



## MINES REGULATION AMENDMENT ACT (NO.85 OF 1990)

After a long and difficult gestation period of three years, we now finally have the Amendment Act enacted and assented to, as at the end of 1990.

This is a milestone in mine safety legislation in Western Australia as it incorporates the "General Duty of Care" and the "Consultation Provision" (Parts III and IV of the OHSWA Act) into the Mines Regulation Act.

The Amendment Act will be proclaimed as soon as consequential amendments to the

Regulations have been completed, a process which may take two to three months.

Although the Act does not legally come into operation until it is proclaimed, there is a widespread commitment in the industry, strongly supported by the Australian Workers' Union to operate as though the Act is already in effect. This approach is endorsed and strongly supported by the Mines Inspectorate, and by the Chamber of Mines & Energy.

It is essential that there is a full and clear understanding of the principles and the operating mechanisms which the legislation provides.

Provided that all parties adopt the legislation with an open constructive outlook, then it can only be of real and lasting benefit to safety in the industry.

The legislation will work if all parties have the will and the determination to make it work.

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PHOTOGRAPH COURTESY : Photographic services -Dept of Mines.



## FROM PAGE 1

Included in this issue of MINESAFE is a series of short questions and answers designed to provide a simplified guideline to the Amendment Act; references to appropriate sections and clauses of the Act are included.

Health and safety representatives and management and supervision should have copies of the Amendment Act available to them and copies should be spread sheeted on notice boards.

There are a few key points to note :

### General Duty of Care

The employer is required to provide as far as reasonably practicable :

- a safe place of work
- a safe system of work
- trained experienced staff and adequate supervision
- appropriate and well maintained plant and equipment

A duty of care is also clearly stated for employees, included in which is an obligation to avoid adversely affecting the health and safety of others by act or omission at work. The principle of "looking after your mate" has long been part of the code and way of life for miners, but as the job becomes more complex, more care and thought by the individual is required.

### Health and Safety Representatives and Committees

It is essential where Health and Safety Representatives are elected, (or appointed or nominated if it is decided not to use the formal legislative procedure), and where committees are established, both function correctly and effectively.

In particular, committees should ensure that their role and method of operation is clearly established at inception and that the major issues and policies on safety are dealt with by committees.

The effective functioning of committees can be destroyed by getting bogged down on check lists of operating problems and detailed trivia.

### Resolution of Issues

The whole thrust of the legislation is to identify and solve safety issues and problems at the workplace level if possible, but above all, within the enterprise.

The legislation contains a broad frame work on procedures for resolution of issues but enterprises should develop their own system within the ambit of the legislation to minimise the potential for any adversarial attitudes to develop.

Provision is made to call in the Mining Inspectorate to adjudicate on issues but this can only be done after all of the prescribed and agreed channels for resolution on site have been fully traversed.

The Report on the Inquiry into Safety in Underground Gold Mines released in June 1990 contains much that is common to all mining operations and deals with some important aspects of consultative arrangements.

Some 1500 copies of this report have been placed in circulation and all persons employed on mines should have access to a copy, and in particular Health and Safety Representatives and Committees.

The Mining Inspectorate looks forward to a year of rapid and smooth adoption by the industry to the new principles, which properly used, will be of great benefit.

**Footnote :** The legislation will also be included in the new Coal Mines Bill presently being finalised - a move that is endorsed by the Industry and the Coal Miner's Industrial Union.

J M Torlach  
STATE MINING ENGINEER

J.TORLACH (STATE MINING ENGINEER)  
ADDRESSING MINING ENGINEERING  
DIVISION TECHNICAL STAFF ON THE  
INCORPORATION OF PARTS III AND IV  
OF THE OHSWA ACT INTO THE  
MINES REGULATION ACT





# EDITORIAL

## 1990 REVIEWED

Safety performance during the calendar year 1990 continued to improve for the industry as a whole, and in the underground gold and nickel sector a steady improvement in the incidence rates of serious injuries is evident. This is an encouraging trend after the events of 1989, and nothing less than total commitment to a consolidated effort for sustained improvement should be the industry's aim for the decade of the nineties.

The Mining Engineering Division and its Inspectorates will be seeking this commitment from all participants in the industry.

The feature article on the cover of this issue deals with the passage of the long awaited amendment to the Mines Regulation Act, incorporating the General Duty of Care and Consultation Provisions into it.

A smooth and rapid adoption of these principles is essential to cement into place the required total commitment to sustained improvement by all of the parties involved.

The paramount need for a systematic, structured and documented safety management system was identified in the Report of the Inquiry into Safety in Underground Gold Mines and a vital part of the system is induction and training. Technological change is rapid and continuous, and requirement for new systems of work continue to evolve. We must therefore adapt to, and keep abreast of these changes.

Legislation provides a framework for good working practice and prescribed minimum standards, but effective safety management ensures a good performance by demanding high standards and setting goals well beyond the "pragmatic" level.

Our goals for the nineties are challenging, but attainable.

## MAILBAG

### QUESTIONS AND ANSWERS

**Q. Are there any working places on a mine where it is an offence to smoke?**

**A. Yes.** Regulation 8.37A provides that a person shall not smoke in a working place where (a) the air contains asbestos fibres, (b) solvents are used, (c) flammable vapours are present, (d) where explosives are present or (f) in a conveyance in a shaft.

**Q. When machinery on a mine is stopped for repair, maintenance, or cleaning purposes, what action must be taken to ensure the safety of personnel working on that machinery?**

**A. The machinery must be isolated from the power source and the isolating switch or device shall be tagged with a prominent suitable danger tag.**

The machinery must not be restarted until the person who fixed the danger tag has ensured that it is safe to do so and has removed the tag.

**Q. How do I know if I am using the correct kind of respirator for my job?**

**A. Respirators employed on mines must be selected, used and maintained according to Australian Standards 1715 (1982) and 1716 (1982). Look for the Standards Association of Australia (SAA) "kite" mark on the box or package and on the cartridge supplied for use with the respirator. Read any instructions for use before using the respirator - particularly any remarks about use in oxygen-deficient or otherwise irrespirable atmospheres. When handling solvents or other chemicals, check the data sheet to see what kind of respiratory protection is required. Above all, don't take anything for granted just because you are wearing a respirator - check and check again to make sure it is suitable for the task. If in doubt, ask and keep asking until you are sure that you have all the relevant information.**

**Q. Do I have to wear a safety belt when I am working in high places?**

**A. Regulation 4.4 says that anyone working in a place where there is a danger of falling from a height must be provided with a safety belt and rope so that he or she can be secured to prevent a fall and is able to work with both hands free. Managers who fail to provide suitable equipment and workers who don't wear the equipment provided are committing an offence.**





## WELCOME NUGGET!

Minesafe now has a resident safety expert who goes by the name of "NUGGET"- An alias he says, that has nothing to do with the ore - just the quality of his advice.

