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professional protection magazine

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NEW RESEARCH:

STYRENE HARMFUL WELL BELOW TLV

A Swedish study concludes that the TLV for styrene should be drastically reduced, and that stringent protective measures be taken for people who handle the substance.

Assistant head physician at the Occupational Health Clinic in Linköping, Ulf Flodin, has established that workers handling styrene suffer adverse symptoms at concentrations *far below* the threshold limit value. Workers complained of fatigue, irritability and memory loss even several months after leaving their job.

The "high exposure" group had been subjected to approximately 50 mg/m³ during long periods, and up to 300 mg/m³ for short times. The "low exposure" group had been exposed to under 25 mg/m³.

The high exposure group displayed headaches, fatigue, memory loss, and irritability.

The same damages were found in the low exposure group, but with less intensity.

The new study differs from earlier research, where no effects have been attributed to concentrations of 50 mg/m³ or below. Dr. Flodin explains the possible reason may be that previous studies have not been made on people handling styrene in strenuous work, where more of the chemical would be absorbed. His own study was

made on workers in a plastic boat building factory,

The complete report is available in English. Please write to PPM for more information.



Source: Örjan Ekström, Arbetsmiljö 4/89 p 10

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Cooeee!

Are you right or left-eared?

"If you find yourself shouting at a farmer, try standing on the other side: right-handed farmers could also be right-eared."

So says Cathy Johnson in an article in the Sydney Morning Herald newspaper, referring to a study by Dr. Lyn Clarke, director of the Agricultural Health Unit at Moree District Hospital.

Hearing loss in farmers' left ear is common. American surveys suggest that the loss is caused by the need to look over one's shoulder when driving tractors.

Most farmers are right-handed, and most turn their head over the right shoulder exposing the left ear to the engine noise.

Two thirds of Aussie farmers hear less

Dr. Lyn Clarke said that more than 60 per cent of Australian farmers and graziers are afflicted with significant hearing loss due to noise.

Modern tractors are sound proofed and equipped with low-noise engines. However, this type of hearing loss has been caused by a life time of exposure to machine noise. Moreover, not only tractors are to blame: chainsaws, augers, guns, and hand tools are also used frequently on the farm,

It seems, though, that tractor activities, such as spraying and plowing, are to blame for the common one-sided hearing loss.

Presumably, conclusive evidence will be reached by making a comparative study

of dividing the group of hard-hearing farmers according to dexterous preference,

Noise down on the farm

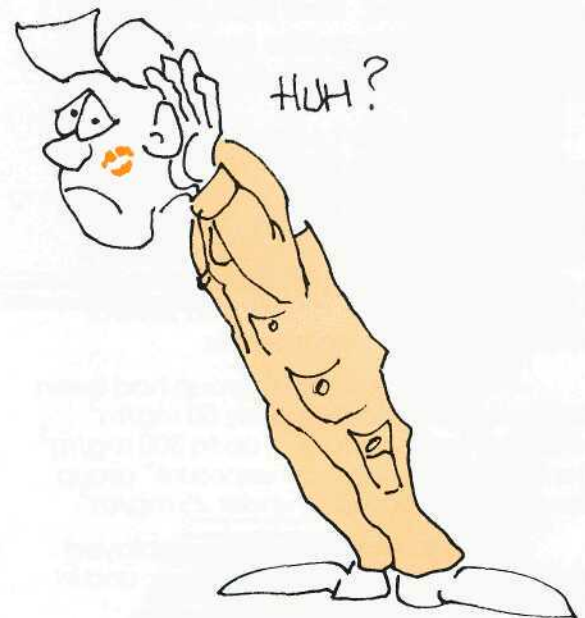
Exposure to the following noises for periods longer than the recommended time limit is likely to cause permanent hearing damage

Noise	Level (dBA)	Time limit
Shotgun	130-150	Never
Chainsaw	90-120	30 secs
Tractor	80-105	15 mins
Angle grinder	103-118	90 secs

(Time limits are calculated on the equipment's maximum recorded noise level.)



Source: Cathy Johnson, Sydney Morning Herald, 02 Oct 1989. Noise levels: National Acoustic Laboratories. American report: Lankford, J., audiologist, Northern Illinois University, article in "Psychology Today".



