

# MINE SAFETY NEWS

ISSN 1444-5174

NSW Department of Mineral Resources

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

November 2001

## MAJOR REVIEW OF MINE SAFETY LEGISLATION

On August 17, 2001 the Minister for Mineral Resources, Eddie Obeid, released a discussion paper to encourage industry and the community to have their say about the NSW Government's plans to update mine safety legislation.

The current NSW Mines Inspection Act applies to all non-coal mines and quarries in the State.

"The discussion paper is an important stage of the NSW government's commitment to better protecting mine workers and improving safety in the State's mines and quarries," Mr Obeid said.

"This review will help ensure NSW has the best occupational health and safety laws in Australia. A similar review is underway for safety in coal mines.

"The Mine Safety Council which includes employer and employee representatives, worked with the NSW Government in developing this discussion paper.

"This review is a significant part of our strategy to make this industry safer," Mr Obeid said. ■■



*Eddie Obeid, NSW Minister for Mineral Resources and Minister for Fisheries*

*Fires on underground equipment must be prevented. See page 11 for an analysis of why they happen and what can be done to prevent them*



## This issue

Minister releases Discussion Paper on Mine Safety	1
Minister opens key NSW Mining Safety Conference	2
Praise for Mobile Gas Laboratory	3
If you can't stand the heat ...	4
Don't accept history – learn and change	4
New faces	5
Working Together for Electrical Engineering Safety in Underground Coal Mines	5
NSW Minerals Council Safety Innovation awards	6
- Judges Award	6
- Industry Award winner	7
- Highly Commended	7
"Is Risk Assessment a speed bump or a valuable exercise?"	8
One plus one does not equal two in hearing protection	9
The dangers of unplanned machinery movement	10
Truck Fill Boom – Drayton Coal	10
Helping small mines meet new safety regulations	10
Cleanliness next to fire-less-ness with underground mobile equipment	11
Status of Major Mine Events	11
Safety alert –	
The dangers to children on mine sites	12
Safety Alerts	12
Safety seminar	12
Departmental contacts	12



The New South Wales Government is targeting improved safety in all sectors of the mining industry.

## MINISTER OPENS KEY NSW MINING SAFETY CONFERENCE

The attendance and enthusiasm at the NSW Mining Industry Occupational Health and Safety Conference 2001 at Terrigal in July was a clear demonstration of the industry's commitment to mine safety, the Minister for Mineral Resources, Eddie Obeid said in opening the conference.



"The NSW Government continues to be committed to protecting those working in mines and quarries and improving mine safety."

"Our achievements to date include a review of mine safety, the formation of a world-class investigation unit, changes to outdated laws and a comprehensive educational program in regional NSW."

Since last year:

- More than 440 owners, managers and workers have completed small mines education programs throughout the State
- 320 mine managers and workers have attended information days,



At the NSW Mining Industry OHS Conference:  
Inset: John Tucker, Executive Director NSW Minerals Council.  
Above: Professor Dennis Else, Chairman Mine Safety Council.  
Right: Neville Sneddon, Chief Operating Officer, Shell Coal Pty Ltd, Graham Terrey, Director Mine Safety and Environment Division, DMR and Mark Anderson, GM Northparkes Mines and Peak Gold Mines



### Newsletter contacts

NSW Department of Mineral Resources  
29–57 Christie Street  
PO Box 536  
St Leonards NSW Australia 1590  
Editor: Ian Lee  
Graphic Design: Terence Stewart  
Photography: David Barnes, Ian Lee and Mine Safety and Environment staff.  
To contact the Information Unit, Mine Safety and Environment:  
Phone (02) 9901 8689  
Fax (02) 9901 8584  
debiasif@minerals.nsw.gov.au  
To obtain publications from the Department:  
Information Counter  
Phone (02) 9901 8269  
Fax (02) 9901 8247  
E-mail  
maniakak@minerals.nsw.gov.au



"The success of this annual conference has made it quite clear that everyone involved in this field is committed to making one of Australia's most important industries safer," Mr Obeid said.

This year's conference was the biggest yet.

Around 320 delegates listened to presentations by more than 60 experts sharing their ideas on how to lift the occupational health and safety performance of the industry.

Mr Obeid said the event is a unique opportunity to share ideas and experiences, which will help better protect the safety of mine workers.

- Several hundred electrical engineers, equipment suppliers and union members have been to electrical engineering safety seminars in Cobar, Orange, Broken Hill and Penrith, and
- Training days have been held for inspectors and mine safety officers.

"The important contribution the mining industry makes to NSW is demonstrated by its economic performance. Last financial year, NSW exported more than \$7 billion of minerals.

The industry is particularly important to regional areas where it creates jobs and supports local businesses."

