



PLEASE NOTE:

This document contains scanned images of pages of the printed edition of PPM magazine. All content dates from the original time of publication. All information given may be out of date, including but not limited to text, illustrations, graphs, statistics, and contact details. Do not use or apply any of the information without first ensuring that it is correct, and that it complies with current regulations in your own jurisdiction.

IMPORTANT

Professional Protection Magazine is published by Safety Equipment Australia Pty Ltd

Conditions of Use

This web site is made available on the following conditions of use, which you accept by accessing and using the site.

You should read these conditions carefully. If these conditions are not acceptable to you, you should not access or use the site.

Information made available at this site is provided as by way of background and not as advice in relation to particular needs or requirements. We believe that information included in this site was accurate and reliable at the original time of publication of the printed material, but to the fullest extent possible under law we expressly exclude all warranties and any liability to any person for any decision made or act taken in reliance upon this information, whether that person is you as a user of this web site or anyone else. This exclusion extends to direct, indirect and consequential loss or damage, to the fullest extent permitted by law.

In particular, information included in this site is NOT a substitute for professional advice and assistance. It is not suitable to be relied upon in particular industrial or other applications. You should obtain professional advice and assistance about your particular circumstances and about appropriate tests, training, instructions, and control and supervision procedures for your operating environment. Information obtained from this site is not fit for use for any of those purposes.

This site also includes information derived from third party sources. We make no representation as to the adequacy of testing or other verification of data made available from third party sources.

The information provided on this site is intended solely for the use of residents in Australia and New Zealand and must not be used by residents in other jurisdictions.

Links to and from this site

Please seek our permission before linking other sites on the internet to this web site.

Neither the publisher nor the editor exercise control over web sites that may be linked to this site from time to time. Therefore, we cannot warrant the accuracy or truth of any material contained in linked web sites, nor can we take any responsibility for material appearing on these sites.

Intellectual property

This publication is copyright © throughout the world under the Berne Union and the Universal Copyright Convention.

Pictorial and other material appearing on this site must not be used (other than by way of reading that material using a computer to view this web site), linked to or copied without our express permission.

Marks used on this site are trade marks of Safety Equipment Australia Pty Limited and generally are registered in Australia. Other marks appearing on this site are the property of their owners and may or may not be registered in any given jurisdiction.



professional protection magazine

Published by Sundstrom Safety (Aust.) Pty Ltd
in the interest of Industrial Safety in Australia.

Number 3, 1987

Formaldehyde

FORMALDEHYDE — DO YOU KNOW THE DANGER?

Formaldehyde is widely used in a variety of industries. It is used in great quantities in the following industries:

Plastics production
Photographic industry
Dyeing and tanning
Rubber industry
Explosives production
Furniture and wood finishing industry
Formaldehyde is also a powerful antiseptic, fungicide and preservative.

DOUBLE HAZARD

The first and most immediate safety hazard in the use of formaldehyde is its flammability. Especially Paraformaldehyde is prone to forming explosive mixes with air. If the substance is sprayed, the risk is even greater, as the tiny aerosol droplets easily carry electrostatic charges that may cause ignition.

The second safety aspect is personal health. Formaldehyde is toxic if ingested or inhaled, and an irritant to skin and mucous membranes. It seems that ingestion causes less severe damage than does inhalation. Even low concentrations of formaldehyde vapour cause eye and throat irritation.

Low concentrations of formaldehyde may also trigger asthmatic attacks in sensitised people. At the same time, allergic skin reactions may occur, such as urticaria (hives, rashes, etc.).

SYMPTOMS - LOW TO HIGH CONCENTRATIONS

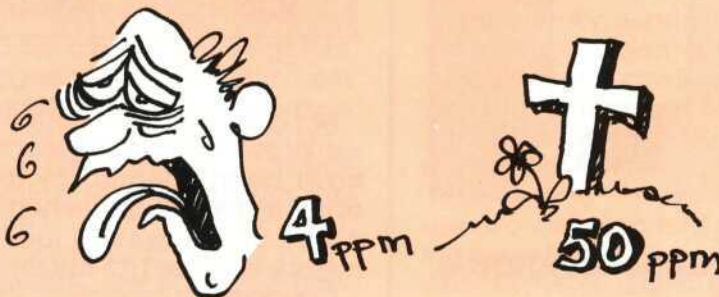
2 ppm: Slight discomfort to eyes, throat and nose

4 ppm: Discomfort increases rapidly

10 ppm: Almost unbearable

20 ppm: Severe breathing difficulty; burning eyes, nose and throat; heavy tear secretion; severe cough.