A love-hungry man from 'round here
was told by a Belle, "Come here, dear!"
His ears, never muffed,
Were totally stuffed,
and sadly, he just didn't hear.

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Questions & Answers

Question: "What are the hazards associated with screen based equipment and its likely health effects?"

"Browser"

Answer:

We found this question very interesting, and decided to explore a number of related or conflicting reports. Here is a rather lengthy reply to "Browser":

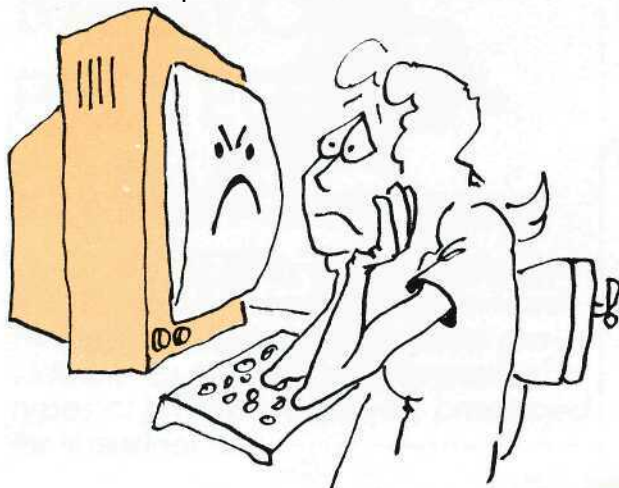
A recent study conducted at the women's ward at Oakland, California shows that women who spend more than 20 hours per week in front of a VDU screen during the first three months of pregnancy are running an 80% higher risk of miscarriage than women who do not work with VDUs.

The study has been criticised, however, in that it does not explain the relationship between VDU work and what appears to be an abnormally high incidence of legal abortions.

The doctors behind the study, Marilyn Goldhaber, Michael Polen and Robert Hiatt, have left the results fully open for interpretation. Women who have miscarried may have exaggerated the time they spent in front of screens, thus distorting the report.

The doctors also point out that the elevated proportion of miscarriages may have to do with things unrelated to VDUs, such as stress, poor ergonomical design, and long periods of static work.

Mr. Ulf Bergqvist at the Work Environment Institute of Sweden, points out that out of all studies performed, only women who work in highly monotonous and routine-oriented computer work tend to show a



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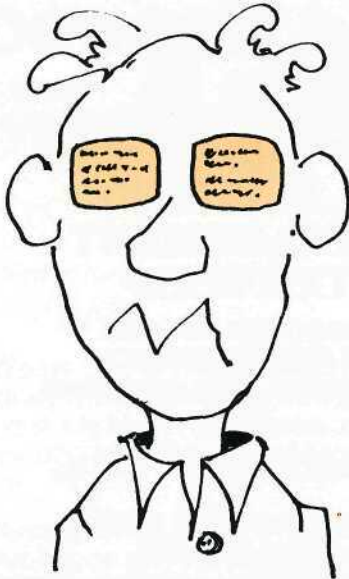
higher incidence of pregnancy disturbances. He suggests that the problem rests in the area of stress and repetitiveness rather than in radiation from the screen,

VDUs differ between sexes?

A study of 40,000 people in the Swedish Telecom attempted to explore the sick days taken by various groups of computer operators. Female terminal operators did not show a higher level of absence than other women in the organisation.

However, a survey of the male operators told a completely different story. Male terminal workers had much higher absence rate than any other group in the organisation.

"Perhaps screen work is more taxing than we think — that's why the men stay away more often", says Gunnar Aronsson from the Swedish work environment institute, who has put the study together with Matti Tonnes and Par Pettersson from the school of psychology at Stockholm University.



When the type of computer work was taken into consideration, the researchers found that monotonous and less qualified work caused a greater absence than more varied tasks, such as CAD-CAM. The highest rate of absence was in the area of computer registration and data entry.

The program has yet to determine the possible reasons why male operators take more "sickies" than women, and why the disproportion increases with age.

WHAT WE KNOW ABOUT SCREENS TODAY:

Most scientists agree on the following hazards of video screen work:

Eye discomfort	Yes
Eye illness (myopia, cataract)	No
Strain	Yes
Stress	Yes
Skin conditions	Yes
Foetal damage	No

An array of electromagnetic fields and radiation is associated with video screens.

