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# SWEDISH AUTHORITIES MAKE DRASTIC CUTS TO TLV

## 26 Solvents affected

*Thousands of Swedish car finishing workers will be working in a much less hazardous atmosphere from 1990, as the TLV for benzene is cut by as much as 80 per cent. Many other TLVs have been at least halved.*

Towards the middle of last year, the Swedish Worksafe organisation took a number of decisions on the lowering of the TLV of dozens of solvents.

Both employers and employees have put forth reservations against the decisions.

The drastically lowered TLV for benzene, however, seems to have met with approval. Benzene is a component in petrol, affecting personnel at petrol stations, car workshops, oil refineries and other fields.

The main complaint from the employees is that some of the limit levels could have been even further cut.

Employers agree in general about the greater restrictions. However, they feel that the date on which the new legislation will

come into force, 1st January 1990, is too soon, and should be postponed until 1991.

"We demanded the postponement mainly because of the ramifications for the dry-cleaning and wood industries", says Peter Ander from the Swedish Employers' Association.

Mr. Ander claims that about 500 dry cleaners will have to invest \$6.6 million to reduce the limit values.

The Employers' Association have accepted most of the cuts, but are querying cuts in solvents whose health effects have yet to be conclusively established.

A Worksafe spokesperson, Kerstin Wahlberg, said that certain solvents had been limited because of subjective complaints, such as sore eyes, respiratory irritation and headache.

### IN THIS ISSUE:

Swedes cut TLV	1
Rock damage	2
Toxic woods	3
Mold	4
Q&A	5
Wallchart	6-7
Tiiiiimber!	8
Asbestos	9
Young ear damage	11
Solvents affect hearing	12

29 solvents and two other chemicals have been reviewed. Most threshold limit values for the solvents have been halved, and certain have been cut by as much as 80%. However, 19 of the solvents have been lowered by less than 50% — a bone in the throat of Ulf Lavenius of the Swedish Factory Workers' Union,

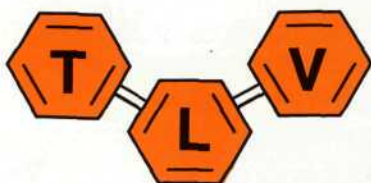
"Worksafe justify this by saying that there are no scientifically proven reasons why the TLV of these organic solvents should be halved. Our union strives to achieve zero exposure. Therefore, we want to cut all limit values as much as possible, especially if it doesn't have any negative economic effects or other drawbacks from the employers' point of view."

Mr. Lavenius stresses that the review has been conducted in a very amicable vein.

"We have been working in the field together with representatives from the employers' organisation. All the problems have been ironed out in a mutually amenable way. However, the end result has not met with our expectations."

Discussions between the Unions and Worksafe will continue throughout 1989.

*The Swedish Worksafe Directorate's new instruction on threshold limit values (AFS 1989:2) is available from Liber Distribution, S-162 89 Stockholm, Sweden or by phoning 0011-46-8-739 9630*



## ROCK'N'SAYAGAIN?

### **One rock concert = three years' noise**

Three years' full time work in a noisy environment and one single rock concert produce equal loading on the hearing. This calculation has been made by the occupational medicine clinic at the Södersjukhuset hospital in Stockholm.

The research team visited two hard rock concerts, taking samples with noise

	Old TLV (ppm)	New TLV (ppm)
<b>Halved TLV</b>		
Methyl glycol	10	5
Methyl glycol acetate	10	5
Methyl isobutyl keton	50	25
Methylene chloride	70	35
Trichloroethylene	20	10
Tetrachloroethylene	20	10
Industrial fuel - hexane	100	50
N-hexane	50	25
<b>TLV cut by more than half</b>		
Ethylene oxide	5	1
Triethylamine	10	2
Ethyl glycol	20	5
Ethyl glycol acetate	20	5
<b>Unchanged TLV</b>		
Butanols	50	50
Butyl glycol	20	20
Cyclohexanone	25	25
Trimethyl benzene	25	25
<b>TLV cut by less than half</b>		
n-Propanol	200	150
Isopropanol	200	150
n-Butanol	25	15
Ethyl acetate	200	150
Butyl acetate	150	100
1,1,1-Trichloroethane	70	50
Industrial fuel - heptane	300	200
Industrial fuel - octane	300	200
Hexanes	300	200
Heptanes	300	200
Octanes	300	200
Nonanes	200	150
Decanes	500	350
Undecanes	500	350
Dodecanes	500	350
Other higher aliphatic hydrocarbons (mg/m <sup>3</sup> )	500	350



Sources: Staffan Nilsson, Arbetarskydd (Swedish work safety newspaper) 5/1989; Örjan Ekström, Arbetsmiljö magazine 3/1989

level equipment. The peak sound level was 125—138 dB(A) in some seats. The duration was three hours. 14,000 people were in the audience, apart from sound engineers, guards and police.

