

NSW

# MINE SAFETY

UPDATE

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Members of the Mine Safety Advisory Council during the May 27 meeting, from left: **Jeremy Allan:** Australian Workers Unions (Observer), **Kathryn Heiler:** CFMEU Mining and Energy (Observer), **Rob Regan:** Mineral Resources, **Warren Baker:** Australian Workers Union, **Rod Morrison:** Mineral Resources (Secretariat), **Tony Ingram:** Extractive Industries, **Scott Jones:** NSW Minerals Council, **Leanne Parker:** Extractive Industries, **Prof. Dennis Else:** Chair, **Jodie Hooper:** NSW Minerals Council (Observer), **Graham Terrey:** Mineral Resources, **Mick Buffier:** Coal

**The Mine Safety Advisory Council is the principal advisory group on mine safety matters to Minister for Mineral Resources, Kerry Hickey MP. See page 3 for further information on the direction and work of the NSW Mine Safety Advisory Council.**



Promoting safety in the NSW mining industry



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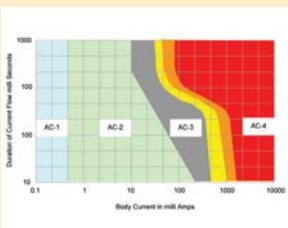
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*The New South Wales Government is targeting improved safety in all sectors of the mining industry.*

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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 NSW Mine Safety Update, NSW Mineral Resources accepts no responsibility for accuracy of information supplied. Inclusion of any product, service or company in NSW Mine Safety Update does not imply NSW Government or NSW Mineral Resources endorsement. © NSW Mineral Resources

# Changes in Mineral Resources Mine Safety

*Graham Terrey (centre at right), formerly Director of Mine Safety and Chief Inspector of Mines for NSW, left Mineral Resources at the end of May to pursue other interests. Rob Regan (left), formerly Assistant Director Safety Operations and Chief Inspector of Coal Mines has been appointed Acting Director of Mine Safety as well as Chief Inspector of Mines and Chief Inspector of Coal Mines. Rod Morrison (right), is continuing as Assistant Director of Mine Safety. After 35 years in mining Graham is not leaving the industry but is studying for a Doctorate in the Development of Mining Regulation at the University of Ballarat, where Professor Dennis Else, who chairs the Mine Safety Advisory Council, is Professor of Occupational Health and Safety*



## Improving safety across NSW mining

The NSW Mine Safety Advisory Council was established in 1998 following recommendations made in the Mine Safety Review and Gretley Inquiry. It acts as the principal advisory body on mine safety in NSW to Kerry Hickey MP Minister for Mineral Resources.

The Council's principal role is to improve safety across the mining industry in NSW. It provides strategic advice on industry safety matters, and facilitates consultation and the exchange of information across industry sectors and between unions, employers and the Government.

The Council has set out its vision as "A safe and healthy minerals industry with a mindset of safety as a value, and which is sustainable and innovative."

Its goal is an industry where risks are identified, prioritised and managed, miners understand that they have responsibility for each others' safety, managers understand and accept their duty of care and responsibilities and everyone can expect to go home healthy and safe.

It further aims to have interaction between stakeholders, which is

focused on working together to lead industry to a culture of safety. It looks to a regulatory and compliance framework, which encourages those exceeding minimum standards and holds accountable those not meeting minimum standards.

The Council has identified five strategic issues through which it will focus its work. These are effective leadership, improved safety performance, innovative and safe technology and processes, competent people and regulatory reform.

The Council meets four times per year. Three industry sector safety advisory committees, covering coal, metalliferous and extractive mining, provide strategic advice to the Council on sector specific safety issues.

Membership of the Council is tripartite, which means it has representatives of mine workers, representatives of the mining industry and representatives from the Mine Safety Division of NSW Mineral Resources. Members are appointed by the Minister for Mineral Resources. ■■■

Professor Dennis Else chairs the Mine Safety Advisory Council. Describing the work of the Council, he said: "Our meetings discuss issues such as monitoring health risks in the mining industry and engaging with original equipment manufacturers to ensure equipment is fit for purpose and safe."