- **Ionising radiation** (X-rays) is present inside the picture tube, but do not penetrate the glass.
- **Optical radiation** (visible light) comprises the light areas on the screen. The light itself is not harmful, however, poor resolution, flickering, and wrong choice of colour of text and background may constitute inferior visual ergonomics.
- **UV radiation** is no greater than that of a light bulb or a candle.

- **High frequency electromagnetic fields** are present in minimal doses, usually well under limit values.
- **Low frequency electromagnetic fields** are weaker than in many other work environments, such as large electrical machines.
- **Electrostatic fields** may exist between the operator and the video screen. These fields may cause skin conditions, but are easily eliminated by earthing the screen and humidifying the air.

Conclusion

It seems that employers should not worry too much about radiation and other physical risks, but pay more attention to proper chairs, workstation design, variety in the work, frequent pauses and so on.

The most monotonous work, such as data entry, could often be done by optical reading devices.

The selection of software should be suited to the people who will operate it — not the other way around.

Background colours, screen resolution and the visual appearance of the software warrant careful examination and adjustment for ease of use and comfortable watching.



Source: Arbetsmiljö 6/88, 9/88, 6/89

Handy Hints



DON'T TAKE YOUR MASK OFF...YET!

Always remove your overalls BEFORE taking off your respirator.

HOW THICK-SKINNED ARE YOU?

The absorptive resistance of the skin varies greatly, depending on which part of the body is exposed to chemicals.

Drips and splashes can soak the clothing and then slowly reach the skin. Even if you lean on spraying equipment, a film of sprayed chemical on the surface can penetrate your clothing. Powder may be dissolved in perspiration and soak through the clothing. Shoes may become moist with chemical preparations.

Granulated chemicals are less likely to reach the skin than fine powders and liquids.

The underarm is one of the least absorptive parts of the body. In the picture, we have given the underarm a reference value of 1. We can then estimate the relative skin absorption of other body parts.

Scalp 3.7

Forehead 4.2

Ear channel 5.4

Eyes 12.0

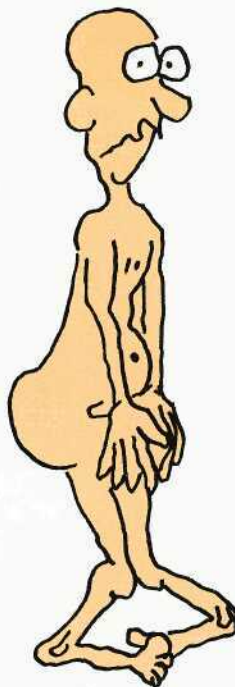
Underarm 1.0

Abdomen 2.1

Palm of hand 1.3

Genitals 11.8

Upper foot 1.6



Some simple rules when handling nasty stuff:

- Read all labels so you know what you're handling
- Use required personal protection
- If working outdoors, keep all chemicals and containers downwind from you
- Always have soap and water at hand
- Wash your hands BEFORE going to the toilet, smoking and eating
- Change soaked or splashed clothing immediately
- Don't forget to wash not only containers after you finish, but also nozzles, compressors and all other equipment that may have been covered with chemical
- Don't leave contaminated clothing and shoes in the open: wrap it up in plastic bags for soaking and washing
- Wash your gloves BEFORE you take them off



Source: Swedish Agricultural Health authority 2-89

BAG YOUR PROTECTIVE GLOVES!

A recent study has discovered that ordinary freezer bags provided by supermarkets and butchers provide better protection than most types of protective gloves, produced for industrial use.

The study was carried out by the National Swedish Laboratory for Agricultural Chemistry to explore skin absorption of pesticides.

It was found that plastic bags could withstand most chemicals used in pesticides for 5—10 minutes, and were easier to put on and take off than industrial gloves.