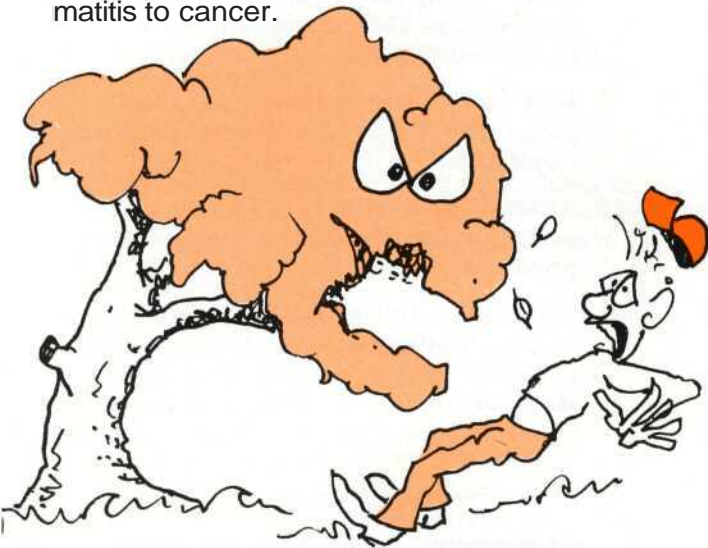
The audience positioned in the peak level seats were subjected to noise equalling three years' full time work in continual noise at the threshold level of 85 dB(A).





# DO YOU KNOW YOUR TOXIC WOODS?

Wood is such a ubiquitous, natural material that most of us would probably see it as totally harmless. However, wood dust has been shown to have many health effects on humans, ranging from mild dermatitis to cancer.



The United States have adopted a threshold limit value of 1 mg/m<sup>3</sup> for wood dust.

Wood varieties have been classified in three main groups:

- **Poisonous/allergenic**
- **Biologically active**
- **Biologically inactive**

Woods of "exotic" or tropical origin are more likely to have detrimental health effects on humans.

## Symptoms

The health effects of wood dusts are many and varied. The acute effects include skin irritation, dermatitis, eye irritation and inflammation. Dust may irritate the upper respiratory tract and cause hoarseness and coughing. Chronic lung irritation may result in permanent wasting of the tissue.

Allergic effects are also prevalent. These include rhinitis, asthma, allergic skin conditions, itching, eczema and urticaria (hives).

The most sinister quality of wood dust is that it has been proven to be carcinogenic. This is of particular concern to the fields of

cabinet making and furniture. An increased number of tumours has also been found in the lumber and sawmill industries, carpentry, joinery, paper and pulp production.

Apart from the effects of the wood itself, the use of chemicals in wood treatment, preservation and finishing must not be forgotten.

## Common toxic woods

The list of woods to watch is long, with some 200 varieties from all over the world. Here is a list of toxic woods found in Australia and the Pacific region, as well as a few very common types from elsewhere:

Name	Family	
Silver fir	Pinaceae	*t
Australian blackwood	Mimosaceae	*†‡
Maple	Aceraceae	*
Redwood	Caesalpinaceae	*‡
Palm	Palmaceae	*‡
Birch	Betulaceae	*
Ebony	Papilionaceae	*
White cypress pine	Cupressaceae	*t
Chestnut	Fagaceae	*t
Moreton Bay chestnut	Papilionaceae	*
Australian red cedar	Meliaceae	*t
Poison walnut	Lauraceae	*†‡
New Zealand white pine	Podocarpaceae	*t
Sempilor (rimu)	Podocarpaceae	*t
Mahogany	Meliaceae	*†‡
Alpine ash	Myrtaceae	*t
Grey box	Myrtaceae	*t
Yellow gum	Myrtaceae	*t
Spotted gum	Myrtaceae	*t
Mountain ash	Myrtaceae	*t
Boxwood	Rutaceae	*t
Sandalwood	Fuphorbiaceae	*†‡
Beech	Fagaceae	*t
Australian teak	Rutaceae	*
Queensland maple	Rutaceae	*
Maple silkwood	Rutaceae	*
Australian maple	Rutaceae	*
Ash	Oleaceae	*
Silky oak	Proteaceae	*
Jacaranda	Bignoniaceae	
Walnut	Juglandaceae	*t
Larch	Pinaceae	*
American whitewood	Magnoliaceae	
Pine	Pinaceae	*†
Poplar	Salicaceae	*t
Whitewood	Pinaceae	*t
Cherry	Rosaceae	*t
New Guinea rosewood	Papilionaceae	*†‡
Oak	Fagaceae	*t
Elm	Ulmaceae	*t

\* — Skin, eye and throat irritation

† — Asthma

t — Toxic effects



# MOULD

## More than just a nuisance

*Sydney people would be more than familiar with the dreaded house mould arising from the continual rain and damp weather over the past several months. But mould occurs in many places and in many occupations, and should be treated with respect: mould can cause a host of health effects on humans and animals.*

ALVEOLITIS, or Farmer's Lung, can be a serious disease. Every year, hundreds of farmers, wood chip workers and fruit handlers are affected. Scientists expect many tens of thousands of people to be affected by the disease during their working life.