"I'm here to help" says Nugget, and while he has been spending time in an open pit - he's quite at home underground - a real all rounder!

We're going to leave it to you to write "The Nugget Story" and invite Minesafe readers to supply his background; and for the speculators, a few thoughts on his future!!

We'd like to know more about his working qualifications and experience as well as the "soft" side - hobbies and interests - imagination and humour may be applied to this task.

Send your story to the Minesafe Editor, 100 Plain Street, East Perth 6004. (The best story will be published in "Minesafe").

St. John Ambulance Australia  
W.A. Ambulance Service Inc.



Pictured are some of the people from the Mining Engineering Division who successfully completed the St. John Ambulance Senior First Aid Certificate during 1990.

We hope this example encourages industry to follow suit and acknowledge the importance of maintaining a current First Aid Certificate, particularly those employees directly responsible for safety monitoring procedures on minesites.





## FLAME ATOMIC ABSORPTION SPECTROMETER (AAS) SAFETY

A recent accident in a mine site laboratory highlights the need for attention to safety when connecting gases to AAS instruments.

A laboratory operator, by mistake, connected an oxygen cylinder to an AAS instead of air, and when the burner was ignited an explosion occurred which resulted in injury.

Burners designed for air/acetylene flames will cause flashback when oxygen or oxygen enriched air/acetylene mixtures are used because of the increased flame speed.

Such explosions may cause blow out of the nebulizer and burner, accompanied by a fire due to the escaping acetylene. Any glassware in front of the nebulizer may be shattered and if solvents are being used there may be increased risk of fire.

These explosions are violent and usually cause shock and ringing in the ears. Additional injury may also result from impact of the nebulizer and broken glass, splashes with solvent or acid and a possible ensuing fire.

There is also a case which occurred several years ago when a chemist died in tragic circumstances in a laboratory fire resulting from an AAS burner explosion while using organic solvents.

An information booklet on the safe use of flame atomic absorption spectrometers is available free of charge from the Chemistry Centre of WA.



STEVE MOUNA - CHEMISTRY CENTRE LABORATORY TECHNICIAN  
OPERATING AN ATOMIC ABSORPTION SPECTROMETER

### DETONATOR WARNING

Minesafe would like to emphasise the dangers involved in the incorrect handling, and disposal of detonators.

Recently, a serious and potentially fatal incident occurred, when a live Nonel detonator was left in the cab of an ex-mine vehicle at a metropolitan wrecking yard.

Fortunately, the landcruiser was examined as it was about to undergo oxy cutting procedures - the possible consequences had it not been discovered are self evident!

We urge Mine Managers to review their procedures involving the handling of detonators, and examination of company vehicles prior to disposal.

We remind workers of Regulation 7.17 of the Mines Regulation Act Regulations 1976 which states that explosives or blasting agents must be transported and stored in securely covered cases, bags, trucks

or other containers of a size and construction approved by the Inspector. The Explosives & Dangerous Goods Act Regulations states that detonators must be carried in a separate receptacle or compartment and separated from other explosives to prevent fire or explosion.

Specific details concerning the size of the detonators and the receptacles in which they should be carried can be found in the Explosives & Dangerous Goods Act Regulations 84, 89(5), 102(a)(b), 103(2)(a)(e)&(f).

Compliance with these regulations should avoid the repetition of incidents like the one described, as well as the possibility of prosecution.

If you require any assistance, or have any queries regarding the correct storage, transport or handling of explosives, then you can phone the Inspectors in the Explosives & Dangerous Goods Division of the Department of Mines on: (09)222-3404.



## LES BERRYMAN - SENIOR VENTILATION OFFICER

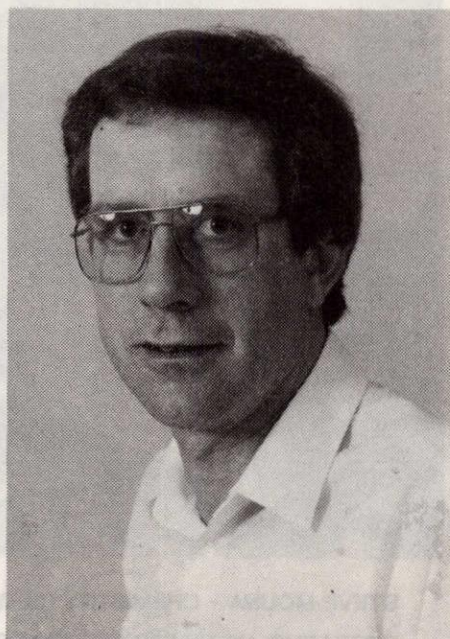
Les Berryman has been with the Mining Engineering Division in Perth since 1981. His expertise makes him a familiar figure on minesites as he is a Special Inspector of Mines (Ventilation) appointed under the Mines Regulation Act and the Coal Mines Regulation Act. He has represented the Department at national conferences and presented papers on Environmental Control in Mines and Mineral Processing Plants. Here he gives us an insight into his job as a Special Inspector (Ventilation).

To most people the terms Ventilation Officer and Special Inspector (Ventilation) refers to someone who carries out dust, temperature and airflow measurements underground. Reduced to its simplest terms, the definition fits, but mine ventilation is a complex field that covers all aspects of a mining operation. In the past decade the word "ventilation" has become synonymous with occupational health, and the ventilation expert has to be able to evaluate a wide range of measurements related to chemical and physical hazards which include the traditional tasks associated with the term.

The Mines Regulation Act defines a Special Inspector as a person appointed to make special inspections, inquiries and investigation within the scope of the Act requiring special technical or scientific training or knowledge.

A Ventilation Officer needs formal training and industry experience as well as good communication skills to be able to do the job effectively.

On any given day underground, Les will measure airflows, temperatures and atmospheric exhaust gas concentration plus dust levels for compliance, checking that diesel engined vehicles are being operated



LES BERRYMAN

in compliance within permit conditions, e.g. correct air quantities and exhaust gas levels.

In the processing plants, and open cuts chemical use is monitored, and checks are carried out to ensure users wear the correct personal protective equipment. Dust suppression procedures and the efficiency of extraction equipment is also monitored so that dust levels are kept within the required standards.

Highly sophisticated instruments are required for many tasks and Les uses a variety of different hand-held instruments including ones for measuring specific gas or vapour concentrations, noise levels, temperatures and air velocities.

Les Berryman has seen a lot of changes over the past ten years. In his opinion the most encouraging is the marked change in attitude towards occupational health by both the employers and the employees. The changes mirror community standards as people are better informed and more aware of the consequences of physical and

chemical hazards at work and no longer accept poor working conditions as a normal part of the job. They expect a healthy workplace and are willing to contribute towards achieving it. This acceptance of personal responsibility makes a Ventilation Officer's task a lot easier.