The two-day conference was jointly organised by the NSW Government and the NSW Minerals Council to encourage better industry safety through an exchange of ideas. ■■



## PRAISE FOR MOBILE GAS LABORATORY

United Collieries has praised the professional performance of the NSW Government's mobile safety laboratory. Jim Middleton, General Manager of United Collieries wrote to Alan Coutts, Director General of the NSW Department of Mineral Resources offering his congratulations:

"I am writing to commend the Department on the performance and professionalism of the personnel involved in the Mobile Gas Laboratory.

"Recently United had a spontaneous combustion heating in a goaf area. As part of the management of this situation the Mobile Gas Laboratory was called to the site to support mine management in analysing available data.

"The van was staffed 24 hours a day with staff able to carry out accurate analysis and to expertly comment on interpretation of the trends and advise on sampling protocols.

"Without doubt this assistance played a major role in our ability to accurately make decisions based on timely information to enable us to quickly and safely control the incident.

"I wish to formally thank all of those involved", Jim Middleton said.

Rob Regan, Assistant Director of Safety Operations at the Department, responded: "Praise should also be given to Jim Middleton and the team at United Collieries.

"They identified a heating developing early and responded immediately. This early detection and rapid response surely prevented a serious problem. The response by United Collieries was professionally conducted and a credit to all involved. A story worthy of telling!"

The Mine Safety Laboratory has two vans equipped as Mobile Gas Laboratories. They are on call 365 days a year and within two hours of receiving a call they can be loaded with equipment tailored to the incident and dispatched to the site.

Two departmental staff accompany the Mobile Gas Laboratory, which can provide more sophisticated analysis and interpretation than can be supplied by a mine's own monitoring system.

Samples are collected by hose connecting the mobile gas laboratory to the mine's monitoring lines or

using sampling bags. The samples are analysed using specific analysers and by gas chromatography that can determine carbon monoxide concentrations from 0% to 2% and methane concentration from 0% to 100%.

Other gases analysed through the mobile gas laboratory are oxygen, hydrogen, carbon dioxide and hydrocarbons such as ethylene and propylene.

The mobile gas laboratory remained on site at United Collieries for 10 days to provide continuous analysis and interpretation 24 hours day.

A fee based on cost recovery is charged for the services of the Mobile Gas Laboratory, which can be called out by coal mines, the Mines Rescue Service or through the Department's District Inspectors.

For more information, contact Grahame Fawcett or Clive Ellis on (02) 9646 1644. ■■



*The New South Wales Government is targeting improved safety in all sectors of the mining industry.*



*Above: Hong Phan and Clive Ellis from the Department's Mine Safety Laboratory load a gas analyser into the Mobile Gas Laboratory.  
Top: Zaw Win tests the functioning of the analyser before taking it out into the field.*

## DON'T ACCEPT HISTORY – LEARN AND CHANGE

In his closing address to the 2001 NSW Mining Industry OHS Conference, Bob Cameron, Chairman of the NSW Minerals Council said all people in the industry are likely to be directly or indirectly involved in at least one serious incident during their careers.

"Where will we be in five years time?" he asked. "The answer depends on all of us. To achieve a safer industry we have to review our systems and check things that are in place are actually working. Don't be afraid to take stock of your health and safety efforts and, if necessary, start all over again to get it right.

"Managers must understand their responsibilities and meet their

obligations while employees must continue to lead with their actions by not taking shortcuts or breaching rules and by highlighting problems.

"Everyone of us has a role to play in ensuring the mining industry's health and safety performance."

Bob Cameron noted that 40 engineering students from the University of NSW were in the audience. He said two plaques at the University commemorate students who died in mining accidents, one from Bob's year and one in the year ahead.

"We didn't even graduate without being touched by mining tragedy!" he said. ■■■



*Bob Cameron, Chairman of the NSW Minerals Council, says everyone has a role in safety*

## IF YOU CAN'T STAND THE HEAT ...

As Michelle Tams from the CSA Mine told delegates to the 2001 Mining Industry OHS Conference the temperature on a nice cool summer day in Cobar is 48°C, rising to 52°C on a hot day.

In the CSA underground copper mine the ambient temperature of the rock is up to 43°C all year round. In addition, the high humidity, combined with reduced air movement underground, inhibits sweating, the human body's normal method of reducing heat.

The CSA Mine re-opened in 1999 and by the end of a mild spring, seven cases of heat illness had occurred. The mine conducted a risk assessment which ranked heat illness as one of the highest site risks.

It reviewed existing practices and asked consultants Brake Fuller to develop a system of work that would ensure the safety and health of the miners.

At most sites, heat management was through limiting work time to six hour "quick shifts".

Research showed this system did not reduce the likelihood or severity of heat illness. It was found the body's ability to cope with heat is influenced by a range of factors including:

- whether heat illness had been suffered in the past

- acclimatisation to hot work
- fitness
- obesity
- other illnesses such as influenza
- drug and alcohol consumption
- environmental conditions
- clothing and personal protective equipment requirements.