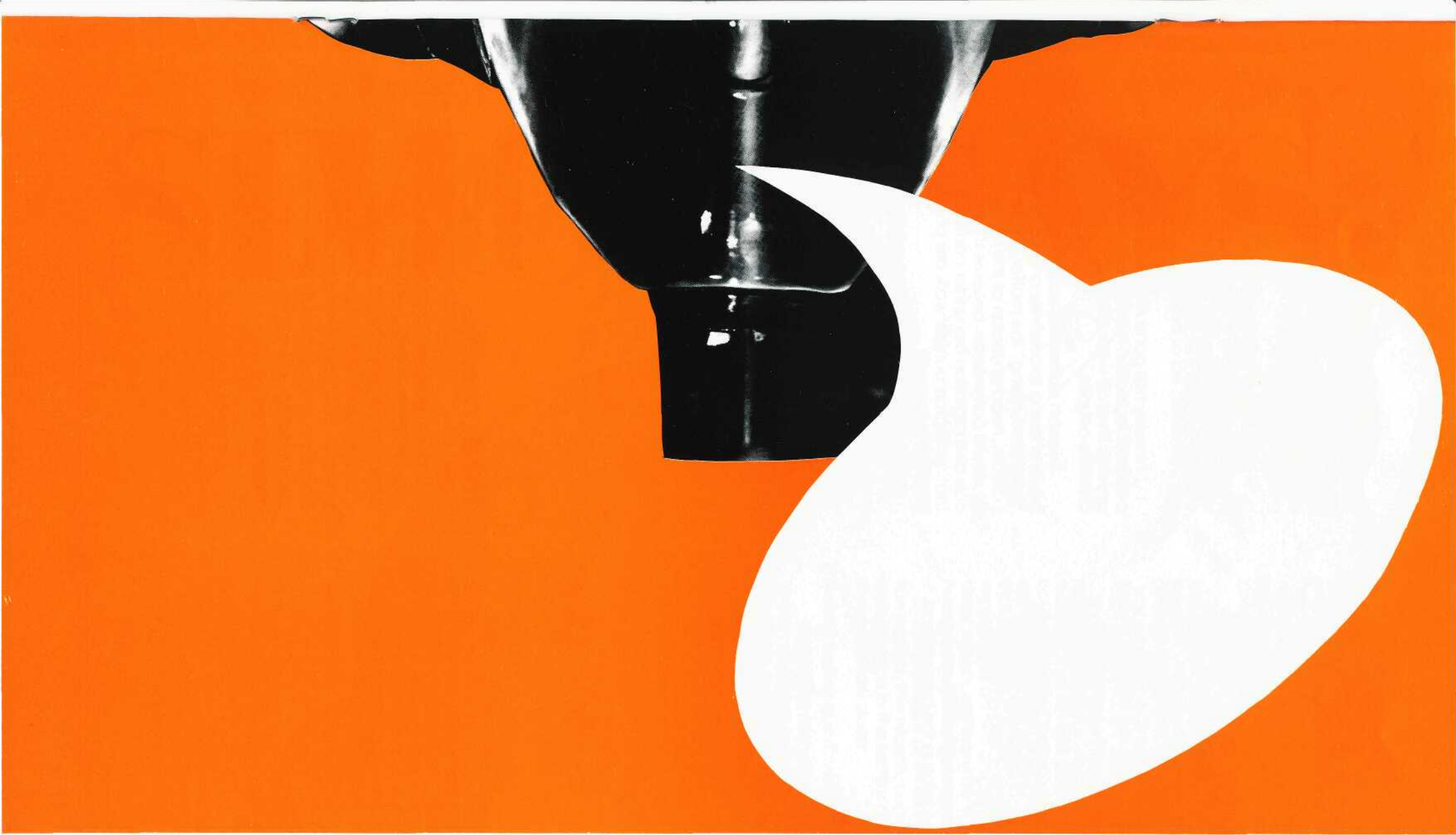
A further benefit was the fact that users were encouraged to throw away the "gloves" immediately after use,



Source: New Zealand Occupational Safety and Health magazine "Safeguard", Aug 1989

SIMMON SAYS:





Put your best words in Simon's mouth and win a great prize! See page 11 for details & entry form!

PREGNANCY IN THE WORKPLACE

Sitting, stress and substances are the three serious S's in the workplace for pregnant workers. All of these factors may diminish humans' ability of having well formed, healthy children.

Other factors include radiation, infections, severe physical exhaustion, anaesthetic gases, cytostatics, heavy metals, tobacco and alcohol.

A host of completely unknown influences may also be lurking in the background,

nancy complications due to their work. This figure amounts to nearly 10% of all Danish women. A scheme of pregnancy pay and foetal damage compensation has been implemented,

It is interesting to note a new field of compensation in Denmark: children who have sustained disorders as a foetus have the right to collect workers injury compensation.