Over 50 ppm: Pressure about the chest; headache; heart palpitation; oedema or spasms of the glottis; death.



It has been proven that allergic sensitisation may follow exposure to very small amounts of formaldehyde.

Repeated or prolonged exposure may result in kidney damage.

CANCER REPORT

It has been suggested that, although formaldehyde itself is not considered to be a carcinogen, it may react with other substance in the body, forming bis-chloromethylether, a dangerous carcinogen. These reactions have not yet been conclusively established, but NIOSH, the American occupational health institute, has recommended that formaldehyde be treated as a potential occupational carcinogen.

SAFETY MEASURES

Do not breathe vapours

Use adequate local exhaust,

or wear personal breathing protection.

Avoid skin contact:

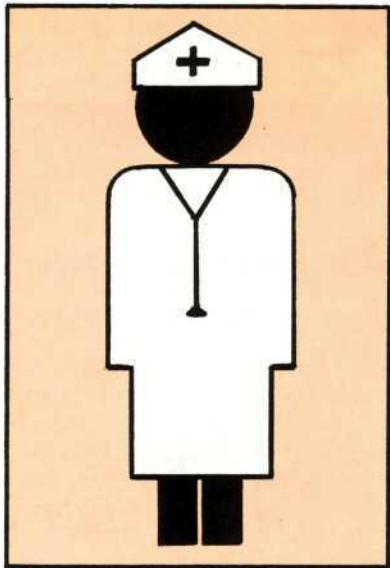
Wear impermeable gloves with long gauntlets. It is a good idea to rub barrier creme into hands and arms before work. Wash hands, arms, face and neck thoroughly after work and before eating.

Prevent spills and fire:

Keep containers tightly sealed. Do not use breakable containers. Keep away from heat, electrical equipment, and open flames. Do not smoke or weld in the area. In the case of a spill, wear protective clothing and suitable breathing protection. Fire fighting is best performed with CO₂ or Carbon Tetrachloride extinguishers.

(Source: *Encyclopaedia of Occupational Health and Safety*).

AIDS:



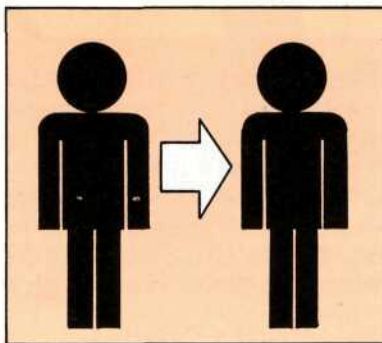
AIDS AND OCCUPATIONAL HEALTH

AIDS is a ubiquitous discussion point in the media. Every day we hear about new facts, new tests and new treatments for the disease.

But AIDS is almost always presented as a sexually linked disease. It is rarely seen in the context of occupational health.

European scientists are now claiming that AIDS may be contracted by acquiring low doses over long periods of time in the work force, in health care, in non-sexual social intercourse, and even within the family. If this research is correct, we may have to change our view of AIDS being exclusively a sexually transmitted disease. These new claims open up a wide range of occupational health considerations. The following is a translation of an article from the Swedish newspaper, Goteborgsposten:

HOW IS AIDS TRANSMITTED?



Not until in the late 1990s will we know how many people have been infected by low doses of the HIV virus in health care or between family members, writes Lita Tibbling.

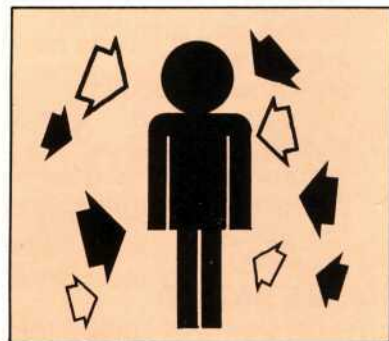
Condoms do not provide safe sex. Assurances from state authorities may have disastrous consequences.