Several heat management methods were developed. Improved ventilation was provided and is constantly reviewed and improved as mining progresses deeper underground into areas of hotter rock.

All personnel were trained in heat management and procedures. Training is updated regularly and is part of the mine's induction system.

Shift coordinators use heat monitoring equipment, at the beginning of each shift to classify the mine into withdrawal, buffer, acclimatisation or unrestricted work areas.

Self pacing of work by employees is also important but the most significant health management method is keeping up personal hydration levels.

Miners are advised to drink sufficient water to ensure hydration before starting work and drinking water is provided at work areas. At least one litre of water must be drunk per hour and some of the miners have to drink

as much as three litres an hour to maintain hydration.

CSA Mine's heat stress management program has resulted in nine months worked – that is, right across summer – without any heat illness reported. ■■■



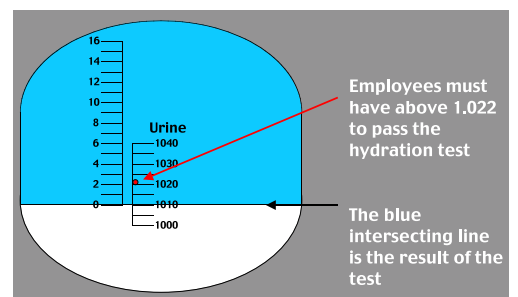
*CSA mine employee self testing for hydration levels.*

*Inset: A small amount of urine is placed*

*on the monitor*

*Top: Looking through the monitor*

*Below: The level of hydration is shown through the monitor*





## NEW FACES

Gang Li has joined the Department of Mineral Resources as Principal Subsidence Engineer, based at Gateshead.

Before joining the Department he spent five years with Coffey Geoscience Pty Ltd, first as Senior Geotechnical Engineer and later as Manager of Underground Coal Mining. Prior to this Gang Li had spent 10 years at Newcastle University, five years gaining a PhD degree in Rock Mechanics (formation and propagation of fractures in sandstone) and five years as Research Fellow of the Newcastle University Institute of Coal Research.

Gang Li came to Australia from China in 1986 to take up a scholarship at the University of Newcastle. In China he had worked as a Structural Engineer on dam and pressurised tunnel projects. ■■



*Gang Li, newly appointed Principal Subsidence Engineer*



*Michael (Mick) McGann, Investigator with the Investigation Unit*

Michael (Mick) McGann was recently appointed to the Investigation Unit as an Investigator.

He is a former detective with the NSW Police. His experience has included investigations of police and local council corruption and investigating organised crime with the Queensland Criminal Justice System and the National Crime Authority.

After leaving the police service, Mick worked as the NSW and Queensland Security Manager of a company.

Mick is highly skilled in managing investigations, interviewing witnesses, conducting risk and hazard assessments, analysing incident scenes and preparing briefs for the Coroner's and Criminal Courts.

He was awarded the NSW Police Valour Award for bravery for arresting an armed bank robber while unarmed, and the National Medal for service and conduct. ■■

## WORKING TOGETHER FOR ELECTRICAL ENGINEERING SAFETY IN UNDERGROUND COALMINES

The safe design, installation, use and repair of flexible cables used in coalmine hazardous zones is a key risk control for preventing gas explosions, fires and electric shock. To be able to determine how well this key risk control is functioning and to provide valuable information for coal mine operators, cable designers, cable repairers and Australian Standards committees, the NSW Department of Mineral Resources and Department-approved cable repair workshops are working together to gather information.

The Department and approved cable repair workshops meet on a regular basis to discuss and refine the information gathered and to identify any particular issues.

The approved cable repair workshops involved are:

- Cable Management Australia of Moss Vale
- Cable Services Australia – Macey's Cable Repairs of Warners Bay
- Illawarra Cable Services of Oak Flats
- Lithgow Cable Repairs of Lithgow
- Rutherford Cable Repairs of Maitland.

### Cable repairs for underground coal mines

Cable type	No. of cables	Type of repair/damage			
		Sheath Damage	Cable torn in half	Arcing of conductors	Broken earth conductors
Miner	262	623	4	28	13
Shuttlecar	715	2386	34	35	110
Longwall	190	330	2	4	2
Feeder	123	112	0	1	9
Others	330	686	3	7	9
<b>TOTAL</b>	<b>1620</b>	<b>4137</b>	<b>43</b>	<b>75</b>	<b>143</b>

Note: It has been noticed that in a significant number of cables with evidence of arcing, the arcing was contained within the cable sheathing (that is the arcing would not have been evident to an observer).

*The table above gives an example of the information gathered for the period April, May and June 2001.*

The Department would like to express sincere thanks to these organisations for participating in a positive and proactive manner. The Department also urges coalmine operators to use this information to improve cable management practices. ■■

## NSW MINERALS COUNCIL SAFETY INNOVATION AWARDS

On the Sunday afternoon before the Terrigal Occupational Health and Safety conference opened, representatives of nine mines made presentations on projects they had undertaken to reduce the danger of injury or death in their mines.

