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ppm

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USA TRIES WAYS TO CURE SICK BUILDINGS

The Environmental Protection Agency in Washington has taken unprecedented measures to clear its Washington head office of the sick building syndrome.

Special work stations for affected people will be installed. All carpets, fabrics, and curtains will be banned, as will all electronic business equipment.

The furniture will be metallic or wooden, and sufficiently old in order not to contain any preservatives or plastics. The ventilation rate will be increased to 500 litres per person per minute.

About fifty of the EPA's 4,000 employees suffer from the well known but ill-explored phenomenon.

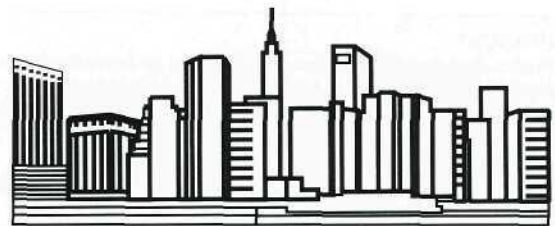
Up until now, no remedy has been found, and people who suffer have been allowed to work from home.

The sick building syndrome is considered to be one of the most common work environment problems in the US, causing enormous costs to government and commercial corporations.

There are numerous newly constructed office buildings that have been empty for several years due to the mysterious syndrome.



Source: *Arbetarskydd*, 3/91 p13



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A new report from the Stockholm Technical College in Sweden points to effects on the blood caused by water based paint.

Eight paints were examined - some experimental "prototype" paints, others common commercially available brands. 250 house painters took part in the survey.

There were relatively clear connections between the following components and their respective effects:

- Organic solvents in the paints caused temporary changes to red blood corpuscles.
- Ammonia contained in the paint cause a temporary decrease of lung functions.
- Unknown components in one of the paints caused temporary lowering of blood pressure.

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Certain ties were found between organic solvents and headache, eye irritation, increased urine secretion and temporal decrease in the lung function of the workers.

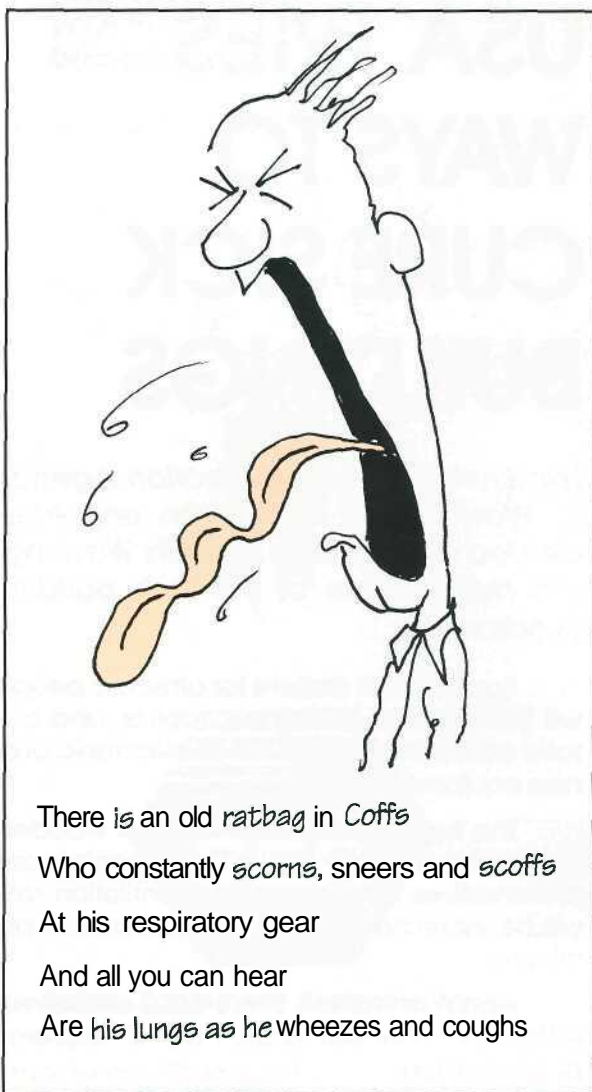
The effects were slight, and should not affect the physical capacity of painters. Nor did the report show any chronic effects,

The leader of the survey, Professor Ulf Ulfvarson, said, "Organic solvents seem to have effects at rather low concentrations. Perhaps this should be taken into account when establishing Threshold Limit Values in the future".

Mr Ulfvarson envisaged that the report would be a basis for developing better paints. He also pointed out that more studies should be made.



