



# NSW mine safety update

Promoting safety in the NSW mining industry

## Minister launches website at CEO review event

The Minister for Primary Industries, Steve Whan, launched the new Mine Safety Advisory Council (MSAC) website at a CEO summit review event held in Sydney in November.



Minister for Primary Industries, Steve Whan, launched the new MSAC website

Industry leaders came together to review the vision and strategic direction for attaining a world-leading OHS culture, as set out at the 2008 CEO summit.

There was agreement at the review event that both the vision and strategic direction were still relevant and appropriate.

Delegates agreed that significant progress had been made by MSAC in the past two years.

The launch of the website gives the industry a portal to both MSAC and mining and extractives industry health and safety resources.

Many publications including the management of fatigue, health and musculoskeletal disorders are available to download from the site.

The site also provides links to other resource libraries and is designed as a one-stop-shop for health and safety information.

Visitors can use the site to access information from all of MSAC's stakeholders, including Industry & Investment NSW, NSW Minerals Council, CFMEU Mining & Energy division, AWU and CCAA.



Visit the new website at: [www.nswminesafety.com.au](http://www.nswminesafety.com.au)

## Prevention is key at 20<sup>th</sup> Electrical Engineering Safety Seminar



Shane Gillette, Adam Smith, Barry Alley and other delegates enjoying the electrical engineering safety seminar

With a theme of 'prevention is better than cure' the I&I NSW 20<sup>th</sup> Electrical Engineering Safety Seminar attracted over 350 delegates to Sydney in early November. People, automation & robotics, case studies and legislation were all part of the mix delivered over two days.

Keeping people safe by identifying hazards before they cause injury was the prime focus of the seminar. The key to identifying those hazards is: using the lessons of the past while looking to the future.

Delegates heard that with the emergence of new technologies and growth in the size and power of plant, unknown hazards may be introduced to the workplace. Diligence and product knowledge are both required to ensure that all hazards are recognised and assessed. Knowing what a machine or system can't do is equally important to knowing what one can do.

Safer bin loading facilities, arc flash containment, explosion risk zones, proximity detection, hot work in a hazardous zone and preparation for future electrical systems

were some of the topics covered along with upcoming legislative changes.

The Senior Inspector of Electrical Engineering at Industry & Investment NSW, John Waudby, said that the electrical engineering safety management plan was the place where all the details of electrical systems should be contained. He also urged delegates to get the information out of their heads and into the safety management plan.

A number of the presentations are available on the I&I NSW website at:

[www.dpi.nsw.gov.au/minerals/safety/publications/seminar-presentations](http://www.dpi.nsw.gov.au/minerals/safety/publications/seminar-presentations)

The 21<sup>st</sup> Electrical Engineering Safety Seminar will be held on 9 & 10 November 2011 at WaterView Convention Centre, Sydney Olympic Park, Homebush.

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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 is 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, Industry and Investment NSW 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 Industry and Investment NSW endorsement.

## EMC testing at MSTC

New apparatus to test equipment for electromagnetic compatibility (EMC) was recently commissioned by the I&I NSW Mine Safety Technology Centre.

EMC is a new field of growing importance for the safe operation of mines. The use of electronic components such as computers, data acquisition systems and radio remote control in underground mines has been steadily increasing. Much of this technology is used to ensure the safety of mine workers. However, it can be susceptible to malfunctions caused by electromagnetic interference (EMI) from other electrical equipment.

Sources of EMI are increasing with the introduction and increased use of modern electrical drive systems for the control of machinery, in particular, variable voltage and variable frequency motors and drive systems (VVVF).

There have already been a number of incidents attributed to EMC problems. Some examples are: modern earth continuity detection systems malfunctioning due to EMI from VVVF drives; ventilation fan interlock systems failing due to radio EMI; and loss of winder control due to radio EMI. It is worth noting that earth continuity protection and ventilation fan interlocks are important risk controls in preventing fatalities.

The importance of ensuring that modern electrical equipment can function safely has been recognised in the development of Australian Standards. Specific requirements for EMC testing are being included in Australian Standards for electrical equipment used in mines. These standards include:

- AS/NZS2081 series – Electrical protection devices for mines and quarries
- AS/NZS4240 – Remote controls for mining equipment
- AS/NZS4871 – Electrical equipment for mines and quarries

The equipment is presently being used to test gas monitors but can test a range of equipment.

For further details please contact Mohamed Abdelkrimi, Senior Engineer Electrical Assessor, I&I NSW on 02 4924 4009.



*I&I NSW staff with new EMC testing equipment at the Mine Safety Technology Centre*

## Vale Pike River Miners

The Mine Safety branch of Industry & Investment NSW offers its heartfelt condolences to the families of the 29 miners who lost their lives in the recent tragedy at the Pike River coal mine in New Zealand.

## “Leading” the way in hazard management

As we aim to meet the challenge of becoming a world leading OHS culture, it is important that we are able to adopt more effective means to control and assess the extent of hazards in the mining environment before they impact on the workforce. The identification and use of both lead and (to a lesser extent) lag health indicators are a useful means to achieve this.

There are a number of difficulties with this approach. The first lays in the fact that not all organisations are mature enough in their management journey of health and safety issues to collect these lead indicators. This has led a number of organisations to an over-reliance on lag indicators to tell them where they went wrong. Lost time injuries or LTIs are a popular example of lag indicators and while of some use, indicators of this type cannot give us the whole picture. Further, it is also clear that organisations are not all resourced adequately to be able to identify, let alone implement a range of leading health indicators. Lead indicators are used to drive behaviours and contribute to building a safety culture and so are valuable to any organisation wishing to get on the ‘front foot’ in the battle to reduce occupational injuries and disease. Yet despite this, the use of lag indicators rather than lead indicators has so far occupied our approach.

