Welcome to the 5th edition of the 3M e-Miner newsletter!

Workplace safety and risk continually drives us to focus on the need to protect our workforce at work, while they travel either overseas or locally. Reducing risk on our sites not only makes for a better working environment, but concentrating on this area can also contribute to improving the overall profitability of the company.

This edition, we will discuss hearing protector classification and provide a training module we have developed and made available to assist you reduce the risk of hearing loss... read more...

3M have many unknown but interesting products. Explosive sensitising is one area that most mining companies would not associate with 3M. Reading on you will find we can assist with this important activity in the efficient removal of overburden... read more...

RFID is helping the mining industry identify, track, trace and locate everything from files, to people, equipment, site access and visitors, vehicle movements and raw materials throughout the entire production process. We may be able to assist you jointly on challenges you face... read more...

Contractor management and workplace safety challenges all sites. An article within discusses the challenges of known and unknown people on site and what can happen if an injury occurs... read more...

3M has been developing a solution using reflective cable sleeves that can be applied to existing cables making them more visible and less likely to be damaged. If this is a problem for you, it would be greatly appreciated if you could take time out to complete our survey and assist with the development of this new solution... read more...

If you would like to “dig deeper” relating to these and other challenges 3M can help with please use any link in this newsletter to contact us.

I hope you enjoy this edition of the Australian 3M e-Miner newsletter.

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HEARING PROTECTOR
CLASSIFICATION
By Peter Knott, 3M OH&ES, Senior Occupational Hygienist

Using hearing protection with the right amount of attenuation is vital in safeguarding miners hearing. In Australia, the attenuation provided by hearing protectors is covered in AS/NZS1270:2002. In this standard their performance is evaluated in a subject fit real – ear attenuation test. The outcome of this test is an SLC_{80} value, used to determine the class of the hearing protector.

WHAT IS THE SLC_{80}?

It is described in AS/NZS 1270:2002 as;

“SLC_{80} (Sound Level Conversion) is a single number rating commonly used in Australia and New Zealand to compare the acoustic performance of hearing protectors. The subscript ‘80’ indicates that in well-managed hearing protector programs, the protection provided is expected to equal or exceed the SLC_{80} in 80% of protector-wearer noise spectrum combinations.”

The following table describes the relationship between SLC_{80}, Class and Hearing protectors required for varying average daily noise exposures (corrected to an 8 hour equivalent (L_{Aeq,8h}).

<table>
<thead>
<tr>
<th>SLC_{80} Range</th>
<th>CLASS</th>
<th>L_{Aeq,8h}</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 - 13</td>
<td>1</td>
<td>less than 90 db(A)</td>
</tr>
<tr>
<td>14 - 17</td>
<td>2</td>
<td>90 to less than 95</td>
</tr>
<tr>
<td>18 - 21</td>
<td>3</td>
<td>95 to less than 100</td>
</tr>
<tr>
<td>22 - 25</td>
<td>4</td>
<td>100 to less than 105</td>
</tr>
<tr>
<td>26 or greater</td>
<td>5</td>
<td>105 to less than 110</td>
</tr>
</tbody>
</table>

The direct comparison of the SLC_{80} with other schemes of hearing protector classification eg NRR, are difficult as testing regimes vary. As a rule of thumb, the US National Institute of Occupational Safety and Health (NIOSH) provide the following guidance in its 1998 revised document “Criteria for a Recommended Standard, Occupational Noise Exposure” for comparing NRR values with the effective noise level inside the wearers ear:

**Earmuffs**

Subtract 25% from the manufacturer’s labelled NRR

**Formable earplugs**

Subtract 50% from the manufacturer’s labelled NRR

**All other earplugs**

Subtract 70% from the manufacturer’s labelled NRR

For example, measure noise exposures in dB(C) or dB(A) with a sound level meter or noise dosimeter.

1. When the noise exposure in dB(C) is known, the effective a-weighted noise level (ENL) is:

   \[ ENL = dB(C) – \text{derated NRR} \]

2. When the noise exposure in dB(A) is known, the effective a-weighted noise level (ENL) is:

   \[ ENL = dB(A) – (\text{derated NRR} - 7) \]

This enables users with known noise exposures to apply a derating to the NRR and use this figure to subtract from the noise exposure level to obtain an Effective Noise Level i.e. the noise level expected inside the protected ear.