Source: Siv Soderlund, *Arbetsmiljo* 13/90 p8.



There is an old ratbag in Coffs
 Who constantly scorns, sneers and scoffs
 At his respiratory gear
 And all you can hear
 Are his lungs as he wheezes and coughs



SWEDEN FIRST TO RESTRICT ALL FIBRES

Sweden will be the first country in the world to regulate the use of all natural, crystalline fibres.

Asbestos has already been restricted, From now on, all other fibre will carry a TLV of 0.5 fibres per millilitre of air.

Erionite, which also belongs to the group, will be completely banned. Although erionite use in Sweden is probably very low, the authorities want to prevent the material from being introduced to a greater extent,

The article says that erionite can cause tumours in the lung.

Turpenes and turpentine also cut

Terpenes, occurring in wood, have also been given a TLV for the first time, Research has produced sufficient evidence that turpenes cause impairment to the lung function.

According to the head of the chemical department of the work safety directorate, turpenes will carry a TLV of 150 mg/m³. At the same time, the limit value for turpentine has been significantly cut.

Other news in the recent Swedish register of hazardous materials is that carbon monoxide will have a TLV of 25 ppm (50 ppm in Australia), and nitrogen dioxide has been cut to 2 ppm (3 ppm in Australia),

This means that exhaust emission will have to be cut at loading docks, car ferries, ro-ro ships (roll-on-roll-off loading) through improved exhaust filtering.

In mining, the cuts will probably mean a rapid trend towards electric vehicles, or that diesel machines will have to be fitted with more effective cleaning devices. The emission of carbon monoxide and nitrogen dioxide in blasting could force mines to implement longer ventilation periods.

Allergens

Certain allergens have been introduced to the B category in the Swedish list, which previously contained only carcinogens,

This means that the handling of these substances requires an explicit approval from the work inspection authority in each individual case.

The allergens concerned are used in defence, aviation and electronics industries, Very low concentrations are capable of causing asthma and rhinitis in workers.

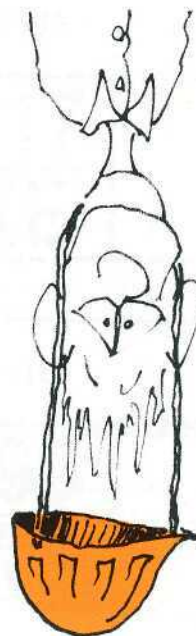
The reason for placing these compounds in the B list is that they can be controlled without being given a specific TLV. In order to establish a limit value, more research needs to be done.

Most of the new regulations will be in force from 1 July 1991.



Source: Karin Liljequist, *Arbetskydd* 11/1990 p6; *Exposure standards for atmospheric contaminants in the occupational environment*, Worksafe Australia, May 1990.

Handy Hints



Always use the head strap on your hard hat — if you fall, the hat remains on your head!



The finer side of chemical storage

In an emergency, it is essential to know what is stored where. The information here is by no means complete, but gives an indication of the types of measures that should be taken wherever dangerous substances are kept.

Information, information, information

Let emergency services know:

- Suitable fire extinguishing agent
- Suitable personal protection
- Environmental risk in case of fire or spillage
- Evacuation requirements
- Types of chemicals stored
- Technical name and UN number of chemicals kept in large quantities (tanks)
- Hazchem code

Let employees know:

- Where the chemicals are stored
- Prohibited dangerous practices
- Safe working routines

Let the public know:

- That dangerous chemicals are kept
- Emergency telephone number to fire brigade and police

What should be marked?

The entrance

Road and rail vehicle entrances should be marked so that everybody can clearly see:

- The word "HAZCHEM" (red lettering on white, 100 mm high)
- The words "IN EMERGENCY DIAL" (20 mm high)
- The words "000, POLICE OR FIRE BRIGADE" (30 mm high)

Package stores

Package stores within the workplace should be marked with

- The Class label (Poisonous gas, Flammable liquid etc.) (100 mm)
- The HAZCHEM code (black lettering on white, 100 mm)

Some general rules for package stores:

- Keep hazardous substances well away from other chemicals, either by distance or by barriers.
- Keep incompatible substances away from each other.
- Prevent access by unauthorised people.