Norway has gone much the same way: a special legislation is being established to provide time off work for parents-to-be and childless couples.

Swedish authorities accuse their neighbours of being excessively anxious and of "over-dramatising" the matter. Ricardo Edström, head physician at the Swedish Worksafe commission, believes that chemicals and radiation are under control, and that risk factors outside work are of greater importance,



Conflicting research

The results of research programs often differ. These differences, together with the indistinct borderlines between possible, suspected, probable and definite risks, render worksafe authorities unable (or unwilling) to set regulations for pregnant workers.

Surprisingly, Sweden is considered to be lagging behind in the research, while the two other Scandinavian countries have not only been very active in the scientific field, but also provide more comprehensive legislation to safeguard both mother and child.

New fields of compensation

In Denmark, it is feared that some 275,000 women stand the chance of preg-

100 dangerous chemicals

Danish scientists have concluded that at least a hundred chemical compounds can cause damage to the human reproductive system. Solvents, metals and pesticides are included in a list, provided to us by the *Arbetsmiljö* magazine.

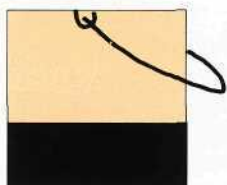
Dicofol is a substance used in certain pesticides, e.g. preparations for mite control. It causes deformations in mice for three generations. There is no limit value.

Benomyl and Carbendazim are two other compounds that are "suspected reproductive hazards" (in Sweden) and "definite reproductive hazards" (in Denmark). Both are free of limit values.

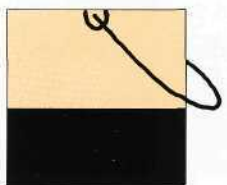
Pesticides used in forestry and agriculture include some 200 active ingredients. Around 50 fungicides and mite-control substances are considered to contain some 35 constituents considered to be "extremely aggressive".



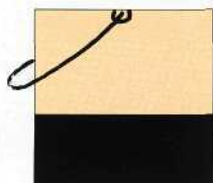
Chances of encountering the nasty ones:



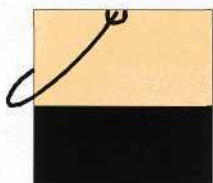
38% of glues & adhesives contain substances that are harmful to the reproductive system.



46% of developers contain substances that are harmful to the reproductive system.



41% of metal surfactants contain substances that are harmful to the reproductive system.



46% of pesticides contain substances that are harmful to the reproductive system.

A Danish group of researchers has compiled a list of 200 "suspected" substances, of which 100 are recognised reproductive hazards at low concentrations. The one hundred compounds have caused reproductive disturbances in at least two animal species or in human populations.

Most of the "nasty" substances are metals, organic solvents or pesticide components. A portion of these are also capable of causing cancer.

Xylene a certain hazard

According to the research, xylene is definitely harmful to the reproduction. The reason is that several population studies have suggested that solvents may be damaging to the reproductive system, and that damage has been caused by low dose experiments on two animal species. ("Low dose" means less than five times the TLV for humans per kilo body weight.)

Acrylamide is another certain reproduction hazard. The reason: unquestionable deterioration in the fertility of two animal species at low doses.

Animal testing questionable

Some scientists strongly criticise the extension of animal tests to indicate human risks. The human body cannot be compared with animal physiology.

On the other hand, the human body is more sensitive to certain embryotoxic substances than animals. For example, rats and cats can withstand 50 times as much methyl mercury as humans. Rabbits cope with 5 times as much thalidomide as humans (which was a contributing factor in the thalidomide disaster). Moreover, rats can drink (and, presumably, still stand up afterwards) four times the amount of alcohol!

Uphill battle

Although scientists have been given greater funding and wider scope, the number of new preparations is growing much faster than the number of studies. Out of tens of thousands of chemicals used in industry, only about 5% have been subjected to occupational health research. The vague terms of reference (such as suspected, possible, probable, and recognised hazards) further compound the problem. Finally, any findings of harmful properties and suggestions of stricter legislation, lowered limit levels, or banning of products are certain to meet with active opposition from virtually everyone but occupational health people and workers.



