

minesafe

WESTERN AUSTRALIA

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Government of Western Australia
Department of Mines and Petroleum
Resources Safety

Pursuing excellence in risk assessment

IS YOUR WORKPLACE UP
TO SCRATCH?

GETTING REAL ABOUT
"REAL MEN"

STOPPING FOR SAFETY



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Welcome to the first issue of *MineSafe* for 2010. Feedback in the first year of the new-look publication has been very positive. However, the magazine has a diverse readership, ranging from remote exploration sites to quarries to large mines, from refineries to head offices, from gold to iron ore, from new-starters to safety and health representatives, from supervisors to safety professionals.

So, to be sure that we're on the right track, we need to hear from as many readers as possible. A short survey will be sent to all subscribers shortly. It shouldn't take long and your input is valued. The survey will also be available online at www.dmp.wa.gov.au/6704.aspx

In keeping with the diverse readership, a variety of topics is covered in this issue, with articles intended to inform, educate and stimulate discussion. There should be something for everyone.

As always, enjoy your reading.

Malcolm Russell
Executive Director, Resources Safety

COMING UP ON THE RADARS:

REFORM AND DEVELOPMENT AT RESOURCES SAFETY

Why is RADARS important?

To save lives and reduce injuries, industry, the regulator and employees must work together to make the necessary *cultural* changes. While extra safety resources and legislation help, significant reductions in incidents can only be achieved if a resilient safety culture is encouraged and maintained.

The State Government's initiative addresses how Resources Safety, as the regulator, will work with the resources industry to reduce serious accidents across the three sectors it administers — mining, petroleum and dangerous goods.

How will this vision be achieved?

As a priority, all workplaces should aspire to a resilient safety culture. Consultation, communication and participation will be paramount to making effective and permanent changes.

- **What do people do when no-one is watching?**
- **How well do they assess risk and apply control measures?**
- **Is responsibility for safety shared?**
- **Is bad news treated as an opportunity for reform rather than blame?**

Also, the risk management approach needs to become the norm in the resources industry. There is already an element of risk management to much of what is done, but the RADARS strategy aims to reinforce, promote and extend its application across the three safety regulatory areas.

From the Government's perspective, the implementation of RADARS will address issues of legislation and the regulator's capacity and competency to support and monitor the risk management process.

What is the current status of RADARS?

Legislation

One of the aims of the RADARS strategy is to create a modern legislative base over the next few years to reflect community expectations, including the adoption of national reforms for occupational safety and health as determined by the State Parliament. A Ministerial Advisory Panel has been established to advise on the development of "best practice" safety regulation for the Western Australian resources industry. The Panel, which is chaired by the Director General of the Department of Mines and Petroleum, has now met twice and will continue to provide advice on a regular basis. Panel members represent:

- UnionsWA;
- Chamber of Minerals and Energy (CME);
- Chamber of Commerce and Industry (CCI);
- The Association of Mining and Exploration Companies Inc (AMEC);
- Australian Petroleum Production and Exploration Association (APPEA); and
- The Australian Pipeline Industry Association Ltd (APIA).

A phased cost recovery approach has been adopted to enable the implementation of RADARS initiatives. Mining is a priority and new Mines Safety and Inspection Levy Regulations are now in effect. The levy will only be used for mines safety regulatory activities.

Cost recovery for the petroleum and dangerous goods functions will be addressed in the next year or so.

Capacity

A number of initiatives are underway in the Department to address the issue of capacity in terms of both staff and work programs.

Additional full-time staff positions are being created in the next year to expand capacity for functions such as safety audits and inspections, provide crucial support for improved data collection and analysis, and develop targeted education and information programs. This will go a long way towards ensuring there are sufficient technical and administrative resources to plan and deliver the program of work necessary to achieve the agreed strategic outcomes.

Positions will be available for safety professionals and ancillary and support staff, across the three regulatory areas of mining, petroleum and dangerous goods. The employment of additional mines inspectors for the regions as well as Perth is a priority, particularly given the skills shortage, which not only affects industry but also the regulator.

People who have worked in the mining industry can get great satisfaction from putting something back by improving safety within the industry, using the experience and technical knowledge they have gained. Working in the regulatory area can also be a great stepping stone for people looking to move back into industry at a more senior level. If this appeals to you, find out more and register your interest at www.dmp.wa.gov.au/10203.aspx

Work has also commenced on new data management and analysis systems to provide the necessary safety and health data to ensure that decisions on strategic direction and resource allocations are evidence based.

Competency

Competency-based training programs have been developed for existing and new inspectors to deliver the skills needed by individuals to become respected safety regulators and meet nationally recognised standards. The best regulators combine a good grounding in a relevant profession, which is then built upon through mentoring, further learning and specialised professional development. A pilot group of inspectors is currently testing the requirements and procedures for the national qualifications before they are rolled out across Resources Safety.

Meeting industry needs

To meet the challenges in the rapidly expanding industry sectors regulated by Resources Safety, we need to embrace change as we increase capacity and develop competency commensurate with the needs of industry. The systems being developed must be resilient and responsive to future developments and technological change. We can no longer rely on a "one size fits all" mentality but must adopt an approach that recognises the specific needs of individual operations. The adoption of a team-based structure will reflect the activities of the various regions and industry sectors.

RADARS updates

Visit www.dmp.wa.gov.au/RADARS for the latest news on what is happening with RADARS.

RADARS FACT OR FICTION?

FICTION – The mines safety levy will raise \$35 million from the mining industry for safety regulation.

FACT – The mines safety levy will raise about \$8 million in 2009-10 and about \$18 million in 2010-11 for safety regulation of the mining industry.

FACT – When fully implemented in 2011-12, the cost recovery approach for RADARS will raise about \$35 million for safety regulation across all of the industry and community sectors regulated by Resources Safety. These include onshore oil and gas, pipelines, mining, exploration, dangerous goods, major hazard facilities, explosives, fireworks, counter-terrorism measures and licensing services.

FICTION – There will be more than 70 new mines inspectors, with 35 recruited in 2010.

FACT – A range of staff positions, including but not restricted to inspectors, is being created for safety regulation of the mining, petroleum and dangerous goods sectors. These will enable Resources Safety to:

- expand capacity for functions such as safety audits and inspections;
- provide crucial support for improved data collection and analysis; and
- develop targeted education and information programs.

This recruitment strategy supports the emphasis on a risk management approach to safety rather than legislative prescription.

FACT – The Department of Mines and Petroleum has been given government approval to create up to 26 additional mines inspector positions.

FICTION – Mining operations will be required to develop safety cases like those used in the offshore petroleum industry.

FACT – Under the RADARS strategy, the emphasis is on expanding the role of risk management rather than relying on detailed prescription for resources safety regulation.

The risk-based approach puts the onus on operators to demonstrate that they understand the hazards and risks of their particular workplaces, and have implemented control measures to eliminate or manage these risks.

There is already an element of risk management to much of what is done in Western Australia, but Resources Safety will work with industry to reinforce, promote and extend its application across the three safety regulatory areas.

STAY INFORMED

Want to keep up with what's happening in the Department of Mines and Petroleum (DMP)?

Starting in April 2010, the Director General Richard Sellers will be distributing quarterly email updates on DMP's latest activities. The newsletter will be a valuable tool for anyone interested in the future of the Western Australian mining and petroleum industry. It will provide an update on topics such

as DMP's work in progress, upcoming events and staff movements relevant to industry.

The newsletter will be distributed in addition to DMP's existing range of publications, including Prospect.

To sign up for this new service, simply send an email to subscribe@dmp.wa.gov.au from the address you wish to receive the newsletter.



Photo courtesy Ruth Robertson

“ AS THE DRIVING FORCE BEHIND THE ‘A TEAM’, THE GROUP THAT MANAGES THE MINES SAFETY AUDIT PROGRAM, HE BROUGHT HUMOUR, LEADERSHIP AND AN IMMENSE WEALTH OF KNOWLEDGE ”

VALE CHARLES ROBERTSON

It is with great sadness that we report the passing, in January, of District Inspector of Mines Charles Robertson. Charles had been a part of Resources Safety since 1990, when he started as District Mining Engineer in Karratha.

He left his mark on the mines inspectorate as he no doubt did at his previous workplaces and organisations fortunate enough to have interacted with him.

Charles was born in Dundee, Scotland, in 1945. After graduating from school in St Andrews in 1963, he moved to Cornwall where he studied to become a mining engineer at Camborne School of Metalliferous Mining, graduating in 1966.

With an Associateship from the Camborne School of Mines, Charles started his working adventures in the Republic of Honduras in Central America, where he stayed for over 18 years. His wife Ruth joined him in Honduras in 1967, where they raised their family of two boys.

Charles eventually moved on to another mining job in Papua New Guinea (PNG), where they stayed for three years.

While in PNG, Charles saw an advertisement for a job in Western Australia with the mines inspectorate. His application was successful and the family travelled to Karratha in 1990. After ten years in the North West, Charles transferred to Perth.

State Mining Engineer Simon Ridge remembers Charles as a quiet achiever, who got the job done.

“With Charles, there was no whirlwind of activity or gusto, but a steady assessment of what was required, a plan, leadership and his nose to the grindstone”, said Simon. “As an inspector of mines he was thorough, consistent and studious. Over the years he won respect from the industry and his colleagues alike.”

“As the driving force behind the ‘A Team’, the group that manages the mines safety audit program, he brought humour, leadership and an immense wealth of knowledge.”

Simon also noted, “As an investigator, Charles has been likened to a terrier, a Scottish terrier of course, once he got his teeth into something he did not let go. His legacy in this area will live on as he has landmark cases against his name.”

However, Charles was not all work and no play. He was a very proud family man, who often spoke of his sons’ achievements and wife Ruth’s skill as a horticulturalist.

He was also not reticent about sharing his passion for steam with interested colleagues. He kept them informed about events at the Australian Railway Historical Society so they were up to speed and parents could take their children along for their injection of coal smoke.

Charles will be sadly missed, not only as a respected inspector of mines, but also as a friend.

There is more
to life...
Exciting new positions coming soon!



SEEKING SAFETY PROFESSIONALS

Resources Safety is currently recruiting staff as it moves into a new era of best practice regulation.

Suitably experienced and qualified persons are being sought from the mining, oil and gas, and dangerous goods sectors.

The division requires a broad set of skills and knowledge, and both tertiary and non-tertiary qualified people are invited to apply. A satisfying and rewarding career may well be awaiting you in one of our teams.

Resources Safety's organisational structure of the future will

offer a defined career path, continued professional development and an unparalleled opportunity to make a real difference to occupational health and safety outcomes in Western Australian industry.

Successful applicants will be able to complete relevant courses to postgraduate diploma level with an engagement in Resources Safety's staff training and development continuum. There will also be the possibility of developing or enhancing auditing, investigation, leadership and management expertise.

Visit www.dmp.wa.gov.au/10203.aspx and look out for our advertisements in the local and national press.

NEW-LOOK MINESAFE – TELL US WHAT YOU THINK

In 2009 Resources Safety launched the new-look *MineSafe* with a user-friendly layout.

Now that the new design has been published for a year, we want to hear what you think about the magazine. Tell us what you like and dislike about the content and style, and how we can improve.

All that is required is a couple of minutes of your time to complete a survey, either online or using the postage-paid survey form to be sent to all subscribers shortly.

Whether you are a regular or occasional *MineSafe* reader, your feedback is vital to ensuring we continue to deliver the information industry requires — in a format that works for all our readers. The more responses we receive, the more confident we will be that we are delivering what you want.





SIMON SAYS



IS YOUR WORKPLACE UP TO SCRATCH?

Over the next few months, inspectors will be scrutinising the crib, sanitation and ablution facilities provided by employers in mining workplaces. Part 7 of the Mines Safety and Inspection Regulations 1995 requires that appropriate facilities are provided and maintained at all mine sites.

In particular, the advent of a mixed workforce underground in Western Australia has meant that such facilities have had to be upgraded to take into account the presence of women.

The maintenance of such facilities is critically important. No-one wants to use a facility that is not kept at a reasonable standard, nor be involved in cleaning and maintaining a substandard facility.

I can well remember the trepidation I experienced during my time in Africa when the mine captain informed me that the "chimbusu" (Zambian for toilet) was going to be brought to the surface during the Saturday morning early shift. Believe me, a "six-seater" rail-mounted unit that had been underground for several years was

not something you wanted to derail and tip over!

On a more serious note, the regulations also require the people for whom the facilities are provided to take due care when using them and to not intentionally soil or damage them.

In addition to normal safety audits and inspections, Resources Safety inspectors will be seeking assurance that mine operators are regularly checking that crib rooms are clean, tidy and free from accumulated waste. Operators must ensure that toilet facilities are kept clean, have appropriate disposal arrangements for sanitary products and are within a reasonable distance of the workplace. Change rooms must also be clean and tidy, with provision for dirty and clean areas.

In summary, eating places, change rooms and toilets at mining operations must be appropriately designed for the number of employees using them, and must be kept clean and tidy. For more details, refer to Part 7, Division 2 (hygiene and sanitation), of the regulations, available from the State Law Publisher's website at www.slp.wa.gov.au

Simon Ridge
State Mining Engineer

BOARDS REPORT ON CHANGES

Results improving

The Board of Examiners reports that the latest Certificate of Competency exam results, from September 2009, show a marked improvement in the average marks obtained by candidates. In a previous issue of MineSafe, the Board had expressed concerns with an apparent reduction in average marks, possibly reflecting poor preparation. It is pleasing that this trend has been sharply turned around.

Of particular note is the significant improvement in the various mining law results. For example, some 70 per cent of candidates passed the last quarry law exam compared to an average pass rate of 40 per cent for the previous 12 months. Congratulations to the candidates for the diligent study that led to this gratifying outcome.

Future candidates are advised to take note of this and put in the required preparation and study so this positive trend continues.

Change in approach

In response to the Kenner Report recommendations, the Mines Survey Board is trialing an interview process for authorised mine surveyor applicants. An added benefit for candidates will be potential recognition of their qualifications and experience in the Eastern States mining industry.

VALE PAUL DUNN

On a sad note, Resources Safety notes the passing at Easter of Professor Paul Dunn, Director of the WA School of Mines. Until recently, Paul was on the Board of Examiners, which he had served with distinction for two years. Our sympathy is extended to his wife and family.



DMP LEGISLATIVE PROGRAM AS AT 27 APRIL 2010

MINES SAFETY

New Mines Safety and Inspection Levy Regulations came into effect on 24 April 2010.

An annual per-hour levy rate will be calculated on the budgeted cost for mines safety and health regulatory services for each year, divided by the estimated number of hours worked by mining industry workers for that financial year. The levy rate will be reviewed and published annually. It will be adjusted according to:

- the number of hours worked by people employed in the industry; and
- costs associated with the delivery of safety regulatory services.

DANGEROUS GOODS SAFETY

Resources Safety continues to progress a raft of amendments to reduce the regulatory burden and streamline administrative processes associated with the dangerous goods safety legislation. Drafting of the amendments to the General, Road and Rail Transport of Non-explosives, and Major Hazard Facilities Regulations has been finalised, and it is expected that they will come into force before June this year. Amendments to the remaining four sets of regulations are in the final stages of drafting, with completion anticipated in the coming months.

PETROLEUM SAFETY LEGISLATION

In February this year, public comment was sought on drafts of the safety regulations attached to the *Petroleum Pipelines Act 1969* (PPA) and the *Petroleum and Geothermal Energy*

Resources Act 1967 (PAGERA). The comments have been collated and can be viewed in the legislation and policy section of the Resources Safety website.

Once the regulations are completed, the remaining parts of the *Petroleum Legislation Amendment and Repeal Act 2005* (PLARA), which introduce an occupational safety and health regime into the PPA and the PAGERA, will be proclaimed along with the safety regulations.

NATIONAL MODEL WORK HEALTH AND SAFETY ACT

The National Mines Safety Framework (NMSF) Steering Group, which operates under the auspices of the Ministerial Council on Mineral and Petroleum Resources (MCMPR), met in Perth on 31 March 2010 with further meetings in late April, May and June to finalise drafting instructions for mining regulations for the national model Work Health and Safety Act.

The final version of the instructions will be submitted to the MCMPR for approval and submission to the Workplace Relations Ministers' Council via Safe Work Australia, which is responsible for the drafting of the model Act and Regulations. The Act is in its final stages of completion ready for sign off by the Workplace Relations Ministers' Council by the middle of this year.

HIGH RISK WORK LICENSING – TRANSITION PERIOD ENDING

People who work in surface mining performing certain high risk work are reminded that they have until 22 July 2010 obtain the new licence, if they haven't already done so. Further information is available at www.dmp.wa.gov.au/8423.aspx

WHAT ARE INSTRUMENTS OF DECLARATION?