To avoid over attenuation, it is generally considered the ENL should be between 75 and 80db.

To access a 3M Hearing training program please [CLICK HERE](#)

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3M™ PREMIUM EAR MUFFS 1440

3M™ SOFT FOAM EAR PLUG 1120

By Peter Knott, 3M OH&ES, Senior Occupational Hygienist
Water-containing industrial explosives like slurries, water gels, packaged and bulk emulsions, require the addition of a sensitisser to achieve detonation. Today, the typical sensitisser employed is some form of solid or gas density modifier designed to create density discontinuities in the emulsion. 3M Glass Bubbles are, as the name suggests, hollow bubbles of glass – perfect for creating reliable explosive sensitisation.

3M Glass Bubbles suitable for explosive sensitisation are available in a range of true densities from 0.125 g/cc to 0.37 g/cc and are capable of providing detonation velocities of over 5000 m/s when used at weight loadings of less than 2%. 3M Glass Bubbles also vary in crush strengths, ranging from 250 to 3000 psi. This means that a glass bubble can be selected to prevent the occurrence of “deadpressing” – where a blast damages the sensitisser in an adjacent borehole before it is detonated, desensitisising the explosive. An added advantage of this property is that a glass bubble sensitised explosive will not change in density at different depths in a borehole, unlike a gas sensitised one, resulting in consistent detonation velocity throughout the borehole.

Some other practical advantages of 3M Glass Bubbles include:

- Pre-manufactured voids mean highly consistent, repeatable performance
- Rigid-walled, hollow spheres give explosives stability over time, temperature and pressure
- Discrete particles allow easy addition and uniform distribution
- Non-coalescing voids allow longer “sleep” time

In fact, studies have shown that explosives sensitised with 3M Glass Bubbles retain unchanged detonation velocities indefinitely, even after storage for 2 years. This is due to the unchanging nature of the inert glass wall of the bubble.

Compared other common explosive sensitisers, 3M Glass Bubbles have been shown to deliver up to a 40% increase in detonation velocity, so with 3M Glass Bubbles you can be confident that you will get more “bang for your buck”.

For more information on 3M Glass Bubbles in this or any application, contact ehumphries@mmm.com or call 3M Customer Service on 136 -136.

Back to Front Page
The idea of the “paperless office” is one that has been with us since the worldwide explosion in computer technology over the past 25 years. On the surface it seems an attractive alternative but for many offices, the sheet of paper is yet to be displaced as a primary method of information storage and transfer. In environments where potentially sensitive information is stored or archived as a hard copy, information security is of paramount concern.

Traditionally, tracking documents to keep their location up to date and easily accessible has been a cumbersome task. Adding the possibility of missing documents and poor security only makes the job of document control even harder. Now there is a way to automate the security and tracking of your sensitive business documents, from employee records to top-secret acquisitions to the all-important legal paperwork every large mining concern must have in order.

Radio frequency identification (RFID) technology is currently a hot topic in areas as vastly separated as packaging, asset monitoring, shopping and even border security. This technology allows a user to tag items and then easily keep track of their location through a computer interface.

At the coalface of RFID, is the RFID tag. The tag is actually a small computer chip (pictured) which is programmed with a unique identifier and can be activated and read by an RFID scanning device. The tag is attached to the item to be tracked and it’s identified is linked to the item through the computer system. Through this simple method, your document management becomes a trivial task.

3M is a major player in RFID technology and has complete document and asset management solutions for a wide range of industries. 3M RFID tracking solutions provide a simple and fully integrated method tracking and locating your paperwork both in the central file room and around the entire office.

To check a tagged file out of the document centre, the file is simply scanned past an RFID reader (pictured). The computer interface can then automatically record the details of the transaction with no further user interaction. By placing readers in key workflow areas around an office, a borrowed document can always be located or the borrower identified to enable easy and secure document management.
3M also provides a powerful desktop PC program (pictured) that can be installed on any PC in the office so all users can easily find the current location of any tagged document they wish to work with.

Perhaps the biggest strength of RFID technology is its ability to make lost files a thing of the past. If a file becomes somehow misplaced, the unique identifier for it can be stored on a portable reader (pictured) that will emit an alarm when the missing documents are encountered throughout the office.

