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ppm

PROFESSIONAL PROTECTION MAGAZINE

AUGUST 1997

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COMMUNICATION:
Have your say

YOUR NEW LOOK PPM

CHRISTMAS COMPETITION WINNER

PRODUCT FEATURE: HEARING & COMMUNICATION

INSIDE

NIGHTWOEK:

out of
sync

GLUE:

a sticky
question

STANDARDS:

beware

PELTOR

The Peltor system in a snapshot:

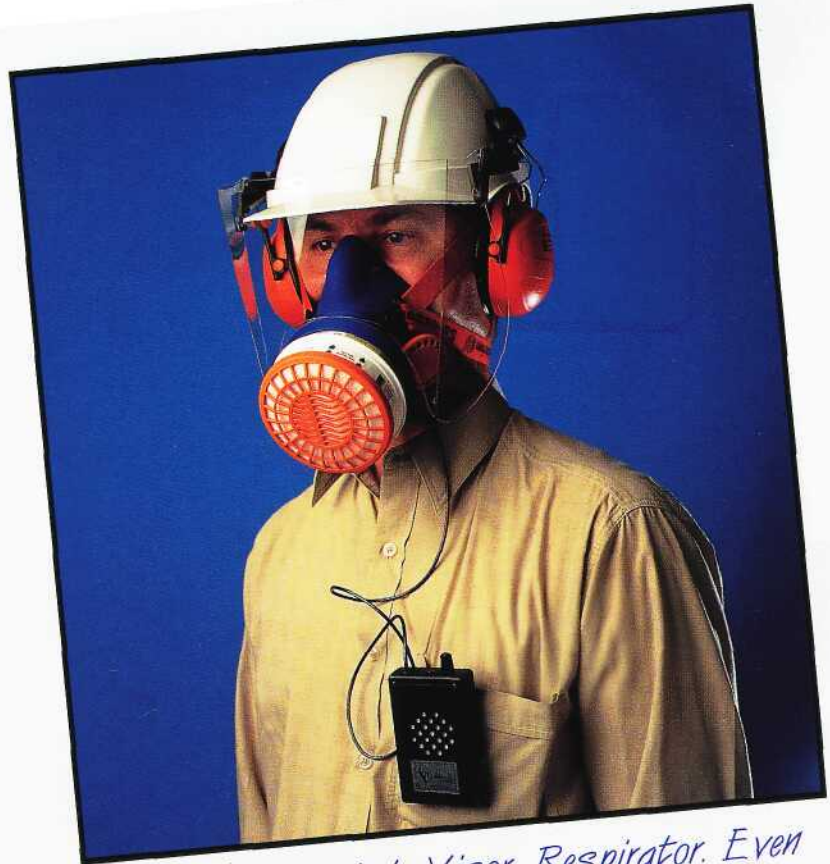
Wearing safety equipment is like taking a snapshot: it's hard to fit everything in.

That's why Peltor have designed a personal protection system that takes in not only hearing protection, but head, face and respiratory protection as well.

Look at our snapshot. The ear muffs slide into the hard hat. The visor fits onto the helmet in a snap. The visor cut-out lets the respirator be a natural part of the scene. You can even talk while wearing the mask.

With Peltor, you get the whole family of safety gear in one single shot.

Peltor. We give you the full picture.



*Muffs. Hard hat. Visor. Respirator. Even
communication gear. All in a single snap.
Now that's a truly integrated system!*



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PROFESSIONAL

INE

LETTER FROM

THE PUBLISHER

Dear Reader,

Welcome to the new-look PPM. This issue is crammed with information on personal protection and occupational health in the same style that has become so popular among our readers. In addition, the magazine now contains useful information on various safety products.

In other words, the policy of not mentioning or endorsing any kind of product or company has been modified. From now on, some of our pages will contain product information and advertising.

However, advertising will be confined to separate sections of the magazine, as you will see in this first issue. This means that you can still enjoy PPM the way you used to, since no advertising appears among the editorial parts (indeed, the bulk) of the magazine.

Why have we decided to re-design Professional Protection Magazine in this manner? Because times have changed since we released the very first issue of the magazine in 1986. Printing and production costs have increased, and we feel that we no longer could sustain the "old style" PPM.

This has also prompted us to abandon the subscription fee for the magazine. PPM is now free, and those on the mailing list will continue to receive PPM without having to pay a cent.

I wish our readers all the best, and hope you will enjoy the new-look PPM even more than before.