Tank and bulk stores

A HAZCHEM placard should be placed on or near the container

If the container is kept within a building, a sign should be displayed at the entrance to the building,

The information should contain:

- The Class label (250 mm minimum)
- The HAZCHEM code (black lettering on white, 100 mm)
- The technical name and UN number of the chemical (black lettering, 100 mm)

This marking is not limited to closed tanks and bulk storage: the same practices should be exercised with process vessels and baths,

Underground tanks

Underground tanks should be at least 600 mm under the earth,

Underground storage is not regarded as a good method. If possible, chemicals should be stored above ground.

Mark the tank site with the following:

- A composite warning placard
- The words "UNDERGROUND TANK" (red lettering, 50 mm minimum)

If the tank contains Class 3 flammable liquids, it should be marked with:

- The Class 3 label (100 mm minimum)
- The words "NO SMOKING, NO IGNITION SOURCES"
- The words "UNDERGROUND TANK" (red lettering, 50 mm minimum)

How you can make it easy for emergency services in case of an accident:

Emergency personnel often arrive at a site only to find no information on chemicals kept, too much and too complex information, incorrect information, or outdated information. Such cases place not only the emergency crew at great risk, but also the general community.

A simple way to avoid problems in case of an incident is to keep a simple emergency manifest, answering the three most important questions the emergency squad will ask:

- What types of chemicals?
- How much of it?
- Where is it?

Note that, with two exceptions, you should only list the *types* of chemicals — not each individual compound. Complete chemical and technical details should NOT be included here. This will only hamper the procedure. There is a great difference between a Material Safety Data Sheet and an emergency manifest,

The emergency document should contain the following information:

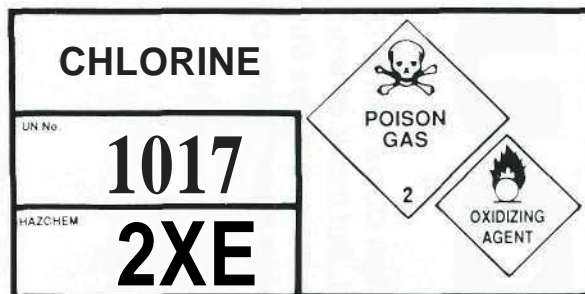
- A list of each category of hazardous chemicals (that is, each dangerous goods Class)

- Poisonous Gases and all materials in Packaging Group I (according to the dangerous goods code) should be itemised separately and identified with their respective technical names and UN numbers.
- The maximum quantity kept of each category
- A code, identifying the store rooms in which each chemical is kept. (Flammable solids are kept in Store Room A, and so on)
- A site plan, showing where the store rooms are located in the building or on the grounds.

For complete information on signage, lettering, HAZCHEM codes and classification, consult Worksafe's Guidance notes for storage of chemicals, the Australian code for the transport of dangerous goods by road and rail and other relevant literature.



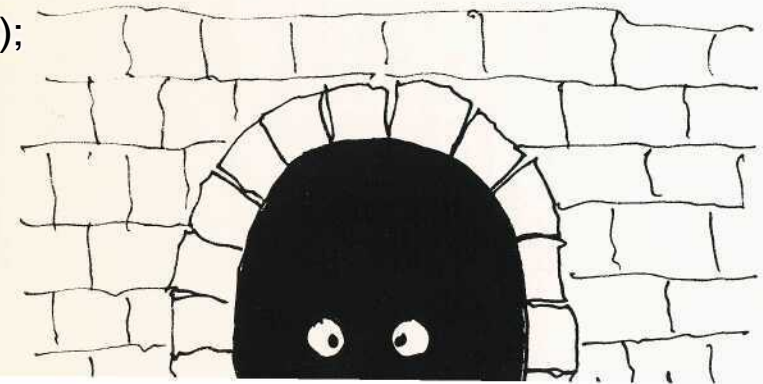
Source: National Occupational Health and Safety Commission, *Storage of chemicals*, AGPS, Canberra, June 1990



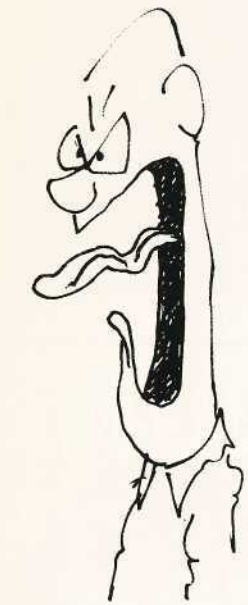
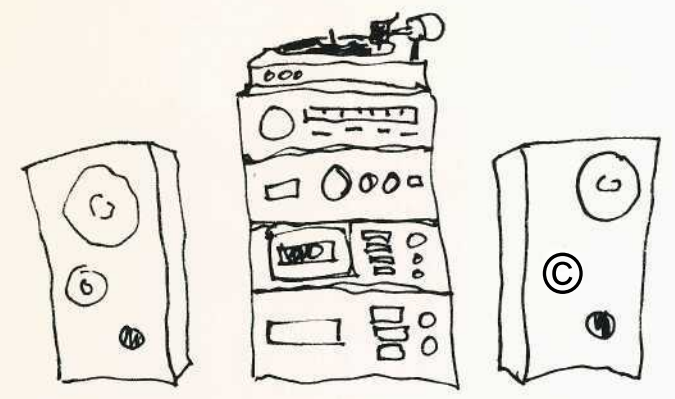
LEISURE **SO UNDO**