Naturally, the measures taken to halt the AIDS epidemic must be built on our knowledge of how the human immune deficiency virus may be transferred from one person to another. If the virus is spread exclusively through blood products and through sexual intercourse without a condom, the entire AIDS epidemic could be stopped by rigid use of condoms and precautions against blood contamination. This is also what most AIDS experts around the world are claiming, and want the general public to believe.

Gertrud Sigurdson² has recently used her indisputable right to tell the public what her advisors have given as a basis for various possible decisions.

Individual researchers should have an equal right to provide the public with the latest findings in AIDS research, and the conclusions that may be derived from that research — even if it will take many years yet before we may talk about any conclusive facts regarding the means of transmission.

DEFENCELESS BODY



The Human Immune Deficiency virus, which ultimately causes the AIDS disease, incorporates itself with those cells within our immune system that protect us against harmful intruders in the microscopic world. Because the virus enters the defence cell's genetic part and utilises the host cell for nutrition and reproduction, the body is incapable of protecting itself against the virus attack.

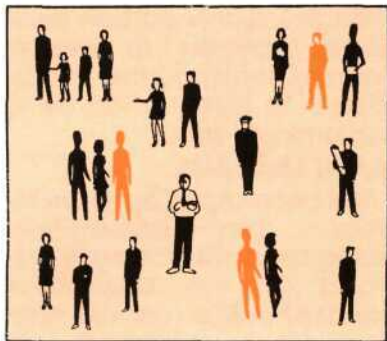
The immune defence cells in our skin, the Langerhan cells, sail about like submarines under the surface of the skin, creating a first defence barrier against bacteria and viruses on our skin. If a virus carrying liquid is applied on to the skin, the Langerhan cells swallow up the virus particles which, consequently, acquire a safe residence and provision base.

a disturbing view

The virus may lie dormant within the cell for many years before it begins to reproduce in large numbers, stimulating the production of antibodies. This dormant period, called the sero-conversion period, could last several years, especially in the case of low contamination doses.

In the case of mucous membranes in the mouth, intestine and sexual organs, the contaminant may be transferred to the so-called macrophages — white blood cells whose function is to eat viruses and bacteria. Also here the virus uses the macrophages as host cells. When the virus ultimately reaches the so-called T4 cells in the blood, the real breakdown of the immune defence system begins — resulting in virtually irreversible infections and tumours; the condition we call AIDS.

UNKNOWN NUMBER OF CONTAMINATED



The Human Immune Deficiency Virus has been found in saliva, sweat, sperm, vaginal discharges, menstrual blood, urine, excrement, tears and breast milk. This means that a person whose skin or mucous

membranes come in direct contact with infected body secretion may catch the disease.

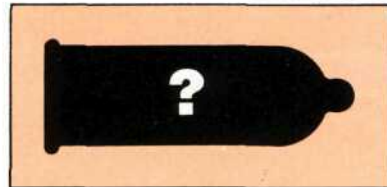
If the infected person at the same time has other infections, especially sexual disease, the incubation period (the period between contagion and actual AIDS illness) is shorter than if the infected person is generally healthy. So far, the longest documented incubation period is 16-19 years.

There are many findings that suggest that the infection from woman to man takes place through female saliva, vaginal secretion or menstrual blood coming in contact with the male's skin or mucous membranes in various body openings. The contamination from male to female may take place through sperm as well as saliva reaching the woman's skin or body openings.

The first people to fall ill are those who have been exposed to large doses of the virus, and who have many venereal diseases. However, with only seven years of experience with AIDS in the Western world, we cannot expect to see any significant number of AIDS patients who fall ill through low dose contamination until late in the 1990s. Consequently, only a few cases of "social" low dose infection have been observed the world over.

Claims that only a few cases of AIDS infection in the health care and between family members have occurred should be restated thus, that until now, only a few cases have been able to be *conclusively established*.

CONDOM NO GUARANTEE



The use of condoms is good, even extremely good, when it comes to the prevention of the spread of venereal diseases such as *clamydia*, *gonorrhoea*, *herpes* and *syphilis*. Consequently, condom usage may also mean that an infected person can live several years longer before dying of AIDS, than a person who does not use condoms.

However, to believe that the use of condoms could prevent the spread of AIDS to any great extent is merely wishful thinking that could have catastrophic consequences for those people who believe in "safe sex" and in the government's assurances in its various information campaigns.