The Swedish National Institute of Occupational health has commissioned several scientists to research the connection between lung disease and exposure to mould.

Professor Per Malmberg of the institute, who has been exploring lung disease for many years, claims that mould may constitute many types of health risks.

Allergic Alveolitis is a common disease. It can leave permanent damage, and can be fatal.

The disease was first described by the father of occupational health, Bernardo Ramazzini in Italy in the year 1600. The first contemporary description of the disease was published in 1932 by the British scientist Campbell, followed by a number of reports from various countries.

Allergic alveolitis is caused by inhaling mould, which consequently affects immunological mechanisms. The symptoms are breathing difficulties, coughing, and high temperature. The symptoms appear several hours after exposure. Mild alveolitis disappears quickly after exposure, while chronic cases are persistent. The function of the lungs may be reduced, and the person may become more or less incapacitated.

Some people become sensitised to the mould, requiring only minute exposure for a

full-blown attack. Consequently, some people must relinquish their professions in order to overcome the disease.

- **TOXIC ALVEOLITIS** is a milder complaint. Farmers often experience discomfort when cleaning out silos and other grain storage areas. Toxic alveolitis does not normally result in permanent damage.
- **HAY FEVER** and **ASTHMA** may affect people with allergic conditions. Mould is one major factor.
- **RESPIRATORY IRRITATION** may occur in all dusty areas. Mould may compound the problem.
- **VARIOUS POISONS** may be generated by mould, affecting livestock if feeding on mouldy hay. Some of these poisons have been shown to cause cancer in livestock. No research points to mould being carcinogenic to humans.

Moist organic materials (and readers on the East Coast of Australia, whether farmers or not, will identify with this) may be a perfect "compost growing ground", leading to a rapid growth of bacteria and mould. When the material dries, great puffs of millions of mould spores will issue at every mild touch. The dust is very fine and lingers in the air for long periods.

Some of the mould spores are extremely fine, and are able to reach the tiny alveoli in the lung.

### Smokers vs. non-smokers

Allergic alveolitis affects non-smokers more severely and more often than smokers. The reason is probably alterations to the immune system in smokers. A recent survey of 38 sufferers from allergic alveolitis did not include a single smoker. The fact that there are less smokers among farmers makes them even more vulnerable.

Toxic alveolitis is much more common than the allergic variety. The symptoms are fever and chills coupled with flu-like conditions, such as aching joints, sore muscles, cough and headache. Breathing difficulties may also occur. Survey material shows that about one in seven farmers suffers from toxic alveolitis.



The symptoms disappear after a day or two, and do not have any permanent effects.

Allergic alveolitis is hard to diagnose. Research conducted by the National Institute of Occupational Health shows that 12 farmers were sick for six weeks before the diagnosis was established. During this period, many of the patients were on antibiotic treatment.

Five of the twelve patients were treated with oxygen. Ten were given cortisone.

The patients' lungs were X-rayed. With one exception, all displayed significant changes in the lung tissue. After treatment, the condition was normalised.

One year after the treatment, two of the patients were still suffering from bronchitis. Four were complaining of fatigue and breathing difficulties. Nine of the twelve farmers went back to their rural operations after purchasing respiratory protection.

When handling materials that may contain mould, farmers are advised to use proper breathing protection, fitted with a particle filter.



Sources: Lundgren, Bjermer, Rosenhall, Blomquist - *Läkartidningen* (medical journal), vol. 85/47 1988; Malmberg - *Aktuell miljövärdhetsforskning* 2/1982; Rask-Andersen, Malmberg - *Draco per Medico* 7/1988

## Handy Hints



Can your seat be adjusted... and have you positioned it in the correct way?

People who spend long periods sitting on chairs or seats should pay special attention to their backs and necks

## Questions & Answers

**Q:**

Are there any guidelines for acceptable noise levels in various types of work?



**A:** You should never be exposed to more than 85 decibels. As soon as the noise level — even temporarily — exceeds this level, hearing protection should be used. Remember also that sound levels below the "safe" threshold could be damaging if you're exposed for long periods of time, and your time off the job includes noisy activities, such as hand tools, motorcycles and other engines, discos and rock concerts, and listening to loud stereo music. Remember that it is the total accumulated exposure to noise that adds up to a dangerous level.

The simple table below may provide some indication as to the preferable maximum noise levels in different situations.