The safety regulation of all activities at mining operations, including construction work, normally falls under the jurisdiction of the *Mines Safety and Inspection Act 1994*, which is administered by Resources Safety.

Under the *Occupational Safety and Health Act 1984*, WorkSafe is responsible for all non-mining and non-petroleum operations. With particular reference to construction, WorkSafe is well placed in terms of inspectorate expertise and its relationship to that sector.

Consequently, there are many benefits if the appropriate regulatory authority has responsibility for certain types of work.

Under section 4(3) of the *Occupational Safety and Health Act 1984*, an instrument of declaration is a mechanism by which the Minister for Commerce and Minister for Mines and Petroleum

may jointly transfer some or all legislative responsibility under the *Mines Safety and Inspection Act 1994* or *Mining Act 1978* to WorkSafe for:

- a designated area for
- a specific purpose and
- a specified period of time.

Most of the instruments declared to date cover major construction at sites in the Pilbara, such as the Pilbara Iron Pty Ltd Railway, Karara Iron Ore Project, Spinifex Ridge Molybdenum, and power stations at Boodarie and Newman.

Declarations are published in the Government Gazette, available from the State Law Publisher's website at www.slp.wa.gov.au

A list of current instruments of declaration is available under "mining" in the industries section of the WorkSafe website at www.commerce.wa.gov.au/worksafe



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INTERNATIONAL AIRPORT AUTHORITY ACT 2009

AN ACT TO ESTABLISH THE INTERNATIONAL AIRPORT AUTHORITY AND TO PROVIDE FOR THE OPERATION OF THE AIRPORTS OF WESTERN AUSTRALIA

The Minister of Transport and Infrastructure, in pursuance of the powers conferred on him by section 2 of the International Airports Act 2009, hereby publishes the following instrument.

1. The instrument is as follows:

2. The instrument is available on the Western Australian Government website at www.wa.gov.au.

3. The instrument is available on the International Airports Authority website at www.iaa.wa.gov.au.

4. The instrument is available on the International Airports Authority website at www.iaa.wa.gov.au.

5. The instrument is available on the International Airports Authority website at www.iaa.wa.gov.au.

6. The instrument is available on the International Airports Authority website at www.iaa.wa.gov.au.

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14. The instrument is available on the International Airports Authority website at www.iaa.wa.gov.au.

15. The instrument is available on the International Airports Authority website at www.iaa.wa.gov.au.

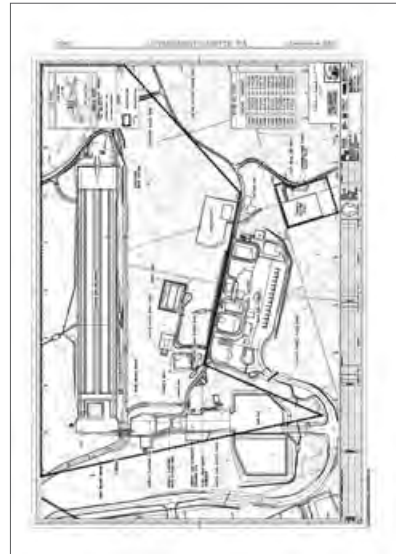
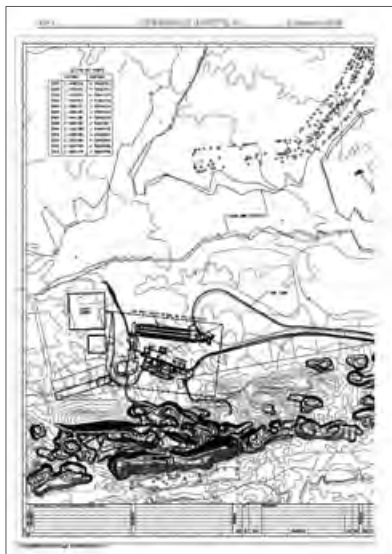
16. The instrument is available on the International Airports Authority website at www.iaa.wa.gov.au.

17. The instrument is available on the International Airports Authority website at www.iaa.wa.gov.au.

18. The instrument is available on the International Airports Authority website at www.iaa.wa.gov.au.

19. The instrument is available on the International Airports Authority website at www.iaa.wa.gov.au.

20. The instrument is available on the International Airports Authority website at www.iaa.wa.gov.au.





PMP
APPROVED



NO “GO” WITHOUT APPROVED PMP

Did you know that the approval of the State Mining Engineer is required before any mining operations in Western Australia get going?

Under the *Mines Safety and Inspection Act 1994*, whenever mining operations are to be commenced, recommenced (after suspension), abandoned or suspended, the principal employer or manager is required to notify the district inspector for the region in which the mine is situated and provide standard information such as:

- name and location of mine;
- lease or tenement number;
- principal employer contact details; and
- what mining operations will be affected, and how and when.

Additional requirements apply with respect to notification for the commencement and recommencement of mining operations for new mining ventures, major expansions or changes in the nature of operations. Operators must prepare a project management plan (PMP) that sets out:

- nature of proposed mining operation (e.g. type of mine, proposed ore treatment, likely workforce, expected mine life);
- broad assessment of major risks and strategies to manage those risks;
- mine plan showing proposed mine layout and facilities in

relation to tenement boundaries, the Australian Map Grid (AMG) coordinates and reduced levels (RLs; calculated elevations in relation to the Australian Height Datum);

- mine plan showing proposed open pit and underground workings, including underground access and egress;
- for underground workings, a summary of the proposed ventilation, stoping and development systems; and
- emergency preparedness and response plans for the mine.

The level of detail required will be determined by the scale, type and complexity of the operation.

Note: The State Mining Engineer's approval to commence or recommence mining is also required by conditions attached to mining leases under provisions of the Mining Act 1978.

The PMP should be viewed not only as a regulatory requirement, under the Mines Safety and Inspection Regulations 1995, and a means of gaining the State Mining Engineer's approval, but also an opportunity to adopt the risk management approach before activities start so that ongoing strategies can be developed for potential major hazards to either introduce risk control measures before people are exposed or, better still, eliminate the risks.

In its role as the lead agency for the regulation of mining (see last issue of *MineSafe*), the Department of Mines and Petroleum is developing an online system to accept PMP submissions and allow operators to track the application through the approval process.



SH

MINOR MINERS

The safety and health of employees in Western Australian mines are regulated by the *Mines Safety and Inspection Act 1994* and associated regulations.

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Inspectors are sometimes asked about the minimum age for employees and others at a mine site. There is no provision in the regulations that prescribes a minimum age for a person to be employed in surface operations at a mine. However, employers need to be aware that there may be minimum age requirements under any applicable industrial award or other legislation, such as that governing education or industrial relations. A useful reference is the "Employment of children laws" fact sheet available from the Labour Relations website at www.commerce.wa.gov.au/LabourRelations

However, the Mines Safety and Inspection Regulations 1995 do

prescribe a minimum age for some categories of employees. For example:

- an underground employee must not be under 18 years of age unless he or she is an apprentice or a cadet who is working underground in order to gain required experience in the course of training for a profession or trade;
- a person handling, charging or firing explosives must not be under 18 years of age; and
- a person must be at least 21 years old to obtain a winding engine driver's certificate.

Although no minimum age is specified in the duty of care provisions of the Act, a duty of care is owed to each employee as an individual and there may be a higher duty owed to someone who is young and inexperienced. In general, young people (below 18 years of age) should not be placed in a hazardous environment and should be provided with adequate supervision.

NEAR-MISS REINFORCES HEAT MESSAGE

Pages 30 and 31 of the last issue of *MineSafe* covered a fatal incident in 1997 in which an exploration employee died in circumstances suggestive of heat exposure. There was also an information panel all about working in hot conditions. Less than a month after the magazine was published, a driller went missing for more than a day from an exploration site near Tom Price.

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The seriousness of the incident was recognised by the exploration company, and a “potentially serious occurrence” report form submitted to Resources Safety.

Incident occurred during packing up of drilling gear and vehicles following completion of drilling program, in preparation for demobilisation. Driller left caravan to walk to vehicle at drill site (~ 5 km). Did not notify other personnel of his plans. Driller did not walk along track, went through bush. Became disoriented. Search and rescue operation commenced. Driller located ~ 2 pm the following day.

Further information can be gleaned from media reports at the time. The driller was last seen at 8 am on the first day. Colleagues raised the alarm when he failed to return six hours later. Police, fixed wing aircraft, State Emergency Service volunteers and workers from neighbouring mining companies were involved in the search for the man. Temperatures were above 40°C. The driller was found by rescue teams the following afternoon, sheltering beneath a rock ledge some 10 km from the drill site.

The exploration company later reported that the employee had been dehydrated and tired but was otherwise unharmed. He had been taken to Tom Price Hospital as a precaution.

Like the 1997 incident, this involved someone walking off alone into the bush to locate a vehicle.

Unlike the 1997 incident, this involved an experienced employee, apparently without a medical condition that would predispose him to rapid dehydration.

And unlike the 1997 incident, this one had a happy ending — but under different circumstances it could have gone terribly wrong.

Note: See Mines Safety Significant Incident Report No. 163 for more information about preventative measures for situations such as this.



DRINKING WELL

In your quest to stay hydrated while at work, how do you know that the water provided is potable?

Employers are obliged, under the general duty of care provisions of the *Mines Safety and Inspection Act 1994*, to provide drinking water to an adequate standard. Regulation 7.8 of the Mines Safety and Inspection Regulations 1995 also contains some requirements regarding provision of potable water.

To ensure the integrity of the water supply and prevent foreseeable contamination, the best approach for those responsible is to use a risk management approach. They should consider how the water will be made potable, and how it will be stored and distributed so it remains potable. It is very important to establish what might contaminate the drinking water and how, so the risks can be eliminated or reduced, and how any undesirable impacts can be detected at an early stage and remedied.

Monitoring and testing must meet the National Health and Medical Research Council (NHMRC) guidelines for drinking water quality in Australia. The NHMRC publishes the Australian Drinking Water Guidelines. This document is subject to a rolling-revision process that ensures the guidelines represent the latest scientific evidence in relation to good quality drinking water. The most recent guidelines were published in 2004 but the guidelines were recently reviewed and revised, and public comment on the draft amendments closed on 15 January 2010. The guidelines and other information are available from the NHMRC website at www.nhmrc.gov.au/publications/subjects/water.htm

In addition, monitoring of the water quality on mine sites is an essential part of the environmental management of a mining and mineral processing operation. A series of water quality protection guidelines on the topic is available from the publications section of the Department of Water's website at www.water.wa.gov.au



Photo courtesy Norilsk Nickel Australia

KEEPING A LID ON UNDERGROUND EXPLOSIVES STORAGE

Resources Safety has seen a substantial increase in the number of underground explosives storage licence applications over the last year. The move to larger magazines for underground explosives, although convenient from an operational perspective, presents new challenges with regard to safety and security. Unlike surface storages, the effects of an uncontrolled underground explosion are not well understood and the potential for disaster is high.

Resources Safety promotes the practice of using surface storage for the majority of explosives while keeping the quantity of explosives underground to a minimum. Safety takes precedence over operational requirements — it is expected that licence applicants will aim to reduce underground storages to a minimum as a priority, and will not simply apply risk mitigation measures as justification for unnecessarily large storages. It is understood that mining companies determine storage quantities based on typical weekly use. That is legitimate, provided adequate precautions are taken.

A risk assessment must be conducted to establish that the proposed storage meets all relevant safety requirements. The licensee needs to consider not only the risks due to fire in the explosives storage magazine, but also the risk and effects of

an actual explosion in the magazine. The potential for damage from blast overpressure should not be underestimated as the energy does not dissipate as readily as it does on the surface, and instead will travel extensively within the underground development. Depending on the situation, it may be that some mines need to continue major storage above ground, and store only limited quantities underground.

Fire suppression systems within magazines are critically important. Routine maintenance is mandatory, as a failure of the system in time of need could easily lead to catastrophe. Licensees must ensure due diligence with regard to the upkeep and operation of the fire suppression systems. Water with a high mineral or salt content can produce deposits, cause corrosion, or otherwise interfere with the performance of such systems, and therefore appropriate measures must be taken to ensure the system is not compromised.

For more information on underground requirements, the following safety alerts are available in the publications section of the Resources Safety website:

- Dangerous Goods Safety Bulletin No. 0109 *Risk assessment requirements for fixed underground explosives magazines*
- Dangerous Goods Safety Bulletin No. 0209 *Fire suppression measures for fixed underground explosives magazines.*



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NO CHANGE FOR AMMONIUM NITRATE EIPS

Dangerous goods vehicles, intermediate bulk containers (IBCs) and sites storing solid ammonium nitrate UN 1942 and UN 2067 use emergency information panels (EIPs) containing Hazchem codes to instruct emergency services on the necessary actions to take in an emergency such as a fire or a truck roll-over.

The seventh edition of the *Australian Code for the Transport of Dangerous Goods Code by Road and Rail (ADG7)*, published in 2007, changed the Hazchem code for ammonium nitrate from “1Y” to “1Z”.

However, Australian industry and regulators agree that the old Hazchem Code “1Y” in sixth edition of the code is more appropriate as it alerts emergency services of the “risk of violent reaction or explosion”. This is good advice as ammonium nitrate can sometimes explode in a fire situation, especially when mixed with fuel.

The use of “1Y” as the Hazchem code for ammonium nitrate is also fully supported by the Dangerous Goods Initial Emergency

Response Guide HB 76:2004, which recommends evacuation of all non-emergency service personnel in a fire situation to a minimum of 800 m because of the danger of an explosion.

Apart from the warning about the risk of an explosion for “1Y”, there is no difference between the old and new Hazchem codes.

- “1” denotes coarse water spray, but the use of fine water spray is also permitted.

Note: The Hazchem code rules also allow normal foam and dry agents but these are not effective for fires involving ammonium nitrate.

- The recommended personal protective equipment under both “Y” and “Z” is full fire kit and breathing apparatus, coupled with the caution to contain water run-off.

Resources Safety has secured a national exemption from the Competent Authorities Panel (No. EXEM/2010/01 of 4 February 2010) that allows use of both the “1Y” and “1Z” Hazchem codes on EIPs those transporting, consigning or storing ammonium nitrate. This means there is no need to change EIPs and incur unnecessary expense.

WEIGHTY ISSUES FOR WA MINING

In January 2008, a person's weight was included on Resources Safety's MineHealth form as it is a factor that can affect lung function testing. Excessive body fat is also a recognised risk factor in developing a range of health problems, including Type 2 diabetes, cardiovascular disease, high blood pressure, certain cancers, sleep apnoea, osteoarthritis and psychological disorders, as well as social problems (AIHW, 2008).

Body mass index (BMI) is only one determinant used to monitor healthy weight ranges. It is calculated by dividing an individual's body weight by the square of his or her height, producing a unit of measure of kilograms per metre squared (kg/m²). Resources Safety has used BMI to get an indication of the prevalence of being overweight and obese in the Western Australian mining industry compared to the Australian population because it is easy to measure and calculate. However, it is acknowledged that a better classification of "healthy weight" might also consider the percentage of body fat, waist circumference or both.

The World Health Organisation (WHO, 2000) recommended the following BMI standard (all measurements as kg/m²), based on associations between BMI and illness and mortality, for adults aged 18 years or over:

- Underweight: < 18.5
- Healthy weight: ≥ 18.5 and < 25
- Overweight but not obese: ≥ 25 and < 30
- Obese: ≥ 30

To minimise complication, and since AIHW (2008) has reported that less than two per cent of Australians are underweight, Resources Safety has adopted three BMI categories:

- Normal: < 25
- Overweight (but not obese): ≥ 25 and < 30
- Obese: ≥ 30

From January 2008 to 30 June 2009, reports were received for 29,158 individuals as part of the MineHealth health assessment — 26,635 males and 3,503 females.

Figure 1 shows the distribution of body mass indices calculated for all sampled employees. Figures 2 and 3 show the prevalence rates of being overweight or obese by gender and age groups, respectively. Figures 4 and 5 show the rates by age groups for males and females, respectively.

What do the results tell us?

- Males are more likely to be overweight or obese than females for all age groups.
- Only 27.9% of males exhibited a normal BMI of less than 25, compared to 49.4% of females in this MineHealth group. This corresponds to 72.1% of males and 51.6% of females having a BMI that implies being overweight or obese.
- The likelihood of being overweight or obese increases with increasing age — and is evident at a younger age in males compared with females.
- Females have lower rates of being overweight for all age groups (average 28.8% for females, 43.9% for males), but obesity rates are similar for both genders (average 21.8% for females, 28.2% for males).