This is most likely because lead indicators take considerably more time, effort and analysis than lag indicators. However lead indicators provide us with greater opportunities to proactively manage our activities.

Finally, there is still considerable misunderstanding surrounding health management and this in turn perpetuates resistance to tackling health hazards with the same vigour and efficacy as safety hazards.

A proposed approach is a personal exposure monitoring program of similar exposure groups or SEGs that aims to identify lead health indicator information before overexposure of workers occurs.

An example of a lead health indicator could be to identify how often an SEG reached 50% of their occupational exposure limit (OEL) before the halfway point (50%) of their shift. But how can this type of leading health indicator help us?

With such an indicator in place, we’re able to set targets to the amount of times we exceed 50% of the OEL before the completion of half the shift length. In this way, real time data of potential hazardous exposure can be used to provide management with the evidence to effectively drive a reduction in worker exposures. It also provides a means by which an employer can assess the effectiveness of existing control measures.

Other possible lead measures could include both activity and outcome based indicators. For example:

- 100% of employees are under the Noise, Dust or DP OEL
- % of employees that remain under 95% of the Noise, Dust or DP OEL by the end of their shift

It doesn’t matter what actual percentage is set (either as an amount of employees or as the OEL) by the organisation, suffice to say that it reflects the risk they have in their own mine. The key here is the leading nature of the health measure.

Leading indicators are good management practice and so should form the basis of our monitoring and evaluation activities. The aim of the examples provided is simply to generate discussion and get stakeholders thinking about the issue in the hope that such engagement will ultimately lead to a greater focus on lead indicators and to better health management.

## IAU officer receives bursary award

Stacie Kendall, Mining Industry Education Officer from the Industry Assistance Unit at I&I NSW received a student bursary to attend the Australian Institute of Occupational Hygienists 27<sup>th</sup> annual conference held in Canberra recently.

Delegates from various industries and countries attended the conference to explore new and emerging issues in occupational hygiene.

“Looking at how other industries are dealing with health issues both new and old has greatly benefited my work with the Industry Assistance Unit” Stacie said.

Stacie holds a Bachelor of Training and Development and is a science student at the University of Western Sydney. She received her award for submitting a paper on how the conference was not only relevant to her studies but significant to her current work in mine safety.

The Industry Assistance Unit has developed industry briefings and workshops, fact sheets and toolkits to support a suite of health management guides released for industry by the Mine Safety Advisory Council.



*The Industry Assistance Unit: (L-R) Tony Anthony, Heather Jackson, Stacie Kendall and Julie Pengelly*

Further information is available on the I&I NSW website at :

**[www.dpi.nsw.gov.au/minerals/safety/resources/training-and-workshops](http://www.dpi.nsw.gov.au/minerals/safety/resources/training-and-workshops)**

## Check inspectors focus on the future

With the advent of new OHS and mining legislation high on the agenda, local check inspectors gathered to hear about their future roles and other issues at the annual Check Inspectors Conference in September.

Presentations on the progress of the national OHS harmonisation process and the national mine safety framework sought to clarify concerns for the ninety seven check inspectors in attendance.

Andrew Vickers, General Vice President of the CFMEU assured check inspectors that while the legislation may be altered there was no intention to change the powers or authority of check inspectors.

Delegates were told that coal mine safety would not suffer as a result of the harmonisation process. Other topics for the day included competence, electrical safety and mental health.

An update on electrical engineering safety by I&I NSW Senior Electrical Engineer, Steve Bentham, showed that when it comes to electric shock the mining and extractives industry rates very well compared to other industries.

Check inspectors were reminded of the key role they play in initiating change and were encouraged to seek out their site statistics are for electric shock to see if they are trending downwards.

If not, ask 'why not?'

John Maitland, Chairman of the Coal Competence Board said that significant progress is being made in developing new systems and standards for competence. As well as the development of exam guides, certificate requirements were being reviewed and training courses for examiners were being developed.



*Delegates learning about fatigue management at the annual check inspectors conference*

On the health side Dr David Meredith spoke of mental health problems such as depression, anxiety and drug and alcohol abuse and how they can become a health and safety issue at work. He said it was critical to be able to raise such problems at work and advised that 'if you suspect someone is having a problem – just ask them'.

Presentations from the day are available on the I&I NSW website at:

[www.dpi.nsw.gov.au/minerals/safety/publications](http://www.dpi.nsw.gov.au/minerals/safety/publications)

## Safe driving workshop for young Cobar miners

The NSW Mine Safety Advisory Council (MSAC) recently sponsored a pilot road safety workshop aimed at young drivers working in mines around Cobar. The workshop was held in October 2010 at Cobar Memorial Services Club.

Sixteen apprentices from the local mines attended and heard presentations from State Emergency Services, the Rural Fire Service and Police Highway Patrol emergency service coordinators. The coordinators shared first hand experiences of the impact major road accidents have on young drivers and the local community.

Cadia Valley Operations apprentice, Ben Hopkins, explained how the "Kids of Cadia" program, a similar program run in Orange, was successful in changing young people's attitudes and behaviours to road safety.

Ben provided insight into how serious road accidents can have devastating consequences for young people.