Source: Arbetsmiljö 6/89

HOW TO TREAT SUNBURN:

- Lie in the shade
- Don't rub itchy skin or break blisters
- Apply cold compresses

HOW TO TREAT BBQ BURNS AND SCALDS:

- Hold the affected body part under cold running water
- Burnt hands & feet may be placed in a luke warm bath. Then add cold water until pain disappears
- Dress the burn with sterile gauze, cover with cotton wool, then bandage
- Pierce blisters with a sterile pin, but don't remove any skin
- Do not apply ointment or oil
- Major burns should be treated by physician

HOW TO TREAT BITES AND STINGS:

Dog bites

- Wash with soap and water
- Apply hydrogen peroxide or cetrimide
- Penicillin may be necessary - let a physician take a look at the bite
- Tetanus is a risk

Snake bites

- Don't try to catch or kill the snake!
- Place one end of a roll of bandage directly on the fang marks, then wind round and round up the limb, as firmly as you can without causing pain
- Attach a splint to immobilise the limb
- Keep absolutely still and don't panic
- Don't cut or suck the wound
- Don't tie a tourniquet above the bite
- Don't move the patient
- Call a doctor

Bluebottle stings

- Don't touch the tentacles with bare hands
- Douse with vinegar for 30 sec minimum
- Never apply a tourniquet
- Seek attention from nearest lifesaving club or doctor
- Never leave victim alone, and check pulse and breathing regularly

HOLIDAY SAFETY 1990

Ticks

- Do not **pull** the tick by the body or **squeeze** it — this will only inject more toxin
- Apply kerosene, turpentine or vaseline to kill the tick
- Slip **tweezers** or scissors gently under the head, pressing into the victim's skin, and close in on the feeding tube. Then pry the tick out with a firm, steady pull.
- Seek medical advice — ticks can cause paralysis

Ant, bee, wasp stings

- Carefully remove any stinger if lodged in the skin
- Apply vinegar or lemon juice to ant and wasp stings



- Apply bicarbonate of soda or washing blue to bee stings
- If allergic reactions occur, immediate transport to hospital may be necessary



Spider bites

- Follow the pressure/immobilisation procedure for snake bite



HOW TO TREAT POISONING

- Make sure the victim's breathing passage is clear
- Do NOT try to induce vomiting in an unconscious person, or if the poison is corrosive
- If the victim complains of burning mouth & throat, the ingested substance should be assumed to be corrosive. If conscious, give water or milk to dilute the poison. Rub mouth, lips, tongue and inside of the cheeks with butter or oil
- Call doctor or the nearest Poisons Information Centre
- Check pulse and breathing regularly
- Determine what caused the poisoning. If unknown plants or berries, place in a bag and take to hospital



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Source: D. Underhill, Australia's Dangerous Creatures, Readers Digest 1988; Black's Medical Dictionary, 6th edition, London 1987; Poison unit, Royal Alexandra Hospital, Sydney

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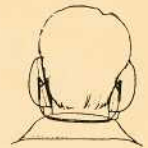
IF I WIN...

...I would like this ear muff model:

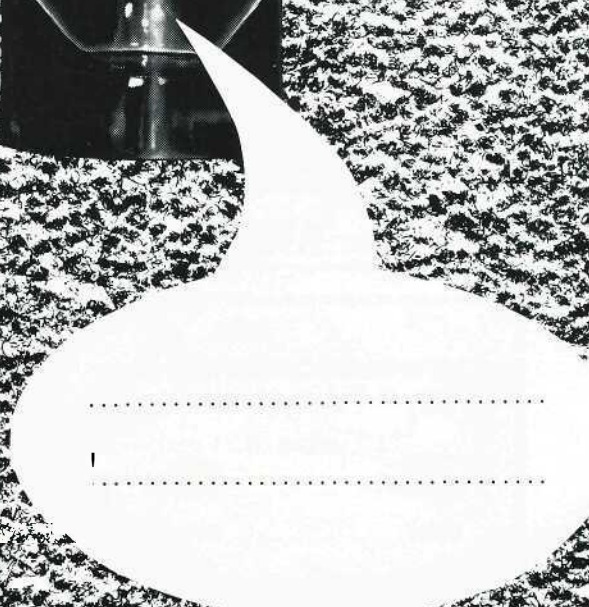
Over-the-head



Behind-the-neck



Foldable



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