Location	Max level
<i>Bedrooms, hospital wards, living rooms, theatres, churches, cinemas, small offices, class rooms, conference rooms</i>	20-30
<i>Large offices, stores, business premises, quiet restaurants</i>	30-40
<i>Limit for work requiring a great degree of concentration</i>	40
<i>Large restaurants, large offices typing offices</i>	40-50
<i>Large typing pools</i>	50-60
<i>Limit for general office work</i>	60
<i>Work in areas where communication is essential</i>	70
<i>Limit above which hearing protection should be worn</i>	85



Source: Peltor Handbook protection equipment & communication

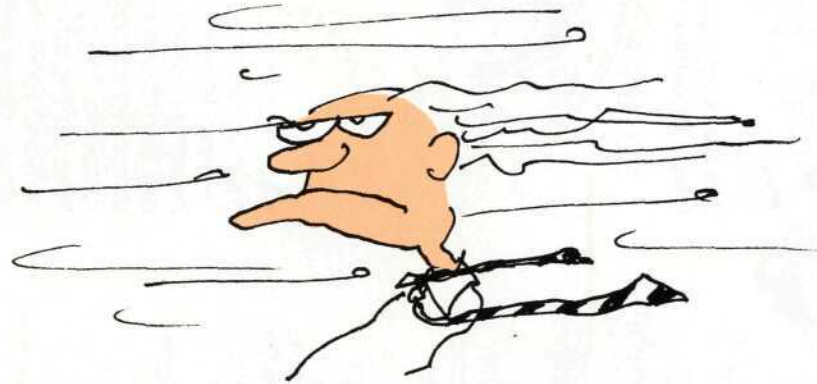
# HAVE YOU OVERLOOKED THE FORGOTTEN RISKS?

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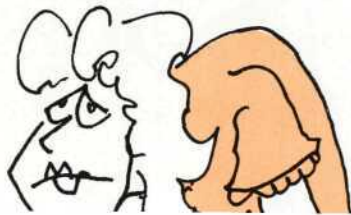
## WORRY

Worrying about money, duties, work load, dissatisfaction, family and other factors may influence your work and make you more vulnerable to accidents.



## SURROUNDINGS

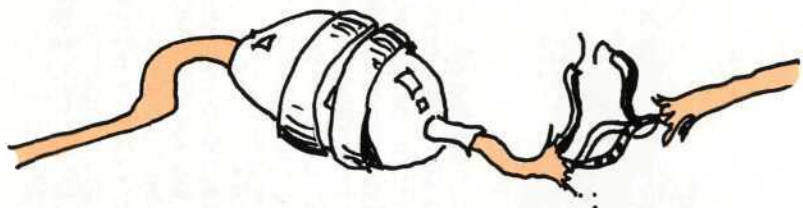
Hot, cold, humid, dry, noisy, drafty—everyone performs better in a comfortable environment, and is less likely to make mistakes.





# POSTURE

Whatever work you're doing, poor posture can ruin your back and neck. Make sure you perform recommended exercises, adjust your seat properly, and use the correct lifting techniques.



## HIDDEN DANGERS

Watch out for mould, dust, dirt, bacteria, sharp edges, static electricity, tall stacks, electricals and many other things that may be a hidden danger.

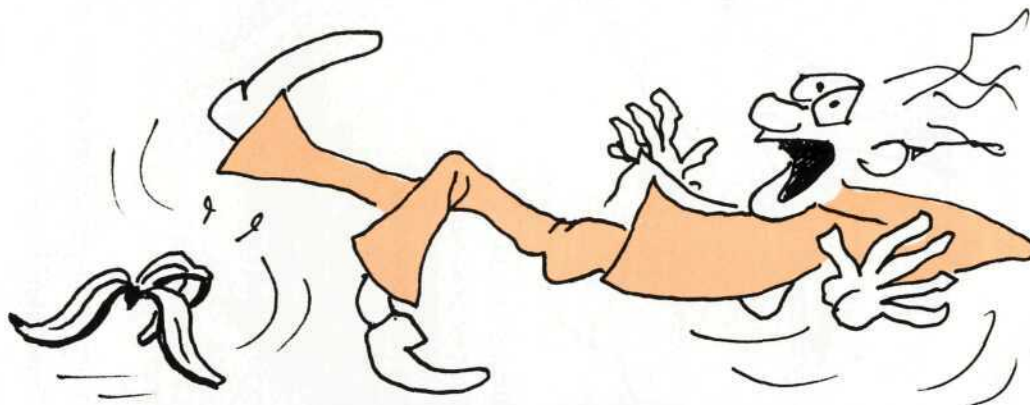


## HEAVY WORK

Excessively strenuous work is a hazard in itself. Numerous devices could relieve the strain.

# CHEMICAL TRAILS

Chemicals can migrate to food, react with water, be toxic, slippery, explosive, corrosive and more. Know the material, how to handle it, and the right protection.



## FOOTHOLD

Slippery chemicals, oils, stairs, wet floors and walkways, ladders and everything else you walk on — watch it. Slip-free floor strips and ladder rungs are easily installed.



## DISCOMFORT

People working in uncomfortable body positions should perform stretching and relaxation exercises regularly.



# TIIIIMBER!

*People working in the forestry and timber industries may be exposed to a number of health risks, both physical and chemical.*

## Noise damage

Noise is a problem in forestry, saw milling and other occupations. Although some chain saws and mill machinery may be equipped with noise reduction devices, hearing protection should always be worn.