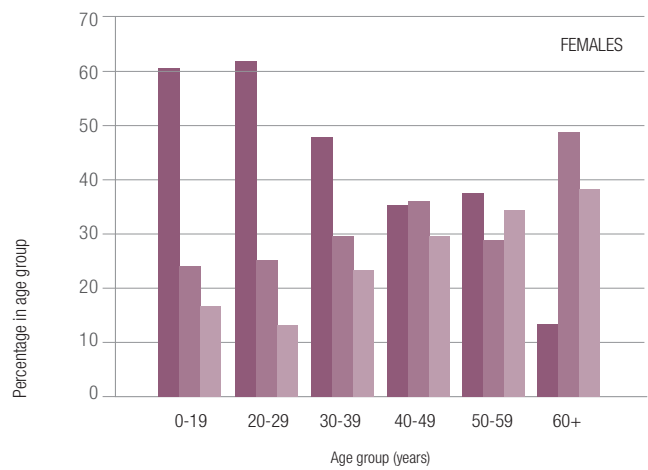
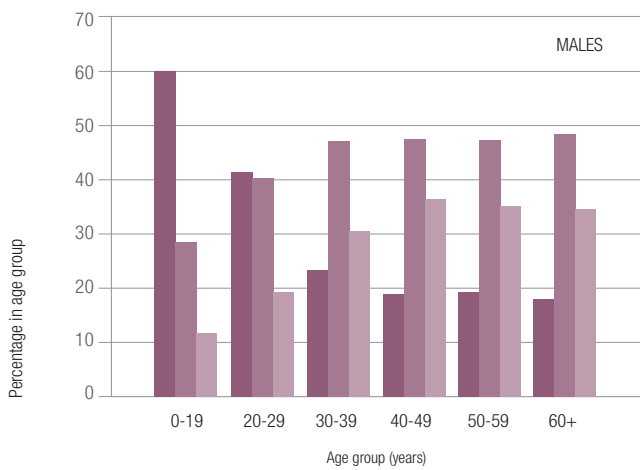
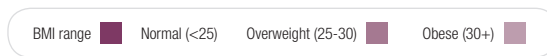
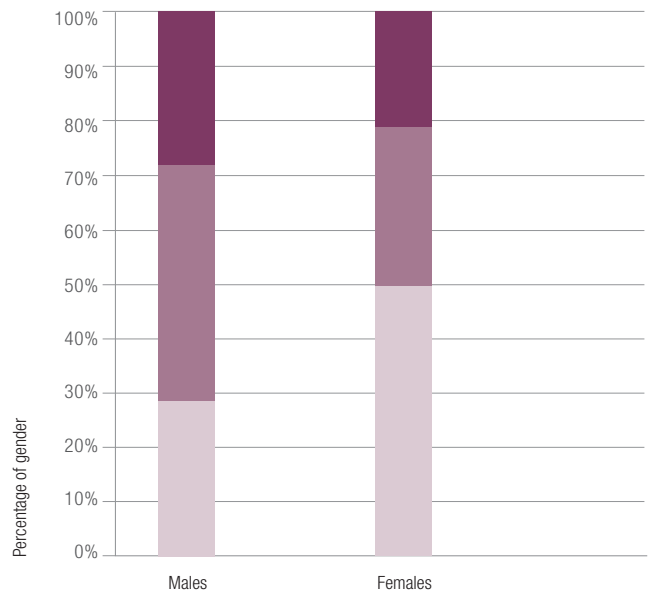
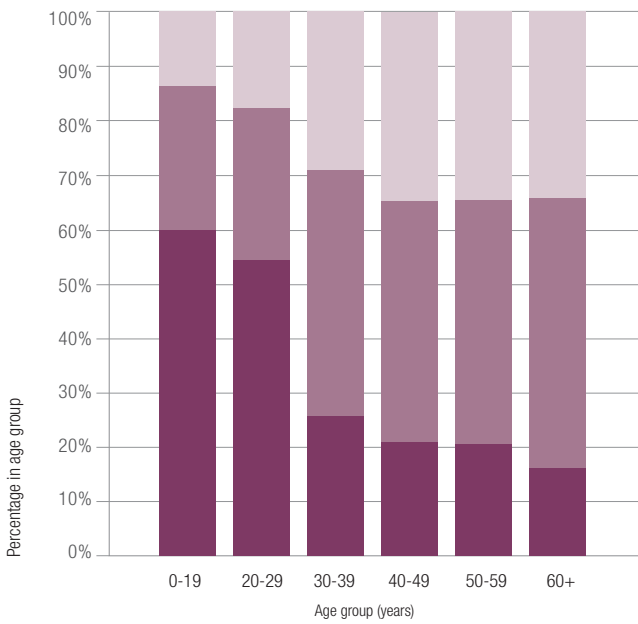
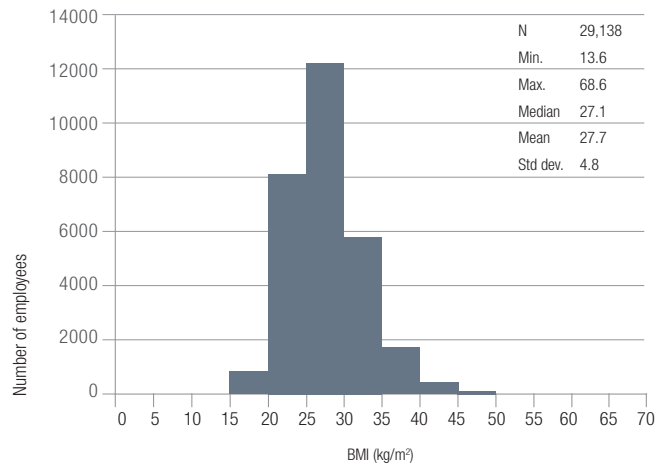
These observations are consistent with prevalence rates of being overweight and obese for the entire Australian population, as reported in *Australia's Health 2008* (AIHW, 2008).

References

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DISTRIBUTION OF BMI IN SAMPLED WA MINING EMPLOYEES



TACKLING MANUAL TASK INJURIES

In early 2008, Resources Safety initiated a project to “identify and implement best practice manual handling and ergonomic strategies to significantly reduce the incidence of musculoskeletal injuries to employees in the WA mining industry”.

We have all suffered from musculoskeletal disorders at some stage, but probably better know them under terms such as sprains, strains, back ache and hernia, and the more colloquial “slipped disc”, “stuffed hip” and “tennis elbow”. Their impact may range from minor inconvenience, to being off work for a day or so, to living with a permanent debilitating injury.

Work-related musculoskeletal disorders have a significant effect on the Western Australian economy. In addition to the direct cost of compensation claims, these injuries incur costs such as lost productivity, staff replacement and training costs, loss of expertise and administrative overheads. The cost to the injured worker includes pain and stress, loss of income and possible long term disability.

In the mining industry, they account for at least one-third of all work-related injuries, and around 45 per cent of the total days lost. Clearly, reducing the extent and severity of such injuries would be of considerable cost benefit to all stakeholders.

What is the main cause of musculoskeletal disorders in any workplace? Hazardous manual tasks!

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

What makes a manual task hazardous and potentially a problem? If it has characteristics that could result in an injury – such as awkward postures, repetitive movements or handling heavy objects.

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

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

Commonly, however, such injuries are a result of *cumulative* “wear and tear” on the musculoskeletal system, caused by repeated or prolonged exposure to lower levels of force. Even low levels of force can cause small amounts of damage to structures. This damage is normally repaired before injury occurs but if the rate of damage is greater than the rate of repair then injury occurs.

Experience shows that the best way to tackle hazards is to adopt a risk management approach, and hazardous manual tasks are no different. The risk management approach addresses both the safety (i.e. acute injuries) and health (i.e. cumulative injuries) aspects of this hazard.

One of the outcomes of the Resources Safety project has been the development of a number of information products to assist workplaces to implement an effective manual task risk management program. The first of these products was the series of fact sheets on manual tasks in mining, released in 2009. These are available from the Resources Safety website in the occupational health section.

The latest release includes the “Prevention of musculoskeletal disorders from performing manual tasks in mining workplaces” training package, which gives mining workplaces the information to run a workshop on the topic.

The workshop will provide the knowledge and skills for mining workplace employees, as part of a manual tasks risk management team, to undertake the risk management process applied to manual tasks. It can be adapted to suit:

- a workplace induction program; or
- manual tasks risk management training for managers.

Each mining workplace is different and there will be some variation in the most suitable approach to implementing and running a program that effectively manages the risks associated with manual tasks. The key factors are described in online guidance for mining workplaces on implementing an effective program to manage the risks associated with manual tasks.

An audit guideline and template are also available to help workplaces assess how they are managing the risks associated with performing manual tasks.

We invite you to visit the website and have a good look at the resources that are now available. Please download them and make them your own.

NEW AND IMPROVED RECENT RELEASES

SAFE DESIGN OF BUILDINGS AND STRUCTURES

A new code of practice on the safe design of buildings and structures was recently approved by the Minister for Mines and Petroleum after endorsement by the Mining Industry Advisory Committee (MIAC).

Resources Safety's *Safe Design of Buildings and Structures – Code of Practice* is based on the Commission for Occupational Safety and Health's original publication, which was launched in 2008 and was the first of its kind in Australia.

Safe design covers two aspects of occupational safety and health:

- eliminating hazards at the design stage; and
- controlling risks as early as possible in the planning and design of buildings, structures, products, processes or systems.

As the code points out, it is more costly to retrofit or modify existing products to achieve safety than it is to “design out” hazards early in the process.

The code emphasises the duties of those who design and construct buildings at a mine. It is aimed at designers, architects, builders and engineers, all of whom have responsibilities for safe building design under the *Mines Safety and Inspection Act 1994*.

The code of practice:

- explains the legal obligations applicable to a person who is in control of, or who may have influence over, the design of a building or other structure at a mine; and
- provides guidelines on how these obligations can be met by providing practical guidance on ways of maximising the safety of the design.

Safety and health issues related to building and structure design need to be thoroughly examined before construction begins. Designers should provide written safety and health reports to clients prior to construction, and the code contains information to help designers with these reports, which include:

- an assessment of potential injury or harm;
- the action the designer has undertaken to reduce those risks, such as changes to design or construction methods or materials;
- parts of the design where identified hazards have not been resolved; and

- a level of detail appropriate for the client and the hazards and risks.

SAFEGUARDING OF MACHINERY AND PLANT

In late 2009, the Commission for Occupational Safety and Health (COSH) released a new code of practice for the safeguarding of machinery and plant. The code has been approved under both the *Occupational Safety and Health Act 1984* and *Mines Safety and Inspection Act 1994*, making it applicable to almost all Western Australian workplaces.

Developed by COSH and MIAC, as well as representatives of unions, employer organisations and government, the drafting process also considered public comments from industry representatives, unions, organisations and community members to ensure all views were thoroughly considered.

“The lack of guarding on machinery is a significant cause of workplace deaths and injuries in WA, and the code aims to reduce this tragic toll,” former Commission Chair Tony Cooke said at the code’s launch.

The code sets out broad duties for employers and other people at workplaces, as well as those who design, manufacture, import or supply plant. It provides:

- general guidance on the identification and control of hazards and risks associated with guarding — or the lack of guarding — of machinery and plant; and
- practical guidance on guarding of machinery and plant commonly found in workplaces.

NORM UPDATED

The online guidance on managing naturally occurring radioactive material (NORM) was recently reviewed and revised following a public comment period, and has been updated to include uranium mining.

The suite of “NORM guidelines” was jointly prepared by Resources Safety and the Radiation Industry Group of the Chamber of Minerals and Energy of Western Australia to describe acceptable methods for addressing radiation safety requirements under Part 16 of the *Mines Safety and Inspection Regulations 1995*.

EMERGENCY INFORMATION

WHAT'S IN THE EMERGENCY INFORMATION CABINET?

An information sheet on manifest and site plan requirements for dangerous goods sites is now available online in the publications section of the Resources Safety website.

Maintaining the currency of the dangerous goods manifest and site plan is important because, if there is a serious incident, these documents provide the Fire and Emergency Services Authority of Western Australia (FESA) with information on the quantity, type and location of dangerous goods on the site, allowing an appropriate response.

Operators must ensure the manifest and site plan are kept at the site so that, at all times, they:

- are readily accessible to dangerous goods officers from Resources Safety and FESA officers; and
- can be made available, on request, to the Chief Officer or FESA.

Most sites keep these dangerous goods documents in an emergency information cabinet, positioned where it will not be affected by adverse events, and can be easily located and accessed by emergency responders.

PURSUING EXCELLENCE IN RISK ASSESSMENT

Under the RADARS strategy for resources safety regulation in Western Australia, the emphasis is on expanding the role of risk management rather than detailed prescription.

The risk-based approach puts the onus on operators to demonstrate that they understand the hazards and risks of their particular workplaces, and have implemented control measures to eliminate or manage these risks.

As pointed out by Professor Jim Joy from the Minerals Industry Safety and Health Centre (MISHC) at The University of Queensland, although its history in the Australian minerals industry is not as long that of petrochemical, nuclear, aviation and other industries, risk assessment is nevertheless significant. The Australian industry has applied formal, systematic risk assessment more extensively than the minerals industries in other countries. With a history of over ten years in many parts of the industry, there has been rapid growth in the use of the methodology. However, the growth of methods and competency has been erratic in many ways, leading to issues with the quality of risk assessment application.

Two publications produced at opposite sides of the globe are recognised as quality guides to the application of risk assessment for mining safety and health. Links to these online publications are provided in the mines safety guidance section of the Resources Safety website.

The first publication provides useful guidance on the risk management approach developed for Australian mining, and the second assesses how well the Australian approach fits US conditions.

NATIONAL MINERALS INDUSTRY SAFETY AND HEALTH RISK ASSESSMENT GUIDELINE

The Minerals Council of Australia (MCA) commissioned MISHC to develop a guideline to take risk assessment in the Australian minerals industry to the next level.

The minerals industry is committed to improving the quality and consistency of risk assessment conducted across the industry. There is also a need to introduce more sophisticated methods and their associated benefits to the industry, to support a “step-change” in the effectiveness of risk assessments.

Originally prepared by Professor Joy and Dr Derek Griffiths, the guideline is structured to help individuals design and undertake formal and informal risk assessments, and provides information to help standardise the methodology. It uses an outcome-based rather than prescriptive approach, and has extensive links to case studies and lessons learned.

The MCA and MISHC are committed to regularly reviewing and updating the guideline as appropriate, taking into account feedback from users. Now in its sixth edition since initial publication in 2001, the latest update of the guideline by Professor Joy was released in June 2007.

APPLYING MHRA TO ELIMINATE MULTIPLE FATALITY OCCURRENCES IN THE US

The recurrence of multiple fatality events in the US minerals industry over a ten-year period, with 18 events fatally injuring 67 miners, led to calls for improvements in the way major hazards were identified, assessed and managed. Proposed solutions included more regulation, improved training, more reliable equipment and better technology. However, in December 2006, the National Mining Association’s Mine Safety Technology and Training Commission stated that what was needed was a new paradigm for ensuring safety in underground mines. A systematic and comprehensive risk management approach was recommended.

The major hazard risk assessment (MHRA) process has been developed by the Australian mining industry since the mid-1990s. It uses a structured approach to characterise major hazards that can cause great harm to a mining operation and its workers if not adequately controlled. The process evaluates engineering, management and work processes that affect how a mine can mitigate its highest risk.

Using a field-oriented pilot study, the US-based National Institute for Occupational Safety and Health (NIOSH) investigated the application of MHRA to American mining conditions. The results for the ten case studies were published in late 2008 as DHHS (NIOSH) Publication No. 2009-104.

The pilot study showed that the MHRA process was generally beneficial for a safer work environment, with three case studies rated as performing a more-than-adequate risk assessment, five as adequate, and two as less-than-adequate. The degree of success was influenced by:

- existing risk management culture at the mining operation;
- design of the risk assessment;
- performance of the risk assessment team;
- character of the risk assessment process;
- extent of existing controls; and
- quality of new ideas.

The authors indicated that a company’s commitment to forming a well-staffed and resourced team, with the capability and intention to proactively and thoroughly address all hazards, is fundamental to the successful application of risk assessment in the MHRA process. An MHRA will also be most effective when the mining operation has:

- a proper understanding of its hazards;
- experience with informal and basic formal risk assessment techniques;
- proper facilities, plant and machinery;
- systems and procedures that represent industry best practice;
- a formal and thorough plan for emergency response; and
- organisational support at all levels for the risk management approach.





LOOKING AFTER FIFO AERODROMES

With tens of thousands of mine workers flying throughout Western Australia every week, the safety of some of the most isolated airports in the world has never been more important.

Aerodrome inspection of mining fly-in fly-out (FIFO) charter aerodromes has been on the Civil Aviation Safety Authority's (CASA) radar since the 2003 introduction of the Civil Aviation Safety Regulations 1998 Part 139 – Aerodromes (Regulation 139) and its accompanying *Manual of Standards*. A certification regime was also introduced for any aerodrome that provides a facility and services aircraft in excess of 30 seats.

