note: Some sites are using Australian Standard AS 1755:2000 Conveyors – Safety requirement as a guide to practical measures to reduce risks associated with conveyor systems. An employer's duty of care obligations under the Mines Safety and Inspection Act 1994 and Mines Safety and Inspection Regulations 1995 are paramount and, in some circumstances, compliance with the standard may not be sufficient.

Systems of work

Section 9(2)(b) of the *Mines Safety and Inspection Act 1994* requires employers to provide the necessary information, instruction, training and supervision for employees to work so that they are not exposed to hazards. Personnel who may be exposed to the hazards associated with conveyor systems include operators, maintenance personnel, supervisors and other personnel working near or moving past conveyors.

To confirm the adequacy of the systems of work provided, it is recommended that a competent person:

- reviews the site's safety and health management systems to identify deficiencies in
  - the application of isolation procedures
  - the applicability of the training provided
  - the assessment of competency
  - the adequacy of supervision
- develops and implements an action plan, with due dates and responsibilities, to address the deficiencies, which should be prioritised based on risk.

MINES SAFETY BULLETIN NO. **101**

TRUCKS MOVING OFF WHILE FITTERS WORKING UNDERNEATH

ISSUED: 6 DECEMBER 2012

Summary of hazard

Over the past 18 months, three open-pit incidents have been reported where a truck has been driven off while a fitter was carrying out work beneath it. Although the fitters were not injured, there was significant potential for serious or fatal injuries. The incidents are summarised below.

- A fitter was assigned to turn on the heater valves under a dump truck in the evening. The fitter approached the truck from the driver's offside and used his torch to signal the driver, who was sitting in the cabin with the engine running. The driver did not notice the fitter and drove off while the fitter was still under the vehicle. The fitter moved to the centre of the truck and was on his hands and knees as the chassis passed over him.
- A water cart broke down in the middle of the night. A serviceman filled the transmission system with oil and left as two fitters were checking for leaks. The fitters placed commissioning tags on the main isolation point and instructed the driver to collect his belongings from the truck. This instruction was misunderstood. As the fitters were inspecting the underside of the truck, they heard the truck's gears being engaged and realised it was about to drive off. They quickly moved from under the truck as it drove away.
- At the start of the day shift, a fitter had placed a "restricted operations" tag on the main isolation point of a truck after the driver had completed his pre-start checks. The fitter commenced his inspection and asked the driver to go to the cabin and turn on the engine as the wheels needed to be turned. As the fitter continued to work under the truck, a light vehicle that was parked in front of the truck left the area. Assuming it was being driven by the fitter, the driver started to move his truck. The fitter went to the centre of the truck as it passed over him.

Contributory factors

- The truck drivers were unaware that fitters were under their trucks before moving off.
- Incorrect use or failure to use appropriate tags has contributed to each of these incidents. The truck drivers and fitters did not follow correct procedures relating to isolation and tagging. This included not placing tags at isolation and control points, not checking isolation points for tags, and the driver being in the cabin during repairs.

- The communication practices between the drivers and fitters were poor and incorrect assumptions made by both parties.
- The systems of work were inadequate to ensure workers were clear of the area before trucks were driven off. Wheel chocks were not used in any of the incidents. In one of the incidents, the horn was not sounded before the truck moved off.
- Two of the incidents occurred at night when visibility was limited.

Recommendations

- Companies should review their systems of work for the maintenance of trucks at mining operations to ensure they cover work on live equipment and working at night.
- Before anyone works under a truck in an open-pit setting, the driver should exit the truck cabin and the truck should be isolated. Appropriate tags and personal locks should be installed at the truck's main isolation point (near bottom of access stairway).
- Restricted operations or exclusive control procedures and tags are required where trucks are left running for live work (e.g. fault finding to initiate repairs). This includes the installation of tags on the main control point (e.g. steering wheel). A restricted operations task controller may be used to control access to the truck being repaired and its hazard footprint. During repairs, workers such as fitters and truck drivers would operate under the authority of this controller.
- To improve communication and ensure the area is clear before trucks are driven off, the use of spotters or hand-held radios should be considered.