However, it is not enough to simply wear ear muffs. A responsible forestry or timber operation should establish a complete hearing protection system, including:

- **Monitoring of staff through regular hearing tests**
- **Selection of the appropriate protection equipment — overprotection causes as many problems as underprotection.**
- **Thorough investigation by independent experts in cases where hearing loss is found**
- **Statistics and audits in order to find and prevent potential hazards**

## Vibration damage

A particular condition known as vibration white finger (VWF) is common in the forestry industry. The symptoms include white discolouration of fingers and hands, numbness, aching hands, stinging sensation in the fingers, and trembling.

Apparently, the condition is worse in cold weather, and is usually more severe in the hand used to hold the front bar of the chainsaw.

A survey conducted in New Zealand in 1972 showed that nearly one of every two forestry workers had suffered from vibration white finger. After chainsaw manufacturers had taken steps to reduce the vibration, the proportion of sufferers had diminished to 30-40% by 1978.

It is accepted that the main cause of VWF is vibration. However, cold temperatures, vascular conditions and smoking could also worsen the condition.

## Chemical damage

Timber preservation involves the use of a number of hazardous chemicals. Skin damage is the most acute effect, but some chemicals may cause severe damage to the body system itself.

Chemicals are used as timber preservatives and as anti-sap stain compounds. These include:

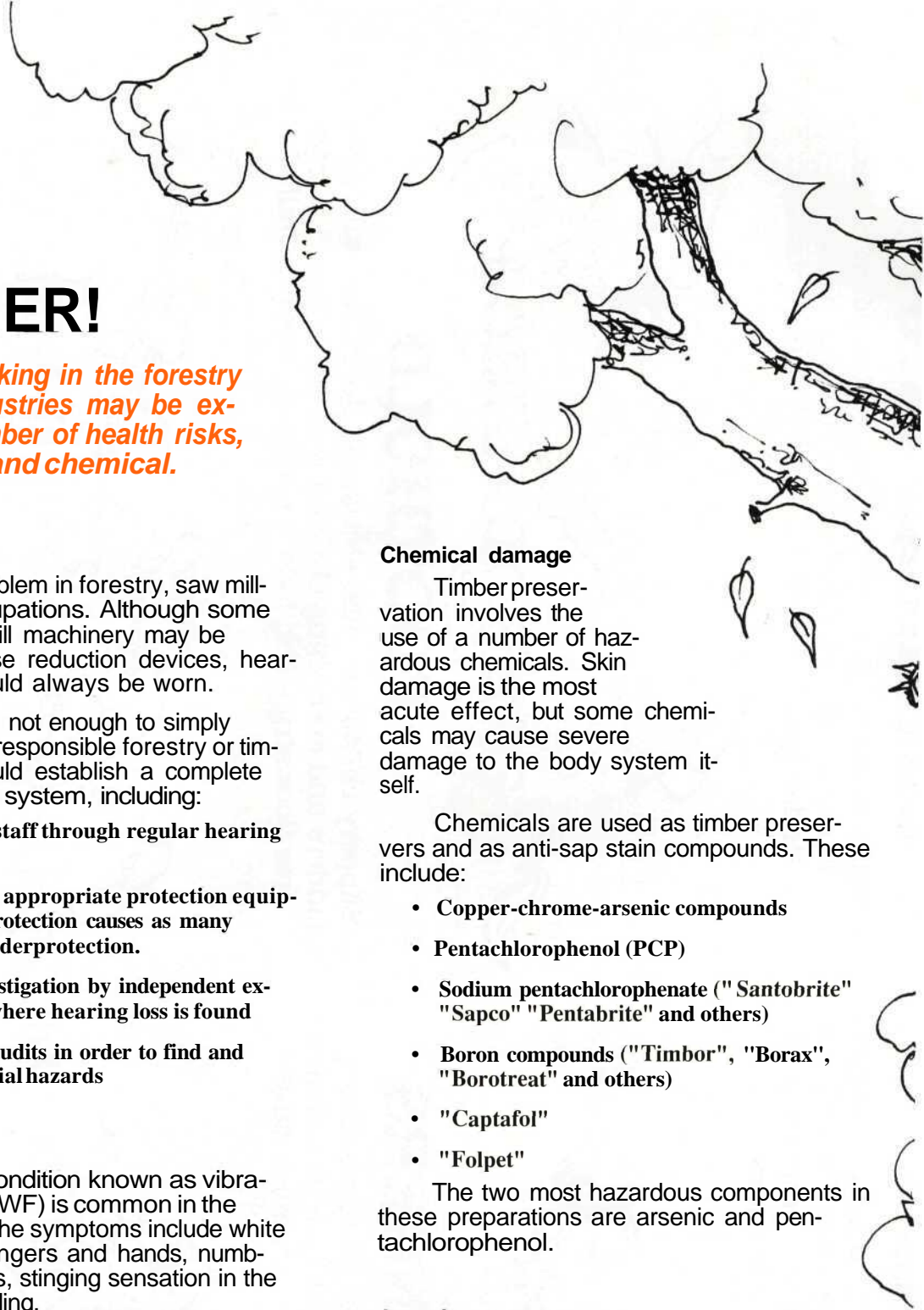
- **Copper-chrome-arsenic compounds**
- **Pentachlorophenol (PCP)**
- **Sodium pentachlorophenate ("Santobrite" "Sapco" "Pentabrite" and others)**
- **Boron compounds ("Timbor", "Borax", "Borotreat" and others)**
- **"Captafol"**
- **"Folpet"**

The two most hazardous components in these preparations are arsenic and pentachlorophenol.