Everyone should know that hearing protection doesn't end as you leave work. Safety conscious people put on their ear muffs as soon as the noise level reaches 85 dB(A). But this is at work, and is only half the story. What about the other 128 hours of the week? Noise adds up, and noise exposure accumulates throughout the week, including the noisiness of your activities after work and on weekends. PPM took an ordinary noise meter and went around the home and vicinity on a Friday, Saturday and Sunday. The results? Some readings may surprise you...

SOURCE	REMARKS	NOISE (dB(A))
Power drill	70 cm (normal operating distance); idle running; outdoors	92
Vacuum cleaner	1.5 m; 1,000W machine; indoors	78
Power saw	70 cm (normal operating distance); idle running; outdoors	108
Driving in city tunnel	Passenger seat; window open	82 (average); 96 (peak)
Suburban train	In the open; slow speed; window open	74
Suburban train	Medium speed; buildings either side; window open	86



Car engine	50 cm; bonnet open (as if checking engine)	84 (idle); 94 (revving)
Lawnmower	1.5 m (normal operating distance); idle running;	93
Stereo system	3 m; rock music; party volume	98
Coffee grinder (domestic)	60 cm (normal operating distance)	94
Hair dryer	10 cm (normal operating distance)	88
Telephone	1 m; bell-type	83
Edge trimmer (electric)	1.5 m (normal operating distance)	72
Powersander	50 cm (normal operating distance); idle running; indoors	94
Streetcorner	5 m; normal traffic	76
Street corner	5 m; as lights turn green	86
Person shouting	1 m	88
Normal conversation	1 m	62
Whispering	1 m	56



Ecologically
sustainable

GLUE?

He brought the shards from the big flower pot in a garbage bag. He got the durable, water proof glue out of the fridge. Bengt Skans is one of the world's very few experts on animal glue. Strong and ecologically sound.

The house is situated at a narrow, winding road in the south of Sweden.

Here lives and works Bengt Skans. By occupation, he is a research assistant at the Art Sciences Institute in Lund. But he is also a living link with something that is almost lost in history: the art of making glue from natural raw ingredients.

This art is almost as old as humanity itself. With time, ancient humans developed high quality adhesives of astounding strength.

While digging Tutankhamun's grave in Egypt, the English archaeologist Howard Carter found a piece of dried glue, which was sent to a laboratory for analysis. The glue passed every test that is normally applied to modern glues — after more than 3,000 years in the desert.

However, the knowledge gained through hard work can also be lost in a single eye blink of history,

The petrochemical industry was born in this century, and established itself within a few

years. This brief period meant disaster for animal glues.

Today, the market is totally dominated by synthetic glues. The consequences are all the serious and not so serious problems in the workplace and in nature, problems that seem to always accompany the petrochemical industry.

The old methods still work

As far as Bengt Skans knows, industrial production of animal glues is just about obsolete. A tiny amount is produced for restoration work on old paintings.

However, every craftsperson could use the glues and achieve a better work environment, claims Mr Skans: carpenters, upholsterers, musical instrument builders, woodworkers and woodwork teachers,

A couple of days before this interview, Bengt Skans held a lecture for woodwork teachers. The ancient technology generated enormous interest.

He tries to trace the animal glue recipes right back to the source: errors in transcription are repeated in every subsequent document throughout the centuries.

Bengt Skans has also tested most of the glues. For instance this one, from the Swedish monk, Peder Mansson, detailing the production of **glue from eel skins that have been dried in the shade:**

The dried eel skins are soaked for three days, then finely chopped. Simmer the skin in +80°C water until it evaporates. The resulting pulp is strained. The remaining jelly is cut into suitable pieces that are dried in the shade.