“This is not to say that some of these aerodromes were not inspected during the 1980s and 90s if they had originally been established as a licensed aerodrome,” said CASA Aerodrome Inspector Greg Doherty.

“For example, Barimunya, Golden Grove and Jundee are all certified aerodromes that, before introduction of Regulation 139, would not necessarily have been regularly inspected by CASA aerodrome inspectors. However, the mining company would generally have had an agreement with the airline

operator to ensure safety, and a reporting system to confirm serviceability of the runway and other associated pavements,” Mr Doherty said.

With the introduction of certification, the operator of a certified FIFO aerodrome, which in most cases is the mining company itself, inherited a number of documentation responsibilities and the requirement for a safety management system (SMS). The aerodrome operator (i.e. certificate holder) must ensure that all the conditions of certification are addressed and sufficient resources are allocated to perform those functions, as summarised below.

- Conduct regular serviceability inspections and record all matters arising.
- Maintain an aerodrome manual and regularly review it to ensure information is accurate and the procedures are aerodrome specific.
- With assistance from local emergency agencies, manage an aerodrome emergency committee and regularly review the emergency plan with respect to WESTPLAN – Air crash subregulations 139.205 (aerodrome emergency committee), 139.210 (aerodrome emergency plan) and 139.215 (testing of aerodrome emergency plan).



WESTPLAN – Air crash is the State’s emergency management plan for air crashes. The latest version was approved in December 2009 and is available from the EMWA Extranet on the FESA website at <http://extranet.fesa.wa.gov.au>

Photos courtesy Aerodrome Management Services

“ I TAKE THIS OPPORTUNITY TO REMIND MINING COMPANIES WITH FIFO AERODROMES ABOUT THEIR RESPONSIBILITIES AS CERTIFICATE HOLDERS SO WE CAN CONTINUE TO ENSURE THE SAFETY OF FIFO IN WA ”

GREG DOHERTY

The emergency plan must be tested annually, with a field exercise held every two years and a table top exercise on alternate years.

- Engage suitably qualified personnel to conduct annual technical inspections, with the inspection reports including comments to satisfy the requirements of subregulation 139.230 (aerodrome technical inspections).
- Ensure the SMS documentation and senior management accountability complement normal operating procedures.

Note: Aerodrome certification for many FIFO aerodromes did not commence until early 2006 as the aerodrome operators had three years to comply and have the aerodrome manual and SMS in place.

The operator must be involved in all decision making and ensure that scheduled events, including technical inspections and emergency meetings and exercises, are conducted as required by the conditions of certification.

Certificate holder senior management must also be involved in the SMS committee and attend committee meetings. The schedule of meetings generally depends on the complexity of the aerodrome but the committee should meet at least three times a year to discuss agenda items such as:

- the CASA report and report findings;
- technical inspections, areas of improvement and any corrective actions;
- emergency incidents and emergency exercise summary reports, and ensure that all outcomes are appropriately addressed;
- a review the risk register and ensure the level of risks for identified aerodrome hazards are still acceptable (International Standard ISO 31000:2009, *Risk management – Principles and guidelines*); and
- confirmation that all scheduled events are conducted.

“As an aerodrome inspector, I have observed that, in general, the facilities are well maintained. The pavements are serviceable and correctly marked, and the reporting officers are competently trained and conduct their duties in accordance with the aerodrome manual procedures,” Mr Doherty said.

“But I take this opportunity to remind mining companies with FIFO aerodromes about their responsibilities as certificate holders so we can continue to ensure the safety of FIFO in WA.”

Further information is available from the CASA website in the aerodrome operations section at www.casa.gov.au

REVISITING ROAD SAFETY ON MINE SITES

Are you dealing with traffic management issues at your site? Between December 2006 and May 2008, MineSafe featured a series of articles on road safety on mine sites that might interest you. Topics included:

- driver fatigue;
- seat belts;
- interaction between light and heavy vehicles;
- human factor in traffic management;
- pedestrians;
- effective road signage; and
- speed management.

Many of the articles were written by traffic engineering expert Damir Vagaya, Manager Mining and Resources at ARRB Group. Damir was also a presenter at the regional Mines Safety Roadshows held in 2007, and his presentation is one of two toolbox presentations on traffic management available from the mines safety guidance section of the Resources Safety website.

WHAT IS THE ARRB GROUP?

Formerly the “Australian Road Research Board”, ARRB Group was formed in 1960 and incorporated in 1965. The organisation was established by state, territory and federal government road agencies in Australia as a means of cooperating to undertake research of national importance that they could not justify carrying out individually.

Check out www.arrb.com.au for more information, particularly about the research programs and training opportunities. For example, ARRB Group is collaborating with Curtin University’s Western Australian School of Mines in May 2010 to present workshops on best practice in the areas of safety and design of roads associated with mining and resource processing operations. Damir Vagaya will be joined by Roger Thompson, Professor of Mining Engineering, who has particular expertise in the design and management of mine haul roads.



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STOPPING FOR SAFETY

As well as the emergency response competitions and recognition by safety awards, there are many good things happening in industry that relate to occupational safety and health. For example, earlier this year Resources Safety participated in Worsley’s “Stop for Safety Week”, with inspectors in attendance on some of the days. And Argyle Diamond’s “The Heat is On” campaign was described at a meeting of the Commission for Occupational Safety and Health. *MineSafe* can provide an avenue for companies and organisations to spread the good news about successful activities such as these. BHP Billiton Worsley Alumina Pty Ltd has provided the following overview of the company’s initiative.

Resource companies are continually looking for new and effective ways to improve safety.

Safety exhibitions set up at BHP Billiton Worsley Alumina sites in February this year proved a popular way to encourage employees and contractors to think about safety. Worsley operates an alumina refinery near Collie in the State’s South West region, a bauxite mine near Boddington and port facilities in Bunbury.

The “Stop for Safety” exhibition attracted more than 3,000 employees and contractors to a host of interactive displays set up in large marquees at the company’s mine and refinery operations. The exhibition was the culmination of many weeks of toolbox talks, site communications and leadership conferences that focused on seven safety topics.

Stop for Safety Week is a major event on an annual calendar of safety messages and campaigns — branded as “Safety Excellence” — that have been part of a long and ongoing strategy by Worsley to improve safety.

The results over the past year have been impressive:

- to the end of March this year, the number of injuries on site is less than half that of the previous 12 months;
- first aid treatments are well down; and
- the company’s total recordable injury frequency rate (TRIFR) rate is at its lowest in history.

Note: TRIFR is the total number of fatalities and injuries resulting in lost time, restricted work duties and medical treatment.

The improving safety story has been reflected at a micro-level, where many work crews and departments are setting new benchmarks in safety performance.

In 2008, the company refreshed and reframed its safety approach with the introduction of new systems, people and engagement strategies, backed by strong involvement from the leadership group. The focus on people included a major program around fatigue management and the introduction of ZIP (zero incident process) training for all employees and contractors.

Other important features have been the communications effort and branding associated with safety messages, promotions and campaigns.

A list of the toolbox talks for each day during the 2010 Stop for Safety Week reflects how Worsley is moving its safety focus

INDUSTRY ACTIVITIES



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away from rules-based compliance to one where people take responsibility for their own health and wellbeing.

All team leaders were provided with professionally designed folders containing information sheets on the toolbox talks planned for the week and the marquee displays, as well as ideas on how to engage their teams. The toolbox topics included discussions on health, wellbeing, waste, road safety and brain control.

EXHIBITION

The Stop for Safety Week exhibition provided an opportunity to highlight many of the key safety issues that have emerged over the past year, or are considered important to maintain continuous improvement into the future.

“This is one of the most significant events in our business calendar,” Refinery General Manager Trevor Peters said. “This was a great opportunity to get our brains focused on safety.

“The success of the event was told many times in the feedback we had from our employees and contractors. An enormous amount of effort went into this event and the rewards were worthwhile.”

The Stop for Safety Week exhibition consisted of large marquees set up at the mine and refinery, with a range of interactive displays and information stalls, many set up by safety equipment and safety systems suppliers.

Rail company ARG brought a train simulator across the Nullarbor from Adelaide to the Worsley refinery to give visitors an

opportunity to experience driving 36 wagons and 20,000 tonnes of alumina.

For Safety Specialist Katie Van Den Brand, the effort by vendors and the attention to detail was a key to the event’s success.

“The inclusion of vendors like ARG, and Project Canary, with their gaming-based technology to train personnel in emergency situations, really lifted the bar in terms of interacting with displays. It opened people’s minds to the possibilities for our business in the future,” Katie said

In addition to Resources Safety, vendors included Sentis, HBF, Veolia and UVEX.

The exhibition ran for a week, with all employees and contractors booking their visit times at a rate of about 160 an hour. Two of the most popular activities were the “beer goggles”, which simulated the effects of alcohol, and the Safe Spine challenge, where one employee held the “plank” position for more than 10 minutes.

At the Boddington mine site, employees and contractors were treated to a similar exhibition, with a sausage sizzle afterwards so that mine crews could socialise and talk about the exhibition over a snack and drink.

“We were able to ensure that every employee and contractor from the mine and Marradong project had the opportunity to participate in the event,” said Boddington Bauxite Mine General Manager Richard Carcenac.

“The schedule, the excellent facilities and the commitment shown by our external vendors resulted in outstanding levels of



Photo courtesy Worsley Alumina



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participation. The exhibits were fun and informative.”

Feedback from participants of the Stop for Safety event showed overwhelming appreciation for the effort that went into making the event both enjoyable and informative.

“About 90 per cent of participants expressed a good to high level of engagement,” said Communications Advisor Dr Dean Laplonge.

“What’s even more significant is that 96 per cent said they felt they were adequately informed about the event prior to the start. This shows that Worsley is really paying attention to the importance of communication around safety and engaging its workforce.”

FAMILY INVOLVEMENT

A key message of the Safety Excellence strategy at Worsley is that safety is not exclusive to sites or individuals. It is about staying safe at work and at home, and about staying safe for family and friends. With this in mind, every contractor and employee at the Worsley refinery was invited to bring their families to site to see the workplace and also visit the Stop for Safety exhibition.

On Sunday 21 February, about 1,200 employees, contractors and their families took up the offer. With a large construction project underway at the refinery, the nearby accommodation village was used as the base for exhibitions, entertainment and bus tours to the refinery.

“I wanted to pass on my appreciation for the family day festivities,” said one contractor. “My mum, brother and girlfriend were all able to visit over the weekend and had an absolute

blast. The entire day was an eye-opener for my family and a rare opportunity to share the work side of life.”

A similar family day is planned at the mine to celebrate the arrival of the new mining fleet.

A LONG-TERM LEGACY

The aim of the Stop for Safety Week at Worsley is to encourage teams to think about what they have learned over the past year and to make some commitments for the future.

“All teams were asked to list commitments for 2010,” said Safety Superintendent John Mines. “We don’t just want to run the event and then forget about it. We want it to have a long-term impact on safety in our business and safety for our people.”

“Work crews were asked to make commitments to improve their health, wellbeing, road safety, brain control, environmental awareness and understanding of BHP Billiton’s Fatal Risk Control Standards.”

The Safety Excellence Team at Worsley will work with teams to ensure commitments are followed through in the months to come.

The Stop for Safety event is an important part of Worsley’s Safety Excellence program, which aims to deliver cultural change around safety. This means developing better ways of working that benefit the operational systems, people, levels of engagement and leadership.

The focus on encouraging people to realise the link between workplace safety and enjoyment of life is paying dividends.



Slabber Van Deventer, Engineering Geologist and one of the weekly winners of competition to “Find the heat stress index sign”

THE HEAT IS ON

Rio Tinto workers are feeling the heat at the company’s Argyle diamond mine in the State’s far north. The workers are taking part in a thermal stress prevention campaign that is delivering good results. Aptly titled “The heat is on”, it has resulted in the number of clinically dehydrated cases falling from 15 in November 2009 to three in February 2010.

The campaign, which runs from September to March, includes:

- regular testing of the hydration levels of workers before, during and after shifts;
- a competition for the best hydrated workforce;
- heat stress forecasts;
- promotional items; and
- regular “pitstops”.

The pitstop is run by Argyle Diamonds’ Health, Safety and Environment (HSE) team, who give an electrolyte replacement to employees on their first day back at work after rotation. According to Argyle Diamonds’ HSE Manager, Peter Firth, the station, which is located at the Argyle camp where temperatures can average about 38°C, served multiple purposes.

“It ensures hydration is the first and last thing on our workers’ minds on their first day back at work, and ensures workers are starting and finishing their shift hydrated,” he said. “It also encourages our employees to start talking about thermal stress with our team and dispels some of the myths surrounding hydration and heat.”

Heat stroke can occur without any obvious symptoms. Often victims do not sweat or feel thirsty, and they may not be aware they have heat stroke until other symptoms such as nausea and dizziness start to occur.

During the wet season and the build up to it, the average humidity can be between 67 and 72 per cent at the Argyle mine site, which is about 150 km south of Kununurra.

Rio Tinto’s campaign makes awareness of thermal stress part of the workers’ day-to-day activities.

Heat stress forecasts are included in the daily incident reports, which are communicated to teams at their pre-start meetings, and displayed in the work area or crib room.

A heat stress index barometer has also been set up outside the entry to the mine to alert workers to the day’s weather.

Hydration testing is conducted at least weekly for each work group, and monthly prizes are given to the work groups with the best hydration results. For example, one group has had 63 per cent of its members reaching excellent hydration levels while another had 50 per cent. Overall, hydration levels are continuing to improve.

Promotional items are also distributed around the site, such as bandannas, stubby holders, clip-on sunscreen bottles, and electrolyte replacement drinks in dispensers in the crib rooms and mess.

Work groups that have higher thermal stress exposure also undertake physiological monitoring, which includes monitoring heart rates, blood pressure and hydration levels at intervals throughout the work day, followed by comprehensive individual and team reports detailing the findings and recommended controls or work-rest schedules.

Peter Firth said that better awareness of the signs and symptoms of thermal stress had led to employees identifying it at the early stages.

“We have seen fewer clinical presentations of thermal stress, with decreased severity, at the site medical centre,” he said.

“We have been building a culture of interdependence with mates looking after mates. We are also training up volunteers to conduct simple hydration tests within their own work groups, to build more sustainable approach and get more buy-in from employees.”





People Category — Industry Road Safety Alliance

All photos courtesy CMEWA

INNOVATION REAPS ITS AWARDS

Innovation has always been one of the keys to Western Australia's success in the resources industry. Nowhere is the importance of innovation more apparent than in the area of occupational safety and health.

The Chamber of Minerals and Energy's Safety and Health Innovation Awards recognise that importance and highlight the industry's commitment to solve safety and health-related challenges. The awards, now in their sixth year, cover three categories — People, Systems and Engineering.

Entry is open to all Western Australian companies in the minerals and resource sector, including contractors associated with the industry. Entries were accepted during October, November and December 2009.

The 2010 awards were presented as part of the Chamber's annual occupational health and safety conference *Leadership to Ownership*, held in Perth on 29 and 30 March.

Three organisations, including a unique partnership between government and industry, have been recognised for innovation in health and safety at this year's awards. The Industry Road Safety Alliance, Macmahon Holdings Ltd and BHP Billiton Nickel West were all category winners on the night.

PEOPLE

The Industry Road Safety Alliance took out the People category. The alliance was established between the South West's key

resource companies, Local Government, WA Police and State Government departments to improve road safety around the resource centres of Collie and Boddington.

Chamber Chief Executive Reg Howard-Smith said that the initiative had reduced road trauma and improved road safety in these resource centres by uniting major road users and authorities under a common goal.

"The Industry Road Safety Alliance took a holistic approach to barriers and challenges, and achieved synergy to deliver safety both in the work place and in the towns of Collie and Boddington," he said.

"For the Industry Road Safety Alliance initiative to be successful, there had to be changes to entrenched behaviours of these initially small towns, and this was done by encouraging various stakeholders to develop a successful plan."

The alliance was formed in early 2009 and now has 14 members.

Since its inception, several major infrastructure improvements have been pursued by the Alliance and work has been completed on intersection improvements, the installation of street lighting and the development of car parks to encourage car pooling and bus services.

The Alliance also conducted major road safety campaigns at Christmas and Easter. This has included altered workforce travelling times to avoid peak holiday traffic, education campaigns and local television, radio and print road safety advertising.



Systems Category —
Macmahon's Mark
Champness (right) receiving
award from Chamber
President Kim Horne



Engineering
Category — Kim
Horne with Adam
Gray of BHP
Billiton Nickel
West



Kim Horne presenting Rio
Tinto Iron Ore's Simon
Hedditch with the Industry
Choice Award



Kim Horne with Craig
Read (centre) and Neville
Ingate of Westrac, which
was highly commended

SYSTEMS

For the second year running, Macmahon Holdings Ltd won the Systems category award.