"At a recent meeting, members listened to three excellent presentations of analyses of work to monitor and control health risks in the mining industry. We heard of good examples from a national and NSW perspective of locally developed cost-effective solutions to noise, vibration and dust exposures. Unfortunately these problems were identified after the equipment was in use.

"A common theme, reinforced by the experience of members of the Council was the need to seize opportunities to improve the way we incorporate health issues into making decisions when buying new equipment. It is far easier, far more effective and much cheaper to get it right during design and construction than to have to modify equipment that is already in service," Professor Else said. ■■■

# Trials of fatigue assessment tools

Following preparatory work by a committee of the Mine Safety Advisory Council, NSW Mineral Resources has been trialing fatigue assessments at metalliferous mines and extractive industry sites in NSW.

Fatigue is one of the safety issues that will be addressed in Regulations being framed to implement both the Coal Mine Health and Safety Act 2002 and the Mine Health and Safety Act 2004.

Assessments were carried out in April and May using an audit type assessment tool developed by the Department of Mineral Resources from a draft guideline produced by the committee.

Sites offered by their management for the trial assessments were the Penrith Lakes quarry, Perilya at Broken Hill and Endeavour at Cobar.

The audit tool is based on a systems approach according to the Australian Standard 4801 for Occupational Health and Safety Systems. The sections of this standard that were audited at each of the sites were:

- 4.43.1 consultation
- 4.4.6 hazard identifications, risks assessment and control
- 4.5.1 measuring and monitoring

The aim of the trial assessments was to train the mines in the procedures and determine whether the draft audit tool is effective or in need of further development.

They were carried out under the guidance of mentors, Earle Alexander and Sharon Carvolith from Audit Systems International. Their role was to oversee the training of groups carrying out the assessments, oversee assessments and provide feedback to the teams.

It was planned that each of the audit team would consist of a representative of the mine's workers, a representative of the mine's management, a Mineral Resources



Mick Kemmink, yellow shirt, describes the Penrith Quarry fatigue management system to assessors, from left, Mihai Leonte from Mineral Resources, Leanne Parker from Hymix and Gary Randle from the Penrith Lakes Development Corporation. Earle Alexander, trainer and mentor for the assessment trails, is standing behind

Inspector or Mine Safety Officer and the mentor. In operation, the teams vary according to availability of people.

Prior to the assessments taking place, all team members were trained to a level equivalent to Internal Management System Auditor, under the QSA International scheme.

Under the guidance of the mentors, the teams verified the existence and extent of each of the mine's fatigue management systems and then conducted work site interviews with miners to check how effectively the systems were being implemented.

All assessments were carried out by the complete team, chosen for each mine, working in accordance with ISO19011:2003: Guidelines for Auditing.

At the end of each assessment, a report was prepared on the completed work and the improvement opportunities that had been identified.

All parties involved, including industry associations and unions, have been invited to a debriefing conference at Penrith on Monday July 5. It is intended that the

trial assessment will lead to the development of a fatigue audit tool that will be accepted and used by the mining industry, representatives of the workers in the industry and the Government. Similar trial assessments are being used to develop and prove auditing systems for employee communication, consultation and training. A training system audit was conducted at Cadia at the end of May and a communication system audit is scheduled for the end of June at Northparkes. ■■■

## DOCUMENTS AND SYSTEMS REVIEWED DURING THE TRIAL ASSESSMENTS

- policy (safety, fatigue, communications, training etc)
- procedures, work instructions, forms, policies, overview manual
- objectives and targets
- management plans
- risk assessments and controls, risk register
- roles and responsibilities ie position descriptions etc
- training records
- communication and consultation records
- document control records
- accident and incident forms
- health surveillance forms
- records register
- audit reports
- management review records ■■■

# New legislation a victory for consultation

Minister for Mineral Resources, Kerry Hickey, has paid tribute to the consultative process that involved all industry stakeholders in development of the Mine Health and Safety Bill 2004. He did so in his Second Reading speech to the NSW Parliament in support of the Bill.

When this issue of Mine Safety Update went to press, the Bill had been passed without amendment by the Legislative Assembly, or Lower House, and was due to be introduced into the Legislative Council, the Upper House.