Some of the projects were simple, others complex but they all showed an innovative approach to solving a problem that in some cases had been beyond the skills of the original manufacturers of the machinery.

A common feature of all entries was that the process of solving the safety problems involved employees. They

are the people who work with the systems, can see the pitfalls and can suggest the improvements that will make them safer.

All mines which presented their innovations made significant contributions to the health and safety of the people working in those mines.

Judging was based on the value of a change of tool, system or procedure to advance the adoption of best practice of health and safety in the industry.

Mount Thorley Coal Operations won the Judges Award for a dozer fall protection frame.

Highly commended by the judges were a vehicle alert system developed by Pasmaenco at Broken Hill and a rib

support guard developed by the BHP-Billiton Appin Coal Mine.

Winner of the Industry Award, voted on by the audience at the presentations, was the Pasmaenco Broken Hill vehicle alert system. ■■



*Tony Edwards of Pasmaenco Broken Hill is presented with the Industry Innovation Award by Prof. Dennis Else*

### Dozer fall protection frame

#### Judges Award

Maintenance personnel at Mount Thorley Coal Operations work on top of the bonnets of D11 dozers to replace or repair air conditioners, headlights and blade lift cylinders.

With no barriers or attachment points on the bonnets, they risked falling from heights of between 1.8m and 3.4m.

Application of the Mount Thorley Operations risk assessment standard and working at heights standard gave working on the dozer bonnets a high risk ranking. Potential for injury increased when the bonnets were slippery from wet weather.

Investigation of other Coal and Allied sites showed nobody had a solution to the problem so Mount Thorley decided to develop an engineering solution in consultation with maintenance personnel and dozer operators.

They designed a 75mm rolled hollow section (RHS) fall protection frame that is rubber mounted above and around the perimeter of the bonnet. Inside the frame is a 36 mm tubular section that is an attachment rail for fall arresting lanyards, which attach to full harnesses worn by maintenance personnel.

Bonnets were also fitted with non-slip pads and painted black to decrease glare while guards were fitted around

exhaust stacks to prevent accidental contact. Operator visibility was not affected because the frames are fitted above cabin height.

Installation of the engineer certified fall protection frames has effectively eliminated the risk of personnel falling while working on the dozer bonnets. The frames were constructed and fitted by a Coal and Allied preferred contractor at a cost of \$2,900 each.

A side benefit is a saving in machine down time because maintenance can now be carried out in the pit instead of having to float the dozers back to the workshop where access can be gained from elevated work platforms. Other Coal and Allied sites are now following Mount Thorley's lead by fitting fall protection frames.

For more information email Dave O'Shannessy at Mount Thorley: [David.Oshannessy@cna.riotinto.com.au](mailto:David.Oshannessy@cna.riotinto.com.au) ■■



*The fall protection frame developed by Mount Thorley Coal Operations personnel*



*The New South Wales Government is targeting improved safety in all sectors of the mining industry.*



## Vehicle alert system

### Industry Award winner and Highly Commended

The Pasminco Mine at Broken Hill has 200 km of underground roads on which as many as 70 vehicles can be operating at any one time. These include heavy ore carrying vehicles and light 4WD utes.

Limited visibility from the heavy vehicles combined with confined workplaces make collisions likely. A spate of incidents in 1999/2000 prompted the creation of a task force to advise on ways to reduce them.

The task force was made up of managers, supervisors and operators. They identified three key areas:

- standardisation of protective systems such as vehicle lighting
- enforcement of existing systems and procedures
- installation of vehicle proximity warning devices.

The first two areas have been implemented and proximity devices are currently under long term trial. The devices consist of Radio Frequency transmitters fitted to the light vehicles and receivers mounted

on the large vehicles. An audible warning, and a visual warning on a screen tells the heavy vehicle operator that a small vehicle is close.

The alarm continues until acknowledged by the heavy vehicle operator who slows or stops his vehicle until the small vehicle has moved away.



*Monitors installed on Pasminco Broken Hill's heavy vehicles to detect light vehicles nearby*

The range of the system can be varied. At Broken Hill it is set at 30 metres.

The system can detect vehicles around corners – vital for safety at intersections where collisions are most likely.

Each transmitter has its own code so the approaching light vehicle can be identified.

The system can be used for receiving text messages for vehicle monitoring. Receivers at the vehicle wash and refuelling bays give a visual indicator to tell light vehicle operators their transmitters are working.

In a test in which a heavy vehicle crushed an old 4WD ute, the heavy vehicle driver said he would not have known he had run over a ute because the impact felt no worse than running over a large rock!

The cost of the system is \$100 for each light vehicle transmitter, \$10,000 for each heavy vehicle receiver system, \$37,000 for software development and \$40,000 for installation.