Goran Berndtsson
Managing director,

Safety Equipment Australia Pty Ltd

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SAFETY FIRST

Flameproofing agents could damage the unborn

Two groups of flameproofing agents not to be used — Chemical Inspection.

The list of substances considered harmful to the reproduction is growing continuously. The Swedish Chemical Inspection's list now contains 35 substances, and six more are due to be added. Flameproofing agents are a new group of suspected substances, and have yet to be included in any list.

Many new synthetic chemicals being released into the environment are similar to the female hormone oestrogen. These substances can damage functions normally governed by the hormones. Embryos, fetuses and newborn babies may be especially affected. Damages may only become apparent at an adult age. Chemical signals during sensitive stages of the embryo's development may cause cancer 15—20 years later.

Now there are suspicions that the hundreds of available flameproofing agents may also have such an effect. Traces of these substances have already been found in Swedish wildlife, such as herring, seal, waterfowl, elk and reindeer.

The greatest emissions take place in the incineration of domestic and industrial waste, and as leakage during use.

However, flameproofing agents are also used in Sweden in the manufacture of circuit boards, plastics, textiles and many other products.

The Chemical Inspection has pointed out two groups of bromided flameproofing products which no longer ought to be used. Some 400 tons of the substances are used in Sweden every year. Most of these materials are lacking in information about their effects on health and environment, although such data should be available for commercially available products.

The Chemical Inspection's list of chemicals that can damage the reproductive system concurs with the European Union's list. Flameproofing agents are absent from both lists.

The listed substances occur in binding agents, paints, lacquers, paint hardeners, photoresistant agents, raw materials in rubber, pesticides, preservatives, solvents, paper chemicals, synthetic raw materials, asphalt, bitumen and tar. Totally, more than 600 tonnes of these substances are used every year in Sweden.

Another list, provided by the Swedish National Board of Occupational Safety and Health (Arbetsmiljöverket) differs from the Chemical Inspection list. There are fewer substances listed.

Source: Ekelöf E. 1997, 'Flamskyddsmedel kan skada foster', Arbetsmiljö no 1, January 1997, p. 10

SEA HAPPENINGS

Something's going on at Safety Equipment Australia. The Research and Development section is bristling with activity. But try to sneak in through the door, and you'll be politely but firmly shown just that: the door.

Regular visitors to SEA have noticed the gradual changes over the past year or so: new workshops and offices being set up; new equipment mysteriously appearing; powerful computers and plotters

being wheeled in and out of the premises; strange components being turned around and around in furtive hands and talked about for hours.

It is all part of a grand-scale new initiative, only known amongst the uninitiated as The Project.

What's going on? It is not for us to divulge. Not yet. Chinese water torture, large amounts of money or strawberry ice cream couldn't persuade us to reveal the secret. Suffice to say that something big is underway at Safety Equipment Australia, and you will have to contain your curiosity until, it is said, sometime in September.

All we can say is *watch this space!*

SEA

HAVE YOU GOT ALUMINIUM ON THE BRAIN?

Year by year, the health effects of aluminium are becoming better known. Some aluminium compounds, such as aluminium fluoride and aluminium sulfate, can cause asthma attacks. But perhaps the most serious effects have to do with the brain and the central nervous system.

The suspected connection between aluminium and Alzheimer's disease are still being investigated, as are other brain disturbances. Dialysis patients have shown brain damage after undergoing dialysis using water purified with aluminium sulfate and taking medications that contained aluminium compounds.

Welders working on aluminium have also sustained damage to the central nervous system, as have miners who breathe in aluminium dust. Electrolysis is another industrial process which often involves aluminium. In Norway and Canada, studies of thousands of electrolysis workers point to coughing and asthmatic complaints that are higher than in other work groups. Even among workers who had worked with electrolysis for a relatively short time—less than five years—around one in ten suffered aluminium-induced respiratory problems. Over sixteen per cent of "veteran" workers had asthma that continued for several years after the workers had moved from electrolysis to other jobs.

Aluminium is derived from bauxite, and has many well-known uses, such as in building materials and in cars, boats and aircraft. Other, perhaps less obvious uses include cosmetics, pharmaceuticals and food additives.

Source: Elgstrand, K. 1996, 'Aluminium affects the nervous system', *Forskning & Praktik*, no. 1, pp. 16-17

WORKING under PRESSURE

Working with high pressure waterjets can end in disaster if the operator isn't properly trained.