When passed by both houses of Parliament, the Bill will become the Mine Health and Safety Act. It will be implemented by Regulations.

This new legislation will apply to metalliferous mining and extractive industries in conjunction with the Occupational Health and Safety Act 2000.

In his Second Reading speech, the Minister said that it was a tribute to the consultative process that, out of the hundreds of issues considered, only three significant matters remained unresolved.

These were the use of the title Site Check Inspector, adoption of the District Check Inspector model from other mining sectors and the specification of maximum hours of work.

Mr Hickey said the Government has shown leadership in deciding the way forward with these issues.

The title of Site Check Inspector was retained in light of the long history of these work force representatives. The role of Check Inspector is now more closely modelled on occupational health and safety representatives in the Occupational Health and Safety Act 2000.

It was decided not to introduce a new entity in the form of District



During the Second Reading speech for the Mine Health and Safety Bill, Kerry Hickey, Minister for Mineral Resources, acknowledged the contribution of industry parties to the consultation process and confirmed that all comments had been fully taken into account.

Organisations praised by the Minister were, in alphabetical order:

- the Australian Mines and Metals Association
- the Australian Workers Union
- the Construction Forestry Mining and Energy Union
- the then Crushed Stone and Sandstone Association, now renamed the Cement Concrete and Aggregates Association
- the Lightning Ridge Miners Association
- the Minerals Council of New South Wales ■■■

Check Inspectors to metalliferous mining and extractive industries but to continue having people available who can substantively fulfil the industry representative role. This is through authorised representatives under the Occupational Health and Safety Act 2000.

The Mine Health and Safety Bill has similar provisions for a ceiling on working hours underground to those in the Mines Inspection Act 1901.

These provisions are essentially a maximum of eight consecutive hours in a shift with a maximum of 48 hours over a period of seven straight days. There is also a requirement to a break of at least one full day of 24 hours in those seven days.

Variations in case of emergencies are allowed for in the Bill, which also provides for development of regulations for these variations.

When it is passed by Parliament, the Mine Health and Safety Bill 2004 will be another major step towards ensuring that every NSW miner returns safely home from work. ■■■

## FREE DOWNLOAD: THE MINERALS INDUSTRY SAFETY HANDBOOK

The Minerals Industry Safety Handbook has been posted on the NSW Department of Mineral Resources website as a series of PDFs for free downloading.

The handbook is a companion to the Safety Management Plan Workbook and it contains valuable information on hazards, safe working practices and protecting miners from injury. <http://www.minerals.nsw.gov.au/mapspubs/safepubs.htm> ■■■

# Understanding and managing the risk of electric shock

One of the most important roles of an electrical engineer in the mining industry is to make sure that electrical plant is not likely to cause electrical injury during normal operations or under fault conditions.

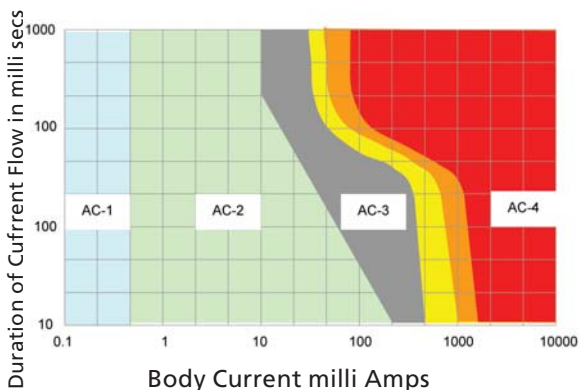
Injury can be due to electric shock, burns, arc blast, smoke inhalation and physical trauma from wayward operation of machinery.

In the mining industry, risk management practices are well established as a means of identifying risk and risk controls. The Risk Assessment is triggered at the design stage for new plant or activities and for each subsequent stage of the life cycle. Risk Assessment is also triggered routinely during a review of operations, or by the availability of new information about risk, such as a safety alert.

Effects of electric shock can be immediate, or delayed. There might be obvious diagnostic signs of injury, or the injury might be internal or emotional. Injuries can be effected by such factors as body mass, skin resistance, current path, age, duration and dampness.

