



NSW mine safety update

Promoting safety in the NSW mining industry



NSW DPI North East Area Manager Paul Healey addresses the coal mine safety legislation roadshow seminars.



Ian Macdonald MLC, NSW Minister for Mineral Resources, Primary Industries and Natural Resources

New coal mine health and safety legislation for NSW commences

A new safety legislative regime implemented under a theme of Safety First will give the NSW coal mining industry the framework to improve mine safety performance.

The NSW Government has a goal of zero fatalities and serious injuries in the State's mining industry.

Coal mine operators will begin implementing new measures to improve safety performance following the commencement of the *Coal Mine Health and Safety Act* and the *Coal Mine Health and Safety Regulation* on 23 December 2006.

There has been a significant level of industry interest in the new safety legislation with almost 1400 people attending information seminars at Newcastle, Wollongong, Lithgow and Singleton in late December.

The NSW Minerals Council and the Construction Forestry Mining and Energy Union have been closely involved in helping to frame the new safety requirements.

The new legislative arrangements place duties on colliery holders, coal operators, contractors and employees - everyone involved in the coal mining industry. Transitional arrangements will help ensure there is a phased-in and smooth implementation during the next six months.

The *CMHS Act* and *CMHS Regulation* replace the *Coal Mines Regulation Act 1982* and its

associated regulations.

The Occupational Health and Safety Act 2000 and Occupational Health and Safety Regulation 2001 are the primary legislation dealing with health, safety and welfare at work across all industries in NSW. The CMHS Act and CMHS Regulation supplement the OHS Act and OHS Regulation and set out safety requirements specifically for the coal mining industry.

The new legislation clarifies and brings greater certainty to where duties are located through the nomination of a coal operator who is the employer with day-to-day control of the coal operation. The operator has all the duties of an employer under the OHS Act, including the general duty of care and the duty to consult employees.

The coal operator is responsible for managing health and safety at all locations at the coal operation and controlling the activities of contractors in respect to health and safety. This responsibility includes a duty to prepare a health and safety management system, a major hazard management plan and an emergency management system.

Coal mine contractors also have increased responsibilities. Employees' rights and obligations are more clearly defined.

Government committed to improving mine safety

The NSW Government has continued its commitment to improving safety in the State's mines with the commencement of the *Coal Mine Health and Safety Act* and *Regulation*.

"The new regulatory regime is based on the principles of risk management and consultation. It supports and encourages coal operators and contractors to plan to ensure injury doesn't occur and to have robust systems in place for this hazardous industry," NSW Minister for Mineral Resources Ian Macdonald said.

"The NSW coal mining industry has achieved improvements in safety in recent years and this new safety legislation will provide the platform for continued improvement."

Extension of OHS Regulation

As part of the reform of NSW mine safety legislation, it is proposed to apply the *Occupational Health and Safety Regulation 2001* (OHS Regulation) to mines and coal workplaces.

A Discussion Paper has been developed that is intended to assist NSW mining industry stakeholders understand the scope and nature of the OHS Regulation.

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Editors please note: any articles in this issue of NSW Mine Safety Update can be reproduced with suitable acknowledgement of their source.

Information provided in this newsletter to promote the enhancement of the safety culture of NSW mining and to alert a wide range of people to potential risks and to potential risk controls. Each site must manage its own risk according to its own hazard identification, risk assessment, control systems and monitoring process. Whereas all care is taken in producing NSW Mine Safety Update, NSW Department of Primary Industries accepts no responsibility for accuracy of information supplied. Inclusion of any product, service or company in NSW Mine Safety Update does not imply NSW Government or NSW Department of Primary Industries endorsement.

Support documentation assists understanding of legislation

The NSW Department of Primary Industries is assisting industry with the implementation of the new coal mining safety legislation.

A suite of support documents has been produced that provide advice on understanding and implementing the new legislation. They include:

- *Summary guides to legislation*
- *Guidance Notes and Technical References*
- *Links to legislation*
- *Audit tools*
- *Codes of practice*
- *Legislation implementation seminar presentation papers.*

The supporting documentation is available for free download from the NSW DPI Mine Safety website at www.dpi.nsw.gov.au/minerals/safety/legislation

Extension of OHS Regulation

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NSW DPI is seeking comments from mining industry stakeholders on the proposal to extend the OHS Regulation to mines and proposed administrative arrangements. All comments received will be carefully considered in developing necessary regulatory amendments and related administrative processes.

In particular, comments are sought on the following issues:

- practical problems in applying specific OHS Regulation provisions to mines
- inconsistencies between OHS Regulation and mining safety acts and regulations
- the applicability or otherwise of particular OHS Act approved codes of practice to mines and coal workplaces
- transitional arrangements
- issues which should be addressed in industry-wide information and training.

It should be noted that the NSW Government is not, as part of this public comment process, seeking comment on the appropriateness or otherwise of the provisions (content) of the OHS Regulation.

As the OHS Regulation applies to all of NSW industry, comment on the content of the OHS Regulation is beyond the scope of this public consultation exercise. Rather, the Discussion Paper invites public comment specifically on the issues highlighted above.

Submissions close Friday 9 March 2007.

The Discussion Paper can be downloaded from the NSW DPI Mine Safety website at www.dpi.nsw.gov.au/minerals/safety/legislation

Are you a contractor?

Do you currently receive Safety Alerts from NSW DPI? If not, register to receive them by sending your details, including name, phone and email to: safetyalert@dpi.nsw.gov.au

Progress on Wran Review recommendations

A major step forward has been taken on the implementation of the major recommendations of the Wran Mine Safety Review.