MINES SAFETY BULLETIN NO. **102**

ADDRESSING THE POTENTIAL FOR MOBILE (PICK-AND-CARRY) CRANES TO TOPPLE SIDEWAYS

ISSUED: 21 DECEMBER 2012

Summary of hazard

Modern crane designs are moving towards more compact arrangements of the boom support structures. Under load, mobile cranes (i.e. pick-and-carry cranes) can topple sideways as well as pitch forward largely due to the movement in the boom support structures with induced side loading. Mobile cranes with extended and elevated booms present a particular hazard in this regard, especially when working with heavier loads, typically at load radii near the minimum specified in the manufacturer's tables.

Contributory factors

- Mobile cranes at mine sites are often used on uneven ground. The safe margins for operating parameters may not be known by crane operators, and can be adversely affected by small variations in ground conditions, exacerbated by a swinging load and the side loading from prevailing winds.
- The applicable Australian Standards do not require experimental confirmation of the sideways stability of pick-and-carry cranes when verifying designs, and no acceptance thresholds are specified.
- The dominant moments (i.e. turning effect that a force has) that induce sideways toppling result from sideways boom and rope movement during tramming. The combined effects can be greater than those experienced during controlled static lifts.
- The process of crane registration does not result in the verification of sideways crane stability.
- Mechanical wear and tear and structural modifications can lead to cracks and embedded flaws that are difficult to detect during periodic crane inspections. The hydraulic systems are sometimes modified during the life of the crane.
- Currently, periodic inspections do not require scrutiny of sideways stability. Also, mobile cranes are not usually inspected in the field under their normal operating conditions.

Recommendations

A more rigorous approach when assessing the safe operating conditions for mobile cranes will help reduce the potential for sideways-toppling accidents in the field.

Manufacturers and suppliers

- Crane designers, original equipment manufacturers (OEMs) and suppliers should assess the risk of sideways loading, through a voluntary "type approval" system, so that new and existing mobile cranes can be validated or certified.
- Side loading tests should establish the reference values for sideways boom movement under the safe working load at reference conditions with high boom angles and a fully extended boom configuration, and including articulation as appropriate.

Mine managers

- Given the observed sensitivity to sideways loading, the safe system of work for mobile cranes should be reviewed and revised to ensure it is sufficiently robust. Where warranted by the risk assessment, consider an appropriate voluntary side exclusion zone.
- In addition to the periodic inspection regime required by legislation, consider an asset integrity management system using risk-based decisions to plan inspections and maintenance.
- A proactive maintenance program should be implemented to address excessive sideways movement of booms due to wear and tear and changes to structural integrity.

Operators

- The factors to be considered when identifying the risk assessment for each lift include:
  - heavier loads
  - smaller radii
  - extended boom
  - moving across uneven ground
  - wind velocity.
- Review the current risk assessment for the crane in use to determine whether the margins for safety are adequate.

Additional information

Australian and International Standards

Available at **www.saiglobal.com**

- AS 1418.1:2002 *Cranes, hoists and winches – General requirements*
- AS 1418.5:2001 *Cranes, hoists and winches – Mobile cranes*
- AS 2550.1:2011 *Cranes, hoists and winches – Safe use – General requirements*
- ISO 4305:2000 *Mobile cranes – Determination of stability*
- ISO 4302:1994 *Cranes – Wind load assessment*

Resources Safety

Available at **www.dmp.wa.gov.au/ResourcesSafety**

- *Evaluation of asset integrity management system (AIMS) – guide*

  Note: Although issued for petroleum operations, this guide has general application to the mining industry.

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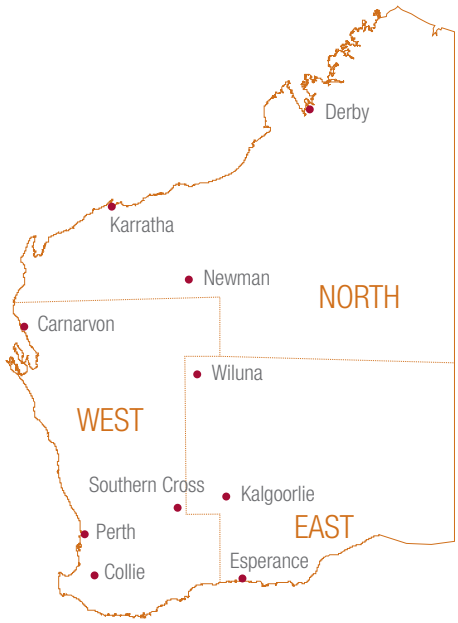

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