There is a large variability in contributing factors and outcomes but the Maximum Reasonable Consequence (MRC) of contact with electricity above 50 Volts is **death of at least one person**. This is clearly demonstrated by Figure 14 in AS 60479.1 (See below).

The probability of death from electric shock rises from possible, with duration greater than two seconds in the grey zone (AC-3), to more than 50% probability in the red zone (AC-4). For example the yellow region of Figure



14 shows that a current of 50 mA for 100 ms has a 5% probability of causing ventricular fibrillation.

A rule of thumb for determining current is to use 1000 Ohms for total body impedance. Current is Voltage divided by Impedance. A voltage of 50 V is sufficient to produce 50 mA of current through a person's chest. 100 mS can have fatal consequences. There are many examples of fatal welding accidents involving voltages of 85 Volts or less.

It is sometimes suggested that the MRC of electric shock is minor injury. This is based on a failure of logic that allows the likelihood to somehow enter the deliberations on the MRC. It is only through the application of engineered risk controls, such as protection and earthing systems, that the risk (Probability and Consequence) can be managed at a level acceptable to the organisation.

When electrical risk controls are being considered, the possible effects need to be clearly understood.

- Immediate physiological effects, as detailed in AS/NZS 60479. 1
- Delayed effects, as detailed by Morse 2 and Jenner 3

A complete knowledge of the potential effects of electric shock is also needed when preparing procedures for immediate care of the victim. The following commonly observed effects are from Morse:

Immediate:

- Exhaustion
- Dizziness
- Loss of Function along current path

Long Term:

- Weakness/Dysfunction distal to injury path
- Chronic pain
- Headaches
- Irritability
- Depression
- Chronic Exhaustion
- Inability to function at a normal level
- Inability to hold/maintain normal employment

A victim may have minimal physical signs of injury but may be far from ready to resume normal duties.

## Electricians and managers improve electrical knowledge

The northern region of Mineral Resources is running electrical standards workshops for management (general managers, production managers and site supervisors), electricians and electrical contractors responsible for extractive sites and quarries.

The next workshops will be held in July in Tamworth and Port Macquarie. Phone Glen Henderson on (02) 6776 0300 or Paul White on (02) 6776 0327 to get the dates and book in to a workshop. ■■

All Mine Safety Management Plans should include plans for the control of the risk of electrical injury.

A properly engineered and maintained electrical installation will have multiple barriers to electric shock. For prevention of direct contact with live conductors, Australian Standards describe insulation requirements, obstacles, minimum height of conductors, enclosures for electrical equipment and access restrictions.

For prevention of contact with faulty live apparatus, the standards describe earthing systems, electrical protection (including safety switches), double insulated apparatus and Safety Extra Low Voltage (SELV) systems. ■■

- 1 AS/NZS 60479.1:2002 Effects of current on human beings and livestock - General aspects
- 2 An Evaluation Protocol for Electric Shock Injury Supported by Minimal Diagnostic Evidence Presented at IEEE EMBS Morse San Diego, 1993
- 3 Jensen, P (1987): "Electric Injury Causing Ventricular Arrhythmias" British Heart Journal Vol 57, No.3, pp 279-283

# New Department of Primary Industries - Relocation Proceeding

In the minibudget announced by the NSW Government, the Departments of Mineral Resources, Agriculture, Fisheries and Forestry will merge to form a single Department of Primary Industries.