The NSW Department of Primary Industries is finalising business arrangements with consultant Shaw Idea Pty Ltd to undertake projects that address the major recommendations of the review. Shaw Idea Pty Ltd was selected by the Mine Safety Advisory Council from an open tender.

The major recommendations of the Wran Review cover the important and sensitive areas of:

- *independent assessment of the practice of production bonus payments and safety-based incentive schemes*
- *independent assessment of the hours worked and fatigue management in the mining industry*
- *examination of the apparent disconnect between some company management systems plans and the translation of such systems/plans to a working level (at the coal face)*
- *independent assessment of mechanisms for worker consultation, feedback and problem reporting of OHS problems at the mine site.*

Shaw Idea Pty Ltd will utilise some of Australia's foremost researchers in the subjects required with a background of knowledge, skills and experience in contemporary approaches to OHS management, fatigue and hours of work management and organisational review.

It is expected the projects will commence in February and take no more than six months to complete.

These projects will require significant interaction with the mining industry and the Mine Safety Advisory Council will be seeking the support of industry for this important research.

The three projects will require significant research, sampling strategies, surveys, data analysis and reporting including future inquiry industry workshops. The industry is encouraged to fully participate and assist in the projects so that truly representative and reliable information is provided as the basis for the resultant outcomes.

The outcomes from the research will be considered by the Mine Safety Advisory Council which will provide advice to the Minister.



Local check inspectors learn about role under new legislation

More than 80 CFMEU check inspectors from throughout NSW attended the annual Local Check Inspectors Conference at Penrith last September.

The conference was opened by the NSW Chief Inspector of Coal Mines Rob Regan.

The focus of the day was the role of check inspectors under the new coal mining legislation.

The *Coal Mine Health and Safety Act 2002 and Regulation 2006* have replaced the *Coal Mines Regulation Act 1982 and Regulations 1999*. The *CMHS Act and Regulation* supplement the *OHS Act 2000 and Regulation 2001*.

The morning session involved talks from NSW DPI engineers, directors and inspectorate staff.

In the afternoon delegates focused on inspections and auditing with an interactive session provided by an accredited trainer.

The new legislation:

- *Provides site check inspectors (and electrical check inspectors in relation to electrical equipment and associated issues and risks)*



NSW Chief Inspector of Coal Mines Rob Regan with Orla Trickey from the CFMEU's Bayswater Lodge at the Local Check Inspectors Conference.

with the same functions as those for OHS committees and OHS representatives under the OHS Act.

- *In the case of industry check inspectors, requires an industry check inspector (among other things) to be an authorised representative within the meaning of the section 76 of the OHS Act 2000 and therefore giving them the powers and functions of an authorised representative.*

- *Provides that a site check inspector and an electrical check inspector must be members of any OHS committee for that workplace*
- *Provides that the employee representative should be a site check inspector for that workplace.*

Further, the new coal mine safety legislation requires check inspectors to undertake a specified training course that will provide them with the competency to carry out the duties of a site check inspector as specified in the CMHS Act.

The course will comprise 10 training modules covering topics including the legislation, OHS management systems, risk assessment and incident response.

NSW DPI is currently developing the training course and further information about the course timetable will be communicated to the industry in the coming months.

The conference was considered a great success with delegates looking forward to receiving more information on the new legislation.

New Mine safety website is more user friendly

Visitors to the NSW DPI Mine Safety website can expect a new-look, more user friendly web experience. The new website was launched by Mine Safe Performance Director Rod Morrison on 31 October.

The Mine Safety website has undergone a major facelift to better reflect the needs of industry and to adopt the new style of the NSW DPI web interface. When you access the Mine Safety website you will be greeted with the following links:

- *About mine safety*
- *Legislation*
- *Mine safety framework*
- *Mine safety resources*
- *Mine safety results*
- *Mine safety initiatives*
- *Publications*
- *News and events*
- *Mine Safety Update newsletter*
- *Safety Alerts and Safety Bulletins*

The links will allow you to easily drill down into the relevant areas of



Mine Safety. The site also features an enhanced search facility that will enable web surfers to locate documents or information relating to mine safety.

Mine Safety website contains a wealth of information, resources and links aimed at improving the health and safety performance of the NSW mining industry. Safety alerts, electrical and mechanical engineering safety information, Mining Design Guidelines, inquiries and accident investigations, qualifications and examinations, safety performance statistics, legislation and legislative updates, safety tools and events are just some of the featured items.

The new Mine Safety web address is www.dpi.nsw.gov.au/minerals/safety

Warning about use of inappropriate refrigerants in mining equipment

NSW DPI has been made aware of reports that mining operators are being approached to purchase flammable refrigerants for use in air conditioning systems in mining vehicles and equipment.

The Australian Fluorocarbon Council has advised that the particular flammable refrigerants that are being marketed are a mixture of propane and isobutane (essentially LPG) and while having excellent properties as a refrigerant, their uses are very limited due to their flammability.

Attempts to sell flammable refrigerants to an underground mine operator in Queensland was prevented during 2006 through the intervention of the Chief Gas Examiner from the Queensland Department of Minerals and Energy. However further reports indicate these products are now being marketed to other mine operators across Australia.

Virtually all air conditioning and refrigeration equipment is designed around the use of non-flammable refrigerants as such equipment contains a large number of potential ignition sources and therefore the use of flammable refrigerants is inherently unsafe.

Only non-flammable refrigerants which comply with the equipment manufacturer's specification and recommendations should be used unless a competent person has made an assessment that the change does not present an increased risk to health or safety. This assessment should be in writing.