High pressure water jets range in pressure from around 700 bar to some 2,600 bar. At this pressure, the water jet is powerful enough to cut through rock and even metal. What it can do to the human body is best left to the imagination.

High pressure water is very hard on the equipment itself: hoses and connections might rupture if they are not kept in top shape. The risk of such a burst is an additional health hazard associated with jet spray equipment.

During normal work, the waterjet can easily dislodge sharp fragments and send them flying through the air. Proper protection equipment, such as face shields and heavy duty clothing, is required. Powerjet cleaning work is often tiring and taxing on the muscles and back. Often, cleaning work requires the operator to maintain an uncomfortable and awkward stance for long periods. The constant need to push against the resistance of the water jet is also a source of strain.

In essence, the use of water jet equipment should be treated with the same caution and rigour as the handling of firearms. There must be no risk of accidentally turning on the beam during maintenance and idle periods. Flawed control mechanisms and procedures can have disastrous consequences. In the first fatal accident of its kind in Finland,

the jet was inadvertently turned on while pointing at a worker. The beam tore open the victim's chest.

TRAINING ESSENTIAL

High pressure work should never be performed by untrained personnel. The operator should know how the equipment works, how to adjust the control settings, and how to safely inspect and maintain the machinery. Some special points include:

- Physical strength

The force needed to control the water beam can be great. Work rotation. Because of the static strain, operators should take turns at least once an hour.

- Support and supervision

Operators should not work alone with high pressure water.

- Balance

The action and reaction water jet can be unstable and jerky, and might throw the operator off balance. Guard rails and rigid scaffolding must be erected in places where there is a risk of falling.

- Personal protection equipment

Impermeable rubber suit, gloves and boots should be worn. A compressed air respirator will minimise fogging up of the visor. Hearing protectors may be required.

- Surroundings

No person other than the operator should be allowed less than five metres from the jet. Sheeting may be required around the area in order to catch flying fragments dislodged by the procedure.

Source: Finnish Institute of Occupational Health 1996, 'Handling high pressure', *Work Health Safety*, issue 1996, p. 32

A mean AMINE

Amines are commonly used in the plastics industry, and are often used together with isocyanates. Both amines and isocyanates have their own detrimental effect on human health. In combination they become an even greater hazard.

Amines are a group of substances, related to ammonia. They have varying characteristics, but they have one thing in common: they smell awful.

The cloying odour of an animal farm is created by amines generated by the decomposition of urine. Other amines have a truly fishy smell. The substances are widely used in plastics industry, manufacture of detergents, paints, pharmaceuticals and pesticides. They are also used as wetting agents, for instance in asphalt and road paint.

DECEPTIVE AND TRICKY

Amines are heavy on the nose. In some instances, the smell might fool you to believe that the amine concentration in the air is much higher than it really is, for example at pig farms, where the actual amount of amines is usually fairly low.

In other cases, the amines may have a numbing effect on the sense of smell; after a while, you don't notice the smell any longer. The sense of smell is not the only way to detect amines in the air—but amines are notoriously difficult to measure and analyse, even by modern detection equipment. However, recently developed techniques may make the work somewhat easier.

TWO WORRISOME AMINES

Piperazine and EDA (ethylene diamine) are two amines with allergenic effects. Piperazine has been clearly shown to cause asthma, while exposure to EDA can result in both asthma and allergic contact



eczema. EDA sensitises the body, and once the skin has sustained an allergic reaction, extremely small amounts of the amine are enough to keep the eczema rife.

EDA affects all of the skin, and it doesn't matter where the eczema first occurred. A person suffering hand eczema must therefore make sure that all areas of the body are protected, such as face and neck. Once the skin has become sensitised, the allergy will remain for life. Once a person has become allergic to EDA, there is also a risk of experiencing similar reactions to other chemically related substances.

Isocyanates

Isocyanates are as useful in the industry as they are difficult to handle. These substances are used to generate polyurethane plastics; materials of greatly varied characteristics. Plastic foam for furniture padding and car seats, lacquers, glues and paints may be manufactured by using isocyanates.

FOOLING THE BODY

Isocyanates usually do not cause skin allergies. The problem occurs when the substance is inhaled into the lungs.

Normally, inhaled chemicals are unable to cause allergic reactions in the respiratory system. They are usually so small that the immune system cannot detect them, and

therefore cannot respond with an allergic reaction.