With young country drivers often travelling long distances, fatigue, as a road safety issue was centre stage. Apprentices at Cobar often travel to Dubbo and Orange to attend TAFE. Kris Long, the road safety officer at Dubbo, discussed fatigue management strategies for young drivers.

The related areas of fatigue and hours of work were identified as a high priority issue in the 2005 Wran Mine Safety Review. MSAC has been working closely with industry to help manage fatigue, including a successful workshop in Cobar earlier this year.

MSAC is working towards educating mining communities that good health and safety practices at work extend into the community.

This pilot workshop is a first step in that direction. The workshop was coordinated by the Tablelands road safety officer Iris Dorsett.

For more information on MSAC's activities, visit the new website at:

[www.nswminesafety.com.au](http://www.nswminesafety.com.au)



*Attendees from the road safety workshop were given a hands-on demonstration of emergency response vehicles during presentations by the State Emergency Services and Police Highway Patrol*

## OHS commitment recognised at CCAA awards

The 32<sup>nd</sup> CCAA NSW Environment Health and Safety Awards, co-sponsored by the NSW Mine Safety Advisory Council, recognised outstanding commitment by the heavy construction materials industry during a gala dinner in October at the WaterView Convention Centre, Sydney Olympic Park.



*The Hon. Gregory Pearce MLC presents the OHS Innovation Award to Mr Dan Bolton from Rocla Quarry Products for "Man Overboard"*

For the first time, an OHS Innovation Award was introduced to highlight exceptional performance and the role of leadership, innovation and advocacy. The inaugural award was won by Rocla Kurnell for their "Man

Overboard" solution, a safety life vest that inflates and automatically activates a strobe light and a GPS transmitter when it comes into contact with water.

The vest was designed for sand dredging operators who often work alone at night and makes rescue possible even if the operator is unconscious in a tidal area.



*Safety lifevest & sensor / transmitter device "Man Overboard"*

The Highly Commended Extractive OHS Best Performance Award for the operation achieving the best overall performance considering its location, size and age was awarded to Boral Emu Plains for "Management of Grinding Risks".



*Mr Richard Bolton (Chairman NSW OHS Subcommittee) presents the Extractive OHS Best Performance Award to Mr Matt Wright from Boral Construction Materials for "Management of Grinding Risks"*

A risk based analysis process was used to identify the competencies for the safe selection and use of hand held angle grinders. Angle grinders are widely used for a variety of tasks in the concrete, cement and aggregates industries and the subsequent learnings and competency based training materials developed during the process are relevant and transferable.

For over thirty years the Cement Concrete and Aggregates Australia Environmental Health and Safety Awards have promoted increased awareness of the benefits of environmentally sustainable operations and a safer working environment in NSW.

This year the finalists were presented their awards in front of a capacity audience of 200 guests. Overall the standard of award finalists was very high and showcased an innovative industry that maintains high safety standards.

## Royal Australian Navy reviews MDG 41

Mining design guidelines (MDGs) released by Industry & Investment NSW are a valuable source of information for the mining and extractives industry. The guidelines are also well regarded outside the mining industry.

Manufacturers, suppliers, mining companies and regulators from other countries have expressed interest in various guidelines. Within Australia, there has also been interest from general industry and the Australian Defence Organisation.

A review of the draft *MDG 41 Guideline for fluid power system safety at mines* by a Royal Australian Navy engineer found the guideline to be "an excellent document and, although specifically written for the mining industry, has significant relevance to hydraulic systems in the marine industry". Of interest to the Navy is the safety associated with the design and use of high-pressure hydraulic systems in general, with particular emphasis on systems to prevent fluid injection injury

on board Navy vessels. Fluid injection injury protocol, located in the appendices of MDG 41, was also noted as being of benefit.

MDG 41 has since been published and will be reviewed in 2011.

Many MDGs are developed collaboratively between I&I NSW, industry and union representatives.

The *Index of NSW Mine Safety Publications (MDG 3011)* contains a list of all available guidelines, as well as other relevant publications, including investigation reports, safety workbooks, manuals, pocket guides and information sheets.

The *New Publications* section in this issue also lists recently published or updated publications.

While not all guidelines are available online, many can be downloaded from the I&I NSW website at:

[www.dpi.nsw.gov.au/minerals/safety/publications/mdg](http://www.dpi.nsw.gov.au/minerals/safety/publications/mdg)

## Interaction of people and plant key to safety

Delegates at the NSW 20<sup>th</sup> Mechanical Engineering Safety Seminar were encouraged to address the interaction of people and plant in the mining workplace. More than 250 people attended the annual Industry & Investment NSW event held in August.

Chief Inspector of Mines, Rob Regan reinforced the theme of this year's conference in his opening address reminding delegates that the interaction of people and plant poses one of the highest risks in the mining and extractives industry. Human actions and reactions must be taken into account when assessing and managing these risks.



*Rob Regan, Director Mine Safety Operations and Chief Inspector I&I NSW, opened the seminar*

With a steady increase in the amount of plant in use and an increase in the size and power of plant there is even greater need for diligence. Mobile plant in particular requires a human operator on, in or near the plant and with thousands of pieces of plant in operation in the industry, the opportunity for unplanned interactions is in the tens of thousands every day.

Delegates were encouraged to tap into the breadth and depth of experience available at I&I NSW when faced with a problem or a shortage of information.