NSW DPI advises that operators should not use flammable refrigerants in mining vehicles or equipment.

For further information contact a NSW DPI Mine Safety officer

MDG 1031 Guideline on managing risk of airblast in underground mine available

Mining Design Guideline MDG 1031 Guideline for managing the risk of an airblast in an underground mine is now available from NSW DPI.

Following submissions from the NSW Metalliferous Industry Safety Advisory Committee and the NSW Coal Safety Advisory Committee, an eminent working group that was collaborating with Mine Safety Operations officers in Orange has completed the new guideline.

The guideline was prepared following a major accident at Northparkes Mine in November 1999 which killed four people. Airblasts have historically occurred in NSW in metal mines and a number of coal mines.

Copies can now be ordered via the NSW DPI website www.dpi.nsw.gov.au/minerals/safety/mine-safety-publications



Project leader Dr Phillip Sothard from the University of NSW with students using the virtual reality training facility.

Photo courtesy of UNSW/Maria Basaglia

Virtual reality approach to making coal mines safer

A first-of-its-kind virtual reality training facility that exposes coal miners to dangerous situations without risk has been unveiled at the Newcastle Mines Rescue Station (NMRS) at Argenton.

The principal aim of this technology is to allow coal mining personnel to operate and test equipment and systems without risk to their personal safety, damage to machinery or tying up mine site resources. The development of this system followed recognition by Coal Services and the Coal Services Health and Safety Trust (CSHST) that advancing virtual reality (VR) technologies could be used to enhance the training of the State's prospective and current mineworkers.

Realistic simulations can be undertaken to analyse an individual's current capabilities and to reinforce critical decisions and alternative actions with various consequences. This visual and audible interaction leads to increased employee awareness and understanding of the safe operating procedures within the coal mining environment.

The School of Mining Engineering at the University of New South Wales (UNSW) and The Coal Services Health and Safety Trust (CSHST) were involved in commissioning the enhanced virtual reality simulation capability for the coal mining industry.

The initial project began in 1999 with funding from CSHST, UNSW and later ACARP and was jointly led by Ron Land (CSPL), Professor Jim Galvin (UNSW) and Dr Phillip Stothard (UNSW).

STAGE 1:

A large flat screen with VR software used in the initial development has been operating at NMRS for the past year, with three first generation modules being developed:

- *Underground Rib Stability – development panel*
- *Self Escape from an Underground Longwall Coal Mine Panel*
- *Open Cut Truck Inspection*

Whilst the above modules were still in the early stages of development they were trialed on Underground Contractor Induction courses with positive results.

STAGE 2:

The next generation VR screen utilising a three-projector, spherical 120 degree screen was then installed at NMRS with work continuing on upgrading the training package's graphics by the UNSW project team. It utilises a spherical screen that wraps around the participant providing a feeling of immersion in the simulated mine model

without the unnatural use of shutter glasses and head sets.

The new VR simulator is designed to produce high fidelity, educationally sound simulations which are modular, competency based, cost effective and easy to maintain and update as technology advances. The system has been designed and developed to allow groups to navigate through a simulated mine environment including a longwall, a development panel and an open cut mine.

Further machine controls can be easily interfaced to the system which can utilise both Unix and Windows hardware and software.

The Self Escape and Rib Stability modules are now used on a daily basis for Underground Contractor Induction classes to reinforce the self escape systems and underground mine working conditions in underground coal mines. The total investment of \$1.7 million (to the end of stage 2) has started to demonstrate its worth with group interaction to the visual stimulus proving to be a valuable training tool that has continued to obtain positive participant feedback.

Some future modules and topics that have been considered for development include: isolating equipment in a panel – air/water/gate and box/transformer/miner/SC/etc; mines rescue teams coming into an emergency situation – reverse of self escape; workplace OHS legislation; first aid – underground or surface; job safety analysis – general or standard types of jobs; safe standing/operating zones around machines (SC/Miner, etc) – pedestrian safety; confined space training; spontaneous combustion; outburst; deputies' inspections – assessment and deputies' refreshers; safe materials handling – manual handling – underground; safe materials handling – manual handling – open cut; welcome to Mine X – hazard identification/virtual mine tour; interactive machine operations – machines from various manufacturers

The estimated cost of each module development is between \$30,000 and \$50,000. CSHST has allocated \$250,000 for the development of the next three to five new modules. The task of determining which modules/topics are to be undertaken has been given to the NSW Minerals Council. Development should commence soon.

With the development of CSPL facilities at Wollongong, it is planned to further expand the VR model to Southern Mines Rescue Station and eventually Hunter Valley and Western Mines Rescue Stations.

CSPL's priority is to fully utilise the system in the NSW coal mining industry *to enhance the training and safety of current and future mine employees.*

Good practice leads to positive OHS outcomes

A commitment to good electrical engineering practice would help deliver positive OHS outcomes, delegates at the 16th Annual NSW DPI Electrical Engineering Safety Seminar were told.

A record number of 235 attendees took part in the two-day seminar at Penrith Panthers during November.

The theme of good engineering practice was reaffirmed by a broad selection of papers presented by industry representatives.

One of the key subjects covered during the seminar was the new legislative framework for the NSW coal mining industry, which commenced in late December. Presentations covered the Occupational Health and Safety Act 2000, the principal legislation regulating the mining industry, the Coal Mine Health and Safety Act 2002 and the Coal Mine Health and Safety Regulation 2006.

