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# professional protection magazine

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## DANISH DOCTORS SHOCKED

### Toluene may cause sexual disturbances

*Danish doctors are shocked by the results of a research project into the effects of Toluene on the male reproductive functions.*

The common solvent TOLUENE is believed to cause damage to the central nervous system, leading to deterioration of concentration and memory. A recent Danish research paper shows that toluene may also affect male sexual hormones. This effect is so strong that it not only causes sexual impotency, but also disturbances to the formation of reproductive cells in the testes.

The result is that the sperm either dies or develops abnormally.

### NO LIVING SPERMS

The research showed that several affected workers did not have any living sperm cells, although they previously had reared several children.

Other people in the affected group had a living sperm concentration of 1000 times less than males who had not been exposed to Toluene.

The testing was performed on 325 workers at two large printeries in Copenhagen. Earlier hypotheses about memory loss, loss of concentrational ability and weakening of

other body functions were confirmed. There was also a suspected increase in blood pressure, disturbances in the digestive system, and liver damage.

The matter of greatest concern, however, was the deterioration of sexual functions.

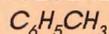
In reference to the effects on the unborn child in pregnant women who were exposed to Toluene, one of the researchers, Finn Gyntelberg, said that compared with Toluene, spirits and cigarettes were like water.

European authorities are in the process of revising TLV's for solvents. Whether the existing TLV for Toluene will be lowered remains to be seen.

In neighbouring Sweden, further research is underway. The current project concerns all long term effects of Toluene, and the testing group includes workers who have been exposed to Toluene daily for up to 43 years.

*Source: Arbetsmiljo 1/86 — Sigurd Holmqvist  
Researchers: Finn Gyntelberg, Per Winkel, Henning Morck.*

### TOLUENE



*Also known as Toluol, Methylbenzene and Phenylmethane.*

*Toluene is a colourless liquid with a sharp sweet odour.*

*Toluene is used in a multitude of applications, mainly as a solvent. It occurs in engine fuel and other petroleum distillates. Common areas where Toluene is used include pharmaceutical manufacture, and the production of explosives, TDI and other chemicals.*

*Common acute symptoms include irritation to eyes and throat, headache, nausea and dizziness. Vomiting and loss of consciousness in severe cases.*

*Prolonged exposure may lead to chronic "pins and needles" in the limbs, fatigue, and general weakening of the muscles. Liver and kidney damage may also occur.*

*Toluene has been found in the blood more than 13 days after exposure. This may explain the long term effects.*

*Although it is not conclusively established, it is believed that Toluene affects the central nervous system, with memory loss and diminished cerebral abilities as a result. The effects on the reproductive functions have yet to be explored further.*

*The current Australian TLV is 100 PPM at 1 PPM = 3.83 mg/m<sup>3</sup>.*

DUST occurs everywhere. Cleaning our homes and workplaces from it is a neverending chore. Still, no matter how thoroughly we do the job, some dust will always remain.

Dust is not only unsightly fluff in the corner of your loungeroom. It is also found in the air we breathe. And it is not always harmless: dust is one of the most common causes of respiratory problems, allergies and related diseases.

Dust is best defined as particles that are small and light enough to be carried by the air. This definition does not only include house dust, sawdust, pollen and suchlike, but also smoke particles, airborne mould and aerosol droplets.

### COUNTRY AIR - NOT SO FRESH?

A recent European research project shows that FARMERS are affected by lung disease more often than the rest of the population. This is extraordinary, considering that farmers generally smoke less and work in a much less polluted atmosphere than do city dwellers.

The chief cause of the farmers' plight is dust.

There are many different types of dust found on a farm. The most obvious varieties include fibres from hay, and particles from harvesting, baling, threshing, and other crop handling procedures.

These large fibrous dusts may cause throat and nose irritation, lung discomfort, coughing, and other allergies.

Other dusts include far more insidious particles, such as mites, which are a common cause of asthmatic complaints in farmers.

Mould often occurs in dust form, and is a major cause of a disease called alveolitis, or "Farmer's Lung". The symptoms are similar to allergic reactions and include respiratory difficulties, fever, and general discomfort.

The European research showed that one of every five farmers was suffering from alveolitis due to prolonged exposure to mould. The most common symptoms were persisting cough and chronic bronchitis. The most serious were severe asthmatic attacks which re-



Mould

quired intensive hospital care.

It was also shown that the mould concentration in the atmosphere was significantly higher where stored hay and cereals were not adequately protected from moisture.

### THE DANGEROUS SAWDUST

The FURNITURE MANUFACTURING industry has been under close supervision for some time, for two major reasons.

The first is the common use of formaldehyde in the treating of surfaces. Formaldehyde is a suspected carcinogen, and should be handled with great care. Breathing protection in the form of full face mask and gas filter or compressed air attachment is highly recommended.

The second reason is sawdust. It has now been established that fine polishing dust from wood may cause nose and sinus cancer. Even though the actual disease mechanism is still to be explored, it is recommended that workers performing wood polishing tasks

should take precautions by breathing protection.

### ASBESTOS - THE KILLER DUST

Asbestos is a collective name for a variety of fibrous crystalline substances, the most common being chrysotile (white asbestos), crocidolite (blue), amosite (brown), anthophyllite, tremolite and actinolite.