For further information contact Tony Edwards at Pasminco Broken Hill on 08 8088 8623. ■■



*How the 4WD test vehicle looked after being "run over" underground by a heavy vehicle*

## ABM 20 rib support protection system

### Highly Commended

The full width road header development miner operated by the Appin Colliery cuts into the coal seam in single passes.

Seam faults and the 3.2 metre height of the seam make the roof and rib, or wall, unstable so the roof and rib are bolted to prevent spalling or falling.

The ABM 20 rib bolting operator standing on a narrow platform at the side of the miner can be hit by coal falling from the rib during bolting.

Over a period of 18 months there were 50 injuries at the mine. Of these, 18 required medical treatment and one resulted in a mine worker being permanently incapacitated.

Through risk analysis principals, the problem was identified, assessed and controls put in place.

All levels of management, engineering, ABM 20 operators, representatives of other mines with similar equipment, machinery manufacturers, the local check inspector and outside consultants participated in the risk analysis process.

The solution was installation of a physical barrier between the bolting operator and the newly cut rib line. Shields of this type had never been fitted to an ABM 20 because of the lack of room between the machine and the rib.

During mining, the barrier retracts to protect the operator. During rib bolting it is extended hydraulically to touch the rib and hold it in place.

There have been no injuries or reported incidents since installation of the barrier in March this year.

Fitting of the barriers costs \$27,000 per machine. Several mines operated by BHP Billiton and other companies are now fitting the shields.

For further information, email Bob Myatt at Appin Colliery: myatt.bob.rc@bhp.com ■■



*The ABM 20 rib support protection system in place against the rib*

## "IS RISK ASSESSMENT A SPEED BUMP OR A VALUABLE EXERCISE?"

That is the question that Jim Joy, from the University of Queensland's Minerals Industry Safety and Health Centre asked his audience at the 2001 New South Wales Mining Industry OHS Conference.

"Ten years ago," he said, "risk assessment was likely to be undertaken only because regulations required it. Today the situation is different, with many seeing real value in carrying out risk assessment because it can prevent injury and death.

"How do you cost an accident that hasn't happened so you can estimate the value of carrying out risk assessment? The aftermath of the gas explosion at Longford in Victoria shows failure to manage risk can be very expensive and can threaten the existence of a company or even a whole industry.

"We have to learn to measure the value of our success in not having

something happen!" Jim Joy pointed out risk assessment has now been a regularly used tool for 10 years.

On average there are 22 fatalities in the Australian mining industry each year.

Jim Joy believes the fatality rate in Australian mining could have been higher over the last 10 years without the widespread adoption of risk assessment. "Risk increases with change and we have seen major change over the last 10 years with bigger mines, bigger machinery and higher production.

Risk assessment is only valid if correctly carried out and based on accurate information.

With the support of the Minerals Council of Australia, Jim is developing Risk Assessment Guidelines for national use and he has requested industry input. He can be contacted by email at [j.joy@mishc.uq.edu.au](mailto:j.joy@mishc.uq.edu.au) ■■



*Jim Joy listens to industry suggestions for developing Risk Assessment Guidelines*



*The New South Wales Government is targeting improved safety in all sectors of the mining industry.*

## ONE PLUS ONE DOES NOT EQUAL TWO IN HEARING PROTECTION

There is a common misconception that when wearing two types of hearing protection, ear muffs and earplugs, noise attenuation ratings can be added together to show total noise reduction.

This is not the case. Earplugs or earmuffs are rated according to their attenuation level, referred to as SLC80.

SLC stands for Sound Level Conversion and 80 represents the percentage of wearers who would experience the noise reduction indicated. Of the remaining 20%, some would experience less reduction and others more.

If the SLC80 for a pair of ear plugs is 22dBA and the noise exposure is

100dBA, 80% of persons correctly wearing the earplugs will have the noise level reduced to 78dBA.

Wearing ear muffs with an attenuation rating of 30dBA in conjunction with earplugs that have a rating of 22dBA does not provide a total reduction of 52dBA.

The National Acoustic Laboratories publication, *Attenuation and the Use of Hearing Protectors* (8th edition), shows the maximum hearing protection gained by wearing two types of protection is 36dBA. Even this level can only be obtained by using specific combinations.

One plus one does not equal two for several reasons, including the coupling of muff and earplug by body tissue, air volume trapped between them, and limitation of attenuation through bone conduction.

Wearing hearing protection should not be looked upon as the only method of protection from excessive noise. The bone in the skull will transmit vibration if the sound is loud and intense enough. This can ultimately cause the same hearing loss that might be experienced if a person was not wearing any hearing protection.

Superior protection is provided by reducing the hazard through engineering strategies such as shielding, enclosing, distancing or replacing noisy equipment.

Another factor that should be taken into account is the rating of hearing protection, much of which is imported from the USA. Earplugs which have an American Noise Reduction (NRR) of 29dBA are rated by the National Acoustic Laboratory in Australia as having an SLC80 of 22dBA.