Delegates heard that Electrical Engineering Management Plans were a key part of the new mine safety legislative framework. They should bring together all aspects of electrical engineering safety. Codes of practice under the new coal mining legislation were also discussed.

Managing the risk of arc blast, the practical application of functional safety and motor failure modes were addressed.

Attendees were also taken through the significant logistical challenge of walking a dragline through a Transgrid easement.

An update on the work of the Remote Control Equipment Advisory



Marcus Punch from Hatch Engineering delivers his paper on assigning and designing to an appropriate safety integrity level at the Electrical Engineering Safety Seminar.

Group was provided, as were recent changes to Australian Standards. Other presentations focused on electrical installation upgrades, a case study of a pathway to compliance, the use of lighting equipment in mines and the role of communicating safety information to the workforce.

CDs of seminar presentations are available by emailing Karen Feeney at NSW DPI at karen.feeney@dpi.nsw.gov.au

Diesel exhaust initiative manages exposure to health risk

BHP Billiton Illawarra Coal has introduced an initiative aimed at mitigating the potential health risks associated with its mining operations.

The Diesel Exhaust Initiative aims to manage employee exposure to diesel exhaust at the company's four underground coal mines and two coal preparation plants.

Studies have shown that exposure to diesel exhaust can cause serious health effects and Illawarra Coal undertook extensive research in the development of a strategy to help reduce diesel particulate levels within their mines.

The research found that there is no one single solution, rather a series of measures can be used to minimise emissions and

decrease exposure to diesel particulate.

These include introducing improved fuels, improving mine ventilation, better engine maintenance, better operating techniques and exhaust filters.

The Diesel Exhaust Initiative has become an important focus in BHP Billiton Illawarra Coal's health and safety program and is now incorporated as part of the company's zero harm program.

The health and safety program reinforces every day expected behaviours and focuses on the systematic management of risk to achieve zero harm. It includes:

- Recruiting people with a high safety commitment

- Behavioural safety observations that ensure every team contacts or is involved with another person on site to observe and discuss safety in the workplace
- Before starting work, the hazards and risks are assessed via a 'task analysis' to reduce harm to people, the environment and equipment
- An Annual Performance Improvement Plan that identifies opportunity and measures improvement
- A Management System that incorporates risk management principles.

Further information can be found at www.illawarracoal.bhpbilliton.com

RCEAG helps develop standard on remote-controlled equipment

The Remote Controlled Equipment Advisory Group (RCEAG) has provided input into the new Australian Standard AS 4240 (design and manufacture of radio remote-controlled equipment).

RCEAG comprises representatives from industry, equipment manufacturers, unions and NSW DPI from the coal and metalliferous sectors.

The group has also developed the new MDG 5002 (operation and maintenance of remote-controlled equipment for metalliferous) guidelines. This will be followed in the first quarter of this year by a new guideline for coal. These guidelines will be superseded by Standards Australia and will become parts 2 and 3 of AS 4240.

Following a fatality at Mount Thorley involving a radio remote-controlled tyre handler, the NSW coroner made recommendations that NSW DPI request that Standards Australia develop a standard to manage radio remote-controlled equipment used at surface mines.

NSW DPI will form a new working group to develop the new guideline. Anyone interested in joining the working group should



RCEAG members Rudie Boshoff (Joy), Steve Jones (DBT), Dave Howard (Joy), Trevor Schram (CFMEU), Robert Jay (NSW DPI), Steve Bentham (NSW DPI), Ray Coppins (Centennial Newstan), Geoff Stapylton (North Parkes) and John Chapman (Xstrata Ulan).

contact Steve Bentham, Inspector of Electrical Engineering, NSW DPI on 02 4931 6653 or email steve.bentham@dpi.nsw.gov.au

Seminar addresses tyre fatalities, loading crane safety



Greg Clements from Clemeco Mining Services discusses some of the safety issues during the Mechanical Engineering Safety Awareness Day at Singleton.

The findings from coronial inquests into tyre changing fatalities in NSW and Queensland was one of the topics at a Mechanical Engineering Safety Awareness Day at Singleton during September.

Vehicle loading crane safety and compliance with Australian Standards, incidents relating to poorly maintained safety critical systems and a rise in welding electrical shocks were also discussed.

The findings and recommendations from the tyre changing fatalities coronial inquests, along with the cause and circumstance of these fatalities, were presented in conjunction with video simulations of each fatality.

The vehicle loading cranes segment consisted of safe operating practices, demarcation of hazardous zones for the crane operator and crane design and installation compliance with Australian Standards AS 1418 part 11 and AS2550 part 11.

The safety critical systems presentation was a follow-up to Safety Alert SA06-13. It highlighted essential safety critical systems, the training and competence of operators and maintenance

personnel and the responsibilities of equipment designers, manufacturers and suppliers.

A welding electrical shocks presentation covered the dangers of electricity, electric shock statistics, good and bad work practices and equipment, voltage reduction devices and treatment for electric shock.

Presentations were also made by Greg Clements of Clemeco Mining Services Pty Ltd, Greg Allan and Peter Berkholtz of Capability Resources and NSW DPI Mine Safety Officer Mechanical Matt Willoughby.

The day was very successful with almost 100 employees and representatives from mines and contracting companies attending.

The large attendance of this number of employees is testimony to the importance that management place on safety, and the safety issues covered by the seminar agenda.

Feedback on the safety issues received by NSW DPI has been positive.

For further information contact Matt Willoughby from NSW DPI on 02 6572 1899

Miners' teamwork helps reduce risk of serious injury at quarry

Miners at Hanson's Kulnura Quarry have been instrumental in the introduction of a new safety procedure aimed at reducing the potential for serious accidents at the quarry's bench face.