## Arsenic

Arsenic may be either absorbed through the skin when handling wet wood, or inhaled in dust or spray form. About 80 per cent of the arsenic is excreted in the urine within two days after exposure. However, the absorbed 20% remains in the body for many months, and may cause both acute and chronic conditions.

Acute symptoms include skin irritation, irritation to mucous membranes, dermatoses, and epidermal carcinosis (skin cancer). Other skin conditions include discolouration of the skin and impairment of the peripheral circulation, which may cause gangrene of the fingers and toes.



Chronic symptoms include weight loss and bowel upsets.

Health effects other than skin disorders are uncommon in the industry.

Protection includes avoiding any direct skin contact with arsenic compounds, and the use of respirators in dust producing work or when spraying.

### **Pentachlorophenol**

Like arsenic, PCP may be absorbed through the skin or inhaled. Skin contact may cause irritation and rashes. Prolonged skin exposure can lead to a type of acne.

Inhalation may result in bronchitis, violent sneezing, coughing, sore nose and throat, and eye irritation. Changes in the metabolism may also occur.

Severe poisoning causes weakness, heavy sweating, head-

ache, dizziness, nausea, vomiting and breathing difficulties.

The people most likely to be exposed to PCP are the "tail-outers", when pulling the treated timber off the conveyor after the chemical bath.

PCP is easily and rapidly absorbed through the skin, and appropriate skin protection is essential. If working near spray nozzles or in an aerosol atmosphere, breathing protection should be worn.

Dr. Bill Glass, Associate Professor in occupational health at the university of Otago,

N.Z., has compiled a number of important points for forestry and timber industries:

*Knowledge*— Unless the workforce know about the hazards, they can do little to minimise the risk.

*Job training*— Proper job methods are safe, as well as being productive.

*Protection*— Personal protection of eyes, hearing, head, feet, lungs and skin are important. Protective devices and protective clothing much the comfortable.

*Environmental controls*— Improvements in tools and in the workplace can do a lot to reduce worker hazards. The new chainsaws, for example, cause less vibration effects. Good lighting in saw mills leads to a safer workplace. Dust control measure minimise inhalation risks.

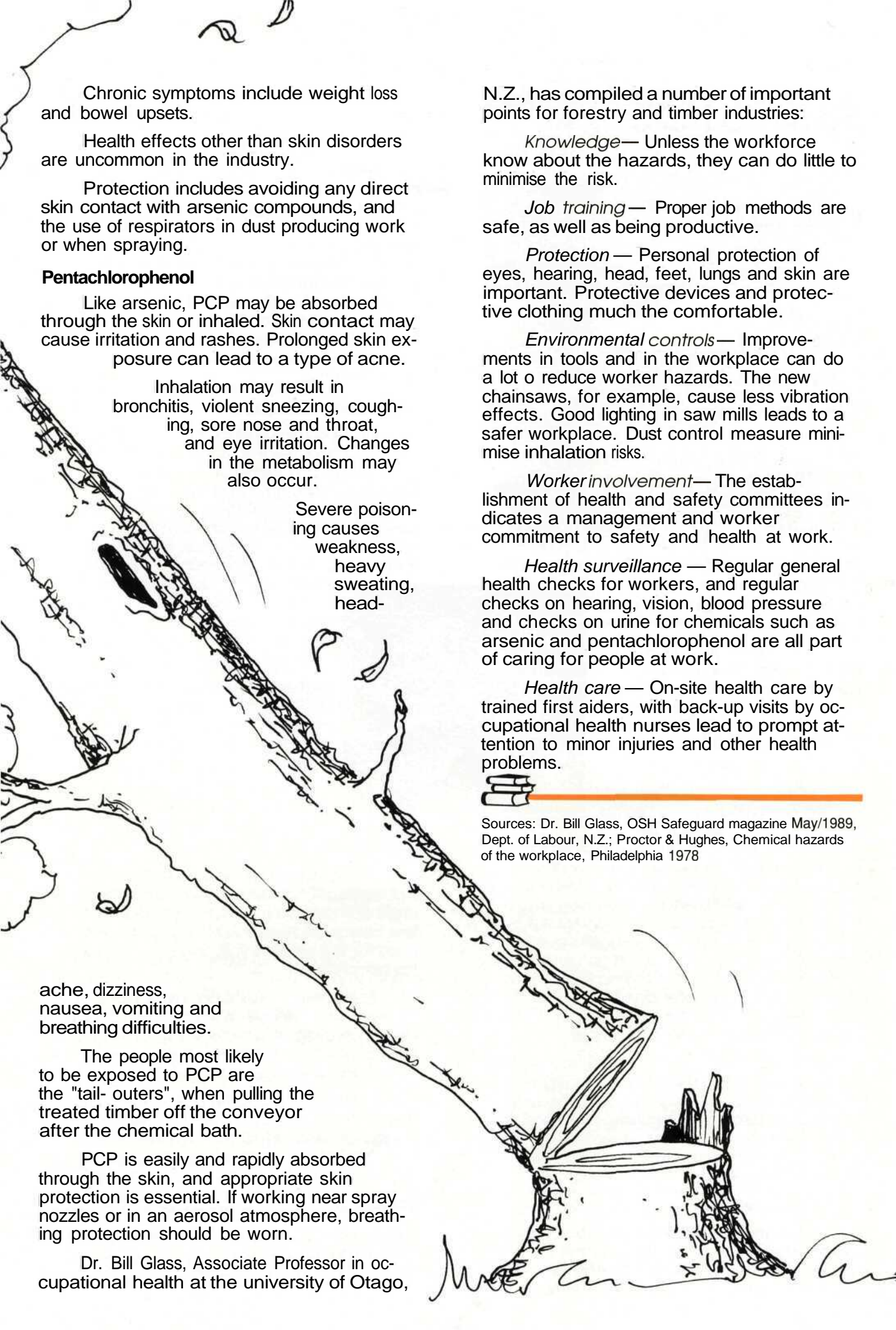
*Worker involvement*— The establishment of health and safety committees indicates a management and worker commitment to safety and health at work.