*(Continued on page 9)*



## THE DANGERS OF UNPLANNED MACHINERY MOVEMENT

Several recent incidents have raised concerns over the operation of remote controlled mining equipment.

In each case the incident has been similar. A mineworker has pressed a button on the remote control transmitter to move or start the equipment.

Instead of the desired action, the machine has done something else or even started several different actions at once.

This is dangerous enough above ground, where there may be room and time to get clear of an out of control machine, but it is even more dangerous in the confines of an underground mine where an unexpected move by a machine can easily trap a mineworker.

In one incident, the cutting head of a continuous miner had overheated and been stopped by the overheat circuit breaker. While it was stopped, a button had been pressed on the controller without any response.

When the head cooled, the circuit automatically reset, the machine responded to the last signal it had

received and it started again. This created a potentially dangerous situation because someone could easily have moved in front of the miner while it was stopped.

Investigation of recent unplanned movement incidents have ruled out multiple signals because in each case only one radio remote controller was being used in the area at the time.

Instead it was found unplanned and dangerous movement had been caused by a single electrical fault in the transmitters, which did not comply with AS4240 1994, *Remote controls for mining equipment*, or with MDG5001 1998, *Guidelines for the design of remote controlled mining equipment*.

Remote control systems are used for a wide range of equipment including continuous miners, breaker line supports, roof bolters, bolter miners, etc.

The following recommendations have been made in a safety alert:

- All radio remote control systems should be assessed to check whether a single electrical fault on the transmitter could cause unintended and hazardous operation of a machine.

- Where assessment shows a single electrical fault can cause unintended movement, the controller must be modified as a matter of urgency to ensure this cannot happen.
- All radio remote controllers are to be assessed for compliance with the requirements of AS4240 and MDG5001. If systems are found that do not comply, a program must be implemented to bring them into compliance.
- Operating procedures are to be reviewed to prevent unplanned movement injuring personnel. ■■

## TRUCK FILL BOOM – DRAYTON COAL

A change to procedure for radiator filling on Cat 789 trucks resulted in increased danger to drivers of slips, trips and back strains. To fill the radiators, they unrolled a hose from a retracting reel, dragged the hose up the front ladders onto the deck and filled the radiator before reversing the procedure.

As well as safety considerations, there was also the risk of environmental damage if the coolant shut off valves were faulty.

To fix the problem, a swing out boom with coolant and potable water hoses was designed in consultation with the drivers and built by local contractor Bro-Built Engineering.

It consists of vertical piping from ground level to the deck level of the truck. At the top a horizontal boom carries the hoses. The driver can lock the boom back against the wall of the shed or swing it out over the deck of the truck while he is standing on the ground.

The driver climbs up to the deck, selects the appropriate hose and turns it on and off with a nozzle end valve. Counter weights retract the hose and the driver returns to the ground to unlock and swing the boom back against the wall. If the driver fails to retract the boom it will automatically fold back adjacent to the wall as the truck drives off.

For more information contact Victoria Jago at Drayton on (02) 6542 0200 or email [Victoria.Jago@anglocoal.com.au](mailto:Victoria.Jago@anglocoal.com.au) ■■

(Continued from page 8)

Decibel rating, or dBA is the noise level measured instantaneously/over a period of time using the "A" weighting graph.

It is a logarithmic scale so three dBA change represents a halving or doubling of noise level.

Damage by continued exposure to excessive noise is insidious and cumulative.

Loss of hearing is debilitating, work limiting, life changing and socially isolating.

There is no cure but noise induced hearing loss is totally preventable by limiting exposure through a range of control measures including the wearing of personal hearing protection as described in AS1270, *Hearing Protection*.



(Adapted from an article in SafetyWA, written by Malcolm McFarland, Certified Noise Officer, Industrial Foundation for Accident Prevention, WA.) ■■

## HELPING SMALL MINES MEET NEW SAFETY REGULATIONS

At the 2001 NSW Mining industry OHS conference, John Moss, Area Manager Safety Operations, NSW Department of Mineral Resources, based in Orange, discussed the changing role of Safety Operations officers in education.

He showed how the NSW's Government Small Mines Campaign illustrated the changes. "Many small mines don't have the knowledge, the resources or even the awareness of the need for a systematic approach to improving safety that bigger operations have," he said.

"Some of them did not even realise they must meet mining legislative requirements. Therefore more than 800 quarries, exploration sites, clay pits, salt evaporation sites, local council operations and borrow pits are defined as 'small mines' under the Mines Inspection Act of 1901.

"Small mines, those with less than five employees, have a higher rate of fatalities than larger (non-coal) mines. Over the past 10 years there have been 13 small mine fatalities – the same number as recorded for the rest of the metalliferous mines, some of which have hundreds of workers. This is clearly an unacceptable situation.

"All small mines in NSW were required by the Mines Inspection General Rule 2000 to have prepared a Safety Management Plan by September 1, 2001.