A significant safety concern facing all drill and blast-type operations is the risk associated with the height of bench faces and the potential for someone to fall over the face. Each blast cycle involves numerous people working near the edge of the face where there are numerous trip hazards present.

According to Hanson, the team at Kulnura wanted to reduce the potential risk and worked together to find an appropriate safety system that would improve safety for miners at the site. The result is a new safety barrier system.

The danger associated with a lack of physical barriers at quarries was highlighted in 2003 when a contract driller at a NSW mine site fell 9.5 metres backwards over a bench. He fell feet first onto fine material, which broke his fall, but he sustained foot injuries and lacerations to his upper body.

The driller had been fixing rear brake lights on his vehicle which was parked about two metres from the active edge of the bench. As he stepped backwards to check the completed task he fell backwards over the bench face and onto the bench below. The subsequent Safety Alert issued by NSW DPI recommended that barriers or identifying markers for no go zones be placed along all exposed active edges where work was undertaken.

The new safety barrier that Hanson has introduced addresses this recommendation. Prior to drilling the shot holes, a drill operator will



Specially fabricated lightweight posts form a barrier near the bench face at Kulnura Quarry, reducing the risk of a fall.

drill a series of holes five metres apart approximately one metre from the bench face. Specially fabricated lightweight posts are placed in each hole and straps are then attached between each post and tightened to form a barrier along the face of the shot.

The barrier that is formed is a visual barrier to alert all workers and contractors that they are close to the edge of a face as well as establishing a physical barrier between workers and the bench face. This helps prevent someone falling if they were to slip or trip as they carry out their duties.

Prior to blasting, the barrier is removed and can then be transported to the next blast site, allowing for a cost-effective yet consistent safety procedure across the quarry blast sites.

Kulnura trainee manager Charlie Stoneman said the safety risk was common in all drill and blast operations and the team at Kulnura had demonstrated that working together in a team can result in finding solutions to potentially dangerous situations.

Developing a safety management plan

More than 270 participants have attended a series of workshops that assist operators of small mines and quarries improve safety at mines.

A joint initiative of the NSW DPI and the Institute of Quarrying Australia, the workshops have assisted production managers, mine workers, supervisors, maintenance people, contractors and plant operators from 162 operations across NSW to develop, review, implement and improve their Safety Management Plans.

There are two types of workshop. The first workshop - Introduction to Safety Management - assists small quarrying and extractive mine operators meet their legal obligations to developed and prepare a Safety Management Plan. The workshop introduces operators to the NSW DPI's Small Mines Safety Management Kit. The kit is a two-part guide that provides information about programs that may make up a safety management plan and 'do-it-yourself' templates that form the basis of a mine safety management plan. As part of this project the kit has been updated and revised and a second

addition recently published.

The second workshop - Refining Your Safety Management Plan - allows operators to gain additional insight into the critical components of the implementation of a Safety Management Plan. It helps meet today's increased levels of due diligence and duty of care in making mine sites safe and systematically managing risk. Particular emphasis is given to is your safety management plan working; is it easy to use and easy to communicate; are you measuring progress and using appropriate standards; identifying and accomplishing improvements; and what to do with contractors. Participants will receive some useful safety management tools including a copy of the Risk Management Pocket Guide. Workshops will be held at various locations throughout the State this year.

Details from Institute of Quarrying Australia (education@quarry.com.au) or NSW DPI (www.dpi.nsw.gov.au/minerals/safety/resources)

Small Mines Safety Management Kit

NSW DPI has recently published a revised edition of the Small Mines Safety Management Kit following a review by NSW DPI Mine Safety Operations and the Quarrying Institute of Australia.

The kit is a two-part guide that outlines information to assist small mine and quarry operators develop a Mine Safety Management Plan and provides 'do-it-yourself' templates that can form the basis of a plan.

The two publications are available through the Customer Services Counter at the Maitland Office of DPI by phoning 02 4931 6666 or can be ordered on line from www.dpi.nsw.gov.au/minerals/safety/mine-safety-publications

Industry should embrace MDG 35 as guideline for bolting equipment

The coal mining industry is being urged to review and act on the revised *Mining Design Guideline 35 – Guideline for Bolting and Drilling Equipment in Mines - Part 1: Bolting Equipment in Underground Coal Mines*.

During the past several years there has been an increase in the number of injuries involving drilling and bolting equipment in mines. Since the transition from timber roof supports to roof bolts, rib bolts, mesh and W-straps the use of bolting equipment in underground coal mines has increased markedly. Between 1999 and 2004 incident data from Coal Services Pty Ltd identifies 347 injuries relating to roof or rib bolting equipment. Injuries have ranged from strains through to severe entanglements.

MDG 35 was first released in draft format in 1996 with the intent of providing a guideline for a mobile bolter. The guideline was prescriptive and not in accordance with the new direction being taken with Mining Design Guidelines. Technology had moved on and there were sections of the guideline that were no longer relevant. With the increasing demand for coal as a resource more equipment was being used, including a significant number of older machines with equipment that did not comply with current community standards.

A review committee was formed in 2003 at the request of the NSW DPI which comprised representatives from NSW DPI, the CFMEU, manufacturers including Hydramatic Engineering Pty Ltd, DBT, Voest Apline and Joy, representatives of coal producers Xstrata, Centennial and BHP, as well as specialists in the fields of ergonomics and strata control.