Macmahon took out the award for developing the Conveyor Safe Work System. The company developed a system of procedures and related hardware devices to enable the safe operation and maintenance of a large conveying plant at its mine sites.

Mr Howard-Smith said that the system demonstrated a transferable solution to fix age-old problems.

“Macmahon developed a solution and did not limit itself to the original problem that had been identified. The team addressed other matters which also presented safety issues in the same working environment,” he said.

Some of the initiatives in making the conveyor safe included:

- dust suppression water sprays over the conveyor walkway;
- the construction of a platform at the conveyor belt level to reduce height-related risks associated with maintenance of the belt; and
- constructing water supply points and hose storage stations at 20 metre intervals along the conveyor walkway, which eliminates the risk of tripping over the hose.

“Macmahon is clearly dedicated to eliminating exposure to hazards and creating safe systems of work,” Mr Howard-Smith added.

Macmahon developed the system to enable the safe operation and maintenance of its large conveying plant at the Orebody 18–Wheeler iron ore mine.

ENGINEERING

An innovative approach to eliminating the risks associated with working at heights saw BHP Billiton Nickel West pick up the Engineering award.

The company won the award for its Zero Harm Communications Trailers. This initiative saw the construction of a mobile communications structure, eliminating the dangers associated with working at heights at BHP Billiton’s Mount Keith operations.

A solar-powered trailer with a working platform and pneumatic telescopic mast was built, allowing for up to 32 solar panels to be connected to four power banks with safe and easy access.

Chamber President Kim Horne said that Nickel West pulled together a variety of components, including working with heights, crane usage, manual handling, power supply and mobility issues, and developed a total solution that is compatible with other commercial businesses.

“This solution is a winner because it maximises available technologies and minimises a variety of hazards,” Mr Horne said.

OTHER RECOGNITION

Rio Tinto Iron Ore received the Industry Choice Award for its Extended Ring Main Unit Operating Handle. and Westrac Pty Ltd was highly commended for its Track Shoe Frame innovation.



Photo courtesy Factive

Dean Laplonge

GETTING REAL ABOUT “REAL MEN”

Dr Dean Laplonge is the founding Director of Factive, a Perth-based communications consultancy. Continuing his research into gender communications, he is currently developing responses to the problems caused by gendered behaviours in the resource sector. For those searching for the next quantum improvement in mines safety, Dean's contribution to MineSafe will be compelling reading.

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The mining industry has become a “safe haven” for the hyper-masculine man. This man is often competitive, sometimes aggressive. He is always rough and tough. Over the past few decades, the media and rampant commercialism have provided us with representations of the clean-shaven, hairless and buff male who waxes and grooms himself to metrosexual perfection. But for the man who rejects this version of what it takes to be a man, the mining industry is where he can “safely” not care about the way he looks, not care about what comes out of his mouth, and yet care very much about being a “real man”.

The problem is that this “real man” is not agreeable with safety standards now sought by businesses in this industry. The man who wants to be the toughest and the most masculine simply cannot be expected to act and stay safe.

It is already well established that men are more prone to risk-taking than women. Research has shown that gender plays a crucial role in driving cultures. In fact, the World Health Organisation estimates that males are two to three times more likely to be involved in fatal crashes. And drivers with only male passengers are more likely to crash. There is a tolerance among men for breaking the road rules. Young men, in particular, tend to underestimate the risks involved with driving. Instead, they often use objects like cars, as well as risk taking and rule breaking, to gain masculine prestige and bond with other men.

From an early age, a boy quickly learns that displays of masculinity will help him avoid ridicule and abuse. He is part

of the “in crowd” if he has a large body, can cope with pain, competes and wins. If he really wants to be seen as a worthy man, he should also degrade others, particularly women and homosexuals. He may be encouraged to commit acts of violence against other people and other things. And this fight for his manhood doesn’t end when he leaves the playground. Throughout his life, the pressure is on him constantly to prove himself to be a real man.

The mining industry in Australia is awash with men who act out their masculinity in this way.

Mining is a significant industry in terms of contribution to the national economy, particularly exports, and employment in Western Australia. It is an industry that defies the national statistics in regard to employment of men and women. On a national level, about 45 per cent of the work force is women. In the mining industry, it is about 18 per cent.

Nationally, mining is also one of the most dangerous industries. According to Safe Work Australia, it accounted for nine per cent of work-related fatalities in 2008-09. Of the 177 fatalities notified to Safe Work Australia for that year, it is also significant that 158 were men.

In this industry, more than most, we need people who are willing to recognise their own vulnerability. We need workers who understand the limits and fragility of their own body. And yet we strongly encourage the man who wants to be a “real man” to work here. We recruit the same breed and promote those who fit the same mould. And we fail to question the hyper-masculine behaviours they exhibit.

In a place where there are so many men competing to be masculine, any request for assistance to lift an object will be seen as a sign of weakness. Any request for a new pair of gloves before commencing a job will open up the worker to ridicule. Company policies tell every worker that safety must come before production. But any request to stop work because of a concern for safety is taken as evidence that this man is less

of a “real man” than those around him. The man who cannot or who will not carry a heavy weight is a “pussy”. The man who puts his hands to his ears to muffle the sound is a “softie”. Peer pressure ensures safety is only for “sissies”, whereas a “real man” takes risks and gets the job done. So we often hear “Toughen up princess”, and “Don’t be such a faggot”.

The impact of all this on new employees, and the few women who manage to make it into the field, is equally strong. Eager to fit in, they too must quickly adopt hyper-masculine mannerisms and language to mimic those who currently dominate the space. Some will start to use the same language and verbalise the same ideas. Others will become passively involved by refusing to say anything in response. They may even find that they have no voice with which to defend themselves and will leave, thereby perpetuating the hyper-masculine man’s belief that you have to be tough to survive in this industry.

In social contexts where hyper-masculinity is recognised as a problem, we are starting to see the development and delivery of targeted solutions. In road safety, for example, we now have advertisements aimed at young men specifically, using images and language that resonate with them. In sport, and particularly those sports where we see a continuing disrespect for women, peer-mentoring programs are being used to change how groups of men challenge and support each other’s behaviours. In the mining industry, however, we have training programs that only seek to develop a general greater self-awareness and safety consciousness. We have not yet seen any attempt to address how otherwise socially accepted masculine behaviours are actually putting people at risk.

Discussions on gender in the mining industry to date have been limited to the under-representation of women in the overall workforce and the so-called glass ceiling they hit when there. We have assumed, quite wrongly, that safety has nothing to do with gender — and yet it is mostly men who are getting hurt.

SAFE WORK AUSTRALIA REPORTS ON SUN AND NOISE EXPOSURES

Safe Work Australia, previously the Australian Safety and Compensation Council (ASCC), develops national policy on occupational safety and health, and workers' compensation. To inform its decision making, the ASCC requested the development and fielding of the National Hazard Exposure Worker Surveillance (NHEWS) survey to determine the current nature and extent of Australian workers' exposure to selected occupational disease-causing hazards.

In early 2008, hazard exposure data from the first nationally representative survey of 4,500 Australian workers was collected. Workers from both priority and non-priority industries were asked about their workplace exposures to:

- loud noise;
- vibrating tools, equipment or vehicles;
- direct sunlight;
- dust, gases, vapours, fumes and chemical substances;
- biological materials (e.g. human and animal blood and urine);
- biomechanical hazards; and
- psychosocial hazards.

The survey then collected information from exposed workers about the controls that were used to eliminate or reduce exposures to these hazards.

The results from the NHEWS survey are being used to estimate where workplace exposures exist that may contribute to the onset of one or more of the priority occupational diseases, which include occupational cancer, respiratory diseases, noise-induced hearing loss, musculoskeletal disorders, mental disorders, cardiovascular disease, infectious and parasitic diseases, and contact dermatitis.

A preliminary descriptive report on the survey results was published in 2008 and can be accessed from the Safe Work Australia website.

In February this year, Safe Work Australia released more detailed research reports on the hazards associated with exposure to direct sunlight and loud noises. The reports are found in the publications section of the website at www.safeworkaustralia.gov.au

SUN EXPOSURE

This report focuses on the exposure of Australian workers to direct sunlight and the control measures that are provided in workplaces that eliminate, reduce or control exposure.

The report describes patterns of exposure to direct sunlight in conjunction with patterns of exposure controls with respect to industry, occupation and other demographic and employment variables. Where possible, it makes recommendations for the development of policies on occupational safety and health, and workers' compensation.

NOISE EXPOSURE

Exposure to loud noises and noise control measures are the focus of this report.

As for the sun exposure report, this report describes patterns of exposure in conjunction with patterns of exposure controls and, where possible, makes recommendations for policy development. However, it has the additional aim of providing researchers with clear and constructive directions for future research on noise exposure.

APPLICATION TO MINING

Although mining is specifically not included in the data analysis because of the small sample size for this industry, the reports should still be of interest. For example, it could be useful from the mining perspective to examine the results of investigations into whether or not there were any demographic or employment factors that affected the provision of the exposure controls.

WHAT'S A "PRIORITY INDUSTRY"?

Safe Work Australia occupational safety and health initiatives target five priority industries:

- building and construction;
- transport and storage;
- manufacturing;
- health and community services; and
- agriculture, forestry and fisheries.

These sectors were chosen because, when compared with other industries, they were identified as having the highest incidence rates, high numbers of workers' compensation claims, or both. By working with these sectors, not only are lives being saved but these industries can set examples of best practice for other employers to follow.

2008-09 INJURY DATA AVAILABLE

Did you know that Western Australia's mining workforce for 2008-09 increased by seven per cent over 2008-09, but the lost time injury (LTI) frequency rate for serious injuries improved by 12 per cent?

Statistics generated from Resources Safety's AXTAT database for 2008-09 show a continuing improvement in the overall safety performance of the State's mining industry. Over that period, some 70,567 mine workers clocked up a total of 142.92 million work hours. An average of 260 mines or groups of mines reported to the AXTAT system.

These statistics and more are available in the recently released Safety Performance in the *Western Australian Mineral Industry – Accident and Injury Statistics 2008-2009*. This is an annual compilation relating mainly to accidents on mines between July 2008 and June 2009 involving time lost from work of one day or more.

Previous compilations did not report injury statistics for exploration activities away from mine sites or on exploration leases, but selected exploration statistics are now included. An average of 87 exploration companies reported to the AXTAT system, with 2,350 people engaged in exploration for a total of 4.9 million work hours.

The safety performance publication is available from the Resources Safety website under mining accidents and incidents. Hardcopies may be obtained by contacting the publications team at Resources Safety (ph. 08 9358 8154, RSDcomms@dmp.wa.gov.au).

The statistics for 2008-09 are summarised below but note that, unless specifically mentioned, they do not include reporting for exploration activities.

FATAL ACCIDENTS

Tragically, there were seven fatal accidents in the Western Australian minerals industry during 2008-09, five more than the previous year. Six were at iron ore operations and one was on the surface at a gold mine.

It appears that there are two common threads in the fatality reports — falling and the early hours of the morning. These issues were flagged by Resources Safety during the 2009 Mines Safety Roadshow — the associated toolbox presentations are available from the guidance section of the Resources Safety website.

Of 19 fatalities that have occurred in the mining sector between July 2004 and June 2009, seven have been underground and 12 occurred at surface operations. Over that five-year period, the most common type of underground fatal accident was rockfall (two fatalities) and on the surface it was vehicle or mobile equipment collisions (four fatalities).

Resources Safety maintains the view that no fatal accident is acceptable, and a fatal injury incidence rate of zero is achievable and sustainable.

SERIOUS INJURIES

There were 316 serious injuries reported in the mining industry for 2008-09, 15 fewer than for the previous year. Of these, 309 were in metalliferous mines and seven were in coal mines. Twenty-eight of the serious injuries were sustained underground and 288 on the surface.

The statistics show that the overall serious injury frequency rate (number of serious injuries per million hours worked) decreased from 2.5 to 2.2.

Of the major mining sectors, construction materials had the highest five-year average serious incidence rate (number of lost time injuries per thousand employees for a 12-month period), at 12.0, and iron ore the lowest at 3.6.

The annual compilation includes a sample of the serious injury reports received by Resources Safety.

DID YOU KNOW?

- Injuries to arms in 2008-09 accounted for the largest proportion of serious injuries in underground mines at 25 per cent, and in surface mining it was injuries to legs at 22 per cent.
- Fracture (36%) and sprain or strain (32%) dominated the nature of serious injury categories for underground mines. For surface mines, it was sprain or strain (46%).
- The most common accident types associated with serious injuries underground were over-exertion or strenuous movements and slip or trip (both at 29%). On the surface, the most common was over-exertion or strenuous movements (32%).

LOST TIME INJURIES

In 2008–09, 20,412 days were lost through occupational injuries on mines in Western Australia. This figure is made up of the number of days lost from injuries initially occurring in 2008–09 (8,712), recurrences of injuries sustained before 2008–09 and in 2008–09 (2,340), and LTIs and recurrences carried over into 2008–09 from accidents before July 2008 (9,360).

There were 397 new LTIs in 2008-09. Of these, 381 were sustained in metalliferous mines and 16 in coal mines. In addition to the initial injuries, there were 65 recurrences of previous injuries, and 113 people were still off work from injuries received before July 2008.

Compared to 2007-08, there were more days lost but from 15 fewer new injuries. This led to an eight per cent deterioration in the overall LTI duration rate for initial injuries. However, the increase in the size of the workforce meant that the overall LTI frequency rate improved by 13 per cent, falling from 3.2 to 2.8.

LTI FREQUENCY RATES DURING 2008-09

- Iron ore — deteriorated by 39 per cent, rising from 1.8 to 2.5.
- Bauxite and alumina — improved by 26 per cent, falling from 3.8 to 2.8.
- Gold — improved by 41 per cent, falling from 3.2 to 1.9.
- Nickel — deteriorated by four per cent, rising from 2.3 to 2.4.

DISABLING INJURIES

Disabling injuries are those work injuries (not LTIs) that result in the person being unable to fully perform his or her regular job any time after the day or shift on which the injury occurred, regardless of whether or not the person is rostered to work, and where alternative or light duties are performed or hours are restricted.

In addition to the 397 new LTIs during 2008-09, there were 608 disabling injuries reported, which is 123 fewer than the previous year, when 731 were reported. So the total number of reportable injuries for 2008-09 was 1,005.

Of the disabling injuries, 380 resulted in the person being disabled for two weeks or more.

DID YOU KNOW?

- Injuries to arms in 2008-09 accounted for the largest proportion of disabling injuries in underground mines at 25 per cent, and in surface mining it was injuries to backs at 24 per cent.
- Sprain or strain dominated the nature of disabling injury categories for both underground (51%) and surface (63%) mines.
- Over-exertion or strenuous movements was the most common accident type associated with disabling injuries both underground (28%) and on the surface (41%).

NEW LTIs SUSTAINED DURING 2008-09

SECTOR	No. OF WORKERS	No. OF LTIs	INCIDENCE RATE	FREQUENCY RATE	DURATION RATE	INJURY RATE	DAYS LOST
Metalliferous surface	62,340	347	5.6	2.8	21.6	60	7,509
Metalliferous underground	7,312	34	4.6	2.1	24.8	51	844
Coal	915	16	17.5	11.1	22.4	249	359
Total mining	70,567	397	5.6	2.8	21.9	61	8,712
Exploration	2,350	32	13.6	6.5	26.4	172	844

Note: Duration does not take into consideration time lost after 30 June 2009 by people still off work at the end of the fiscal year, time lost from recurrent injuries, or time lost by people with carry-over injuries from before July 2008.

DANGEROUS GOODS INCIDENTS IN 2009

The overview of dangerous goods incident reports for 2009 is now available online from the Resources Safety website under dangerous goods accidents and incidents.

The report describes dangerous goods and explosives incidents that occurred during the calendar year 2009. The report also compares the 2009 incident data with comparable data collected since 1991, and provides some statistical analysis of incident data for 2001 to 2009.

Looking at nearly 20 years of data, the total number of reported incidents, excluding major hazard facility (MHF) incident reports, has remained relatively constant over the period. It is suspected that the actual number of incidents is greater than the number reported, so year-to-year variations should not be over-interpreted. For example, the significant increase in explosives incident reports is probably more attributable to increased awareness of reporting responsibilities by mining companies.