*David Clark, Consulting Engineer, delivers his presentation 'I am a machine - if you mistreat me I will bite you, stand on you or kick you'*

Taking the machines point of view, Consulting Engineer, David Clark drew an analogy with horses used in underground mines in times past. The words 'treat me well and I will work for you' apply equally to horse and machine. He advised we treat machines with the same respect accorded to those work horses or risk being trod upon, bitten or kicked.

He told delegates that unplanned human interaction with machines can be avoided by considering interactions at the plant design stage and further encouraged engineering managers to get involved not only with their machines but with the people who interact with them. To emphasise the point, David left us with an apt quote: 'tell me and I'll forget, show me and I may not remember, involve me and I will understand'.

The seminar's keynote speaker, Dr Ross Walker, an eminent practising cardiologist with a passion for people and health, encouraged delegates to look after their health and fitness. Being fit to carry out our work tasks is important, particularly when interacting with machinery.



*Key note speaker Dr Ross Walker, practicing cardiologist, author and life coach*

Dr Walker warned that 'convenience is killing us' and stressed the importance of the food we eat.

Corrie Pitzer, CEO SAFEmap International Pty Ltd, focused on why engineering for safe human performance fails. He said engineers needed to shift the focus from low accident rates as a measure of safety to a focus on the system or symptom.

Lamenting the fact that safety had been taken from the frontline and put into 'safety departments' he encouraged a shift of focus to the capabilities of human beings. He said 'the most competent part of the safety system is the human being - if we allow them to be. Give people at the front line the ability to make decisions about safety because the potential of people in the work place to make decisions and take actions can be hugely positive and effective'.

In acknowledgement of the value and longevity of these safety seminars, Rob Regan paid tribute to retired mining inspector Leo Roberts, as well as the current Senior Inspector of Mechanical Engineering, Gordon Jervis and Inspector of Mechanical Engineering Wally Koppe, for their 20-year commitment to this successful annual event.



*Leo Roberts, founder of the mechanical engineering seminars, was acknowledged for his long standing contribution*

Leo Roberts was presented with a gift and acknowledged for his contribution to these seminars, having initiated the inaugural seminar twenty years ago.

A number of the seminar presentations are now available on the I&I NSW website at:

[www.dpi.nsw.gov.au/minerals/safety/publications/seminar-presentations](http://www.dpi.nsw.gov.au/minerals/safety/publications/seminar-presentations)

**The 21<sup>st</sup> Mechanical Engineering Safety Seminar will be held on 10-11 August 2011 at the WaterView Convention Centre, Sydney Olympic Park, Homebush.**

## Regional mechanical safety workshops

A number of mechanical safety workshops will be held in the Central West and Riverina areas of NSW in early 2011. The workshops are aimed at production managers and supervisors and will cover current best practice on a range of topics, including;

- Slings and lifting
- Cutting and welding
- Machine guarding and conveyors
- Mobile plant.

Similar workshops were previously held in southern NSW with very positive feedback from attendees. For more information please contact Lisa Tracey on 02 6360 5333.

## Lightning Ridge farewells dedicated safety course presenter

Anyone attending a safety awareness course in Lightning Ridge over the last seventeen years would have benefitted from the accumulated wisdom and experience of presenter Bruce Kremmer.

Bruce, a former Senior Inspector of Mines, played a leading role in the development and implementation of the popular safety awareness course. He also co-presented at all but one of the courses since its implementation in 1993.

As of October 2010, Bruce has retired from his presentation duties and his wealth of experience will be greatly missed. His commitment to improving safety on the fields undoubtedly contributed to the reduction in mining fatalities in the area since the introduction of the course.

A farewell dinner was held to honour his contribution after the completion of his final presentation, where he was presented with a commemorative plaque and a painting of the Lightning Ridge opal mining fields by local artist John Murray.



Bill Barraclough (R) presented Bruce Kremmer (L) with a farewell gift and commemorative plaque

## Clearly defined withdrawal conditions can save lives

All NSW coal mines are required by regulation to determine withdrawal and re-entry conditions as part of their health and safety management system. To assist industry achieve this, a new guide has been produced by Industry and Investment (I&I) NSW in conjunction with Mines Rescue Pty Ltd.

The *Guidelines for determining withdrawal conditions from underground coal mines (MDG 1022)* are intended to assist with identifying and managing circumstances involving withdrawal of people from underground coal mines and the subsequent re-entry into the mine.

It is essential that all health and safety management systems set withdrawal conditions in terms that actually result in evacuation when certain predetermined conditions are met. These withdrawal conditions must be expressed in terms that are clearly defined and readily understood, rather than ending with terms like "more inspection" or "more monitoring".

In the past, I&I NSW inspectors have noticed that risk assessments often stop short of prescribing the withdrawal conditions that lead to an evacuation. An extensive audit that was undertaken by the department in 2005-06 of underground emergency systems in NSW coal mines showed that withdrawal conditions rarely went to evacuate. They instead focussed on further inspections and opinions of people.

This was also identified as a fatal flaw in the inquiry into the explosion at the Moura No.2 Mine in 1994. The inquiry found that withdrawal conditions at the mine were "totally unacceptable".

The *Coal Mine Health and Safety Regulation 2006*, Clause 13(1)(g), requires that the "conditions (withdrawal conditions) under which people are to be withdrawn, and to remain withdrawn, from the coal operation or parts of the coal operation as a precautionary measure when conditions of risk or a threat to health or safety (not amounting to an emergency) warrant such action," form a part of a mine's health and safety management system.