The scope of *MDG 35* was reviewed by the committee and revised to specifically cover production-oriented mobile bolting equipment such as bolter miners and mobile bolters and was released for industry comment in October 2005. The guideline has been further revised to include equipment such as pneumatically powered hand bolters and the second draft of *MDG 35* is currently available for industry comment.

NSW DPI Mine Safety Officer Paul Drain used the recent Ergonomics of Underground Coal Mining seminar to convey to industry the need to take the revision to *MDG 35* seriously as there are some who believe that as it is currently in draft format it is not a current and relevant community standard. He said *MDG 35* was more than just about roof bolter controls, it is about the system, the workplace and the OHS of the operators and maintenance personnel.

The *Guideline for Bolting & Drilling Equipment in Mines - Part 1 Bolting Equipment in Underground Coal Mines* has been compiled to assist in formulating a management system approach for the design and safe use of bolting equipment in underground coal mines. It should be used when assessing the safety aspects of bolting equipment in underground coal mines.

Further information can be found at www.dpi.nsw.gov.au/minerals/safety/resources/mechanical/topical-issues



Lightning Ridge Opal Miners Safety Awareness Course team James McMahon, Janet Town, NSW Minister for Primary Industries Hon. Ian Macdonald, David Howell, NSW DPI Director-General Barry Buffier and Warwick Schofield celebrate the presentation of the Staff Achievement Award.

Safety Awareness Course team receives achievement award

The success of the Lightning Ridge Opal Mine Safety Awareness Course has been recognised with the awarding of a NSW DPI 2006 Staff Achievement Award.

The team, comprising NSW DPI Mine Safety Officers David Howell, Janet Town, Jim McMahon and Warwick Schofield, were honoured for their outstanding contribution in project excellence, customer service, sustained performance and innovation.

Based at Lightning Ridge, the team runs the Opal Mine Safety Awareness Course, aimed at improving safety, eliminating fatalities and reducing injuries, and Mine Operators Workshops, where attendees are given assistance preparing safety management plans and safe work procedures for their mines.

Almost 6000 people have attended the Safety Awareness Course in the 13 years it has been running and almost 1500 people have taken part in the more recently developed Mine Operators Workshop.

The courses have helped reduce the number of opal mining-related deaths from an average of one death per year to no fatalities for 10 years and injuries related to opal mining have also been significantly reduced.

As a result of their success, both courses have been used as the basis for the development of the NSW DPI Small Mines Campaign.

NSW DPI Director-General Barry Buffier said recipients of the Staff Achievement Awards reflected the good work of staff throughout the Department who went about their job each day with a high degree of professionalism and passion.

For more information on the Safety Awareness Course visit www.dpi.nsw.gov.au/minerals/safety/resources/training-and-workshops

SA06-17: Failure of scaffolding

A worker sustained two dislocated shoulders and a fracture to the shoulder when the decking of scaffolding he was working on collapsed, causing him to fall 3.5m onto a moving conveyor belt. Scaffolding had been set up over a conveyor belt for the purpose of installing megabolts. The scaffolding was set up to span the conveyor belt and was 3.1m in width. The 3.1m span necessitated the use of extendable transom trusses which require ledgers to be used as spreader bars to prevent the trusses bowing sideways and the decking planks dropping through. The scaffolding designed required that three ledgers be installed as spreader bars in each bay of the scaffolding to ensure rigidity of the structure. There were no such ledgers in place in one bay of the scaffolding. The absence of those ledgers allowed the transom trusses to bow outward resulting in the steel deck planks supporting the worker to slip from the transom trusses. The steel deck planks and the worker fell through the scaffolding onto the moving conveyor. The worker was carried 60m before the conveyor was stopped by his workmates. Ensure the Contractor Management Risk Mitigation Measures are applied to sub-contractors; ensure the Standards of Mechanical Engineering Practice (commissioning) are utilised for all equipment on site; ensure that construction is checked for compliance against design; use a checklist (such as that provided in AS/NZS 4576:1995 – Guidelines for Scaffolding) for the handover certification from the scaffolder to all end users; and when using non-rigid transom trusses take extra care to ensure they are effectively prevented from sideways movement.

SA06-18: Longwall staple failures

There have been a number of recent incidents of failed staple lock fittings with respect to hydraulic connectors on longwall equipment. Personnel have been sprayed with fluid under pressure when staple lock fittings have failed or migrated out of the fitting due to a variety of failure modes. Fluid injection injury and others (such as bruising and abrasions) have resulted from these failures. Visual investigations of the longwall equipment have failed to identify any broken staples. The investigation is continuing to determine the causal factors in the incidents. General staple failure modes include, but are not limited to, broken or cracked staples, physical abuse of staples, wear, fatigue exceeding service life, overload, wrong specification for staple material and dimensions, poor quality or corrosion. Staples have the potential to fall out of position due to vibration, lack of retention, bending and twisting movements, incorrect installation or incorrect staples being used in fittings. An audit of staples in high-risk areas on longwall equipment is recommended to detect damaged staples or staples that have migrated out of position. Replace a sample of the staples in the high-risk areas and have them inspected and tested for integrity. Staples should be correctly positioned and positively retained. Periodically audit the face for staple condition and retention and appreciate that staples have a limited service life. Provide suitable levels of safety where the personnel usually operate and consider a hard barrier (guard/cover) between the high-risk areas and where the personnel operate. Only use compatible staples and fittings, don't mix and match different types and manufacturers' staples and fittings. Treat all hydraulic components as having stored pressure; always isolate the hydraulic supply and lock the isolation valve into the closed position; depressurise the hydraulic system; check the hydraulic pressure has been dissipated; check that hydraulic pressure has been dissipated by two independent means; and confirm isolation and depressurisation have been successful.