We do not know today in which stages a virus carrier is contagious during all the years preceding the actual illness. Perhaps in the future, we will have testing techniques (antigen tests, tissue reproduction tests) that are much more sensitive than the antibody tests we have today, and that are capable of establishing whether a carrier is contagious or not. Until then, we must view all virus carriers as potentially contagious, and we must take steps accordingly.

Lita Tibbling

Footnotes:

- 1) Lita Tibbling is a lecturer at the University of Linköping, Sweden.
- 2) Gertrud Sigurdson is from the Swedish Social Directorate, according to our information.

Masks:

PUTTING MASKS TO THE TEST

You're using breathing protection equipment that is said to be of "high performance".

But who decides exactly what is high performance? How do you know that your breathing gear really is as good as it claims to be? And most important — how is the equipment tested?

There are a number of features that must be tested in any breathing protection product, whether it be a disposable paper mask or a rubber mask with cartridge filters. The most important features are Breathing Resistance; Absorption Capacity; Vibration Resistance; and Mask Leakage.

BREATHING RESISTANCE:

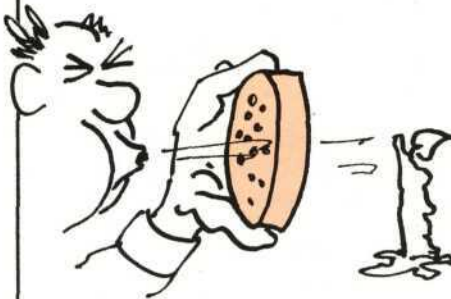
The breathing resistance of a filter should be as low as possible. High resistance means that the filter is hard to breathe through and uncomfortable.

Resistance is tested by blowing or sucking air through the filter at a prescribed flow rate, and measuring the differences in pressure before and after the air passes through the filter.

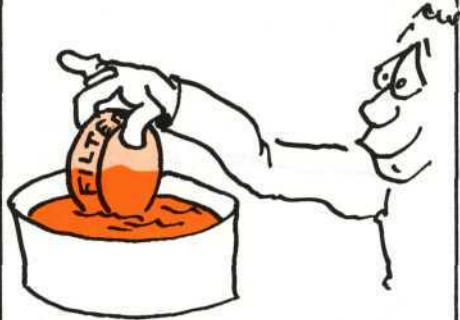
ABSORPTION:

The absorption test is designed to determine the filter's capacity to separate harmful gas or particles from the contaminated air, while letting clean air through.

The test is performed much like a breathing resistance test. However, the air flow is artificially contaminated. Flow rate and contaminant concentration are carefully



RESISTANCE TEST



ABSORPTION TEST



SHAKE TEST



LEAKAGE TEST

monitored. Once the air has passed through the filter, any traces of contaminant are detected.

Ideally, no contaminant should be present. However, after a certain period, the filter becomes saturated and begins to let contaminants through. This penetration must not take place until after a certain stipulated period.

STABILITY/VIBRATION TEST:

You move around at work, bump into things, turn your head, and are exposed to various sources of vibration, such as trucks, engines, drills, and so on. The stability test ensures that the filter does not deteriorate in these circumstances.

The filter is subjected to vertical and horizontal shaking. After the vibration test, the breathing resistance and absorption capacity are measured.

The test is especially important for gas filters. Unless the filter has been properly filled, the active carbon may pack together in dense patches, leaving other areas "open" to penetration by a contaminant gas.

MASK LEAKAGE:

This test requires a person to wear the completely assembled mask and filter, stand in a controlled atmosphere (a room or tent filled with contaminated air), and perform specific manual tasks, such as moving bricks, turning the head, reading the alphabet aloud, etc.

During the test, the total leakage of the mask is measured.

Test Overview

This is the most contested point in the Australian Standard. In Australia, the measuring depends entirely on the individual test person: the air is contaminated with isoamyl acetate of a certain concentration, and the person is asked whether he could smell or taste the chemical during the test.

In Sweden, by comparison, the test is more "objective": a hose is inserted into the mask and connected to a chemical detector that shows on a plotter how much contaminant has leaked in to the mask.

The current discussions concern the very individual taste and smell tests performed in Australia.

The Australian method was used in Europe previously, but is now considered hopelessly unreliable — rather like measuring noise levels by asking people if they're bothered by the sound.