Isocyanates, however, have an ability to ride piggy-back on other, larger substances. The result is that the immune defence system can recognise the isocyanate and react to it. In short, the body is "fooled" into an allergic response.

Apart from allergy problems, isocyanates cause great irritation on the respiratory system, and may result in inflammation.

ACROSS THE BOARD

It has been found that you don't have to be particularly sensitive or an allergy-sufferer to be affected by isocyanates. A survey conducted over several years at the Sahlgrenska Hospital in Gothenburg found that allergy sufferers were no more susceptible to the effects of isocyanates than people with no pre-existing allergies. There was therefore little chance of lowering the incidence of allergy by screening staff before they started to work with the substances.

Among the 300 workers surveyed, the most common problem was not an "actual" allergy to isocyanates, but rather a generally heightened sensitivity to chemicals, dust, smoke and other irritating substances. This increased sensitivity was related to the amount of isocyanates and amines in the air of the workplace. In work areas with high concentrations, almost a third of all workers suffered an increased general sensitivity to irritants.

Industrial health professionals probably stop and think when they see "isocyanate" written on a label or an MSDS. It may be advisable to do the same when the word "amine" crops up.

Source: Belin L., Bergmar G., Meding, B., Wass, U. 1990, Sjuk av jobbet, compilation ed. publ. by Arbetsmiljö, pp. 11-13

Bend an ear to styrene

Research connects styrene exposure with poor hearing. A research project conducted by the Finnish Institute of Occupational Health and the Helsinki University's Pathology department has found links between styrene exposure and a higher risk of hearing loss. The study was performed on laboratory rats that were exposed to varying doses of noise and styrene fumes.

High concentrations of styrene (600 ppm) were found to have a toxic effect on the inner ear, making it more susceptible to loud noise. The problem of increased hearing loss, balance difficulties, impaired vision and poor sense of smell is not unknown among styrene workers. The degree of hearing loss is higher in workers exposed to a combination of noise and styrene fumes than to loud noise alone. Styrene is widely used in the plastics industry as well as in the manufacture of synthetic rubber and insulation materials.

Source: Finnish Institute of Occupational Health 1996, 'Don't turn a deaf ear to styrene', Work Health Safety, issue 1996, p. 37

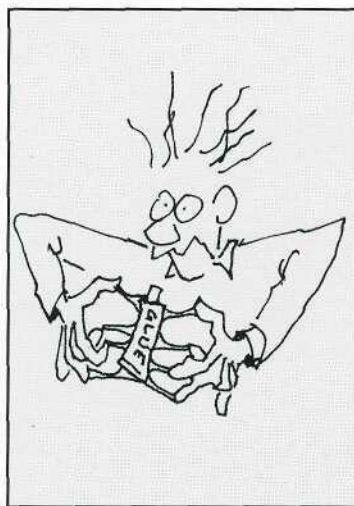
Glue Glue

that carries a lot of stick

Cyanoacrylates are often components in powerful glues. Swedish researcher, Johan Montelius at [the National Institute for Working Life in Solna, Sweden, has been commissioned by the Nordic Expert Group to research available scientific literature on these sticky substances.

First commercially available in the late 1950s, cyanoacrylates were found to have the capacity to bind together a wide variety of materials, and soon enjoyed a wildfire acceptance in the industry. Soon to come was the development of cyanoacrylate products for domestic use.

The glue has very strong adhesive qualities, and can even glue together wet surfaces. This in turn meant that the material could be used in surgery to stick together skin and mucous membranes.



Because the glue sets very fast and can adhere to human tissue, manual handling of cyanoacrylate glues always carries the risk of sticking together fingers, eyelids or other body parts. Usually, adhered skin tends to separate naturally after a few hours or days, normally without any permanent effects.

FUMES—A STICKIER PROBLEM

Cyanoacrylate fumes irritate the eyes and respiratory tract. Today's exposure limit values have been calculated on the basis of irritation. However, the material can also cause eczema and asthma. Most incidents of allergic contact eczema have resulted from handling the material when used as a cosmetic

glue. Although the number of documented cases is quite low, Mr Montelius believes that there is reason to suspect that contact eczema from cyanoacrylates is more common than previously thought.

A Finnish study established that cyanoacrylates were the culprit in twelve of 880 people suffering from respiratory problems. Out of the twelve, eleven were women, mostly working in the electronics industry. The latency period ranged between one week and fourteen years.

It is impossible to draw any conclusions about the extent of the risk of respiratory problems caused by cyanoacrylates, because the number of people who have worked with the substance is unknown. It also seems difficult to determine whether the respiratory problems are due to allergies or irritation.