SA06-19: Operator's hands injured in conveyor at quarry

The operator of a crushing and screening plant at a quarry sustained major hand injuries and amputation of two-and-a-half fingers when his hands were caught under the head drum of a moving conveyor. The operator attempted to free a blockage in a transfer chute with a steel bar while the plant was still running. He climbed up an aluminium ladder to the chute and, while barring the material in the chute, miscued and jammed the bar in the gap between the head drum of the conveyor feeding the chute and the top of the chute. The conveyor pulled the bar and the operator's gloves into the gap. He was left standing on the ladder with his hands caught under the revolving conveyor and all he could do was shake his head to attract attention as his voice couldn't be heard above the noise of the plant. He was finally noticed by the operator of a passing front end loader who was able to initiate his rescue. The injured person is undergoing extensive operations to both hands. The incident is currently under investigation by NSW DPI officers. It is recommended that operators ensure all employees have been trained within the past 12 months in the need to isolate machinery before attempting to carry out any work in the vicinity of moving machinery. Retrain employees without such recent isolation training. Review isolation procedures for crushing and screening plants to ensure that safe procedures to address clearance of blockages exist and the requirement to stop plant and isolate it where people must work on it is clearly stated. Direct supervisors to regularly observe and enforce compliance with isolation procedures and apply risk management to crushing and screening plant design to identify and eliminate blockages where possible by engineering solutions.

SA06-20: Working at heights

An excavator operator slipped and fell approximately 3.5 metres to the ground while undoing a hydraulic fitting on the top of the excavator boom. He sustained serious injuries to his left leg and right pelvis. The operator was in the process of repairing a leaking hydraulic fitting on the excavator boom. During the process of undoing a hydraulic coupling on the boom, the operator slipped and fell approximately 3.5 metres to the ground. Investigations are continuing but contributing factors include, but were not limited to, the following:

- *The operator was not wearing fall protection and did not have a fit-for-purpose work platform from which to work*
- *No JSA or risk assessment was undertaken prior to commencing the repair work*
- *The boom of the excavator could have been lowered to provide a safe work location, eliminating the need to climb up the boom*
- *It appears the hydraulic pipe running up the boom may not have needed to be removed to repair the oil leak.*

All mine management should be aware of the duty of care under the *Occupational Health and Safety Act 2000*. Mine management must implement safe systems for work at heights and instruct and train employees in these safe work systems. Enforce these safe systems through supervision and discipline. A number of similar incidents have occurred recently where persons have been seriously injured while working at heights. Recent Safety Alerts addressing these incidents include:

1. SA06-04 Working at heights
2. SA06-02 Working at heights – prevention of falls and fall arrest
3. SA04-25 Fall from elevated work platform

4. SA04-20 Fall from truck when tarping
5. SA04-16 Serious spinal injury

From these examples there appears to be a culture at mine sites, both large and small, where persons working at heights do not systematically identify and control the hazards associated with working at heights before commencing work activities. A culture of "it won't happen to me" appears to exist. If working at heights is identified, effective controls to prevent falls must be implemented prior to starting the job.

Safety Alerts and Safety Bulletins

Safety Alerts are an important communication tool between the NSW Department of Primary Industries and the NSW mining industry, suppliers, unions and industry organisations.

NSW DPI issues Safety Alerts following the occurrence of an event such as a fatal accident, dangerous occurrence or incident which is considered to be of significance to the industry, with the aim of preventing a similar occurrence.

Safety Bulletins are also issued by NSW DPI. Like Safety Alerts, they contain information relating to safety issues but are not directly linked to a specific incident.

Safety Alerts and Safety Bulletins can be accessed on the NSW DPI website at minerals.nsw.gov.au/safety/alerts

If you would like to receive an email copy of Safety Alerts and Safety Bulletins, email your contact details to safetyalert@dpi.nsw.gov.au

Guideline for remote-controlled equipment in metalliferous mines

Metalliferous mines are being encouraged to obtain a copy of the new metalliferous mines version of *MDG 5002 - Guidelines for the use of remote-controlled mining equipment*, which is now available through the NSW DPI.

The guideline has been developed following extensive consultation with the metalliferous mine industry including three workshops that were used to identify and assess the main risks associated with the use of remote-controlled mining equipment and to consider controls to eliminate or minimise the identified risks. Feedback from stakeholders was also sought on the draft guidelines. The main risks and main risk considerations, along with additional guidance material, are contained in the new guidelines. Mines are being encouraged to obtain a copy of *MDG 5002* and audit their current remote control systems against the new guidelines as part of a continuous improvement process.

A coal version of the guideline is currently being developed through the Remote Control Equipment Advisory Group.

Copies can now be ordered via the NSW DPI website at www.dpi.nsw.gov.au/minerals/safety/publications/mine-safety-publications



Wosthoff precision gas mixing pumps used to prepare standard test gases at the Mine Safety Technology Centre.

Mine Safety Technology Centre tests gas monitoring equipment for mines

Gas monitor compliance testing and calibration are just two of the important services that are provided by the Mine Safety Technology Centre at Thornton.

Before a gas monitor is permitted to be used in an underground coal mine, its performance needs to be assessed. The monitors need to comply with relevant sections of Australian Standards AS/NZ 61779 Electrical Apparatus for the Detection of Flammable Gas and AS/NZS4641 Electrical Apparatus for detection of oxygen and other gases and vapours at toxic levels which are a battery of tests that usually take about two months to complete. These tests determine the accuracy and response times of the monitor as well as the effect of different conditions, such as pressure, temperature and vibration, on its performance.