Health and safety management systems must also be developed and implemented under the *Occupational Health and Safety Act, 2000* and the *Coal Mine Health and Safety Act 2002*.

The guidelines have been published as a set with the revised *'Guidelines for underground emergency escape systems and the provision of self rescuers (MDG 1024)*, and *Guidelines for in-seam response using CABA for events where life is at risk*.

They are available for download from the I&I NSW website at: [www.dpi.nsw.gov.au/minerals/safety/publications/mdg](http://www.dpi.nsw.gov.au/minerals/safety/publications/mdg)

## Electrical safety standards need to improve

An electrical improvement program undertaken by Industry & Investment NSW identified a number of concerns with the extractive industry's management and understanding of electrical safety issues.

As part of the program, I&I NSW inspectors are visiting the state's extractive mine sites to assess the content of each site's electrical management system and the electrical safety standards and compliance standards of all electrical installations on site.

Since the program began in 2007, inspectors have visited 92 sites in an area bordered by the Central Coast region of New South Wales, the Queensland border and extending west to Tenterfield, Moree, Inverell and Coonabarabran.

The operations that have been included in the program are predominantly those with process plants that are electrically powered, usually provided by an electrical supply authority, site generator or a combination of the two. Although, 12 volt dc to 240 volt ac inverters are also used by the industry.



*An electrical installation in need of urgent improvement, as seen by I&I NSW inspectors during the program.*

The site visits have identified that the industry's electrical understanding is very low, electrical maintenance is poor and the use of portable electrical tools and electric welding equipment is not well managed.

The standards of the electrical installations

inspected varied greatly and the industry has to move forward if electrical safety is to improve.

Any improvement in the electrical safety performance within the extractive industry will rely on operators of the mines understanding the safety issues associated with the use of electricity.

Without this knowledge, a majority of these mines will continue to operate with limited electrical safety standards and continue along the path of break down maintenance.

As a result of the electrical improvement program, an "Electrical awareness for quarry managers and supervisors" training course has been developed and is available through the Institute of Quarrying Australia (IQA).

The course has already been presented at 15 locations nationally to more than 300 industry employees and is now providing the major training component of the electrical improvement program.

To assist the industry in developing electrical standards, I&I NSW has also developed information sheets on electric shock protocol,



*An improved electrical installation. The standard of installations viewed during the program varied greatly.*

electrical isolation, electric welding procedures, overhaul of electric welding machines, removal and restoration of power and electrical tradesperson qualifications.

I&I NSW inspectors would like to congratulate all of the mines visited so far on

their willingness to undertake improvements and the actions they have implemented since each initial site visit.

The electrical improvement program will now move to the south east region of NSW with 35 sites expected to be visited over the next twelve months.

The information sheets and further information on electrical safety are available from the I&I NSW website at:

[www.dpi.nsw.gov.au/minesafety](http://www.dpi.nsw.gov.au/minesafety)

## Incident investigation reports available

The I&I NSW Mine Safety Investigation Unit publishes information from major incident investigations to assist industry to become better informed about potential hazards and industry best practice.

The investigation information is presented in a short report format which can be used as a resource for persons conducting risk assessments, job safety analysis and auditing tasks.

A summary of the incident is also provided in a power point presentation format which can be used as a resource at tool box talks, team meetings, risk assessment meetings, etc.

The current range of investigation topics published include;

- PLC system functional safety for safe operation of plant (truck loading bin)
- Human interaction with surface mobile mining equipment

- Human interaction with longwall equipment
- Human interaction with underground bolting equipment
- Human interaction with remote controlled bogging machines
- Electrical isolation practices on high voltage equipment
- Cable handling practices on a continuous miner
- Chain and slinging practices on a longwall face
- Haulage rope failure on a drift winder

The investigation reports can be downloaded from the I&I NSW website at:

[www.dpi.nsw.gov.au/minerals/safety/major-investigations/investigation-reports](http://www.dpi.nsw.gov.au/minerals/safety/major-investigations/investigation-reports)

# New proximity detection workshop

A new proximity detection and collision avoidance workshop to be held by I&I NSW on 8-9 February at the WaterView Convention Centre, Sydney Olympic Park, will bring coal and metalliferous mine operators up to speed with new safety technology.

The use of proximity detection and collision avoidance systems can reduce the incidence of mobile equipment and vehicle collision incidents on surface mine sites and the interaction of heavy plant and workers in underground coal and metalliferous mines.

Rob Regan, Director Mine Safety Operations, I&I NSW, believes "the essence of good mine safety is identifying problems then solving them.

"Under previous mine safety legislation the department identified mobile equipment as a key risk area and developed the Human Error Workshop Program to address the problem, as it had no viable engineering solutions at the time.

"Since the introduction of more specific reporting requirements for incidents involving all plant and equipment, it has shown that mobile equipment unplanned movements make up half of all notifiable incidents," he explained.

"Today there are viable engineering solutions that should reduce the high frequency of such incidents. Proximity detection system engineering has reached sufficiently high levels of capability and reliability that manufacturers and operators should be making them standard features on all at risk mobile equipment. As an industry this is a problem on which we can all collaborate to solve," said Mr Regan.

During the workshop mine safety inspectors from I&I NSW will present case studies and statistics on collision incidents while product presentations will be given by manufacturers and representatives from the range of proximity detection and collision avoidance safety systems currently on the market. There will also be hands-on sessions and discussions on how the different systems work.

The workshop will close with a brain-storming session on how to achieve best practice in avoiding incidents and collisions associated with machinery operating in close proximity to other machines, fixed equipment or workers.