There are a number of companies and industries currently using 3M's RFID solutions with great success. In July 2005, 3M and the USA General Services Administration agreed to a five-year partnership of utilising 3M RFID technology for document and asset tracking in the various organisations the GSA control. Several large law firms worldwide and even 3M's own Office of Intellectual Property Counsel are heavy users of 3M's RFID solutions.

By securing your documents you are protecting your company's most value asset — information. RFID tracking will enable you to do this easily and confidently, resulting saved money, secure information and increased productivity. Why wouldn't you consider it?

3M Mining is proud to be a key supporter of Australia's growing natural resources sector. For more information, contact your 3M Mining representative, look at www.3m.com or email the author at ehumphries@mmm.com
Most people working in heavy industry are aware of the importance of workplace safety. Every state and territory government has introduced Acts that deal exclusively with workplace health and safety and detail the responsibilities of employers and employees to guarantee the right of a safe workplace for all. However, something many people do not realise is that an employer or organisation is also legally responsible for the safety of employees of third-party contractors carrying out work on site. Most people are even more surprised to learn that in some states the same legislated right to safety even extends to trespassers on site. The punishments under these acts include substantial fines to companies and even jail terms to officers of negligent organisations.

Although an employer would be hard pressed to make sure a trespasser is wearing the proper PPE for the job, the true intent of this type of law is to drive home the importance of not having uncontrolled hazards on site that regular employees know how to avoid through experience. Where possible, hazards should be controlled or eliminated so that genuine visitors and even trespassers will be safe.

Some hazards are only controllable to a limited extend. In these cases workers usually need specialised training and/or personal protective equipment (PPE). Because these duty of care requirements extend also to contractors performing work on site, the owner of the site is responsible for ensuring that all contractors and employees of contractors working on site have received adequate training, instructions and PPE required to perform the task at hand. Even though the contractor is an independent business, the primary responsibility for their employee safety on site is the organisation who has engaged them to perform the work.

The wide perception of these laws is that in practice they are not enforced. This is not true. On November 16 2006, the Australian Financial Review reported that a car dealership was fined $100,000 when a contractor’s assistant was injured while on the premises.
According to the AFR “The court found that...the car dealership had failed to provide a safe workplace, had insufficiently trained and supervised the contractor and had not engaged in any risk assessment of the work performed”. Once this may have been treated as part the contractor’s obligation, however the courts now recognise that the engager has a mutual responsibility for safety that extends to contractors, contractor employees and even contractor behaviour while on site.

Most employers appropriately recognise these responsibilities and do the right thing by providing necessary training and even PPE as part of the induction process to contractors who visit their site. However, it is important to realise that the safety policies that apply to company employees apply to all types of visitor. Therefore if your operation has a policy on the type or style of respiratory or hearing protection employees use in certain areas, then your operation is obliged to ensure contractors meet the same standards. If your site has a policy that fully standards compliant day/night high visibility clothing be worn by employees, then a contractor who is allowed on site in breach of that policy could become the legal responsibility of the site in the event of a “struck by” accident.

While the documentation and diligence required by these laws may seem onerous, it is a fact that they are here to stay. Rather than be caught out after an accident, why not review your contractor policies now and avoid a potentially unpleasant surprise in the future.

To access a 3M Visibility Products training program please CLICK HERE

Back to Front Page

Contents not legal advice
This article is a summary only of the subject matter covered, without an assumption of a duty of care by 3M. This article is not intended to be nor should it be relied on as a substitute for legal or other professional advice.
3M™ SCOTCHLITE™ CABLE SLEEVE SURVEY

By 3M Mining Development

3M Australia, in conjunction with 3M converters, has been developing an item designed to reduce lost-time incidents resulting from HV cables being damaged through lack of visibility.

The newly developed 3M fluorescent and reflective cable sleeves are designed to be rapidly applied to existing cables in areas of high concern where there is substantial moving traffic and cross over ramps.

If this problem is a current concern on your site, please take the time to answer this linked survey. It will assist us to create better solutions to reduce the cost of repairs and down time in your mine.

To take part in the survey please CLICK HERE

Fluorescent colour makes the retrofitted cables sleeves visible during the day

Retroreflectivity of the sleeves enhances night time visibility of cables

FOR MORE INFORMATION AND SAMPLES CLICK HERE!