*Health surveillance*— Regular general health checks for workers, and regular checks on hearing, vision, blood pressure and checks on urine for chemicals such as arsenic and pentachlorophenol are all part of caring for people at work.

*Health care*— On-site health care by trained first aiders, with back-up visits by occupational health nurses lead to prompt attention to minor injuries and other health problems.



Sources: Dr. Bill Glass, OSH Safeguard magazine May/1989, Dept. of Labour, N.Z.; Proctor & Hughes, Chemical hazards of the workplace, Philadelphia 1978





# ASBESTOS

## A time bomb waiting to explode?

**Asbestos is the collective name of several naturally occurring crystal-line fibrous minerals, including:**

- Chrysotile (White asbestos)
- Crocidolite (Blue asbestos)
- Amosite (Brown asbestos)
- Anthophyllite
- Tremolite
- Actinolite

Asbestos has many valuable qualities. The fibres may be woven, are strong and extremely heat resistant. This is the reason why asbestos has been used in protective clothing, insulation, brake belts, gaskets etc.

It has been estimated that asbestos has been used in about 3,000 applications.

### What are the risks?

#### *Pleural plaque*

When handling asbestos or materials that contain asbestos, a fine particle dust may be generated. Asbestos dust comprises needle or thread shaped particles with a capacity to create damage to the lungs when inhaled. The finest fibres may become attached to the lung membranes (Pleura). When breathing, the membrane moves against the rib cage, and the grinding fibres cause tiny scars or suffusions on the lung tissue. The scars may later calcify. The condition does not cause pain or discomfort, but is a sure sign of exposure to asbestos.

#### *Asbestosis*

Asbestosis is a disease caused by over-growth of the connective tissue in the lung. This means discomfort and impaired breathing. Asbestosis may occur several years after leaving a position where the worker is exposed to asbestos.

#### *Lung cancer*

Inhalation of asbestos dust leads to a greater risk of lung cancer. The latency period may be as long as 20 years. Smokers stand a much greater chance - up to eight

times greater than non-smokers - of getting cancer.

#### *Mesothelioma*

Mesothelioma is a rare form of cancer, caused by blue asbestos (crocidolite). There may be a very long period between the exposure to asbestos and the first signs of the disease, as long as 50 years. Mesothelioma usually occurs in the lung, but may also appear in the abdominal lining (peritoneum). No effective cure has been found, and the disease leads to death within a few months or years after it appears. There is apparently no relation between smoking and mesothelioma.

### Asbestos in Australia

Australia has one of the world's highest rates of mesothelioma. Emeritus Professor David Ferguson, head of Worksafe Australia's mesothelioma surveillance program, claims that although the disease is rare, Australia is still experiencing an epidemic, and the extremely long incubation period could mean that we are sitting on a time bomb in the community. He predicts that the rate of mesothelioma will increase until the year 2000, and then diminish.

Western Australia has the highest proportion of the disease, 26.9 per million people aged 20+. However, the number of reported cases is highest in New South Wales.

Worksafe Australia is hoping that the asbestos control program will eventually eliminate the occurrence of mesothelioma.

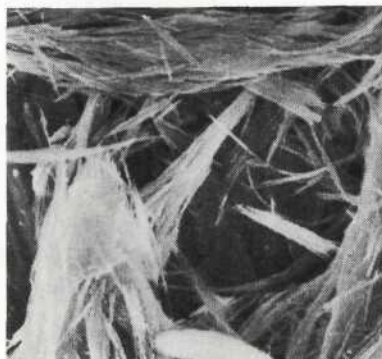
Worksafe is said to have the best statistical registration system in the world. The register is used to monitor the disease and follow trends. Worksafe Australia is lobbying hard for the establishing of a national asbestos handling standard.