Looking back, Les remarks that as little as 20 years ago, people accepted industrial diseases as an occupational hazard. Attitudes meant that people wearing protective equipment such as dust masks and earmuffs were usually in the minority and the wearers often had to pay for personal protective equipment, or at best could only expect an employer to provide half the initial cost.

Fortunately, those values have changed.

Today, everything is supplied and workers not only understand the reasons for wearing protection but are also willing to do so.

Obviously there are times when it is impossible to bring the workplace to a standard considered acceptable for a healthy work environment without some use of protective equipment. In these circumstances the work of a Ventilation Inspector becomes even more exacting and monitoring the workplace and ensuring that the rules are in place is a primary concern.

After countless visits to mines across the state, and many years in which he has seen it all, Les knows what many are still learning - that health is a precious possession and must never be compromised in the workplace.



# A READY REFERENCE TO THE MINES REGULATION AMENDMENT ACT 1990

This document has been prepared by the Mining Engineering Division to assist you to become familiar with occupational health and safety amending legislation, before the legislation is proclaimed.

The information contained here is a guideline only and is not intended to be read as a definitive document. Please refer to the Mines Regulation Amendment Act (No. 85 of 1990) for detail on the legislation.

J M Torlach

STATE MINING ENGINEER

## FUNCTIONS OF HEALTH AND SAFETY REPRESENTATIVES

**Does a mine site have to have a Health and Safety representative (HSR)?**

It is not compulsory, but any individual employee may give notice to an employer, requiring the election of a HSR.

**What is the function of a Health and Safety representative?**

In a nutshell — The function of the representative is to look after the Health and Safety interests of the workers at his mine.

**Are the functions detailed in the Act?**

Yes. Section 23S of the Amendment Act gives full details of the representatives functions.

The key elements are to consult and co-operate with the employer and to liaise with employees on safety matters.

**It seems to me that many of the representative's functions duplicate those of the Workmen's Inspector?**

That is not correct. The Workmen's Inspector has a statutory appointment with legal duties and responsibilities across all mining operations in a wide area. While both represent the workers, it must be stressed that everyone has some degree of responsibility for safety on a mine. The Health and Safety representative undertakes more specific responsibilities for his mine or workplace, and regular liaison with the Workmen's Inspector of Mines (WIM) will assist him in his tasks.

**Will the Health and Safety Representative have any powers?**

The representative has no statutory responsibilities and therefore no statutory powers. The powers that the representative has relate only to his functions and the ability to carry out these functions properly.

**Will there be any direct involvement between the representative and the WIM?**

The representative should be involved with everyone on the mine or in the workplace which he represents. Liaison between employees, employers, WIM and the HSR is an important part of this role. The WIM has an obligation to liaise with HSRs.

**Can the HSR inspect the mine or workplace?**

Yes, usually at times agreed with the manager. If he has not inspected the mine or any part of it during the preceding 30 days, he may do so at any time once he has given reasonable notice to the manager. He can also accompany an inspector if requested to do so by the Inspector.

**I would like to become a Health and Safety representative but will I be liable if I fail to perform my function or any of my functions?**

No — Section 23S(3) states that a Health and Safety representative incurs no civil liability arising from the performance of his duties.

**As a HSR will I be required to inspect alone, areas where I may not be familiar with all workplaces or with potential hazards, for example underground workings?**

No. The manager must provide for safe conduct of the HSR throughout the mine.

**What happens if the Manager does not provide this escort?**

The Manager commits an offence.

**Is there a code of ethics in place for HSR?**

Yes. S.23U of the Amendment Act gives guidelines and includes a mechanism for disqualification as a HSR in the event of a breach of the conditions of service attached to the appointment.

**I assume the employer/Mine Manager has certain duties to fulfil in relation to Health and Safety representatives at a mine?**

Yes. It is important for employers and managers to make the information and facilities available that are relevant to the representative's duties. These duties are detailed in Section 23V of the Amendment Act.

**My employer has certain confidential medical information about me. Is that made available to a Health and Safety representative?**

Not without your permission. Neither can this information be made available unless it is in a form, that does not identify or permit the identification of an employee. The employer does not have to supply information that will disclose a trade secret. It is an offence to contravene this section.



**Will a HSR be able to get time off work, with pay to perform his duties or attend training courses?**

Yes. Regulations may be written to ensure that Health and Safety representatives are able to perform adequately without suffering financial loss.

**As the Health and Safety representative can I request my employer to establish a Health and Safety Committee?**

Yes, if there are 10 or more employees at your mine.

**Does that mean that a mine with less than 10 employees does not have to have a committee.**

Yes it does. It is assumed that such a small mine can adequately carry out its health and safety obligations without a Committee. (If there is a HSR, the manager and the HSR in effect can operate as a committee of two).

## ELECTION OF HEALTH AND SAFETY REPRESENTATIVES

**Who conducts the election of Health and Safety representatives at the Mine.**

The election can be conducted by your Trade Union. If there are two or more unions, the Union members should decide which one of the Unions should conduct the election.

**There are no Trade Unions at our Mine. What then?**

You may still have an election. Normally, you would decide on the conduct of the election at your first delegates meeting with the employer.

**What procedures need to be followed to appoint a HSR?**

Sections 23O and 23P provide detail. It is important to know that when an employer is given notice requiring the election of a HSR, the employer must, within 21 days invite the appointment of a delegate or delegates.

**Our Trade Unions have agreed that we want the election conducted by the Electoral Commission. Is this permitted?**

Yes. In fact if there is no response from the Company under Section 23P (1) to the invitation to a Trade Union for an election to be held, the election will automatically be held by the Electoral Commissioner.

**Our Trade Unions cannot agree about who should conduct the election, what happens now?**

First, you may refer the dispute to the State Mining Engineer. If the State Mining Engineer cannot resolve the dispute he may refer it to the Industrial Relations Commissioner.

**Who can vote at an election of Health and Safety representative?**

Every employee at the mine is entitled to vote.

**Is the election by secret ballot?**

If any of the parties consulted (S.23P) requests a secret ballot, then a secret ballot is required. Otherwise, it is not compulsory. No ballot needs to be held if there is only one eligible candidate.

**Who can be elected a HSR?**

A person wishing to stand for election as a Health and Safety representative must meet the requirements set down in S23(Q8) of the amending legislation.

The candidate must :

- i) be an employee who works at the mine; and
- ii) have been continuously employed at the mine concerned during the preceding two years;
- iii) have a total of at least two years experience at a mine in work of a similar nature to the work he does at the mine;
- iv) have had a total of at least 12 months experience of a type described in item (iii), and training and experience adequate to fulfil the function of a HSR;
- v) have been approved by the State Mining Engineer as a person who can fulfil the requirements of the legislation.