"Many were found to be ignorant of their legislative obligations and often had a shortage of suitably qualified supervision. Safety issues were compounded by problems of geographic isolation, inadequate communication, misguided attitudes to safety management, shortage of resources that could support safety improvement and a lack of understanding of the negative commercial impacts of poor safety performance. The NSW Government realised the need to provide hands-on, practical help to small mine operators."

***It is expected the New South Wales Government's Small Mines Campaign will lead to a long term reduction in injuries and fatalities.***

To remedy this situation, the NSW Government developed a Small Mines Campaign which:

- identified small mines in NSW
- improved their awareness of statutory obligations
- provided a structured education program
- worked with small mine employers and employees to advise them how to develop and implement Mine Safety Management Plans.

Educational workshops were held in various regional centres. Each was divided into two sessions, the first over one and half days, the second three months later over a single day. Training was based on the *Guidelines for Safe Mining* and the *Safety Management Plan – Workbook*, a combined Institute of Quarrying Australia and NSW Department of Mineral Resources publication that is rapidly becoming the industry standard.

The workbook provides a structured, plain English explanation of how to develop a safety management plan and has pro forma documentation and examples. Both publications are available from NSW Department of Mineral Resources offices.

Topics covered included:

- Safety Management Plan overview
- Policy
- Document control
- Hazard identification
- Risk assessment
- Workplace inspections
- Job safety analysis



*"It's in the book!" John Moss tells delegates to the NSW Mining Industry OHS Conference during his speech about helping small mines meet safety regulations*

- Safe work procedures
- Emergency response planning
- Maintenance programs
- Work environment
- Accident and incident reporting
- Contractor management
- Training and development
- Fitness for work.

After each workshop session, Safety Operations officers visited participating small mines to advise management and employees how to prepare Safety Management Plans.

The Department is now focussing on assessing compliance through a questionnaire sent to all small mines. Information received will be used to identify directions for future work in the small mines sector.

It is expected the Small Mines Campaign will lead to a long term reduction in injuries and fatalities. ■■■



## CLEANLINESS NEXT TO FIRE-LESS-NESS WITH UNDERGROUND MOBILE EQUIPMENT

An analysis of 81 underground fires involving diesel powered, mobile equipment in NSW mines between July 1990 and September 2000 has indicated that virtually all of the fires could have been prevented by better maintenance.

The most common cause was diesel or hydraulic oil spraying onto hot components when pipes and hoses wore through or burst. Oil does not ignite on its own but can do so if sprayed onto a hot exhaust manifold, a hot turbocharger or onto a worn out and arcing electrical wire.

If the engine is turned off, the hydraulic fluid or diesel oil flow generally stops and the fire goes out.

However, in many cases oil-soaked dirt and dust or deposits of grease on the equipment provide enough fuel to keep the fire burning.

That's where cleanliness and maintenance comes in. Regular cleaning will remove the secondary fire fuel and make it easier to find and fix problems that can cause fires.

The other common cause of fires was electrical, again a maintenance issue, with batteries breaking loose or cables breaking and shorting out onto components or vehicle frames to provide the spark needed for ignition.

Some fires were also related to brake retarder systems.

The figures on underground equipment fires are from a scoping study initiated by the mining industry and the NSW

Department of Mineral Resources in 1996.

Information was incorporated into the *Guidelines for Safe Mining*.

Underground equipment fires which have occurred since 1990 have not resulted in serious injury but fires are unnecessary underground dangers.

For further information on how to prevent fires on underground equipment, contact Bob Johnson, NSW Department of Mineral Resources Inspector of Mechanical Engineering on (08) 8080 0622.

The full list of underground equipment fires, with causes and prevention strategies, can be found on the Safety pages of the NSW Department of Mineral Resources website [www.minerals.nsw.gov.au](http://www.minerals.nsw.gov.au) ■■

## BERRIMA COAL MINE DEATH

A mine in NSW's southern region, Berrima Coal Pty Ltd has been fined following the death of a worker.

In the Industrial Relations Commission on 12 June 2001, Vice-President Walton fined Berrima Coal Pty Ltd \$91,000. The Court also found an offence proven against the mine manager but did not record a conviction. Both the company and the manager pleaded guilty to charges under the Occupational Health and Safety Act 1983.

In April 1996, Robert Fraser was killed while working as an electrician at the mine. At the time, workers were cutting away, or "brushing" the roof of a mine roadway intersection, so that an overhead conveyor could be installed. Unsupported roof under which Mr Fraser was working collapsed.

The Manager's Support Rules require support to be installed in coal mine roadways. The support rules at Berrima said the distance between the end of a roadway and the latest permanent support should be at most 9 metres. In this case the length of unsupported roof was 22.6 metres. As well, coal mine managers must have brushing provisions in their support rules, and there were none at Berrima.