To register for the workshop phone Julie Downie on 02 4931 6624 or email [julie.downie@industry.nsw.gov.au](mailto:julie.downie@industry.nsw.gov.au). Numbers are limited so register early to secure your place.

## New publications

### **MDG 1020 Guidelines for underground emergency escape systems and the provision of self rescuers**

Guideline to assist the development, implementation and assessment of underground emergency systems relevant to the escape and evacuation of people affected by emergencies, as well as the provision of self-rescuers integral to those systems.

[www.dpi.nsw.gov.au/minerals/safety/publications/mdg](http://www.dpi.nsw.gov.au/minerals/safety/publications/mdg)

### **MDG 1022 Guidelines for determining withdrawal conditions from underground coal mines**

Guideline to assist the development, implementation and assessment of withdrawal conditions of people from underground coal mines. Documented protocols for the safe withdrawal from a mine site after an incident, as well as safe re-entry, are required by regulation.

[www.dpi.nsw.gov.au/minerals/safety/publications/mdg](http://www.dpi.nsw.gov.au/minerals/safety/publications/mdg)

### **MDG 3609 Escape breathing apparatus for underground coal mining applications**

This document contains the requirements for registering self rescue breathing apparatus for use in underground coal mines and the procedures for in-service testing of self-rescue breathing apparatus.

[www.dpi.nsw.gov.au/minerals/safety/publications/mdg](http://www.dpi.nsw.gov.au/minerals/safety/publications/mdg)

### **Investigation Report - Incident resulting in fatal injuries to a subcontractor on Eastern Star Gas Petroleum Assessment**

Investigation report into the fatality of a sub-contractor struck by a recoiling 200mm polyethylene pipeline during pipe extraction using 10mm chain components and excavator bucket on 1 August 2009.

[www.dpi.nsw.gov.au/minerals/safety/major-investigations](http://www.dpi.nsw.gov.au/minerals/safety/major-investigations)

### **MSD in NSW mines validation workshop summary**

A summary of findings from a validation workshop, held to investigate the causes of musculoskeletal disorders in the NSW mining industry.

[www.dpi.nsw.gov.au/minerals/safety/world-leading-ohs/musculoskeletal-disorders](http://www.dpi.nsw.gov.au/minerals/safety/world-leading-ohs/musculoskeletal-disorders)

### **Register of licensed workshops for explosion protected electrical plant repairs**

An updated register of licensed workshops.

[www.dpi.nsw.gov.au/minerals/safety/resources/electrical-engineering/management-systems-and-work-process/licensed-activities](http://www.dpi.nsw.gov.au/minerals/safety/resources/electrical-engineering/management-systems-and-work-process/licensed-activities)

### **Electrical Engineering Safety - Electrical Isolation Information Sheet No. 6**

This information sheet provides minimum safety requirements to assist in the development and implementation of electrical isolation procedures to reduce the risk of electric shock.

[www.dpi.nsw.gov.au/minerals/safety/resources/electrical-engineering/guidance-material/electrical-engineering-safety-information-sheets](http://www.dpi.nsw.gov.au/minerals/safety/resources/electrical-engineering/guidance-material/electrical-engineering-safety-information-sheets)

### **Industry Assistance Unit training packages**

A series of training packages to help industry hold their own workshops on health management, musculoskeletal disorders and fatigue management. They include facilitator's manuals, participant's manuals and supporting PowerPoint presentations.

[www.dpi.nsw.gov.au/minerals/safety/world-leading-ohs](http://www.dpi.nsw.gov.au/minerals/safety/world-leading-ohs)

## Safety Alert Summaries

### SA10-03 Shearer operator crushed by automated longwall roof support

A mineworker received serious crush injuries while operating the longwall shearer. The mineworker was found between the longwall roof support and the spill plate of the armoured face conveyor. The mineworker was operating the trailing drum of the shearer using a remote control transmitter. For causes yet to be determined, the mineworker became crushed between an automatically advancing shield and the spill plate. He was found lying over a relay bar with his lower legs and feet trapped beneath the pontoon of an adjacent roof support.

The mineworker was found semi-conscious with serious crush injuries to his pelvis, femur and lower abdomen. The longwall walkway area was found to be narrow in places, restricting access, and was not protected from the ingress of face stone and flyrock. As an antecedent matter, emergency stop facilities were not readily accessible for the injured mineworker as he lay trapped on the ground.

An investigation has been initiated by the department's Mine Safety Operations and Investigation Unit. All mines should review risk assessments and ensure they identify and address all risks associated with remote controlled equipment operating within automated mining systems. Mines should also ensure adequate access and egress is maintained on the walkway along the longwall face. The accessibility of emergency stop systems must be considered for all positions of persons on the longwall face. This includes persons who may not be in a standing position, or injured in some way.

*For further recommendations and information on relevant standards and other related publications please refer to the safety alert.*

### SA10-04 Portable gas monitors - understanding response times

There have been two incidents at NSW underground mines where mining officials have been exposed to potentially dangerous environments due to the delay in response times of hand-held gas monitors. One incident occurred when an undermanager was carrying out an inspection of a pillar panel return. He felt dizzy from an oxygen deficient atmosphere. It is believed that he entered the oxygen deficient atmosphere at a quicker rate than his gas monitor could react.