**Must the employer be notified of the result of an election?**

Yes. The Trade Union who conducts the election should notify the employer.

**I have a few questions relating to the conduct of election. What do I do?**

Contact the State Mining Engineer or his delegated representative. If the State Mining Engineer is unable to resolve the matter, the State Mining Engineer can refer the issue to the Industrial Relations Commissioner.

**How long is the term of office of a Health and Safety representative?**

Two years, but the Health and Safety Representative can stand for re-election.

**What are the conditions laid down for a Health and Safety representative to cease to hold office?**

S.23R of the Amendment Act sets out 4 conditions:

In brief

- term expires - not re-elected
- ceases to be an employee of the mine
- resigns
- is disqualified

## ESTABLISHMENT OF HEALTH AND SAFETY COMMITTEES

**Is it compulsory to have a Health and Safety Committee on a minesite?**

If an employer has been requested to establish a committee by a Health and Safety Representative at a mine where more than 10 people are employed, a Health and Safety Committee must be established. In the event that an employer does not feel that a committee is



warranted, an appeal procedure to the State Mining Engineer exists. Otherwise it is not compulsory unless the State Mining Engineer has exercised his discretionary powers and insisted one is formed at a minesite.

**Once a request is received is there a time limit on setting up the committee?**

Yes. The committee must be established within 3 months, otherwise an offence is committed.

**If we already have a health and safety committee in place do we have to change this arrangement?**

If all the parties in the workplace are satisfied with the current arrangement then there is no obligation to change.

**No request has been received by an employer to establish a committee, but the employer wants one on site. Is this O.K.?**

Yes. The employer can decide to initiate a committee at any time, in accordance with the Act.

**Who should be on a Health and Safety Committee?**

Section 23ZA of the Amendment Act contains guidelines. It is important to note that committee members must be employees at the mine.

**The State Mining Engineer also has decision making powers regarding committees. What happens if the manager, a representative or a trade union member doesn't agree with his decision?**

A decision made by the State Mining Engineer may be referred to the Industrial Relations Commission for review.

**We have our Health and Safety Committee. What exactly is it supposed to do?**

The Health and Safety Committee is an advisory Committee. It should facilitate, inform and be informed, recommend and consider. Guidelines are in Section 23C of the Amendment Act.

**Does the committee need to run along formal legislative guidelines.**

No. The committee can make its own guidelines. All the law requires is that it meets at least every three months.

**There is a safety issue at the mine that needs to be**

## **RESOLUTIONS OF ISSUES RELATED TO HEALTH, SAFETY AND WELFARE**

**resolved. How do we go about it?**

Procedures for the resolution of Health and Safety issues need to be set up between the manager, employers and employees at the mine. If no procedures are in place, procedural guidelines are to be found in the regulations. More information can be found in Section 23ZE.

**Where an issue is unresolved, and there is a risk of injury or harm, what do we do?**

After all attempts to resolve the issue onsite have been

exhausted, anyone involved at the mine may inform an Inspector. The Inspector will attend as soon as practicable and either take action under appropriate provisions of the Act or decide no action is required.

**I have reasonable grounds to believe that continuing to work will expose myself or others to a risk of imminent and serious injury. What to I do?**

You must stop work and notify the employer, the manager and the Health and Safety Representative if there is one. Procedures for resolution of issues will then apply (Section 23ZE). Remember, it is an offence not to inform your employer, the manager and the Health and Safety Representative immediately.

**I have, on safety grounds, refused to work at my usual task. Will I be given reasonable alternative work? Will my entitlements continue?**

You may be given reasonable alternative work until you can resume your usual work. This will not effect your right to receive the same wages and conditions you might have at your usual work. You are still entitled to them.

**I am not doing my usual work, and there is a dispute about my pay and benefits. What happens now?**

Any party involved in the dispute may refer the issue to the Industrial Relations Commission.

## **DIVISION 3A — GENERAL PROVISIONS RELATING TO OCCUPATIONAL HEALTH SAFETY AND WELFARE**

**There is a "no double jeopardy" clause proceeding the detail of this new legislation. What exactly does it mean?**

The provision of the general duty of care in the Act does not detract from the many specific duties in the Principal Act and its Regulations. However, the general duty still applies even though a specific duty requirement may have been complied with.

**The new legislation imposes a general duty of care on employers. What exactly does this mean?**

This duty is the obligation of employers so far as is practicable, to provide his employees with :

- a safe place of work
- a safe system of work
- trained experienced staff and adequate supervision
- appropriate and well maintained plant and equipment

You will find detailed information in S. 30B "Duties of Employers".

**Does this employer's duty of care also apply to Contractors?**

Yes. A contractor engaged at a mine is "an employer at a mine" as in 30B(1). The relationship between the "principal" who engages the contractor and his employees is detailed in 30B(3).



**The principal employer has appointed a mine manager. Does this fulfil his obligations under the duty of care?**

No it does not. The mine manager is only responsible for matters over which he has control. The principal employer is still bound by the duty of care.

**Do all employees have responsibilities under the general duty of care?**

Yes. An employee must take reasonable care to ensure his own health and safety and avoid affecting the health and safety of others. Guidelines are laid down in S.30C.

**Does this also apply to employers and self employed persons?**

Yes it does. (S. 30D).

**As an employee, do I have to report dangerous situations or occurrences?**

Yes. Every person working in a mine has this responsibility. Obligations are detailed in S. 30E.

**Who is responsible for making sure that the access to and egress from the mine are such that they do not present a hazard to persons at the mine?**

The principal employer and the manager have this responsibility.