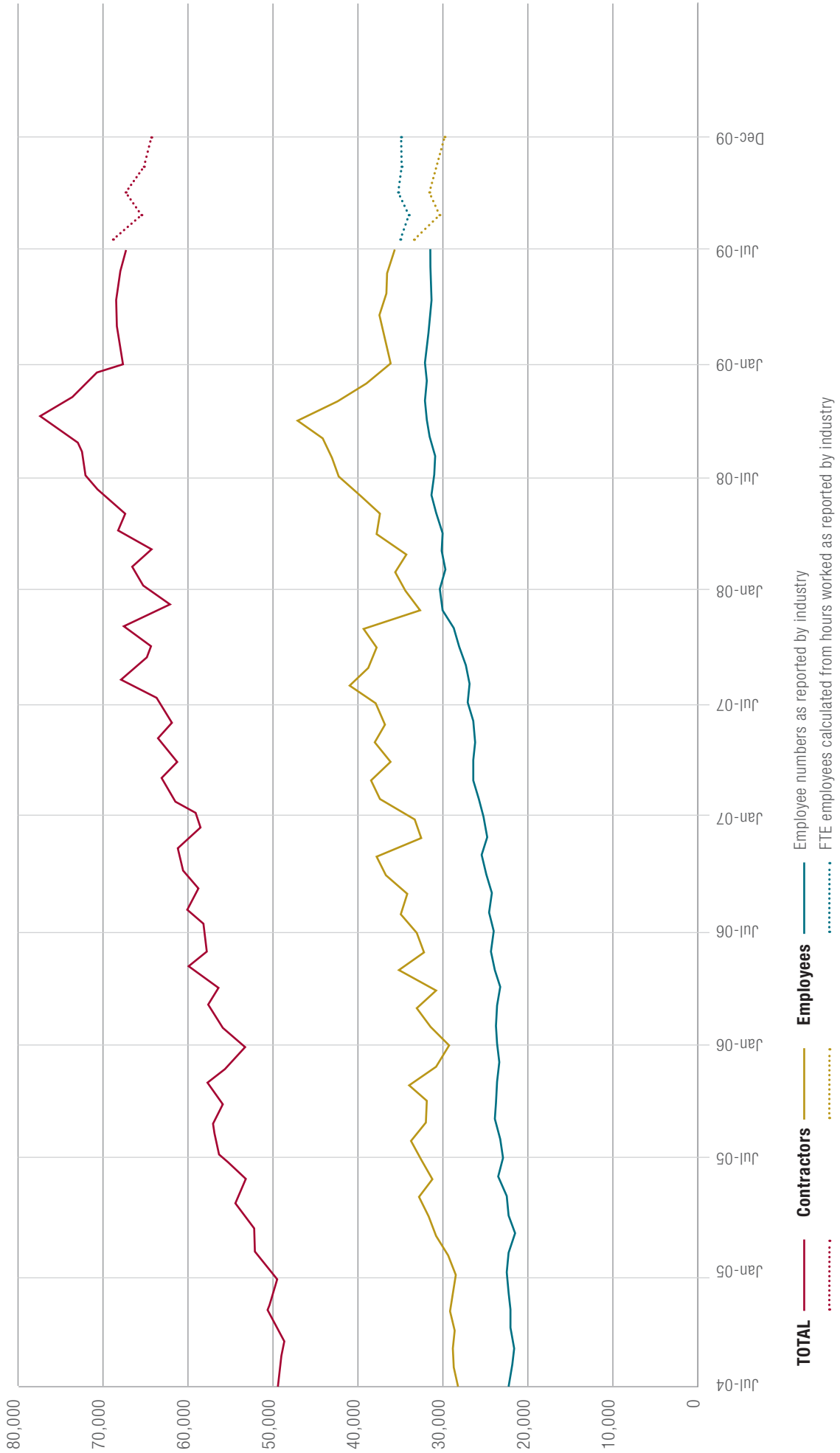
There was only one serious injury and, fortunately, no fatalities as a result of a dangerous goods incident in 2009.



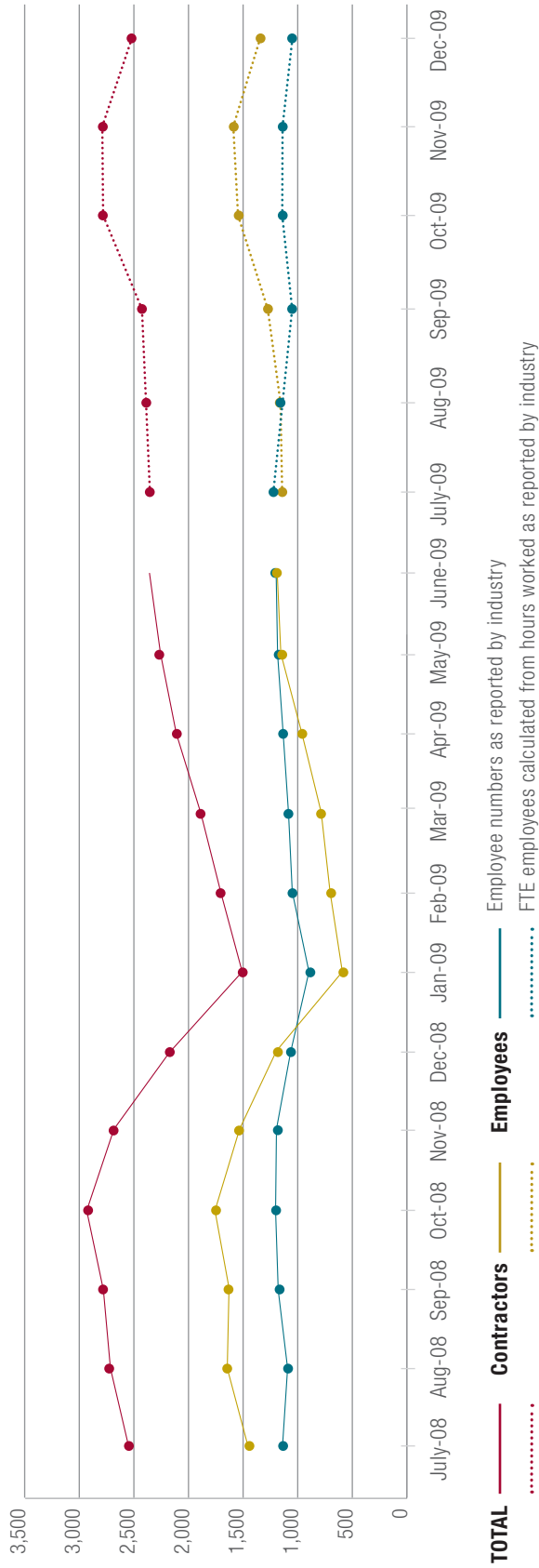
CRUNCHING THE NUMBERS

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



MONTHLY EXPLORATION 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

CRUNCHING THE NUMBERS

DISTRIBUTION OF SAFETY & HEALTH REPRESENTATIVES AS AT 20 APRIL 2010

- Mining registrars administration boundary
- MARBLE BAR** Administration region
- 153 (11/23)** Number of SHRs (Number of sites with SHRs/Total sites)
- Town/city

KUNUNURRA

DERBY

KIMBERLEY
71 (12/34)

• KARRATHA

• MARBLE BAR

MARBLE BAR
142 (11/22)

KARRATHA
390 (20/43)

• CARNARVON

MEEKATHARRA
198 (11/18)

• MEEKATHARRA

LEONORA
113 (10/17)

WARBURTON
1 (1/1)

• GERALDTON

• MT MAGNET

• LEONORA

MT MAGNET
28 (2/8)

SOUTHERN CROSS
46 (4/13)

• KALGOORLIE

• PERTH

• SOUTHERN CROSS

COOLGARDIE
53 (10/22)

KALGOORLIE
53 (9/24)

PERTH & COLLIE
251 (37/119)

NORSEMAN
17 (3/8)

• NORSEMAN

• COLLIE

• ESPERANCE

Total active (incl. C&M) mine sites = 329
 Mine sites with SHRs = 130
 Total SHRs = 1,435
 SHRs attached to mine sites = 1,363
 Others (e.g. exploration) = 72



HEALTHY ACTIVE WORKPLACES TRAINING WORKSHOPS COME TO THE PILBARA

Based in the Pilbara? You are invited to attend a Healthy Active Workplaces training workshop presented by the Department of Sport and Recreation.

Did you know?

- Healthy workers are almost three times more effective than their unhealthy colleagues.
- Unhealthy workers take 18 days sick leave in comparison to two days for healthy workers.
- World Health Organisation research showed workplace health programs could reduce sick leave by up to 30 per cent and increase productivity by up to 53 per cent.

Today's working environment can contribute to inactive lifestyles and high levels of stress, which impacts on employees' health and increases costs to the business sector through loss of productivity and absenteeism.

Creating a workplace culture that supports and enhances the health and wellbeing of Western Australians should be a priority to provide health, social and economic benefits across the State.

If you are an HR Manager, OSH representative, health promotion professional, or just someone with an interest in making your organisation a better place to work, this workshop will provide you with all the resources and knowledge to implement a workplace health and wellbeing program.

The free workshops introduce the Workplace Physical Activity and Health Resource Kit, which includes practical tips on how you can get your program started, and the Online Employee Health and Wellbeing Survey to help you plan, implement and evaluate your workplace health program.

Karratha workshop

All Seasons, Karratha
 Lot 1079 Searipple Road
 Date: Monday 24 May 2010
 Time: 10 am – 12 pm

South Hedland workshop

JD Hardie Centre
 Cottier Drive
 Date: Tuesday 25 May 2010
 Time: 9 am – 11 am

RSVP

To confirm your place at either of these events, please RSVP to Tahlia Maslin at the Department of Sport and Recreation on (08) 9492 9776 or tahlia.maslin@dsr.wa.gov.au





Left to right: Todd Keogh, St Joseph's Catholic Primary School Principal Riley Horrocks, Cody and Mark Michela, and Peter O'Loughlin

Photo courtesy of Worsley Alumina

LOOK OUT FOR RADAR

Worsley Alumina recently hosted its 2010 Stop for Safety Week to promote safety initiatives at both work and home. Resources Safety was invited to participate and also provide an activity for the family tour held at the refinery on Sunday 21February.

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All for One – the Meerkat Way, a DVD used during the 2008 Mines Safety Roadshow, was shown throughout the safety week as the meerkats' teamwork instinct provided a refreshing approach to topics such as the importance of communication, prioritising safety, and watching out for others. A meerkat soft toy with "safety vest" and "hard hat" was used as a prop.

The original intention was for children to name this safety meerkat, with first aid kits offered as prizes. However, interest in the competition was so strong that entry was extended to the Worsley workforce!

Employees contributed 120 entries and 80 came from families on the refinery family tour. The proposed names (and explanations) were insightful, clever and amusing. Resources Safety congratulates the winners and thanks all those who participated.

In the "senior" category, entries from Steve Edwards, Rhonda Gaddes, Darren Hata and Melvin Santos were well received but the overall winner was Robert Sykes, with his suggestion of

"Radar", who is always on the lookout for potential hazards associated with his family or workgroup.

This name is a perfect match with the Reform and Development at Resources Safety (RADARS) strategy. Together with the motto "Looking out for hazards and his mates", Radar the Safety Meerkat will be used as a mascot by Resources Safety to help raise awareness of occupational safety and health campaigns.

Peter O'Loughlin, Senior Inspector of Mines in Collie, was joined by Todd Keogh, Worsley's Occupational Safety Advisor, to present the junior prizes at school assemblies.

JUNIOR WINNERS

Cody Michela, *St Joseph's Catholic Primary School, Bunbury*
"Care Kat" because it looks out for others

Kestrel Fantasia, *South Bunbury Primary School*
"Tazama", which means "look out" in Swahili

JUNIOR RUNNERS UP

Michael Suckling, *Australind Primary School*
"Mero" because it's the safety superhero!

Annabelle Biffin, *Collie Senior High School*
"Seeking Safety Sam" because meerkats work in groups to look after and keep each other safe like Worsley does





All photos courtesy of Worsley Alumina



Robert Sykes receives his prize from Peter O'Loughlin and Todd Keogh while Supervisor Marcel Fransen (left) looks on



Collie Senior High School Vice Principal Nicki Polding, Annabelle Biffin and Peter O'Loughlin

GIANT LEADERS

Human beings are supposedly the most intelligent creatures on the planet. But when it comes exhibiting the nature of safety, we have to look up to the giants in the field — elephants.

Just as the little African critters in the DVD *All For One – the Meerkat Way* could show us a thing or two about watching out for each other, so elephants can teach us about natural safety leadership skills.

As seen in *Giants of Leadership – the Nature of Safety*, which uses BBC Wildlife footage from Africa, elephants demonstrate respect within teams, consistency, leading by example, two-way communication and passing on knowledge so that safety systems can evolve. Those are the same core skills required by safe leaders in the human world.

Unlike traditional training programs on safety culture, *Giants of Leadership* takes the viewer out of the everyday work context and encourages them to see safety through new eyes.

Interestingly, it is the matriarchs or older females that lead the herds. In human terms, what they demonstrate is how to share a safety vision, how to be there for the whole group, communication and taking appropriate action when required.

The culture that they generate is “We’re all in this together.” Elephants look out for every member of the group, helping those in need. The leaders are dependable and teach safe behaviour, they don’t depend on instinct alone. This safety culture has produced an “organisation” that has survived through all sorts of climates — from ice ages to desertification — for 50 million years.

Other animals come to rely on elephant leadership, following in their tracks to find reliable watering holes and be protected from predators, just as leaders in industrial safety find themselves being followed by others.

This is an interesting and “outside the box” training tool for any company serious about building a giant of a safety culture.

An online preview of *Giants of Leadership – the Nature of Safety* can be seen at www.futuremedia.com.au — type “elephant” into the search engine.





POSTERS GET A MAKE-OVER

Resources Safety's suite of posters is being rebranded to reflect the Division's new look under the Department of Mines and Petroleum banner.

In addition, a new hearing test poster is now available, entitled "What is your hearing test telling you?" This practical guide encourages you to think about the environment you are in, whether at work or home, and how it can affect your hearing. The poster also shows how to interpret the results of a hearing test, and offers examples of ways to protect your hearing as well as contact details for further information.

The rebranded and hearing test posters have been sent to all managers and safety and health representatives. If you would like your own copies, please contact RSDComms@dmp.wa.gov.au

The posters are also available online in the mining publications section at www.dmp.wa.gov.au/ResourcesSafety



Photo courtesy Kalgoorlie Miner

“ DOUG AND JIM HAVE PLAYED A SIGNIFICANT ROLE IN IMPROVING THE SAFETY OF THE STATE’S MINING INDUSTRY, AND THEIR EXPERTISE AND EXPERIENCE ARE INVALUABLE ”
MALCOLM RUSSELL

Jim Boucaut, Simon Ridge and Malcolm Russell

TWO PEARLERS COMBINE TO MAKE DIAMOND

DOUG AUSTIN, MINING ENGINEER (PROJECTS), AND JIM BOUCAUT, SENIOR INSPECTOR OF MINES

Doug Austin and Jim Boucaut have been at Resources Safety for more than 30 years. They have gained much insight and experience into the State's mining industry in that time, and have shared that knowledge with their colleagues, often acting as mentors.

Executive Director Malcolm Russell said that their commitment to Resources Safety was highly commendable.

"Doug and Jim have played a significant role in improving the safety of the State's mining industry, and their expertise and experience are invaluable," he said. "Their drive and passion for the job are still as high as when they first joined the department."

Doug joined the then Department of Mines in 1978 as a District Inspector of Mines.

He was born and educated in Kalgoorlie and is a graduate of the WA School of Mines. He commenced his career in the town at various underground mines on the Golden Mile and at Kambalda. His first job in mining was as a survey assistant at the North Kalgurlie mine in 1969, and then as a mining engineer at many other shafts on the Golden Mile before they closed for economic reasons in 1975.

In 1976, Doug worked at the Mt Charlotte gold mine in Kalgoorlie where he gained exposure to large-scale underground mechanised mining operations. In 1977-78, Doug commuted daily to Kambalda and completed two years of underground practical mining experience, during which time he obtained his First Class Mine Manager's Certificate of Competency. It was after this that he started his long career in the regulation of the State's mining industry.

Doug was appointed the District Inspector of Mines in 1980 in Kalgoorlie, staying there until 1984 when he transferred to Perth. As a District Inspector, he visited many mine sites throughout Western Australia and met with a large number of mine employees in a role of administering mines safety legislation, undertaking investigations of serious and fatal accidents, conducting audits, and inquiring into complaints.

Doug said that he had found his more than 30 years as a regulator to be interesting, challenging and rewarding. The positive side was being able to enforce and promote safety within the industry, while the downside was the investigation of serious and fatal accidents. Doug added that one of the benefits of being a regulator is the opportunity to inspect a wide variety of mining projects covering surface and underground operations across a spread of commodities.