The second incident occurred when two deputies were inspecting a face road after the release of a large amount of methane. They progressed past the point where their monitors showed 1% methane intending to determine where 2% methane was present. Their gas monitor was on continuous alarm from the methane and they were focussed on the methane levels. They retreated to a safe location when the monitors showed 2% methane. Upon checking the peak readings they found the oxygen "peaks" on the gas monitors were 7.5% and 8.4%. The methane readings may also have been depressed by the low oxygen environment.

The investigation revealed that a monitor at one of the collieries had a 6 second response time for 1% methane, and a 29 second response time for 2% methane. Even at a relatively slow pace it is possible to walk at 1 metre per second.

This gives a person the ability to proceed into a rapidly deteriorating environment without recognising the hazards. The normal alarm system on gas monitors has only one alarm and this cannot be reset under certain conditions.

*For a full a full list of recommendations and relevant standards please refer to the safety alert.*

### SA10-05 Water tanker rollover at haul road intersection

A water tanker failed to negotiate a left hand turn at a 90 degree T-intersection of two haul roads and rolled over to its right through 270 degrees coming to rest on the passenger's side. The incident occurred at 5.30 pm in clear, dry weather and the haul road was in good condition. The water tanker driver had six months experience in this task and had completed generic induction and water tanker training. He had completed ten hours of work on his first day shift after a seven day rostered break.

The water tanker comprised a prime mover and a single trailer fitted with a 20,000 litre water tank. It is estimated that the water tank contained 15,000 litres of water at the time of the incident. The water tanker came to rest on the wrong side of the haul road with the prime mover in the centre of the road and the rear of the trailer in the table drain at the side of the road.

The I&I NSW investigation showed no documented pre-start inspection of the water tanker was conducted on the day of the incident. The water tanker driver was not wearing a seat belt and was extremely fortunate to have suffered only minor injuries in the incident. An independent third party audit of the water tanker failed to identify any mechanical failure that could have contributed to the incident. The investigation could not determine the actual speed of the water tanker before the incident, but given all of the prevailing circumstances it did conclude that the water tanker was travelling too fast to safely negotiate the intersection and that this was the primary contributing factor to the incident. No baffles were installed in the water tank and a lateral surge of water when the water tanker was attempting to negotiate the intersection may have contributed to the rollover.

*For a full list of recommendations and relevant guidance material please refer to the safety alert.*

### SA10-06 Contractor suffers serious burns

A contractor employee was in the process of refuelling a petrol operated generator situated in the back of a tray top ute. A fire erupted during the refuelling process which seriously burnt the contractor. The contractor received full thickness burns to 20% of his body and partial thickness burns to another 10% of his body. The contractor will require ongoing burns treatment for a considerable period of time.

Two contractor employees were welding breathers into a large diameter poly-pipe. They were using a petrol powered generator to run an electrical powered poly-welder. The generator ran out of fuel and a 20 litre steel jerry can of petrol was used to refuel the generator. A fire erupted during the refuelling process seriously. The ignition source has not yet been confirmed. However, a number of contributing factors have been identified.

All mines should avoid using petrol driven motors on a mine site, whenever possible use diesel operated equipment. Only fit for purpose fuel containers that meet the requirements of relevant standards should be used. Petrol containers and petrol powered equipment should not be filled while they are in a vehicle or on the back of a truck or ute. A motor should not be refuelled while it is operating. Ensure petrol operated equipment is turned off and has cooled down sufficiently prior to re-fuelling. Do not smoke or use matches or cigarette lighters in the vicinity of refuelling areas and flammable liquid and gas storage areas. No smoking/no naked flame signs should be placed in these areas. Any work conducted where static electricity risks may exist should be risk assessed and controlled. It is also essential that appropriate flame resistant clothing be provided to protect persons who may be exposed to fire hazards.

*For further information on contributing factors, additional recommendations and relevant standards please refer to the safety alert.*

### **SA10-07 Shotfirer hit by falling shotcrete**

A shotfirer working underground in a large block cave mine received serious crush injuries to both legs when hit by a large piece of shotcrete that fell from the backs of a drawbell. The piece of shotcrete hit the shotfirer on the lower back knocking him to the ground. The injured shotfirer was working with an assistant shotfirer who was operating a mobile processing unit (MPU) fitted with an extension boom for charging upholes. The assistant shotfirer was loading a hole with emulsion from the MPU while the shotfirer was preparing a primer for the next hole. An undercut firing had taken place at the end of the previous shift in close proximity to the drawbell being charged. A few blast holes in the drawbell had to be redrilled prior to charging activities commencing due to dislocation in the blast holes from stress redistribution. Some 'booting' was also heard in the area before charging commenced.

Contributing factors may include, but are not limited to the fact the mine was using a post undercut mining system and the ground support systems in the drawbell had been affected over time by the redistribution of stresses following undercut blasting activities. The inspection process did not clearly identify the effect that stress redistribution had on the ground and existing ground support in the drawbell. The ground support had been installed a considerable time before the blasting activities commenced. Technically competent persons such as geotechnical engineers were not directly involved in the drawbell inspection process prior to charging activities commencing.

It is essential that all persons working in underground mines where high stress conditions exist and seismic events are possible are trained in early identification and interpretation of changes in ground and ground support. All underground mines should also ensure that the adequacy of installed ground support systems are regularly reviewed and assessed by personnel with technical expertise and knowledge of ground support systems.