**Does this duty of care extend to manufacturers, designers, imports or supplied plant at a mine?**

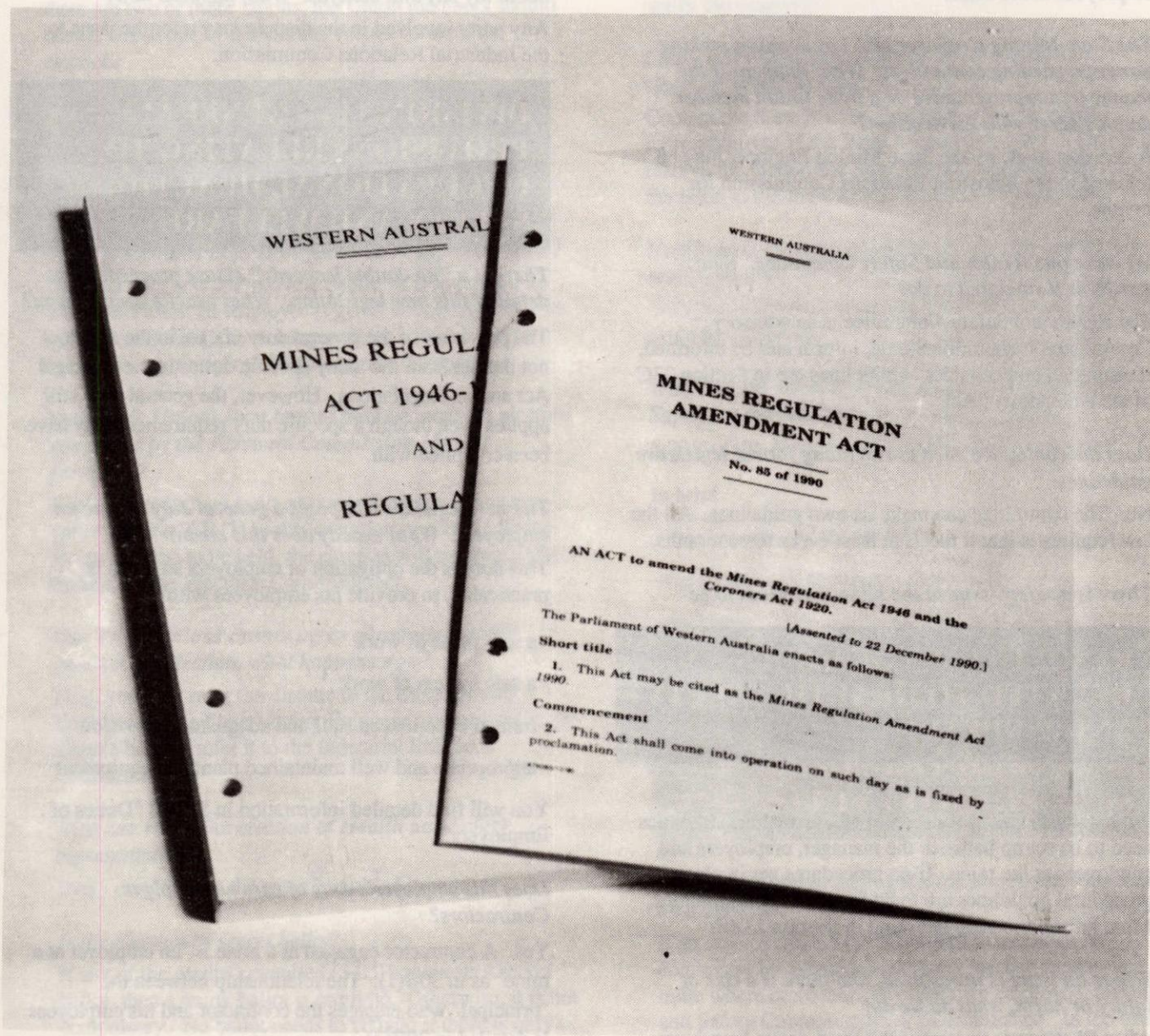
Yes. Guidelines are detailed in section 30G.

**If you have further questions with respect to these topics, please contact your local Inspectorate who will be pleased to assist you.**

Perth Inspectorate — Phone (09) 222-3333  
Fax (09) 325-2280

Karratha Inspectorate — Phone (091) 868-243  
Fax (091) 868-251

Kalgoorlie Inspectorate — Phone (090) 213-066  
Fax (090) 213 612





## PRECAUTIONS REQUIRED WITH WORN OR DISCARDED DRILL STEEL

There are a range of hazards associated with the re-use of discarded percussion drill steel.

The most serious hazard is exemplified in the description below, in which a fatality resulted from welding and heating of discarded drill steel which apparently contained some remnant explosive.

This information has been distributed across Australia in a SIGNIFICANT INCIDENT REPORT, reproduced here to ensure a widespread awareness of the hazard.

### INCIDENT

A boilermaker was killed when a drill steel which he was welding to a front end loader bucket exploded. A length of discarded drill steel (50 mm diameter) was tack welded at one end to the bucket, and the deceased was heating the steel with an oxy-acetylene torch to bend the steel to conform to the bucket shape before further arc welding. The purpose of the drill steel was to act as a wear component, in lieu of hard facing.

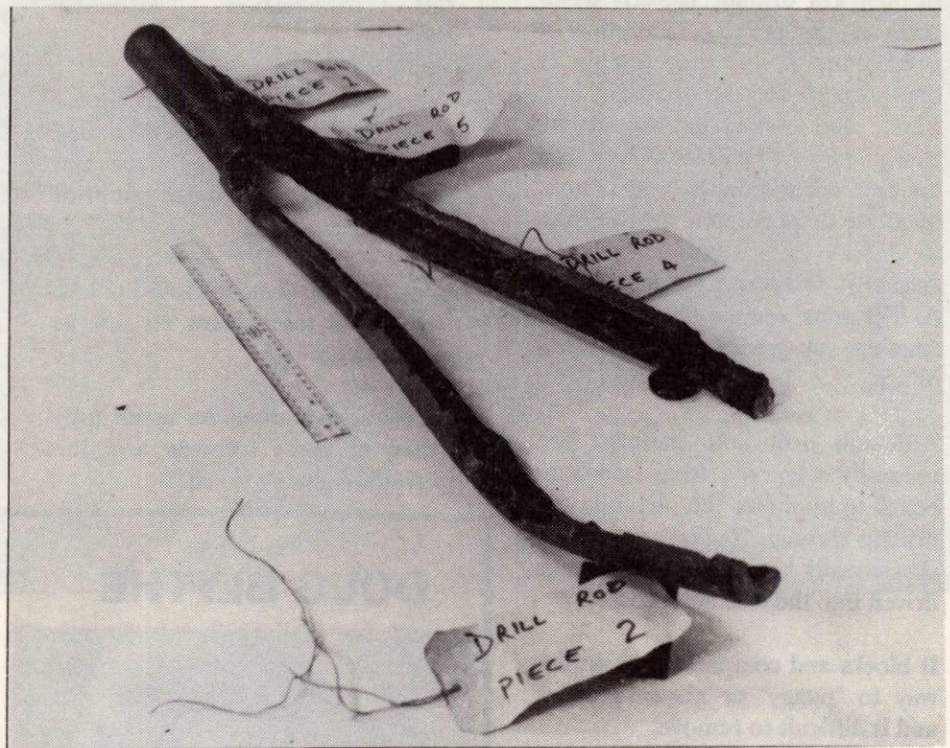
There was an explosion and the deceased was struck by shattered pieces of the drill steel.

### CAUSE

The explosion apparently resulted from a build-up of temperature and pressure which detonated explosive material contained in the hollow core of the drill steel.

A length of drill steel had previously been welded to the other side of the loader bucket in a similar manner, and the first 150 mm of the core was blocked with tightly packed material, which subsequent analysis showed to be ammonium nitrate. It is probable that the length which exploded was cut from the same length of steel as that which was already welded in place.