Other research has shown that some cyanoacrylates have mutagenic effects on bacteria, and there are some suspicions that the materials could be carcinogenic.

Source: Montelius, J. 1995, 'Cyanoacrylates', The Nordic Expert Group for Criteria Documentation of Health Risks from Chemicals, *Arbete och Hälsa* 25/1995 as reported in

Night-owls, insomniacs and roster shift-workers, wake up! Here are a few hints for the wee hours:

WAYS TO STAY AWAKE

DOIN' THE



If you sleep just before going to work, make sure you sleep either less than half an hour or longer than an hour and a half.

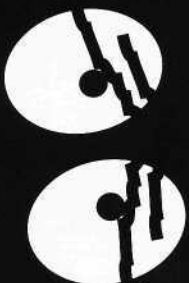


Have a good meal before work.

If possible, have at least a short nap during your shift (even as short as 10 minutes).



Don't nibble on snacks. Stick to fruit if you get hungry.

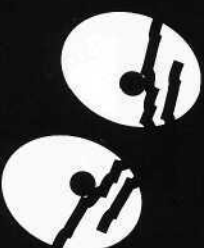


Sleep at least eight hours after each shift.



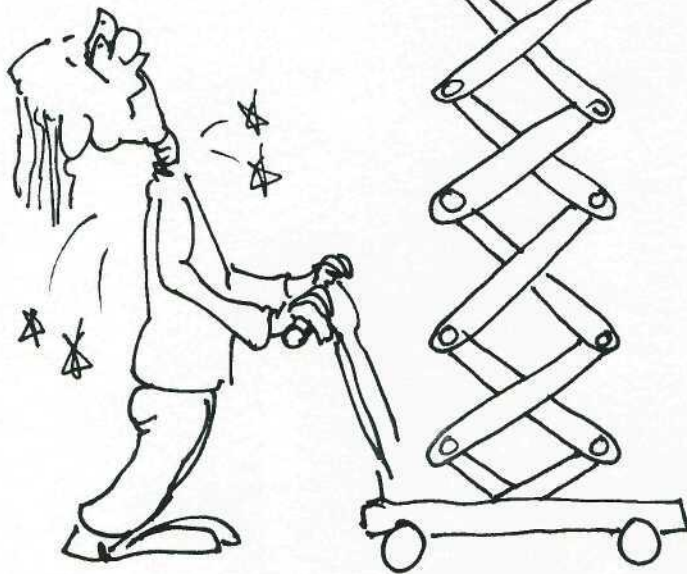
Get as much rest as possible during holidays.

If you rotate rosters, make sure you rotate "clockwise", e.g. morning shift, then afternoon shift, then night shift.



HH

HANDY HINT



LIFTING AIDS:

WATCH OUT!
NO BACK ACHE MIGHT MEAN A PAIN IN THE NECK INSTEAD!

GREEN PAINT

A HEALTH RISK?

"Green" or "natural" paint may cause health problems not only in painters, but also in other construction workers and people who move into newly painted premises too soon.

These findings have been made in a study conducted by Arbetslivsinstitutet in Umeå, Sweden.

The researchers recommend that at least one week should pass before inhabiting the newly painted rooms.

"Green" paints are considered to be an environmentally sound alternative to solvent-based paints.

Normally, solvents are not used in the manufacture of natural paints. However, since the product has a limited life span, preservatives are often used to keep the paint fresh longer. Painters and building construction workers have complained of dizziness, headache, fatigue, nausea and eye irritation.

Source: 1996, Arbetsmiljö, No 9, Sep 1996, p 13

FILL IN THE BLANKS:

1. Equipment should be covered by a ...
comprehensive maintenance contract

2. Workers should be covered by a ...

Answer: comprehensive safety program

Keeping dogwatch

Working night shift is not the natural thing to do, but can be managed by many, says Work Environment Professor Torbjorn Akerstedt.

Professor Akerstedt's view is that no-one should really work night shift; it clashes seriously with the normal biological rhythm.

Still, many people prefer to work nights. Surveys suggest that money is the primary lure, followed by leisure time.

The biggest problem, according to professor Akerstedt, is that many night workers overexploit their free time, for example by working two jobs or by taking in double shifts in order to gain longer continuous time off work. Some even run their own businesses during daytime, while performing shiftwork at night.