The centre has more than 4000 metres of internal gas pipe work supplying over eight different industrial and scientific grade gases to its work areas. These gases can then be blended and mixed in proportions from percentage concentrations down to parts per million for calibration and test work using Wosthoff precision gas mixing pumps. The centre also has a range of certified gas standards available for calibration of gas chromatographs for the analysis of mine atmospheres. Two mobile gas testing laboratories are available for on-site gas analysis and diesel emissions testing. In 2007 the Centre will also have capability for the testing of diesel particulate matter (DPM).

Contact MSTC Manager Geoff Slater on 02 4924 4001

ILO code of practice for coal mines

Full details of the International Labour Organisation's new international code of practice on Safety and Health in Underground Coal Mines are now available on the ILO website.

The new code replaces the existing 20-year-old code to reflect the considerable changes in the coal mining industry and the workforce during the past two decades. While not intended to replace national laws, regulations or standards, the code of practice sets out a framework that specifies the role of authorities, employers, workers and their organisation. It also outlines methods for identifying hazards, preventing and minimising risks and specific provisions for safe underground mining operations.

The code can be accessed at www.ilo.org/public/english/standards/relm/gb/docs/gb297/pdf/meshcm-9.pdf

CALENDAR OF EVENTS

Mine Operators Workshops 2007, Workshops held regularly, Morilla Street, Lightning Ridge, contact Janet Town, DPI, 02 6829 0678

Mine Safety Awareness Course, Courses held regularly, Lightning Ridge Bowling Club, contact Janet Town, DPI, 02 6829 0678

Hunter Valley Underground Mine Mechanical Engineers Meeting, next meeting at Mine Safety Technology Centre, Thornton on February 14, quarterly meeting in June, additional dates TBA, Paul Drain, Mine Safety Officer, DPI (02) 4931 6652

Hunter Valley Opencut Mine Mechanical Engineers Meeting, Mine Safety Technology Centre, February 15, quarterly meetings - venues and dates TBA, Matt Willoughby, Mine Safety Officer DPI (02) 6572 1899

Southern & Western Coalfields Mechanical Engineers meeting, next meeting February, location and dates for other quarterly meetings TBA, Graham Johnston, Mine Safety Officer, DPI (02) 4222 8307 or Wally Koppe, Inspector Mechanical Engineering, DPI (02) 4227 1699

Manufacturers Safety Seminar, late March, location TBA, Gordon Jervis, Snr Inspector of Mechanical Engineering (02) 4931 6642

NSW DPI Local Check Inspectors Conference, September 2007, Penrith Panthers

Introduction to Safety Management Workshop for small mines and quarries, at various venues and dates throughout NSW, see NSW DPI website www.dpi.nsw.gov.au/minerals/safety/resources/training-and-workshops for further details or contact Institute of Quarrying Australia (education@quarry.com.au)

Refining Your Safety Management Workshop for small mines and quarries, at various venues and dates throughout NSW, see NSW DPI website www.dpi.nsw.gov.au/minerals/safety/resources/training-and-workshops for further details or contact Institute of Quarrying Australia (education@quarry.com.au)

Mechanical Safety Presentations to the Extractive Industries, Closed workshop 'onsite'. Bookings — generally workshops are not open to broader industry however if you would like more information please contact DPI. Held periodically throughout the year, as required Angus McDouall, Inspector Mines, DPI (02) 6776 0309. Paul Drain, Mine Safety Officer, DPI (02) 4931 6652 (Nth Coast) Matt Willoughby, Mine Safety Officer, DPI (02) 6572 1899 (Mid North Coast)

Hunter Valley Electrical Engineers meeting, Held bi-monthly on the first Friday of the month — venues change for each meeting Contact John Waudby Senior Inspector of Electrical Engineering (02) 4931 6641 or 0418 295 656

Southern and Western Coalfields Electrical Engineers meeting, quarterly (limited numbers). TestSafe, Londonderry, Bob Kennedy, Inspector of Electrical Engineering (02) 4227 1699 or 0417 226 362

NSW DPI 17th Annual Mechanical Engineering Safety Seminar, 8 and 9 August 2007, Penrith Panthers Gordon Jervis, Snr Inspector of Mechanical Engineering (02) 4931 6642

HIESN (Hunter Industry Electrical Safety Network) meeting, Meets the first Thursday of each month — venues change. Peter Henderson, Tomago Aluminium 0408 683 544

Western & Central Western NSW (Cobar, Broken Hill, Orange) Mine Electrical Engineer meeting, Venue & date TBA Stan Maginnis, Inspector of Electrical Engineering, (02) 6351 3052 or 0417 223 875

Remote Control Equipment Advisory Group meeting, Invite required, see contact for more details. Meets quarterly John Waudby, Senior Inspector of Electrical Engineering, (02) 4931 6641 or 0418 295 656

MEMMES (Mining Electrical and Mining Mechanical Engineers Society of the IEAust) Meeting, Monthly, Meeting Contact: Peter Whip, President 0427 425 798

For more information go to: www.dpi.nsw.gov.au/minerals/safety/resources

NSW DPI — Mineral Resources Offices

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University of New England, Armidale NSW 2350
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Broken Hill NSW 2880
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Phone: (02) 6829 0678, Fax: (02) 6829 0825

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947–953 Londonderry Road,
Londonderry NSW 2753
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After hours – emergency only – (02) 6360 5343



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