This is a very fatty glue which is unsuitable for gluing wood. It is, however, ideal for gluing gold leaf, as the fatty content makes the gold easy to polish,

Some fish scales make a pale, colourless glue.

The cod's swim bladder makes a similar glue, but with a very low melting point.



Animal glue expert, Bengt Skans, shows the flower pot he mended with a glue made from cottage cheese.

Cow and calf hide, moose hide, and skins from reindeer, squirrel, goat and rabbit can be used, as can the skin of most mammals. Each glue has its own characteristics, The technique is usually quite simple.



Bengt Skans preparing moose glue — odourless and incredibly strong

Animal glues have one thing in common — they are extremely strong. Two pieces of wood that have been glued together with animal hide glue cannot be broken apart at the joint: the glue is stronger than the wood.

Mr Skans claims that animal glues can easily compete with modern glues, and are more environmentally friendly. He feels that scientific testing should be done to compare the two types of glue point by point.

"Old technology is often ingenious, and it is very close to everything that grows around us" says Bengt Skans.

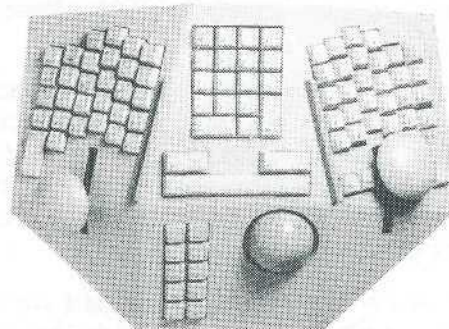
Mr Skans mended his smashed flower pot by heating cottage cheese (in order to separate the fat) and adding slaked lime in order to make a casein glue. Excess glue can be rinsed away with water, but once it dries it becomes both waterproof and very strong.



Source: Peter Lange, *Arbetsmiljo* 15/90 pp2-3; Pictures by Susanne Ewert.

WHAT? YOU CALL THIS A

K E Y -
B O A R D



New type design spells less wrist risks

An inventor claims that this new keyboard is the ultimate in ergonomic design.

John Ullman has cleverly named his invention the *Ullmanual*, and admits that it looks a bit strange.

The most important feature is that the operator's hands are supported by two "balls" that follow the arm movements back and forth. The idea is to take away a lot of under-arm strain, much like resting your hand on the table when you write in longhand. The muscle relief, according to Mr Ullman, can be felt all the way up the arm to the shoulder and neck.

The keyboard utilises a conventional QWERTY layout, and has proven to be faster to master for non-typists than normal keyboards.

Whether it looks like a joke or not, the giant *Apple* corporation is currently negotiating for the production rights of the *Ullmanual*,



Source: Siv Soderlund, *Arbetsmiljo* 15/90 p40

Q

What are the long term health effects of traffic fumes on road workers?

Kevin Keegan, OHN, Adelaide

A

Information on this topic seems to be very scant, even on an international scale.

It appears that diesel fumes may be of some concern, at least in confined areas with little air movement, such as road tunnels, enclosed parking facilities, car ferries and so on.

"Fresh" (not exhaust) petrol has attracted a lot of attention in Europe, and some countries have made it mandatory for petrol stations to fit all their nozzles with special rubber muffs that prevent the fumes from escaping while filling the car.

However, in the case of road workers, one article hints that asphalt fumes may be a greater hazard than traffic exhaust (see below),

First, we recommend that you read two previous articles in PPM, namely *Diesel exhaust proven to increase lung cancer*, PPM vol 3 no 10, Dec 1988; and *Diesel and lung cancer - update*, PPM vol 4 no 11, March 1989.

These articles generated unprecedented interest, controversy and doubt among our readers. The complete original reports are available in full from PPM.

Second, we have encountered two more items that may be of interest. The following are abridged accounts of those articles, collected from the Swedish magazine, *Arbetsmiljo* (Work Environment Magazine).

Diesel fumes mean increased risk of lung cancer and coronary disease

A survey of 708 employees at five bus depots in Stockholm shows that diesel fumes increase the risk of lung cancer and heart disease.

The survey was conducted in collaboration between the Clinic of Occupational Medicine of the Karolinska hospital and the Greater Stockholm Local Traffic Authority,

The 708 people in the survey had all been working in the bus depots between 1945 and 1987, and had all been exposed to diesel exhaust during at least six months. The surveyed individuals were compared with each other, as well as with a control group of people working in the greater metropolitan region.

Same death rate - for discrepant reasons

The result shows that the mortality rate in the group was as expected, but that more people died from lung cancer and ischaemic heart disease than expected. Both increases are small, but still greater than anticipated.