Inadequate sleep is a problem even amongst regular 8-hour shiftworkers: about 80 per cent of all night workers get only 6 hours sleep on average.

OLDER WORKERS SLEEP LESS

It seems that the body does not get used to working night shift: the older night workers get, the more sleeping disorders they suffer, no matter how long they have been doing nightwork. There is a threshold

“Working night shift is not the natural thing to do...”

around the age of 45; after this, it becomes difficult to withstand the attacks of the biological rhythm.

Therefore, it is not the most “accustomed” people who stay in the night job — it is the ones who are willing to take the most punishment.

DANGERS IN THE NIGHT

Sleeping disorders and gastrointestinal disturbances are common results of night work. Stomach complaints often start with gas and bloating, and may lead to ulcers in the worst case.

Another danger of night work is the risk of heart attack. This is caused by a rise in the fat content in the blood. Food taken at night is more readily stored in the body, compared to meals taken in the daytime. Another factor is that many night workers have a tendency to nibble on snacks during work.

The decision processes in the brain are slower during the dark hours, which may have an effect on the ability to prevent accidents or react to an emergency. The likelihood of having a car accident at 5:00 AM is eight times greater than at the five in the afternoon, according to Torbjorn Akerstedt.

THINGS YOU CAN DO

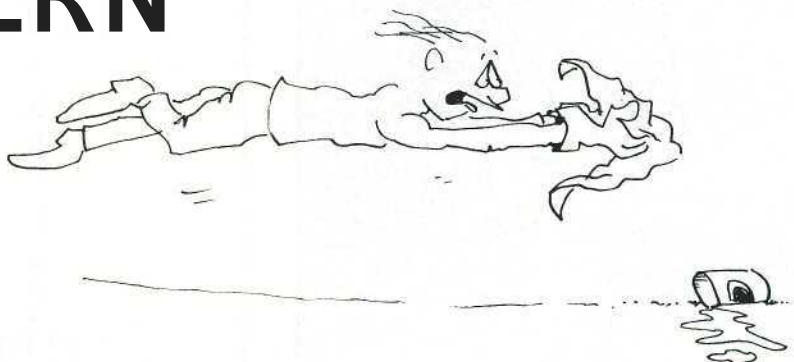
Night work does not have to be more hazardous than daytime jobs, claims professor Akerstedt. A few simple precautions may be in place:

- Night workers should give themselves plenty of time to recuperate between shifts and, if possible, during shifts.
- Work only two night shifts in a row, or three at the most. After this, you need at least two nights off. It takes 48—72 hours to readjust to normal day rhythm.
- Workers with rotating shift rosters should ensure that the shifts are rotated forwards in time, for instance morning the first day, afternoon the next, and night on the third day.
- Permanent night shift is better than rotating shifts.
- Sleep at least eight hours after each shift.
- If possible, take a short nap during the night shift.
- Have a good meal before work. This helps to avoid snacking during the shift.

Source: Högberg, C. 1996, “Ingen borde jobba natt”, Arbetsmiljd, no. 9, p. 51

CLERN

UP



THAT SPILL!

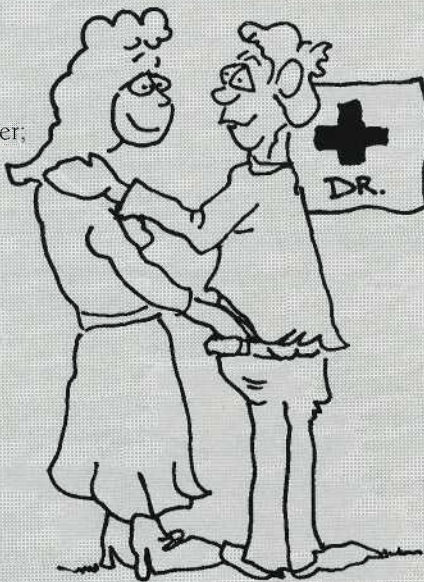
...AND THE WINNER IS...



GRAEME WALTERS.

GRAEME WALTERS IS THE LUCKY (AND SKILFUL) WINNER OF THE PPM 1996 CHRISTMAS COMPETITION. HE WINS A GREAT PAIR OF PELTOR FM STEREO HEADPHONE HEARING PROTECTORS, VALUED WELL OVER \$200.00.

There was a young couple called Cooper;
Who went to the doc in a stupor.
He'd glued his wife's thumb;
To the seat of his bum:
Their marital bond was just Super!