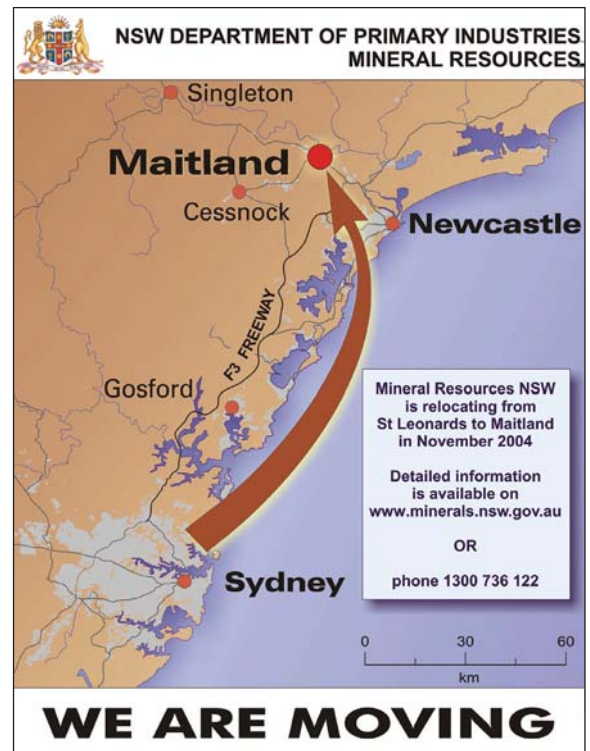
The departmental merger and restructure of Mineral Resources is currently being worked on by the Interim Board of the Department of Primary Industries. Changes that result from the restructure are scheduled to be implemented on July 1, 2004. Information on any changes will be provided as the detail becomes available.

These changes will not affect the Relocation of Mineral Resources to Maitland. Building construction and relocation planning remains on schedule. It is planned that staff will relocate to the new Maitland Head Office in November 2004.

Relocation of the Mine Safety Technology Centre from Lidcombe to Thornton will begin in July and continue through November.

Mineral Resources has been preparing for the relocation for two years, and every effort has been made to ensure continuity of service throughout the relocation process. While the impact of the relocation on the Mine Safety Division will be minimal, there may be some temporary disruption in other areas of operation.

Detailed information of the relocation, together with "Frequently Asked Questions" can now be



found on the website, [www.minerals.nsw.gov.au](http://www.minerals.nsw.gov.au) If there are any questions or concerns that you may have about the relocation, then please contact by email [relocate.maitland@minerals.nsw.gov.au](mailto:relocate.maitland@minerals.nsw.gov.au) or by phone 1300 736 122/ ■■■

## COMING EVENTS

NSW Mining Industry Occupational Health and Safety Conference, Leura, July 25-27, 2004

Local Check Inspectors Conference, Penrith, August 11, 2004

Electrical Engineering Safety Seminar, Penrith, November 10-11, 2004

For further information, or to book for these events: please contact Rebecca Rohr on (02) 6578 7726. ■■■

## SAFETY ALERTS

**SA-04-09. BROKEN CHAIN CONNECTOR RESULTS IN SERIOUS INJURIES.** A mine worker suffered severe head injuries when struck by a section of a chain and hook assembly

**SA 04-08 OPERATOR KILLED CHANGING TYRE.** An operator was fatally injured when changing a tyre on a rear dump truck while using a radio controlled truck mounted tyre handler

**SA 04-07 FATAL ROOF FALL.** A mine worker was fatally injured while erecting roof supports in front of a roadheader machine.

**SA 04-06: CRANE DOGGER KILLED UNLOADING TRAILER – UPDATED.** A crane dogger was killed when struck by a materials trailer, which detached from a crane while being moved in a pick and carry operation.

**SA 04-05: BREATHING APPARATUS CAN GET CONTAMINATED.** Compressed air breathing apparatus (CABA), when stored underground may become contaminated with pathogenic mould fungus. This can produce toxins that can contribute to lung diseases and contain potential carcinogens.

Find full Safety Alerts at: <http://www.minerals.nsw.gov.au/safety/safalert.htm> You can get safety alerts, notices of seminars and other events, and copies of Mine Safety Update mailed to you at work or at home by filling in the coupon on the back cover of this magazine. ■■■

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## Do the right people in your organisation read Mine Safety Update?

NSW Mine Safety Update and Safety Alerts are only of assistance if read by the widest possible cross-section of people who can influence safety performance in mining. If you want to get Mine Safety Update or Safety Alerts mailed directly to you at home or work, or want them to go to someone else, please fill in the form, fax it to us and we will add the name to the mailing list.

TO: Rebecca Rohr, Mine Safety Performance Improvement Division, NSW Mineral Resources,  
fax: (02) 6572 1201

Please send me by mail

MINE SAFETY UPDATE

SAFETY ALERTS

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Position: \_\_\_\_\_

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