The amount of explosive material in the core of the rod is a matter for speculation, but the steel has been



THE DRILL STEEL RESPONSIBLE FOR THE FATALITY

disintegrated for a length almost a metre and it is therefore likely to have contained explosive along much of its length. Only a very small amount of explosive is required to present a critical hazard in such circumstances.

### COMMENTS AND PREVENTATIVE ACTION

Drill steel (hollow core) which has been in use must be checked before discard or before it is subjected to any process of cutting, heating or hammering, to ensure that it has no blockage in the core, as that blockage may consist of, or contain, explosive material.

If blocked drill steel is to be cleaned out for salvage or re-use, then full precautions must be taken in devising methods to do so. Application of heat, impact, friction or undue pressure may cause any explosive remnants to detonate. If mechanical means are resorted to then the process must be done by remote control with total protection of personnel.

Apart from the hazard potential of explosive remnants in the core, care should be exercised in the re-use of

any discarded percussion drill steel, as it becomes embrittled in service. It should never be used for holding staging and securing safety lines, nor in any application where its failure may create a hazard.

Discarded drill steel should never be used to make scaling bars.

Although the entry of explosive into the core of percussion drill steel is a relatively rare circumstance, it has over the many decades during which such steel has been used, been the cause of a number of serious and fatal accidents. Gelatinous explosives (nitroglycerine based) have been in much less common use over the past decade, than in earlier years; these explosives are more susceptible to accidental detonation than ANFO and slurries.

In soft and friable ground and in "bulled" areas of faces where burn cut rounds are fired, unexploded remnants of gelatinous explosives have been forced into the drill steel core. Subsequently, when the steel has been heated, cut or hammered, or attempts made to clear the blockage with steel wire etc, explosions have occurred.

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In open cut drilling, (mostly down holes in the bench), quantities of unexploded ANFO may remain in the ground due to leakage into friable and faulted ground during charging up, or by being driven into the area around the hole in a "non-ideal" or an incomplete detonation.

Areas containing unexploded ANFO may remain in the bench whether sub-grade drilling is used or not.

Although drill hole patterns are normally staggered from bench to bench to minimize the possibility of drilling through "bulled" ground, it occasionally happens that ANFO is driven into the drill steel core.

It blocks and compacts in a similar way to "puggy" or clayey ground, and is difficult to remove.

Drill steel should be checked thoroughly before discard to assure that the core is clear, and the precautions outlined in the S.I.R. must be observed.

#### Hazard due to Drill Steel Embrittlement

Drill rods are made of high grade alloy steel which becomes embrittled in service by the fatigue action of the hammering and rotation to which it is subjected.

All discarded drill steel should be treated as suspect and should not be re-used for any purpose where sudden failure could create a hazard. In particular it should not be used as pins for supporting stages or other structures, nor for the attachment of safety belts or safety ropes.

It should not be used in the supporting of operating machinery, such as fans hung overhead, as the load and continued vibration may induce failure.

It can be used with an adequate margin of safety for static low load applications such as short pins to support cables etc.

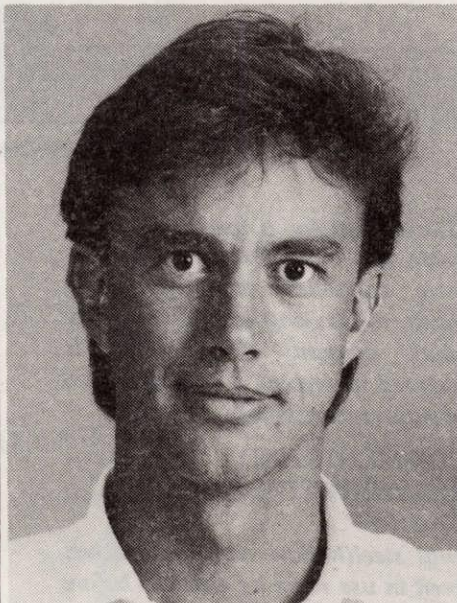
Discarded drill steel should never be re-used for scaling bars as the potential for brittle failure makes this application extremely hazardous.

When drill steel is to be cut up for pins, etc, the precautions described upon for checking remnant explosives must be carried out prior to cutting.

Lengths of drill steel should not be welded to steel stiles to act as ladder rungs.

All personnel must be made fully aware of these hazards and the precautions to be taken.

## DOUG BLYTHE



The Minesafe Committee would like to introduce Doug Blythe - the creator of "Nugget" - the newest member of the Minesafe team.

Doug is a photographer with the Surveys and Mapping Division, and has a Diploma in Media Design. As we can see, he is also an extremely talented cartoonist, and images of Nugget in his various guises will flow from the tip of Doug's pen in future issues of Minesafe as well as other divisional publications.

Doug's willingness to participate in these projects is greatly appreciated by the Mining Engineering Division.

## CLEARING REGULATIONS SOIL AND LAND CONSERVATION ACT

In 1986 the Government gazetted regulations requiring each landholder or occupier of land in WA to notify the Commissioner of Soil Conservation of their intention to clear land.

All land in WA is subject to these Regulations and if clearing in excess of one (1) hectare of land is proposed, then a minimum of ninety (90) days notification of intention must be given to the Commissioner.

With gazettal of the Regulations, the Commissioner of Soil Conservation verbally delegated his authority to examine intentions to clear to the Director General of Mines. This resulted in all applications for disturbance of the ground surface (prospecting, exploration or mining), being examined by Department of Mines staff. This process ensured that land degradation would not occur as a result of the project operations.

In late 1990, the Commissioner of Soil Conservation, under Section 7 of the Soil and Land Conservation Act, delegated to the State Mining Engineer his authority to examine intentions to clear land.

Therefore, all mining proposals to clear more than one (1) hectare of land requires submission of a notification to do so to the State Mining Engineer. A form is available from Karratha, Perth and Kalgoorlie Mining Engineering Division offices, or the Public Counter, 1st Floor, Mineral House, Perth. The form, "Notice of Intention to Clear Land", should be submitted through your local Mines Department Inspectorate Environmental Officers (Karratha, Kalgoorlie, Perth).

Please note that no clearing may be undertaken within 90 days of submission of the notice of intent OR until the State Mining Engineer advises his approval to proceed.

When submitting environmental documents required under tenement conditions, (e.g. Notices of Intent), the notification to clear form should be submitted with that document.



## GUIDELINES ON SAFETY BUND WALLS AROUND ABANDONED OPEN PITS

A new publication entitled "Guideline on Safety Bund Walls Around Abandoned Open Pits" has recently become available from the Mining Engineering Division.

The Guideline addresses long term post mining stability, and was produced after extensive consultation with Government and Industry.