TOP

safety standards can only be achieved by starting at the

BOTTOM

solvents

AND PREGNANT WOMEN

Exposure to solvents in daily doses may cause a reduction in fertility and a greater risk of miscarriage. Even exposure to concentrations below the exposure limit can affect women's ability to conceive.

New Finnish findings point to an increased risk of spontaneous abortions in the early stages of pregnancy—even before the woman is aware that she is pregnant.

The study found that fertility in women could be reduced by 25%, even by non-daily exposure to low concentrations.

A previous study from 1991 stated that aliphatic hydrocarbons were of particular concern.

This new study, conducted by Markku Sallmen of the Finnish Institute of Occupational Health, concentrated on aromatic hydrocarbons (such as styrene, xylene and toluene) and halogenated hydrocarbons, (such as tetrachloroethylene, trichloroethylene and 1,1,1-trichloroethane). All are common in the industry, occurring, for instance, in the manufacture of plastics and paint thinners. Laboratory technicians, footwear workers, dry cleaners and metal workers were also commonly exposed. The study does not point a finger at any single occupations, or any single solvent, since most of the workers are exposed to a variety of substances. The only exception is

dry cleaning, where tetrachloroethylene is used almost exclusively.

Toxic and mutagenic effects

Solvents can have toxic effects on the foetus and gametes (reproductive cells), and are also capable of genetic mutation.

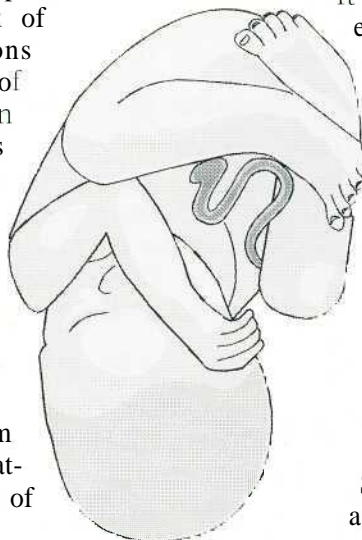
It is very difficult to establish which part of the reproductive process is harmed by the solvents, since every stage is as vulnerable as the next. The eventual miscarriage might be caused by toxic, hormonal or mutagenic factors.

OTHER HEALTH RISKS

Solvents can also damage the central and peripheral nervous systems, kidney and liver damage, and dermatitis. Solvent-induced cancer has been observed in laboratory animals.

The study also included exposure to lead, but no connection was established between low-level lead exposure and reduced fertility in women.

Source: 1996, Haavisto, R; "What every mother should know about solvents", Work Health Safety, Finnish Institute of Occupational Health, pp 6-7, ref. to: 1995, Sallmen, M., Lindbohm, M-L et al; "Reduced fertility among women exposed to organic solvents", Am. J. Ind. Med., No27: 1991, Lindbohm, M-L.; "Parental occupational exposure and spontaneous abortion", Ada Universitatis Tampensis ser. A, vol. 317 Occupational Health



CAN'T HEAR FOR ALL THE NOISE?

One of the problems with conventional hearing protectors is that they do the job too well. All noise is suppressed, including voice communication, warning signals and other alerts. Paradoxically, the ear muffs have to be removed in order to hear!

Enter the electronic brigade: hearing protectors with headphones, amplifiers, microphones, noise suppressors, radio transmitters, and an amazing array of other electronic gadgets designed to make working life easier for users.

Communication headsets come in plug-in or wireless models which use either an in-built communication radio or a connection to an external radio worn on the belt. Either type can be used in voice-activated mode (the transmission begins as soon as you start talking), or push-to-talk mode (you press a button to transmit). A good headset will let you use voice communication in noise up to 115 dB(A).

Entertainment headsets are designed primarily to give the user an incentive to wear the hearing protectors at all times. The incentive is that the user can tune in to his or her favourite radio station, and get hi-fi reception at safe levels while the protector cuts out harmful noise. Some entertainment systems also allow management to break into normal transmission to convey warning messages and other announcements.

Impulse noise headsets are ingenious devices that "listen" to the surroundings, amplifying useful noise (such as speech), while suppressing harmful noise—even very loud impulse noise, which is instantly suppressed before it reaches the ear.

Other new developments include in-respirator microphones that can be connected to either an external loudspeaker or a 2-way radio, facilitating voice communication even while wearing a respirator.



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Mark their words!