Doug's career with Resources Safety changed in October 2007 when he moved away from the day-to-day District Inspector role to a position of Mining Engineer (Projects). In this capacity he assists in:

- dealing with the many regulatory and technical enquiries made to the mines inspectorate;
- the preparation of procedures;
- the compilation and revision of safety information material; and

- administrative matters in the Perth inspectorate, as required.

Importantly in terms of transferring corporate knowledge, Doug is also a mentor for less experienced staff in technical and operational training and development.

Jim Boucaut, Kalgoorlie's Senior Inspector of Mines, started his career with the mines safety regulator in the State's North West. He joined in 1980 when he became District Inspector in Karratha. Before becoming an inspector, he had been employed in the Zimbabwean and South African resources sector.

Jim's 30 years of service was recently recognised with a certificate presented by Executive Director Malcolm Russell and State Mining Engineer Simon Ridge.

Jim later spoke with the *Kalgoorlie Miner's* Ian Kirkpatrick about what it meant to him. He told Ian that working for Resources Safety had given him the opportunity to gain diverse experiences as his profession took him to a broad range of mine sites, all with their own unique scenarios and situations.

"Having that first-hand consultation with so many mine sites is an experience that has helped shape my career with the Department, and it is one aspect of my professional life that has been very rewarding," he said.

Jim has seen much in his 30 years. He has seen safety regimes improve, and credits a safer working environment as one of the greatest points of difference from when the mining sector moved from the late 20th into the early 21st century.

"The modern mine site places significant emphasis on workplace safety and mining safety has greatly improved in the past 30 years," Jim told the *Kalgoorlie Miner*. "But it's an area of mining where there is no place for complacency — safety requires constant vigilance and review."

Resources Safety congratulates Doug and Jim on reaching such significant milestones and for their contributions to improving safety in the State's resources industry. In anniversary terms, they are individually "pearls" — combined, they make "diamond".



Doug Austin

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“ HAVING JUST COME FROM THE PRIVATE SECTOR, I KNOW THAT INDUSTRY WILL BE HAPPY WITH THE NEW APPROACH TO MANAGING SAFETY AND RISK IN THE RESOURCES SECTOR ”

TYC

TAKING ON THE SAFETY CHALLENGE

ANDREW CHAPLYN,
DISTRICT INSPECTOR OF MINES

After more than twenty years in the mining industry, new District Inspector of Mines, Andrew Chaplyn has decided to give something back. The former mining manager has joined Resources Safety to be part of improving safety in the State's mining industry.

"I'd been out on the mine sites for many years and decided to change my professional direction," Andrew said.

He also had a more selfish reason for wanting to leave a working life on the mines — his family. Andrew has three children, two of whom are heading into high school and a third who recently turned two.

"Although fly-in fly-out worked well for my wife Jennifer and me, we wanted to spend more time together, especially as the children enter their teen years," he said.

His 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.

Andrew 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," he said.

During the early 1990s, Andrew took a break from mining to travel the world, visiting 25 countries. It was during this time 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 has seen 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, and 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.

"When I was working at Broken Hill, we were constantly managing risks and creating opportunities. I was involved in the site-wide analysis of all systems and processes to identify and alter potential bottlenecks in order to improve safety and production levels. So I am coming into this role at Resources Safety with a solid understanding of the challenges that the sector faces, but also an awareness of how things can be done better."

During his time in Broken Hill, Andrew also completed studies in risk management through The University of Queensland.

Andrew said that since joining Resources Safety he had been impressed with its systems and support, and he was looking forward to being part of the new direction the division is taking towards a risk-based approach to safety regulation.

"The current push to change the way that we are structured to a team-based environment and the way we do our jobs is exciting and offers more opportunities than before," he said. "Having just come from the private sector, I know that industry will be happy with the new approach to managing safety and risk in the resources sector."

"The role of District Inspector is interesting because you play an integral role in administering the mining legislation, reviewing project management plans, investigating issues and being involved in the practical mining operations at all levels, from the miner to the managing director.

"This new role has also exposed me to a variety of sites that are doing some great things, and I look forward to helping share this knowledge throughout the sector."



“

MOST OF THE NEW BUNCH OF WORKERS ARE PRETTY GOOD, EVEN THE YOUNG BLOKES, WHEN IT COMES TO SAFETY AND NOT TAKING RISKS

”

BG

PUTTING LOCAL KNOWLEDGE TO GOOD USE

BRIAN OTWAY,
EMPLOYEE'S INSPECTOR OF MINES

In September last year, nominations were called for Employee's Inspectors of Mines for the Collie, Kalgoorlie, Karratha and Perth Inspectorates. Employee's Inspectors are elected by people employed at mines in their region. They are then appointed by the Minister for Mines for a term of four years.

Employee's Inspectors must have a certificate of competency as an underground supervisor and at least five years' experience in underground mining. They have the same powers as District Inspectors of Mines except they cannot interview people and take statements unless requested by a District Inspector, and they cannot initiate prosecutions unless authorised by the State Mining Engineer. One of their main tasks is to liaise with safety and health representatives and committees in the region for which they were elected.

Why put your hand up to be an Employee's Inspector of Mines? Some people who have worked in the mining industry get great satisfaction from putting something back as a safety expert, and improving safety within the industry, using the experience and technical knowledge they have gained through the earlier part of their career. Alternatively, working in the regulatory area can be a great stepping stone for experienced people looking to eventually move back into industry at a more senior level.

Following last year's election, Brian Otway has joined Jock Watson (re-elected unopposed) as an Employee's Inspector of Mines for the Kalgoorlie region.

Brian is a true Goldfields local. He has been in Kalgoorlie since 1961, working underground in the region for much of the past four decades. His father was an airleg machineman and Brian followed in his footsteps shortly after finishing his carpentry apprenticeship.

"I wanted a trade under my belt, but as soon as I finished, I bolted underground," Brian said.

"I still put the old chippy skills to use building my own homes and doing renovations at friends' houses. Trouble is, you don't get paid for it," he joked.

Before joining Resources Safety in November 2009, Brian spent the previous 12 years as a shift supervisor. He has seen firsthand how safe work practices and processes are implemented.

Brian said that he had been fortunate to have never had any bad accidents on his shift or when he was on site. However, he is keenly aware of what can go wrong.

Although he was never directly involved when accidents or fatalities occurred, he knew the people who were, and saw the effect it had on their families and the workplace.

"The mining industry faces all kinds of risks and we need to work together to make sure everyone knows how to avoid or reduce these risks and work in the safest way possible," he said.

"Most of the new bunch of workers are pretty good, even the young blokes, when it comes to safety and not taking risks."

Brian visits about four mine sites a week in the goldfields and, being a local and stalwart of the local industry, always runs into someone he knows. His supervisor, Alan Holmes, reckons that Brian knows about half the town — or at least it appears that way!

Brian, who has three adult daughters, is enjoying his new lifestyle of working a normal roster instead of the time-on time-off schedule he had worked for more than 40 years.

"I wanted to stay part of the industry and put my knowledge and experience to good use, so I decided to nominate for the position of Employee's Inspector. It gives me great satisfaction to get out there checking that the conditions people are working in are safe, and answering questions.

"It's also good to know that, fortunately, there aren't too many big issues out there and most of the companies are doing the right things."

Even in his spare time, Brian can't leave the resource sector behind and has been known to try his hand at a bit of prospecting and fossicking. He also enjoys the bush lifestyle and getting out camping, especially around Esperance.

MINES SAFETY SIGNIFICANT INCIDENT REPORT NO. 158

FALL FROM WORK BASKET IN AN UNDERGROUND DECLINE

4 DECEMBER 2009

Incident

A team of three employees had been instructed to remove electricity cables from the backs of a decline tunnel at the intersection with a drive to an operating level.

The employees were using an integrated tool carrier (IT) fitted with an elevating work basket, similar to an elevating work platform (EWP) used in surface construction operations.

The IT was stationary, with two employees in the basket and a third operating the machine. All had completed the site training requirements for the work being undertaken.

The work place was about 6 metres high. To release the cable ties holding the cable, the operator stood on a cross member of the guard rail. While stretching to reach the cable, the employee fell over the edge of the basket guard rail and onto the ground.

It was estimated that the employee fell to the ground from a height of about 4 metres. He sustained a fractured pelvis and contusions to the upper body.

Immediate causes and contributory factors

- Access to the cables was obstructed by a ventilation bag, water pipes and other services.
- The movement and final positioning of the work basket on the IT was limited by the drive dimensions and services suspended from the backs and shoulders of the drive.
- The employee who was injured was not wearing fall arrest equipment, and there was no fall arrest equipment in the basket.
- There were no specific anchor points provided for the correct attachment of fall arrest equipment within the confines of the work basket.
- The procedures at the mine did mention that fall arrest equipment should be used where there was the risk of a fall from height.
- A job safety analysis (JSA) or similar work plan was not completed for the task, and no specific instructions were given as to how the work was to be carried out safely.

- The investigation revealed that the injured employee stood on the lower of the two basket hand rails to reach the high workplace.
- The investigation also revealed that employees often had to stretch and lean over the rails to work on mine service facilities such as pipes, cables and support elements.

Comments and preventative actions

- Regulation 4.5(1) of the Mines Safety and Inspection Regulations 1995 states:

The manager of, and each employer at, a mine must ensure that

- (a) Fall arrest equipment is provided to employees at a workplace if the risk of injury to employees from falling cannot be eliminated from the workplace or the system of work at the workplace; and
- (b) the equipment referred to in paragraph (a) is
 - (i) appropriately designed for the task for which it is to be used;
 - (ii) used in such a way as to reduce, so far as is practicable, the possibility of injury to the user; and

(iii) properly maintained.

- The hazard of falling from elevated work baskets and platforms is not new, and for surface operations has required the use of fall arrest equipment in EWPs for many years.
- Not only can employees fall over or through guardrails, but there have been instances where baskets have detached from mountings, hydraulic or pneumatic cylinders have failed, or machines have become unstable. All these hazards can result in employees falling or being thrown out of work baskets, with the potential of serious injury or death.
- Managers and employers should review the work practices at underground operations where employees are required to work at a height from baskets and platforms.
- Where employees are required to work at height from a basket, there is a demonstrated risk of falling and sustaining injury. The provisions of Regulation 4.5 should therefore be applied to reduce the risk of injury.

MINES SAFETY SIGNIFICANT INCIDENT REPORT NO. **159**

FALL THROUGH GRID MESH FLOOR — FATAL ACCIDENT

6 JANUARY 2010

Incident

While erecting structural steelwork, an experienced tradesperson fell about 10 metres through a grid mesh floor and died from the injuries sustained.

Installation of the grid mesh floor had not been completed and sections of grid mesh were not secured in place. An area adjacent to sections of mesh had been left open to allow for the installation of additional steel work. It appears that one section of grid mesh was able to move towards the opening and away from supporting steelwork at the opposite end. The accident occurred while the deceased was moving about on this part of the grid mesh floor — the section of mesh slid off the support steelwork at one end and fell to the ground.

The accident occurred during the hours of darkness and the work area was illuminated from below by lighting towers.

Immediate causes and contributory factors

- The hazard posed by the unsecured grid mesh sections had not been properly identified, barricaded or otherwise controlled.
- Installation of the grid mesh floor was incomplete and sections of mesh had not been fixed with either permanent or temporary fastening devices.
- The presence of the opening and a floor slope of 5 degrees allowed a section of mesh to move and become unsupported.
- Lighting of the area from below caused limited visibility at floor level.
- It was the first night shift and first time the workgroup had worked at that location, and group members were unfamiliar with the area.

- The workgroup's attention was focused on the installation of overhead steelwork.

Comments and preventative actions

Section 9 of the Mines Safety and Inspection Act 1994 prescribes that the employer at a mine must provide and maintain workplaces, plant and systems of work such that employees are not exposed to hazards.

To prevent a recurrence of this type of incident, the following preventative actions should be considered.

- Grid mesh floors should be installed in accordance with safe work procedures based on risk assessment and manufacturers' recommendations.
- Persons engaged to install grid mesh floor should be trained in the procedure and wear appropriate personal fall restraint equipment when necessary.
- Sections of grid mesh should be secured in place as soon as practicable after being placed in position.
- Unsecured grid mesh can be extremely hazardous. It should be properly barricaded and sign-posted at all access points to the floor and below to warn of the danger posed.
- If identified as an issue during a risk assessment, arrange for employees to familiarise themselves with potential hazards in a new work area during daylight hours.
- Construction work should be supervised to ensure employees work safely. Effective supervision takes time and includes conducting a shift handover (which may necessitate a walk-round inspection) and communicating the presence of any hazards to the oncoming shift in verbal and, if necessary, written forms.
- Responsible persons should arrange for existing grid mesh floors to be checked to ensure sections of mesh are not damaged, missing or unsecured.

Information relating to a similar accident can be found in *Safety and Health Alert 07/09, Worker fatally injured in fall from grid mesh panel walkway*, issued by WorkSafe WA and available from the publications section at www.commerce.wa.gov.au/worksafe

MINES SAFETY SIGNIFICANT INCIDENT REPORT NO. 160

MAINTENANCE PERSONNEL CRUSHED BY EXCAVATOR COUNTERWEIGHT

6 JANUARY 2010

Incident

During the cleaning out of a run-of-mine (ROM) crusher bin at an Eastern Goldfields mine, two maintenance personnel were crushed between the bin and an excavator counterweight. They sustained serious injuries, including multiple fractures.

The excavator was being used to clean rocks from the crusher bin to allow maintenance work to be carried out. This involved the excavator bucket reaching into the bin, removing loose rock and placing it beside the bin. The incident occurred when the slewing action of the excavator created a pinch point between the counterweight and bin's concrete sidewall when tipping a bucket of rock beside the bin.

Immediate causes and contributory factors

Before initially approaching the ROM crusher bin, the maintenance personnel had notified the excavator operator, who subsequently shut down the machine. After viewing the crusher mantle from the front of the bin, the maintenance personnel had started to leave the area.

Upon seeing the pair departing, the excavator operator recommenced cleaning out the bin. He was unaware that they had returned to the area until he was lifting the third bucket of rock from the bin and noticed one of them lying on the ground.

Comments and preventative actions

- Safe systems of work must be in place to prevent hazardous interactions between personnel and operating earthmoving equipment. This is particularly important when working in confined areas with the potential to create pinch points.
- To limit the interaction, work areas must have defined boundaries or barriers that are determined by the machine operator's field of vision.
- Machines must have effective means of communication to allow the operator to be contacted.
- Should personnel wish to enter an area where equipment is operating, they must first notify the operator who must shut down the machine before authorising their entry.
- Equipment should not be restarted until the work area is vacated and the operator notified that all personnel are clear.
- Relevant personnel are to be trained in the procedures and risk control measures in place.
- It is the operator's responsibility to operate the equipment safely and only commence work when it has been confirmed that all other personnel and equipment have left the work area.

MINES SAFETY SIGNIFICANT INCIDENT REPORT NO. 161

STRUCK BY MOVING TRAIN — FATAL ACCIDENT

10 MARCH 2010

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Incident

During the early hours of Tuesday 24 February 2009, a railway maintenance operator involved in maintenance on a mainline track was struck while between a “tamper” track maintenance machine and a passing empty ore train travelling on the bypass rail line.

It appears there was a problem with the tamper’s work heads on the dual rail side. The operator left the rear cabin, climbed off the machine between the two rail lines and walked towards the front cabin to investigate the problem. The empty ore train was travelling at about 35 km/hour when it apparently struck the operator.

The injured person was found alive but passed away before emergency service personnel arrived at the scene.

Contributory factors

Possible contributory factors may be broadly grouped as design, systems and human factors.

Design factors

- A track maintenance machine on a main railway line, with an adjacent passing line, experienced a fault with its tamping heads. The mainline and bypass rail lines were installed about 3.5 metres apart, with a rail vehicle clearance of about 1.75 metres. This exposed rail employees on foot between the tracks to a “struck by/caught between” moving machinery hazard.
- There was no internal access between the rear and front cabins of the tamper, where separate operational controls were located.
- The track machine operator alighted from the tamper on the bypass rail side around the time a passing empty train was expected to pass.
- The rail ballast in the area was coarse and sloped in a “V” formation, with the main line slightly higher than the bypass loop rail line. Marks were evident in the sloped ballast in line with the tamper working heads, and a small steel jacking plate had been placed under one of the lifting jacks. The low point of the ballast where personnel might walk was 0.5 metres from the side of the passing train.

Systems factors

- Vigilance was the primary control to warn of approaching trains.
- Time records were out by 8 minutes between train control

time and the radio wavefile time documented during each communication. There was no time synchronisation communication recorded between train control and the tamper prior to going on track.

- Employees were exposed to substantial noise and were wearing local CB radio headphone and intercom sets, which may have prevented them from hearing the approaching train.