In fact, there are direct self-contradictions in the current Australian Standard directives. On the one hand, it has been decided that the test should be carried out as a smell/taste test. On the other hand, a different section of the Standard categorically denounces the value of smell as the detecting device:

" . . . the sense of smell has VERY SERIOUS LIMITATIONS. Some of these limitations are as follows:
a) There is considerable

variation between individuals, with some persons being unable to detect certain contaminants by smell. . .

b) The sense of smell in an individual may be considerably diminished temporarily by reason of a cold in the nose. . . "

All other tests have been carefully designed to create a controlled environment with high repeatability and precise measuring. It is surprising that the most important test is based on such an individual sense as smell.

(Source: Australian Standard 1715-1982).



Methylene

METHYLENE CHLORIDE - CAUSE OF CANCER?

Methylene Chloride is a very common solvent, fumigant, blowing agent or aerosol propellant. Millions of workers around the world are exposed to the substance daily.

Methylene Chloride has long been established as a relatively hazardous chemical, whose TLVs have been set around the 70-100 PPM mark in the US, West

Germany and Scandinavia. The main health risks are impairment of the Central Nervous System, as well as inhibition of the oxygen delivery to body tissue.

It is not until recently that concern about the possible carcinogenic effects of Methylene Chloride have been raised.

The current NIOSH (National Institute for Occupational Safety

and Health) recommendation is to treat Methylene Chloride as a "possible occupational carcinogen", and to limit its use as much as practicable.

In mid-1986, NIOSH called for all employers using the chemical to warn workers of the possible carcinogenic effects, and to reduce the exposure to workers to the lowest feasible degree.

WHAT IS METHYLENE CHLORIDE?

Formula:
 CH_2Cl_2

Names:
Methylene chloride
Dichloromethane
DCM
Methane dichloride
Methylene bichloride
Methylene dichloride

Molecular weight:
84.93

Boiling Point:
40.1°C


Melting Point:
-96.7°C

Density:
2.93

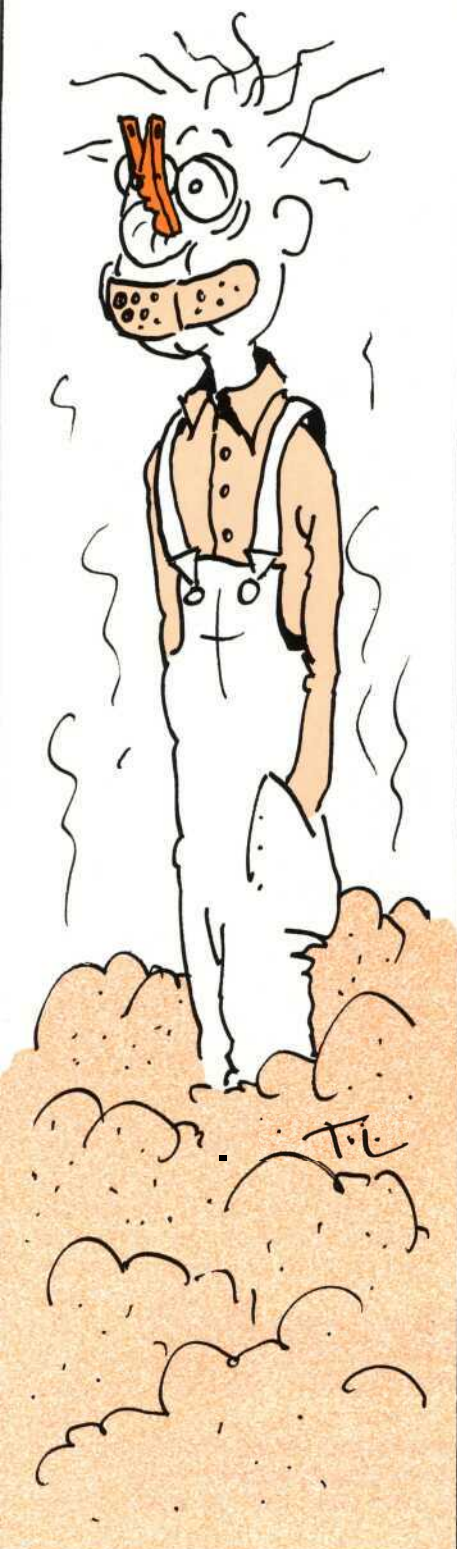
Characteristics:
Colourless, volatile liquid
Non flammable
Ether-like odour

Methylene chloride is detectable by smell at 200 PPM approx.