*The Product
mark refers to the
performance of the
product*



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Company**

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company*

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Standards Australia

The familiar Standards Mark with the white ticks is becoming more and more common in advertising and information material. Indeed, the mark might be so familiar that we simply let our eyes skim over the logo without actually checking which version of the StandardsMark we're looking at, and what the mark actually signifies.

The red StandardsMark is by far the most common among product sheets for protective equipment and advertisements in safety magazines. However, it pays to be aware of the fact that there are various marks, each with a very different meaning. At a casual glance, the marks may look the same.

The Quality StandardsMark means that the company has had its quality system audited, approved and certified. The Product StandardsMark means that the product to which it refers has been performance tested and that the product is manufactured according to a quality assurance program.

What does this mean in practice?

The most important thing to remember is that the Quality mark (with the text "Quality System") refers to the company, and the Product mark (with the text "Certified Product") to the product — and that one does not cover the other. One is based on the management of the company, and the other is based on the performance of the goods.

In other words, just because you're buying a safely device from a Quality Endorsed Company does not mean that the device itself has been licensed according to Australian Standard.

If you want to make sure that the equipment you buy or use meets Australian Standards requirements, make sure the product carries the Certified Product StandardsMark and licence number. A Quality Endorsed logo or mention of an ISO 9000 licence is not enough.

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Who said you need a PhD to push a button?

We did. And for a good reason:

The PhD Ultra portable gas detector only has one button.

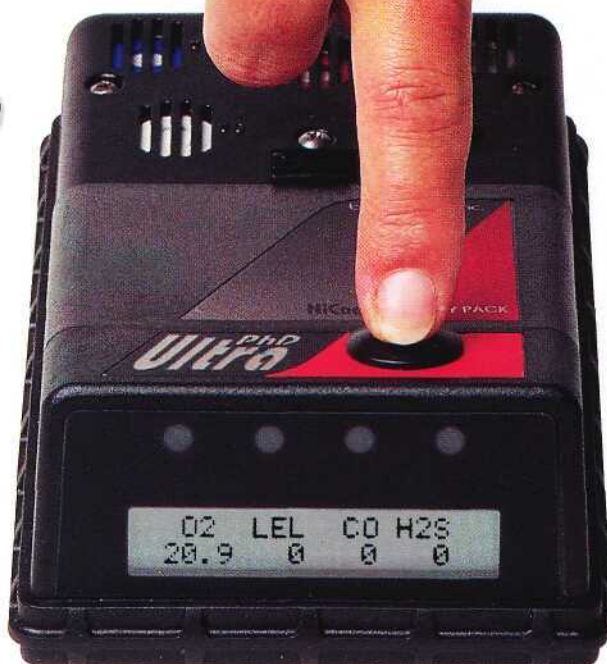
The moment you press it, the PhD Ultra sets up, calibrates itself and goes to work.

In seconds, you have the oxygen level, combustible gas percentage, and the concentrations of two toxic gases of your choice.

But that's not all. The PhD keeps a data log of gas fluctuations for as long as you like. To process the data, simply plug the PhD Ultra into your PC or straight to a serial printer.

Gas detection: there's nothing to it. All you need is a PhD.

Ultra^{PhD}



One-button operation

Up to four sensors, each with its own memory chip

Automatic data logging of gas levels, temperature, location and more

Ni-Cad or alkaline batteries — 12 h continuous use

Auto calibration

Intrinsically safe — even when changing batteries

Set-up and calibration as sensors are fitted

Plugs straight into PC or serial printer

Sound and light alarm at any gas level

Measures oxygen, explosive gas and toxic gas simultaneously

Choice of sensors: O₂, explosive gas, CO, H₂S, SO₂, Cl₂, NH₃, HCN, NO₂ and NO

Highly competitive price

Single gas models also available

The PhD Ultra. Total gas detection at the press of a single button.



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Does your
hearing
protection
have the
tick of
approval?

Times have changed.

Selecting safety equipment is not as easy as it used to be; not if you're serious about quality and safety standards.

Take hearing protection. You're not just buying a pair of ear muffs: you're making a major change to your entire safety system.

More importantly, you're making a decision that will affect a lot of people, on and off the job.

That's why your decision must be safe, sound, and solid.

Peltor makes your choice just that little bit easier. By selecting Peltor hearing protection, you have already fulfilled the first requirement of your safety program.

Why? Because Peltor models carry the Australian Standards Mark.

Think. Could you justify a choice that didn't have the official tick of approval?



Peltor. Standards approved.



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