The Stockholm survey is corroborated by two recent American surveys, pointing to the same result.

Diesel exhaust contains more than 1,000 different substances, It is still unknown how these substances can affect humans.

Professor Christer Hogstedt, project leader, said, "It isn't only people working at bus depots that are exposed. Everybody who is exposed to diesel fumes is running a risk of contracting lung cancer and heart disease."

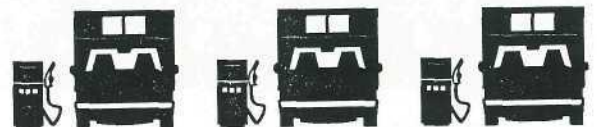
The survey showed no signs of a combined effect of diesel and asbestos.

The researchers pointed out that the risks of exposure to diesel fumes are much lower today than forty years ago, when buses sometimes were left idling in the depots,

There is no sentiment that diesel vehicles should be banned. However, alternatives are being looked at, such as ethanol-fuelled engines and turbos. Particle traps will be fitted to buses within a year or two.

Is it a bus? Is it a truck? No, it's SUPERDIESEL!

A new super diesel which contains no sulphur will be tested within the next year, according to the Greater Stockholm Local Transport Authority. The authority currently runs 1,800 buses in Stockholm.



Both economical and environmental interests tend to favour the continued use of diesel,

Sick of asphalt

Asphalt workers suffer from cough, stinging eyes, fatigue and loss of appetite, This is especially true when the asphalt reaches temperatures of 150 degrees or more.

This is the conclusion of a report on 447 Norwegian asphalt workers. The report recommends that road building companies purchase asphalt that does not require such a hot temperature, or that alternatives be used.



Source: Per Carlsson, *Arbetsmiljo* 12/89 p8; and 2/90 p8

IF YOU CAN'T READ THIS...

More than one million Australians would not be able to read this article. You think they are all migrants? No, 30% are native English speakers.

A new report hot off the presses suggests that Australia could be paying as much as \$6.5 billion a year due to communication problems.

The parliamentary inquiry has led to a report entitled *Words at work: A report on literacy needs in the workplace*, and was conducted by the House of Representatives Standing Committee on Employment, Education and Training. The report presents some astounding findings, compiled from various sources:

- 40% of workers from non-English speaking backgrounds cannot communicate in English.
- 61% have problems reading.
- Almost 66% have difficulties writing.
- Seven out of ten workers have problems taking a phone message.
- One in two Australians cannot make out the dosage instructions on a medicine bottle.
- One source stated that an astounding 30% of native English speakers had trouble writing English.

Earlier research has shown that:

- 4% cannot sign their name on a credit card slip
- 11% fail to identify the expiry date on a drivers licence



- 45% are unable to understand a flight schedule
- 57% can't work out a ten per cent surcharge on a restaurant bill

What could this mean in a safety sense? It could mean disaster. If workers are unclear of safety features, safe work routines, and emergency procedures due to poor understanding and lacking communication, accidents are likely to happen.

The Government may be planning stricter monitoring of school children's literacy skills, but this is not a solution for the thousands of adults in the work force who might not comprehend safety advice.

Employers could try to assess the effectiveness of their signage, induction and safety training, and ensure that they are using communication that is suitable to their staff.



Source: Paul Chamberlin, *Sydney Morning Herald*, March 15 1991; Michael Kiely (ref. *Sydney Morning Herald*, Nov 1989), *Australia Post Marketing Seminar*, March 1990

You're a winner!!!

PPM Christmas competition results

We had a lot of replies to our latest spot-the-picture competition. Most of the replies were correct, and the winning entries were drawn out of a hat.

The five lucky winners will receive a professional kit of Stockhausen skin protection preparations and cleaning agents, specifically tailored for their particular operation by Stockhausen's own occupational nurse.

The winners are:

- **D. G. Gray, Safety Officer**
Golden Bay Cement, WhangareiNZ
- **Paul W Jones, Apprentice Spray Painter**
Rob Roy Panelbeaters, Narembeen WA
- **Sophie Robinson, Occup. Safety & Fire Co-ord.**
Tetra Pak, FairfieldNSW
- **Mike Salaman, Snr Production Officer**
W.M.C. Petroleum Div., West Perth WA
- **Inars Salins, Snr Technical Officer,**
C.S.I.R.O., Canberra ACT

Congratulations from all of us at PPM!
The winners will receive their kits in the mail.

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Handy Hints



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