Human factors

- Upon approaching the track machine, the train driver dipped the headlights of the train but did not sound the horn as no personnel were expected to be on foot in the area.
- The deceased was working his first nightshift of a fly-in fly-out roster and, including travel, flight and work arrangements, potentially had been awake for nineteen hours before the accident.

Comments and preventative actions

To avoid a reoccurrence of this type of incident, the following preventative actions should be considered.

- Designers and manufacturers of rail equipment should, where practicable, provide an internal walkway to provide onboard access between front and rear cabins.

- Rail companies should, where practicable, provide adequate track separation or safety barriers to protect rail employees from being struck by moving rail equipment. Employees must not alight from machinery unless there is adequate clearance.
- Rail companies need to ensure that safe work procedures are developed and implemented via training and on-the-job competency assessments for all employees and site supervisors prior to carrying out work at the rail operations.
- In conjunction with employee vigilance, the safe work procedures for communications and movement during rail maintenance must include the use of signs or devices warning of the hazard.
- All rail operations should be on synchronized time.
- Rail companies need to review their fitness-for-work or fatigue management policies regarding returning to work on the first day of a fly-in fly-out operational roster, whether on a day or night shift. The policy must take into account the length of the work day and travel undertaken by the employee.

MINES SAFETY SIGNIFICANT INCIDENT REPORT NO. 162

FITTER STRUCK BY ROLLER SHUTTER SUPPORT BRACKET

16 MARCH 2010

Incident

During the removal of a roller shutter assembly from a workshop at a Western Australian mine site, a fitter working from an elevated work platform (EWP) sustained serious head injuries when he was struck by a support bracket for the roller shutter.

The roller shutter assembly consisted of a roller curtain attached to a drum casing. The drum casing was connected to an internal shaft by springs designed to counterbalance the weight of the curtain, thereby assisting an electric motor to raise the curtain. The roller shutter was secured to the building by support brackets attached to each end of the shaft. The brackets were bolted to mounting plates welded to the workshop steel structure (see photographs).

The roller shutter was 6 m wide by 5 m high, and the roller shutter assembly weighed 800 kg.

When the fitter removed the final bolt from the support bracket on the non-drive end, the bracket spun and struck the fitter in the head. The fitter was wearing a safety helmet and safety glasses. The glasses were hit by the bracket and may have mitigated the extent of the injuries sustained by the fitter.

There have been previous serious and fatal accidents involving roller shutters in industrial and domestic applications.



View of non-drive end of roller shutter



Close-up view of support bracket after incident

Immediate cause and contributory factors

- The bracket rotated suddenly due to the release of stored spring (mechanical) energy upon removal of the last bolt from the support bracket.
- Before undertaking the task, work permits were issued based on a task hazard analysis. The hazard of electrical energy was recognized by the work team and appropriate electrical isolation performed. However, the work team, including supervisory personnel, failed to identify the hazard of stored mechanical energy.
- No signage was available warning personnel of the hazard.
- The task of removing the roller shutter was non-routine.
- Personnel in the work team had not performed this specific task before, nor were they formally trained or instructed in the task.
- The manufacturer's safety information was not available on site.
- There were no procedures for the task of removing the roller shutter.
- There were no maintenance records for the roller shutters on site.
- Mechanical inspection of the roller shutter after the incident revealed that it was in a poor condition, indicating a lack of preventative maintenance and inspection of the equipment.

- Inspection of the support bracket indicated incorrect alignment of the locking pin at the non-drive end. Although this may not have contributed directly to the incident, it does indicate that the installation may not have been in accordance with manufacturer's recommendations.

Comments and preventative actions

To avoid a recurrence of this type of incident, the following preventative actions should be considered.

- Develop and implement procedures for the installation, maintenance and removal of roller shutters on site, based on a risk assessment and the manufacturer's instructions.
- Persons performing work on roller shutters must be suitably experienced, trained and competent to perform the task.
- Ensure that the site change management processes are effective in identifying tasks that are non-routine.
- Responsible persons should conduct an on-site audit of plant with stored energy hazards and assess the adequacy of control measures.
- Install warning signage on roller shutters and other installations to identify the hazard of stored mechanical energy.
- Consider installing later model roller shutters with improved engineering controls to minimise the risk of stored mechanical energy to personnel.

MINES SAFETY SIGNIFICANT INCIDENT REPORT NO. 163

EXPLORATION EMPLOYEE LOST IN REMOTE BUSH

20 APRIL 2010

Incident

In January 2010, during site demobilisation, a contract driller went missing at an exploration tenement site in the Pilbara for about 30 hours.

He had attempted to walk through scrub to retrieve a support vehicle located about 6 kilometres from the exploration campsite. He left the site in the morning but became lost when he failed to find the support vehicle and then failed to intersect the cleared access tracks and gridlines in the area.

The driller became dehydrated and disorientated, and spent the night in the bush. By the next day he was in a weakened state and, having found shade under a rock ledge, waited there for assistance.

When his colleagues raised the alarm some six hours after he was last seen, a search was organised involving local police, SES volunteers and other exploration company employees, who were assisted by a light plane and helicopter.

The contract driller was found about 10 kilometres from the exploration campsite and rescued by helicopter. He was taken

to the local regional hospital and treated for dehydration. He was discharged the next day.

Contributory factors

- The contract driller chose to walk via the shortest route through the bush, instead of along access tracks and cleared gridlines, even though transport vehicles and personnel were available. The route chosen was not clearly delineated.
- The bush was sufficiently dense to obscure the support vehicle's location, access tracks and cleared gridlines.
- The contract driller was poorly equipped for remote bush walking, having only 500 ml of water, no hat and no emergency equipment such as an emergency position indicating radio beacon (EPIRB), or handheld global positioning system (GPS) or satellite communication equipment.
- The weather conditions at the time were hot and dry.
- There was no site induction or procedure documentation established for the exploration site covering the safety rules for working in remote bush.
- There were no clear instructions issued by the contract drill supervisor to the contract driller on the method to be used to retrieve the support vehicle on the morning of the incident.

- The person responsible for the safe management of all activity on site on behalf of the owner and the exploration manager was absent from the site.

Comments and preventative actions

To avoid a recurrence of this type of incident, the following preventative actions should be considered.

- As per section 47(2)(b) of the *Mines Safety and Inspection Act 1994*, the tenement owner and exploration manager must ensure that all exploration work carried out on site is under the direct control of a site-based person responsible for the management of all activities.
- A comprehensive induction and operating procedures appropriate to remote exploration work must be developed and all exploration employees trained in the procedures before commencing remote exploration work, as per regulations 3.6 and 4.13 of the *Mines Safety and Inspection Regulations 1995*.
- There must be consultation between exploration management, supervisors and employees about how work tasks are to be performed, and clear instructions issued before they are carried out.
- Exploration employees should be prohibited from walking unnecessarily in remote bush. Adequate transportation should be readily available and used.
- Where work on foot in remote bush is unavoidable, employees should be trained in bush survival techniques and equipped with appropriate personal protective equipment (PPE), such as personal survival kit, an EPIRB, GPS equipment, satellite communication equipment, sufficient water and sun protection. Journey management and call-up procedures must be in place.
- Access tracks and gridlines should be clearly delineated with signposts or tape markers.
- Emergency procedures must be in place to manage a search for employees who are lost, and should be enacted immediately in a coordinated manner when an employee(s) fails to call in on schedule.
- People lost in the bush during hot, dry conditions should avoid direct sunlight where possible but not wander further than is necessary to find shade. Attempts should be made to highlight their location, such as drawing in sand, using rocks to make an "SOS" or displaying colourful or reflective objects to attract attention from ground and aerial searches.

Resources Safety has produced a *Mine Safety Matters* brochure on travelling in remote areas that may be useful for inductions or preparing operating procedures.

MINES SAFETY BULLETIN NO. 90

TOTAL FIRE BANS AND IMPLICATIONS FOR MINING OPERATIONS

21 DECEMBER 2009

Bush fires legislation

Resources Safety has received several enquiries regarding total fire bans and the implications for mining operations. The relevant legislation, available from the State Law Publisher (www.slp.wa.gov.au), is:

- *Bush Fires Act 1954* (the Act); and
- Bush Fires Regulations 1954 (the regulations)

Note: The legislation was amended in December 2009 to allow the Minister to declare a “total fire ban”.

The parts of the legislation that may apply to the mining industry include, but are not limited to:

- sections 22B(2) and 22B(3) of the Act, referring to fires in the open air and certain activities being prohibited during a total fire ban; and
- regulation 24A(2), covering activities prohibited in the open air during a total fire ban.

For the purposes of section 22B(3)(c) of the Act, regulation 24A(2) prescribes the use or operation of any engine, vehicle, plant, equipment or machinery on land on which there is bush or which is under crop or pasture or stubble.

Practical application to mining operations

The following and similar activities may be affected by a total fire ban:

- clearing of bush as part of pre-stripping operations;
- exploration drilling operations; and
- repairs to equipment in vegetated areas involving “hot work”.

Applying for an exemption

An exemption can be applied for under section 22C of the Act.

The information below from the Fire and Emergency Services Authority of WA (FESA) is provided for your information and action as required.

The *Bush Fires Act 1954* was amended on 1 December 2009 to enable the declaration of a total fire ban in any area of the State when existing or impending weather conditions are conducive to the outbreak of bush fires. This replaced the existing power to declare a bush fire emergency period, and is in addition to

the existing restrictions on lighting fires in the open air during restricted and prohibited burning times. During a total fire ban, it is an offence to light, maintain or use a fire in the open air or carry out an activity in the open air that causes or is likely to cause, a fire. Pursuant to this, outside activities such as welding, grinding, gas flaring, the operations of brick kilns and the like are prohibited unless an exemption has been granted.

To apply for an exemption it is necessary to make written application to the FESA Regional Office nearest to your operation or, for companies with operations at various locations throughout the State, to the Rural Operation Officer, FESA Regional Office, 91 Leake St, Belmont WA 6104.

The application should provide the following information.

- The name of the applicant and, for an application by a company, the person applying on its behalf.
- The location of the site where the use of fire or activity is proposed to occur.
- The nature of the activity undertaken at the site where the use of fire or activity is proposed to occur and the purpose that requires the use of fire or the carrying out of the activity at the time and place for which the exemption is sought.
- The likely impact should the exemption not be approved.
- The precautions that will be in place:

- for the use of fire, to ensure any fire can be contained and if necessary extinguished
- for an activity, to limit the risk of a fire starting and, if necessary, to contain and extinguish any fire that does start.

- The period for which the exemption is sought.

Ensuring the best outcome

With summer weather now upon us, it is recommended that all mining operations, including exploration, review their fire and emergency preparedness systems and equipment to satisfy themselves that all is fully operational.

All employees should be reminded of the need to fully comply with the requirements of a total fire ban. Significant penalties may apply if non-compliance can be proved.

Employers and employees are reminded of their duties under sections 9 and 10, respectively, of the *Mines Safety and Inspection Act 1994*. Employers need to be satisfied that their employees are not, as far as practicable, exposed to hazards posed by bush fire or associated bush fire fighting activities. Employees need to cooperate with their employer in the identification, reporting and control of bush fires.

DANGEROUS GOODS SAFETY BULLETIN NO. 0110

INADEQUATE CHECKS AT POINT OF DELIVERY LEADING TO SECURITY INCIDENTS INVOLVING EXPLOSIVES

15 MARCH 2010

Background

In two security incidents, incorrect numbers of boxes or pallets of explosives were delivered to mine sites, and inadequate reconciliation against consignment documentation resulted in a “reportable situation” as defined under section 9 of the *Dangerous Goods Safety Act 2004*.

In the first incident, six boxes of detonators were consigned for delivery to a mine site but only five boxes arrived, as identified in a subsequent stocktake. The transport company alerted all of its Western Australian depots to the missing item, which was eventually located in another location. Further investigation revealed that the company transporting the explosives was a subcontractor and unaware of security requirements.

In the second incident, a routine stock check of a mine site explosives magazine revealed that 16 cases (one pallet) of

explosives were missing. The supplier was contacted and a stock check at the point of vehicle loading confirmed that the correct number of pallets was loaded as per the consignment order. The missing pallet of explosives was found on the vehicle — the driver had forgotten to unload it.

Credit should be given in both incidents to the personnel conducting the stocktake. The accuracy of the stocktake allowed the inconsistencies to be identified and appropriate action to be taken.

Issues

- Insufficient care and attention during the reconciliation of shipments of explosives against the consignment document led to a reportable situation under section 9 of the *Dangerous Goods Safety Act 2004*.
- To comply with regulation 194(2) of the Dangerous Goods Safety (Explosives) Regulations 2007, licence holders are required to obey their explosives management plans. In these incidents, the licence holders did not comply with the following security measures identified in their plans:
 - the explosives transport licensees failed to monitor the location of an explosive at all times while it is being transported [regulation 161(5)(c)];

- the explosives transport licensees failed to reconcile the explosives at the beginning and end of the journey [regulation 161(5)(e)];
- the explosives storage licensees failed to reconcile the explosives received at site [regulation 161(4)(c)]; and
- in the first incident, the prime contractor (explosives transport licensee) failed to ensure its subcontractor was trained in the requirements of the transport company explosives management plan [regulation 161(5)(a) and Schedule 10(2)(c), (d) and (e)].

Recommendations for licensees

- Ensure that processes and procedures for consigning, handling, transporting and receiving explosives are adequate and comply with regulatory requirements.
- Provide refresher training where appropriate for persons involved in consigning, handling, transporting and receiving explosives. Due care and attention is required by all individuals involved in the handover of explosives, and reconciliation checks must be accurately performed.
- Ensure that explosives are not supplied to unauthorised people. Drivers should have the names of personnel authorised to receive explosives, and those individuals should produce appropriate identification and security clearances to the driver before unloading commences.
- Subcontractors are to be trained in the details of the prime contractor's explosives management plan before handling or transporting explosives on behalf of the prime contractor.

DANGEROUS GOODS SAFETY BULLETIN NO. 0210

CONFINEMENT OF A SMALL QUANTITY OF 1.4S EXPLOSIVES CAN RESULT IN LARGE EXPLOSION

13 APRIL 2010

Hazard

A dangerous situation with a high risk of explosion can result when explosives of hazard classification 1.4S are confined (e.g. in a lined metal box) and exposed to fire.

Contributory factors

Explosives of hazard classification 1.4S are commonly believed to be “safer” than other explosives. This assumption is not always correct, and appropriate measures must be taken to reduce the risk of explosion.

Explosives substances or articles classed as 1.4S are packaged or designed to limit blast and projection hazards if accidentally initiated. It is important to be aware that some items of hazard classification 1.4S can be highly explosive (e.g. detonators or articles filled with black powder) but, due to robust packaging and dunnage, any blast effects are minimised. However, these items still have significant explosive potential.

A sealed package of 1.4S explosives directly exposed to fire will burn, with the resulting gases released to the atmosphere. The blast and projection hazards are limited to the packaging, or are sufficiently minor that an emergency response is not inhibited. In contrast, when the same package is confined in a carry box, magazine or other sealed container and exposed to fire, the gases produced can be trapped, resulting of a build-up of pressure inside the container. If the pressure becomes too great, the container will explode.

Shotfirers, firework operators and firework contractors are authorised to store limited quantities of explosives under

the provisions of their licence. The Dangerous Goods Safety (Explosives) Regulations 2007 require the explosives to be stored safely, which includes storing the product inside a container. The choice of container has a significant impact on the consequences of fire on the explosive product.

- A potential mass explosion hazard exists for hazard classification 1.4S explosives that are under confinement (e.g. inside a wood-lined metal box) and exposed to fire or other intense heat.
- An explosion resulting from fire impacting upon 1.4S explosives under confinement (e.g. in a carry box or magazine) can be significantly large and hazardous.
- Consideration must be given to the type of explosives stored (irrespective of packaging) and appropriate safety measures must be applied. The material safety data sheet (MSDS) should be reviewed for information about the hazards of the product.
- Do not assume that 1.4S explosives will generate only minor explosions – large explosions can occur.
- The emergency response must be appropriate to minimise risk – if 1.4S explosives are stored inside lined, metal containers and involved in a fire, the area should be evacuated immediately. For storages of 1.4S explosives up to 30 kg, the recommended evacuation distance is 400 metres.

Note: This distance is also suitable for up to 30 kg of explosives that have been classified as 1.4S due to packaging, but the items themselves have a mass explosion hazard (e.g. detonators).

Recommendations

- Explosives of hazard classification 1.4S should be stored inside a wooden box, which will burn in the event of a fire and allow gases to be released to atmosphere.
- If a metal box without ventilation must be used, evacuate to a distance of 400 metres if the box is involved in a fire.
- Adequate security measures that are commensurate with the type of explosives are still required.

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For dangerous goods emergencies or accidents requiring attendance of emergency services, caller must dial 000

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