*For further information on contributing factors, additional recommendations and relevant legislation please refer to the safety alert.*

## **Safety Bulletin Summaries**

### **SB10-07 Repair and overhaul of electrical explosion-protected equipment**

The NSW Coal Mine Health and Safety Regulation 2006 requires mines to have explosion-protected electrical plant overhauled and repaired at licensed facilities. It has come to the department's attention that some equipment is being overhauled and repaired at facilities that are not licensed.

Coal mining operations are required to ensure that the overhaul and repair of electrical explosion-protected plant that may alter the explosion protected properties of the plant, is undertaken at facilities licensed for that purpose.

Facilities carrying out overhaul and repair of electrical explosion-protected plant that may alter the explosion protected properties of the plant shall obtain a licence (if not already licensed).

*For further information on relevant legislation and guidance material please refer to the safety bulletin.*

### **SB10-08 Bullying or victimisation at the workplace**

There has been a noticeable increase in complaints to the Mine Safety Operations branch of Industry & Investment NSW about bullying and victimisation in the workplace. Such behaviours can pose a risk to mental health and contribute to workplace accidents and physical injuries.

The WorkCover guide, Preventing and Responding to Bullying at Work, defines bullying as:

"...repeated unreasonable behaviour directed towards a worker or group of workers that creates a risk to health and safety.... these behaviours can be direct or indirect".

Direct forms of bullying include verbal abuse, spreading rumours and interfering with personal property or work equipment. Indirect bullying may involve unjustified criticism, denying access to information, withholding vital information, setting unreasonable tasks, excessive scrutiny or changing work arrangements to cause inconvenience.

An isolated incident of unreasonable behaviour is not bullying. The behaviour must be repeated. However, single incidents should not be ignored.

Legitimate and reasonable management actions also do not constitute bullying. Employers and managers have a right to direct how work is done and to provide performance feedback.

Victimisation of an employee involves dismissing or harming the employee in their employment because they have raised OHS issues or are exercising legislated OHS consultation functions. Victimisation and bullying may occur together.

*For recommendations, relevant legislation and information on other related publications refer to the safety bulletin.*

# CALENDAR OF EVENTS

**Mine operators workshops**, next workshop 3 Feb 2011, Miners Association Building, Morilla Street, Lightning Ridge. Contact Janet Town, I&I NSW, 02 6829 9208.

**Mine safety awareness course**, next course 28 Feb – 1 Mar 2011, Lightning Ridge Bowling Club. Contact Janet Town, I&I NSW, 02 6829 9208.

**Avoiding collisions on mine sites - proximity detection systems**, 8-9 Feb 2011, WaterView Convention Centre, Sydney Olympic Park. Contact minesafety.seminars@industry.nsw.gov.au

**Mechanical safety workshops**, Central West and Riverina areas of NSW in early 2011. Contact Lisa Tracey on 02 6360 5333

**Mechanical engineering safety seminar**, next 10-11 Aug 2011 WaterView Convention Centre, Sydney Olympic Park. Contact minesafety.seminars@industry.nsw.gov.au

**Electrical engineering safety seminar**, next 9-10 Nov 2011 WaterView Convention Centre, Sydney Olympic Park. Contact minesafety.seminars@industry.nsw.gov.au

**Hunter Valley underground mine mechanical engineers meeting**, held quarterly at the Mine Safety Technology Centre. Contact Paul Drain, Inspector of Mechanical Engineering, I&I NSW 02 4931 6652.

**Hunter Valley open cut mine & coal preparation plant mechanical engineers meeting**, held regularly. Contact Matt Willoughby, Inspector of Mechanical Engineering I&I NSW 02 6571 8788.

**Introduction to safety management workshop for small mines and quarries**, held at various venues and dates throughout NSW. Contact Institute of Quarrying Australia (education@quarry.com.au).

**Refining your safety management workshop for small mines and quarries**, held at various venues and dates throughout NSW. Contact Institute of Quarrying Australia (education@quarry.com.au).

**Hunter Valley electrical engineers meeting**, held on the first Friday of every second month at the Mine Safety Technology Centre. Contact Owen Barry, Inspector of Electrical Engineering I&I NSW 02 6571 8708 or Peter Davidson, Mandalong Mine 02 4973 0922..

**Southern & Western Coalfields mechanical engineers meeting**, held quarterly. Contact Graham Johnston, Inspector Mechanical Engineering, I&I NSW 02 4222 8307 or Wally Koppe, Inspector Mechanical Engineering, I&I NSW 02 4222 8303.

**Southern and Western Coalfields electrical engineers meeting**, TestSafe, Londonderry, held quarterly (limited numbers). Contact Stan Maginnis Inspector of Electrical Engineering I&I NSW Lithgow Office 02 6350 7891 or Wollongong Office 02 4222 8300 or 0417 223 875.

**HIESN (Hunter industry electrical safety network) meeting**, held on the first Thursday of each month, venues change. Contact Peter Henderson, Tomago Aluminium 0408 683 544.

**Remote control equipment advisory group meeting**, invite required, held quarterly. Contact Steve Bentham, Inspector of Electrical Engineering, I&I NSW, 02 4931 6653 or 0409 836 286.

**MEMMES (Mining electrical and mining mechanical engineers society of the IEAust) meeting**, held monthly. Contact Peter Whipp, President, 02 4946 7817 or 0488 495 620.

*For more information go to: [www.dpi.nsw.gov.au/minerals/safety/resources](http://www.dpi.nsw.gov.au/minerals/safety/resources)*

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**[www.dpi.nsw.gov.au/minesafety](http://www.dpi.nsw.gov.au/minesafety)**

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