Detailed studies of rock behaviour were carried out across a wide spectrum of mines before the guideline was produced, with the intention of assisting operators to devise site specific solutions to the problems of public safety and abandoned open pits.



Copies of the Guideline can be obtained from Simon Wood, Librarian, Mining Engineering Division, Telephone: (09)222 3436 Fax. (09) 325-2280.

## KILN INSPECTION PRECAUTIONS

A plant supervisor suffered serious burn injuries when he was engulfed in flames while carrying out inspection work through a hatch at the discharge end of a cooler kiln at an ilmenite upgrade processing plant.

The inspection task and procedure was not unusual, and had been conducted in a similar manner on many previous occasions. The exact cause of the explosion and associated flame front has not been determined.

Control room operators suspected that a blockage had occurred at the cooler kiln discharge chute and arranged for an inspection. The supervisor, with an assistant, waited until the kiln was under negative pressure and then opened the hatch door.

Within seconds flames shot from the kiln through the door and it was only the quick evasive action of the supervisor that prevented him from sustaining more serious injuries.

The sudden introduction of air through the hatch is thought to have produced an explosive air/fuel mixture which was ignited by the high temperature associated with the reduction kiln. The reduction and cooling kilns contain a volatile atmosphere. Whilst this atmosphere is under constant control in order to enhance the

metallurgical process, variations do occur and it only requires a "trigger" to set up an adverse reaction.

With the accident in mind, it is appropriate that management of all ilmenite upgrade plants thoroughly review procedures for cooler kiln inspections. Such a review should include (a) personal protective equipment worn by inspection personnel, (b) kiln operating conditions at inspection time, (c) fresh air purging for a period prior to opening any inspection door, and (d) hatch door opening by remote, mechanised control rather than manual means.



# CONTAM

The Atmospheric Contaminant Monitoring System (CONTAM) has recently been modified and the changes to the system will be progressively implemented during 1991.

The objectives of the system are unchanged, but the new system will allow for the collection of samples over a wider range of occupational groups as well as a more appropriate reporting system.

The first phase of the modifications involves a workforce survey. The Workforce Survey forms, sent to each Registered Manager, will help to establish statistical sampling quotas for each minesite. These forms should be returned to THE CONTAM MANAGER, 100 Plain Street, EAST PERTH.

By the end of the first quarter of 1991, when sampling quotas have been established and reviewed by the relevant District Inspectors, Sample Quota Forms will be forwarded to each mine for sampling in the second quarter of 1991.

These forms indicate which contaminants are to be sampled, and the number required for each Occupational Group (e.g. underground). Sample results are to be entered on this form and returned to the Department.

(NB: the old green CONTAM "Atmospheric Contaminant Report" forms will become obsolete once these forms have been issued).

To coincide with the introduction of the new system, revised CONTAM guidelines are being prepared and will be issued in the 2nd quarter of 1991.

Every twelve months a Digest will be produced providing summary information on trends and relevant control measures.

Should you have any queries please direct them to the CONTAM MANAGER - Mr Mark Brown on (09) 222-3093.



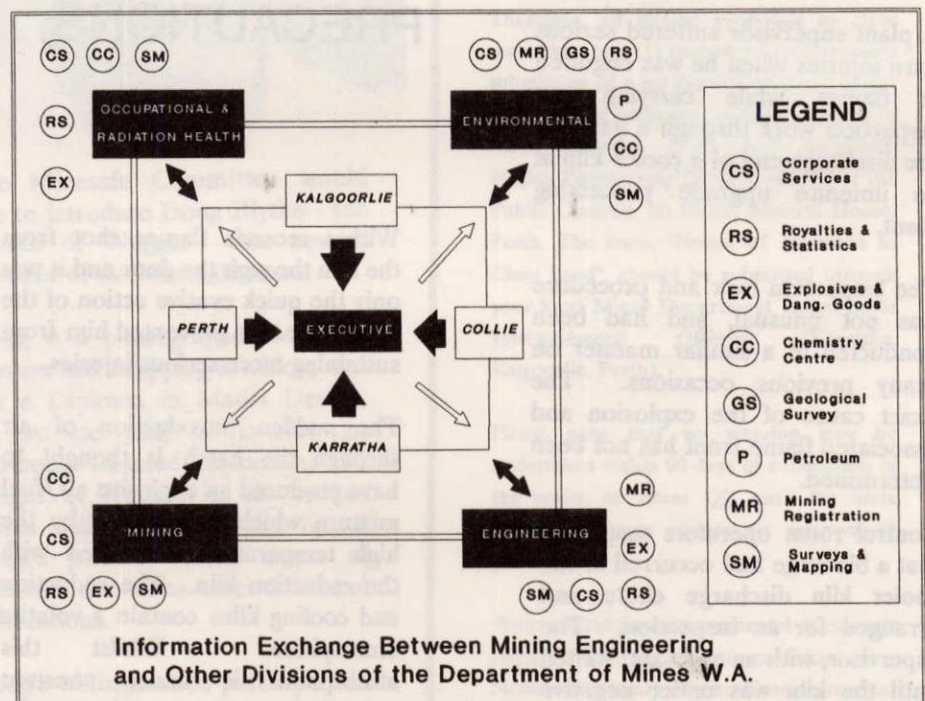
## THE CONTAM TEAM.

MARK BROWN, CONTAM MANAGER  
AND JANE WILLIAMSON,  
DATA ENTRY OPERATOR

## APOLOGY

The MINESAFE committee would like to take this opportunity to apologise to the Surveys and Mapping Division of the Department of Mines for their omission from the flow diagram which appeared in the November 1990 issue of MINESAFE.

The Surveys and Mapping Division, and in particular the Map Information Service, provides the Mining Engineering Division with a number of very valuable services, namely: indexing and storage of mine plans: special drafting projects to show underground workings for future planning, such as the Collie Coal Basin. In addition, two officers have been assigned to the MINEDEX project to assist with minesite coordinates and plan references.





# WHAT'S ON

## VENTILATION OFFICER'S COURSE

Surface Ventilation Officer's Course  
21-22 March, 1991.

Underground Ventilation Officer's  
Course 4-5 April, 1991.

Venue : Department of Mines - 100  
Plain Street, East Perth.  
Cost : \$150 per course.

For further information and  
nominations, please call Tania  
Piscicelli (09) 222-3095.

## EXAMINATION DATES

### WA CERTIFICATES OF COMPETENCY (METALLIFEROUS)

- \* FIRST CLASS MINE MANAGERS
- \* QUARRY MANAGERS
- \* UNDERGROUND SUPERVISORS
- \* RESTRICTED QUARRY MANAGERS

Examination date : 15 April 1991

### WA CERTIFICATE OF COMPETENCY (COAL)

Closing date for applications  
Friday, 22 March at 1500 hours.