The Court noted there were no arrangements for the "superintendence" of managers and supervisors at the mine. This included a lack of systems of communication and monitoring. These would have ensured all instructions for safely operating the mine were carried out at all levels of supervision. The serious

consequences of failure to supervise in relation to roof support was an important aspect of the case

As a result of this court case Berrima Colliery was identified as the employer failing to ensure that supervisors maintained the systems of work which were in place to ensure the safety and health of the mine's employees. Vice-President Walton indicated there was a system of work at the mine and if it had been followed the accident may have been prevented.

"Employers must make sure systems of work which are designed to ensure the safety of employees are complied with at all times." He noted the Coal Mines Regulation Act 1982 requires mine managers and supervisors [including deputies] to make sure support rules are followed.

In deciding the penalty, the Court took into account the defendants' pleas of guilty, cooperation with authorities after the event and steps which the company had taken to make its approach to safety more systematic. If the company had not shown it was making attempts to better manage safety, the fine may have been higher.

The Director-General of the Department of Mineral Resources, Alan Coutts said there were important lessons to be learnt from Berrima: "Not only does this tragic case highlight the critical role of effective supervision in health and safety, it also demonstrates the importance of mining companies implementing systematic safety management."

The full judgement of Vice-President Walton is available at: < [www.lawlink/ircjudgments](http://www.lawlink/ircjudgments) > . ■■



*The New South Wales Government is targeting improved safety in all sectors of the mining industry.*

## NATIONAL INTEREST IN RAISEBORER SEMINAR

Following a DMR investigation into a fatal accident during raiseboring, a seminar for those with a special interest in raiseboring techniques was held at Dubbo in late September.

The seminar was a chance to share knowledge and experience, useful in the development of safe systems and an effective risk management process. A particular focus was reducing the risk of serious injury or fatality when working near the bottom of large diameter (> 1.8 metres) raiseborer holes.

The NSW Department of Mineral Resources organised the successful seminar. It was attended by all major mining contractors engaged in this work, mining companies and Departmental Safety Operations staff. Each of these groups separately reviewed the priority issues that had the greatest potential to eliminate risk. The aim of their review was to develop actions which could assist in the elimination of risk.

All the participants agreed they need to be committed to reduced risks associated with this practice. They recognised that it would take resources, people, time and money from all. Another meeting has been planned to progress the teams' actions. ■■

## SAFETY ALERTS

Number	Title	Date
SA01-10	Coal mine shuttle car cable reel weld failure	Issued 13/06/01
SA01-11	Children in danger on mine sites	Issued 8/07/01
SA01-12	Unstable structure crushes workman	Issued 31/08/01
SA01-13	Fall of coal and stone kills miner	Issued 19/09/01

## DEPARTMENTAL CONTACTS

<b>HEAD OFFICE</b>	29-57 Christie Street ST LEONARDS 2065 Ph: (02) 9901 8888 Fax: (02) 9901 8777	Specialist Services and Applied Research, Lidcombe Investigation Unit, Lidcombe	Ph: (02) 9649 5266 Fax: (02) 9646 3224 Ph: (02) 9649 8959 Fax: (02) 9649 5631
<b>ARMIDALE</b>	Ph: (02) 6770 2100 Fax: (02) 6770 2121	<b>LIGHTNING RIDGE</b>	Ph: (02) 6829 0678 Fax: (02) 6829 0825
<b>BROKEN HILL</b>	Ph: (08) 8080 0620 Fax: (08) 8087 8005	<b>LITHGOW</b>	Ph: (02) 6351 3052 Fax: (02) 6352 3876
<b>COBAR</b>	Ph: (02) 6836 4392 Fax: (02) 6836 4395	<b>LONDONDERRY</b> Core Library	Ph: (02) 4777 4316 Fax: (02) 4777 4397
<b>GATESHEAD</b>	Ph: (02) 4942 2300 Fax: (02) 4942 2323	<b>ORANGE</b>	Ph: (02) 6392 6333 Fax: (02) 6392 6363
<b>LIDCOMBE</b> Environmental Geochemistry, Lidcombe	Ph: (02) 9646 1344 Fax: (02) 9749 1405	<b>SINGLETON</b> (Inspectors) (Geology)	Ph: (02) 6572 1899 Ph: (02) 6572 4200 Fax: (02) 6572 1201
Mine Safety Technical Services Assessment and Advice, Lidcombe	Ph: (02) 9646 1644 Fax: (02) 9646 3224	<b>WOLLONGONG</b>	Ph: (02) 4227 1699 Fax: (02) 4226 3851

Website: [www.minerals.nsw.gov.au](http://www.minerals.nsw.gov.au)



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 risks according to its own hazard identification, risk assessment, control systems and monitoring process. Whereas all care is taken in producing Mine Safety News, the NSW Department of Mineral Resources accepts no responsibility for accuracy of information supplied. Inclusion of any product, service or company in Mine Safety News does not imply NSW Government or NSW Department of Mineral Resources endorsement.

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