Methylene chloride is used in a wide variety of paint strippers, degreasing agents and aerosol propellants. It is used extensively in pharmaceutical and food processing industries (such as decaffeination of coffee), and is also used as a fumigant for fruit and grain.



Chloride



NO PREVIOUS CANCER WARNINGS

The material used for compiling Sundstrom Chemical Safety Database shows differing indications regarding the cancer risk of Methylene Chloride:

Documentation of TLV's:

No mention of carcinogenic effects.

Merkblätter Gefährliche Arbeitsstoffe: "**Carcinogenic effects tests were negative**". Skyddsblad, Sweden:

No mention of carcinogenic effects.

Sigma Aldrich: "**Possible carcinogen**".

ILO encyclopaedia: **No mention of carcinogenic effects.**

NIOSHWARNs:

US research shows clearly that methylene chloride does have carcinogenic effects, mainly on the lungs, liver, and salivary and mammary glands, on animals.

These studies, according to NIOSH, are "without major shortcomings". The testing imposed no limitations on the interpretation of the results, and NIOSH finds it necessary to be concerned about the potential consequences of occupational exposure to methylene chloride.

MINIMISE WORKER EXPOSURE

NIOSH have published guidelines for both employers, workers and health personnel:

EMPLOYERS:

- Limit worker exposure to least possible.
- Provide exhaust ventilation, etc.
- Provide isolation in

remote rooms and automatic equipment.

- Provide personal protection equipment.
- Provide change rooms, showers, separate eating areas.
- Provide regular air monitoring.
- Provide respiratory protection with training and fitting.
- Provide health monitoring for early detection of effects.
- If possible, replace methylene chloride with other solvent.
- Provide worker education about methylene chloride.
- Provide a list of adverse symptoms and health effects.

WORKERS:

- Use protective clothing and respirators.
- Avoid any contact with chemical — change soiled clothes.
- Wash and wipe all affected skin immediately.
- Report any signs and symptoms to health professional.

HEALTH PROFESSIONAL:

- Be familiar with signs and symptoms of exposure.
- Maintain complete medical history of each worker.
- Perform regular medical check-ups, paying special attention to target organs.

(Source: NIOSH Current Intelligence Bulletin 46.)

Office safety

remember the hazards!

1. ELECTRICALS

Never overload a power point — don't "piggy back" socket dividers.

Replace worn leads immediately.

Don't touch electrical appliances or tools with wet hands.

Don't clean appliances or tools while connected to a powerpoint.

Wear rubber soled shoes when using electricals in wet areas and on concrete floors.

In the event of an electrical accident:

1. **Switch off electricity.**
 2. **Push the person free of the hazard — be sure to touch the person only with non-conducting material (wood, rope, clothing, plastic, rubber, etc.) Use only dry materials.**
 3. **Administer respiratory assistance.**
 4. **Commence heart massage.**
 5. **Call ambulance.**
- (Energy Authority of NSW.)

2. PRACTICAL ADVICE

Always push desk drawers back immediately — especially bottom drawers.



Don't pull out top drawers in filing cabinets fully — risk of the cabinet toppling over.

Never stack boxes too high.

Don't carry bundles or stacks so high that they obstruct your vision.

Never leave hot coffee, tea, etc., on high shelves or cabinets.

Never let electrical cords run across the floor.

Congrats!

We are pleased to announce the winners of the Sundstrom Visitor's Door Prize.

1st prize — Chemical Database:
S. Scott — Spurway Cooke.

2nd prize — Training Programme:
Sgt. Don Price — RAAF (Williamtown).

Congratulations to the winners, and thanks to everyone who took part in the event.

Further copies of P P M and other safety information is available FREE from Sundstrom Safety. Please complete the coupon (or a photocopy) to be included on our mailing list.

Name: _____

Position: _____

Company: _____

Address: _____

Postcode: _____

Telephone: _____

sundström
Safety (Australia) Pty. Ltd.



P.O. Box W 110, Warringah Mall NSW 2100
Unit 7A/3 Kenneth Road, Manly Vale
Phone: (02) 949 1311 Fax: (02) 94 2640