Examination date: 29 March 1991

## UPDATE OF PUBLISHED SIGNIFICANT INCIDENT REPORTS

13. Tramp metal "fired" from  
jaw crusher November  
1990
14. Electric shock involving  
P&H shovel 13/12/90
15. Haul truck tyre explosion  
December 1990
16. Substation transformer  
December 1990
17. Caught by Rock Drill  
February 1991
18. High pressure water jetting  
February 1991
19. Explosion of a drill steel  
subject to high  
temperature.  
February 1991
20. Drilling rig fire  
February 1991

## CONGRATULATIONS WORSLEY ALUMINA

Area 1 Operations Crew at  
Worsley Alumina has produced an  
enviable safety achievement by  
working for five years without  
incurring a lost time injury.

The record was achieved on 14  
December 1990, and since this crew  
deal with high temperatures and  
pressures, they certainly have every  
reason to be proud.

Congratulations to crew members  
Brad Vanderston, Phil Cornell,  
Steven Tomerini, Bruce Carr, Gary  
Mahnel, Alan Armour and Neil  
Atkins, and past members of this  
group.

## STAFF CHANGES

Ventilation Officer, David  
McGowan is leaving the Kalgoorlie  
Inspectorate to work in industry.

Marek Sakowski, Mechanical  
Engineer from Kalgoorlie  
Inspectorate has resigned.

Tania Piscicelli is now the  
Administrative Assistant at M.E.D.  
replacing Jim Lawrence who has  
transferred to the Chemistry  
Centre.

Peter McGushin, District Mining  
Engineer, Kalgoorlie has retired  
after 8.5 years service.

Peter Garland, District Inspector  
of Mines in Karratha has been  
transferred to the Perth Office to  
undertake special projects. Sean  
Argus has taken over his position in  
Karratha.

Helen Punch has resigned as  
Secretary of the Coal Industry  
Council. Nadine Logan has  
accepted the position.

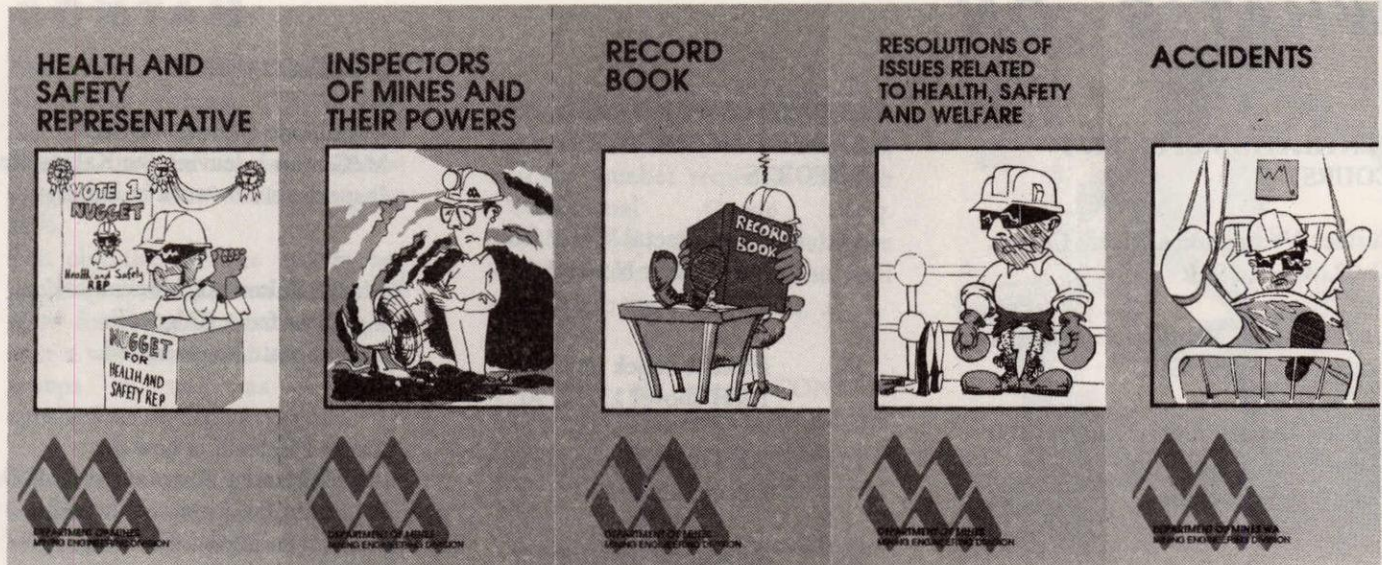
Chris Orr, MED's Geotechnical  
Engineer, has left the Division, to  
work in industry.

Fred Strauss, Machinery Inspector  
in Kalgoorlie, has transferred to the  
Perth Office.

Stuart Evans, Research Officer -  
Radiation, has left the Division to  
work in industry.

John McKay, formerly from the  
Drilling Branch, is transferring out  
of the M.E.D.





Research & Technical Services, in consultation with the Senior Inspector of Mines has produced the first block of a series of information pamphlets aimed at increasing mineworker's knowledge of mining safety law.

The pamphlets, in an easy to read format, will be a valuable asset to induction training, safety training and general education programs.

The first pamphlets discuss the role of Inspectors, Accidents, Record Books, Election of Health and Safety Representatives and Resolution of Issues in the workplace.

They are available through inspectorate offices or from the Mining Engineering Division.

The pamphlets are free of charge. Contact Simon Wood on (09) 222 3436

**LEGISLATION PASSED IN 1990**

Coal Mines Amendment Regulations - 1990 gazetted 27 July 1990

Coal Mines Regulation Amendment Act - 1990 proclaimed 6 July 1990

Mines Regulation Amendment Act - 1987 proclaimed 26 October 1990

Mines Regulation Amendment Act No. 85 of - 1990 (assented to 22 December 1990)

**WANTED :**

Minesafe would like to receive copies of your newsletters and bulletins. That way, when your site accomplishes safety records that should be recognised, we can publish your achievement. Send copies to The Minesafe Editor, Department of Mines, 100 Plain Street, EAST PERTH WA 6004.

**Minesafe Publication Dates 1991**

**JUNE 1, SEPTEMBER 1, DECEMBER 1, 1991**

Copy deadlines :

Feature Articles, photographs, 14 May, 14 August, 14 November 1991.

Letters, Notices, 20 May, 19 August, 18 November, 1991.

All copy should be addressed to The Editor, MINESAFE.

**MAKING THE GRADE (VIDEO)**

"Making the Grade" is about exploration programmes, and how best to carry out evaluation of mineral potential without harming the environment.

"Making the Grade" is available from the Mining Engineering Division (Keith Lindbeck, (09)222-3437) or from the Chamber of Mines & Energy (09)325-2955.

**MINESAFE**

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