Elsewhere in Australia, laboratories are involved in extensive asbestos testing. Research programs include surveys of the efficiency of the membrane filter method, and of the use of wetting agents.

CSIRO in Melbourne have concluded that wetting agents are of little use in asbestos removal. Water alone was just as effective or even more effective than wetting agents.



Sources: Worksafe Australia Vol. 4 No. 4, March 1989; Swedish Work Safety Directorate publication ADI333, 1987; ILO Encyclopaedia of Occ. Health and Safety, Geneva 1985; Black's Medical Dictionary 35th ed., London 1987





# YOUNG PEOPLE'S HEARING

## Say what?

*Could our electronic age be responsible for a wide degeneration of young people's hearing? A Swedish research program has shown some very worrying results.*

Rock music, discos, portable stereos, head phones, head sets, stereo plugs - these days, you can carry your powerful sound machine wherever you go. Is it possible that an ever increasing exposure to loud music could constitute a high risk?

Swedish youth are hearing less and less. Thousands of boys are relieved of Swedish military duty because of poor hearing. The Senior Defence Surgeon, Ebbe Lindner, is worried.

"We don't want to accept recruits who already have a hearing damage that's likely to worsen in a noisy military environment."

A survey of over 50,000 persons has been conducted by university lecturer Per Nilsson, finding that early damage may deteriorate over only a few years to a stage where a normal conversation may be impossible to discern.

According to Mr. Lindner, the problem arises from discotheques, rock concerts and portable stereo amplifiers.

The defence forces turn back thousands of youths every year. The Swedish national conscription system means that the defence forces are responsible for the health and well-being of its soldiers from start to finish.

"The boys often dream of a 'hard and tough' position within the army", says head surgeon Ove Grahne at Gothenburg recruiting office. "But I cannot allow them to run the risks of such a position. Many of them are very disappointed.

"It's all about their future quality of life. A minor hearing fault today may result in total inability to comprehend a conversation within a few years. We have seen cases where men have committed suicide be-



cause of continuous hiss and ringing in the ears."

Head nurse Birgit Carlsson is also concerned of the declining test results:

"The boys who come here have worse and worse hearing. Many don't even know that their hearing is defective."

### Rapid decrease

The test report from the initial military registration is later compared with a second hearing test when the person actually joins the army. Ebbe Lindner has grave concerns about the facts gained by these two checks:

"We find that the hearing damages worsen notably in the relatively short period between registration and service. And if that period is longer, say, 2-3 years, you can almost count on deterioration."

Ulf Rosenhall, a researcher with the Sahlgrenska hospital in Gothenburg, has conducted a large scale survey that concurs with Dr. Lindner's warnings about loud music.

### Smaller gadgets — greater risk

The minimal equipment now required to hear music in highly realistic stereo has possibly lead to a greater risk of hearing damage.

People who travel on trains, walk along noisy city streets, or work in noisy environments while listening to music tend to turn up the volume in order to drown surrounding noise. Whereas the now outdated padded cup headphones provided at least some shielding of ambient noise, modern minia-

ture plugs and "turbo" phones let all the noise through, and have to be turned up loud.

However, you cannot "drown" noise with music without running a great risk of hearing damage.

#### Occupational hearing - risks and solutions

Tractor drivers, machine operators and people in many other occupations often like to wear headsets to get away from the monotonous engine noise.

However, even with soft music it is possible to boost the noise level to a hazardous level.

The ideal solution is hearing protection with in-built speakers. Such hearing protectors shield the ear effectively from surrounding noise, then provide pleasant music listening at safe levels, without the need to drown ambient noise.

Some hearing protectors may be plugged directly into a car radio or cassette player. Others may be used in a wireless multi-user circuit operated over a loop antenna, providing entertainment to everyone working in the area covered by the loop. Such systems have a number of benefits: firstly, each user may select one of several channels, depending on taste and preference. Secondly, the system is a strong encouragement for everyone to wear hearing protection. And thirdly, supervisors may break into the transmission to transmit important announcements, reaching everyone on the floor.



Source: Sven Ullgren, Göteborgs-Posten, March 1989

## CAN YOU HEAR THE SOLVENT?

*In a recent experiment, rats that were first subjected to toluene and then noise suffered severe hearing loss. Control group rats that were spared the toluene showed a lesser decline.*



Ann Christin Johansson of the Swedish Institute of Work Environment claims there are signs that humans also suffer greater loss of hearing when exposed to solvents. Research involved a group of ship painters, whose hearing damage was higher than expected, considering the noise level at the wharf.

In a paper mill, workers who dealt with chemicals had a higher degree of hearing loss than other workers, although they were exposed to lower noise levels.

The actual source of the damage is yet to be determined. However, it has been established that the hearing loss is due to degeneration of the sensitive cilia.



Source: Arbetsmiljö 4/89

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**Private Bag 1001**  
**Mona Vale NSW 2103**  
**AUSTRALIA**

**Tel: (02) 949 1311 Fax: (02) 94 2640**

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