Asbestos has been used for many years in a wide array of applications, some of which are listed below:

**Cement industry • Friction elements • Washers/packings/gaskets • Paper industry • Textile industry • Insulation and reinforcing materials • Wall and roof cladding and coverings • Heat and fire insulation materials • Noise insulation materials • Boilers, etc.**

In Europe, the use of the various types of asbestos is being progressively restricted, but asbestos is still a common concern when remodeling old materials, demolishing buildings, and otherwise working in situations where asbestos was extensively used prior to new legislation.

The major risks involve asbestos in its dust form, i.e. where the asbestos fibre is free and airborne. Cases of bound fibres (asbestos example in a rubber wash gasket) are usually of little concern.

The main health effects include changes in the texture of the lungs.

Asbestos fibres occur in lengths of up to half a millimetre, but the smallest fibres, 3 micrometres (0.003mm) and less, that constitute the greatest health risk. These microscopic particles may pass through the body or be inhaled and will often cause scarring of the lungs and other serious damage to the respiratory system — commonly known as Asbestosis.

The most serious feature of asbestos is its carcinogenic properties. Cancer from asbestos is an insidious disease: the signs of cancer may not occur until some twenty years after exposure.



been established that the smoking will multiply the 3 cancer is usually branching cancer, but other forms of the disease are rise.



**Aerosols with building dust**

pean nations, as well as ia, have introduced very egulations regarding the ng of asbestos. The main tion devices are high-nance face masks and nd full protective clothing.

**AEROSOLS - WET DUST**

term dust particles also es aerosols: tiny ionised ts that are formed when a s forced through a narrow

ers exposed to aerosols are invariably performing orf of spraying task. Pesti-car lacquers, paints, clean-tergents, surface sealants most of other chemicals are n aerosol form. The health reat where the liquid con- dangerous compound, las also been shown that pleisthemselves, whatever lid, may affect the lungs in mental way.

**WHAT SIZE PARTICLE?**

size of the dust particles n important role in the way gs are affected: RSE particles are often ough to get caught by

the tiny hairs that line our nose and throat. This results in sneezing, expectoration and coughing — the body's method of ejecting foreign particles.

**MICROSCOPIC** particles are often drawn into the lungs, but are so small and light that they usually follow the air out again when we exhale.

It is the **MEDIUM** sized particles that constitute the biggest problem. These particles are so small that they reach the lung without being stopped on the way, yet large enough to stay in the lung when we breathe out.

What happens next depends very much on what sort of dust particle is inhaled. It may be a fibre that causes scarring, a corrosive chemical, an allergenic substance, or an organic matter such as a bacteria, virus or mite, that may reproduce and attack our system from within.

**PERSONAL PROTECTION**

A particle filter and mask works in a very simple way: it stops any particles larger than molecular size, while letting the air through. In other words, the filter is a mesh which separates the pollution from the atmosphere before we allow the air to reach our lungs.

Many attempts have been made at designing particle filters that really work.

Some filters are marketed as safe particle filters, but are designed to stop only the coarsest of dust (say, sawdust around a circular saw).

Other filters include the conventional rosinated wool fibre varieties, which used to be the only — and therefore most effective — other protection available. But wool fibre filters have one important drawback: they clog up in moist atmospheres. Spray painters and other users are forced to either put up with hard and bothersome breathing or frequent replacement of expensive filters.

The Sundstrom particle filter is a revolutionary design which has been born from true lateral think-

ing: instead of making the filter thicker and with more fibres, why not make it thinner with fewer fibres arranged to create a much finer mesh? And then treat the filter so that it repels moisture and can be used in wet or dry areas alike?

This is just what Sundstrom have done: the particle filter comprises a triangular paper-like sheet of specially arranged fibre. Although the thickness is less than a millimetre, the filter will stop any particle down to 0.3 microns (0,0003 mm) — even bacteria and viruses. The physical qualities of the sheet are such that it repels moisture in the atmosphere to a great extent. Finally, the sheet is folded and inserted into a large-area canister. The large filter area means that the air travels more slowly through the filter, providing easy breathing even during strenuous work.

The result? A top performance, long-lasting filter which doesn't clog up and ensures low breathing resistance throughout its life.

**AEROSOL WARNING**

It should be pointed out that workers in aerosol atmospheres should always use a particle filter in conjunction with a gas filter. The particle filter will sort out the droplets while the gas filter absorbs any harmful fumes or vapours. Sundstrom's particle filter is designed for attachment to any of the gas filters, providing effective protection in all situations.



**WRITE TO US!**  
*If you want to find out more about filters, protection, or substances in your own work environment, please write to Sundstrom Safety (Australia) for complete information.*

**Sundstrom Safety Pty Ltd**  
P.O. Box W 110  
Warringah Mall NSW 2100

# A MATTER OF SUBSTANCE

## instant chemical info

A new chemical information service is being created by Sundstrom Safety (Australia). The system provides comprehensive information on thousands of commonly used hazardous chemicals.

The service is free and open to anyone who wishes to know more about his or her own working environment. It may be of use to professional people in widely varied fields. Here are some of our recent inquiries:

- 1) A graphic artist wanted to know about spray glue.
- 2) A fibreglass sealer who always got headaches when applying the paste wanted to know why and what to do about it.
- 3) A pharmaceutical company wished to know what kind of gloves to use in the handling of certain organic compounds.
- 4) A farmer wanted to know more about the health hazards of — and protection against — a pesticide.

The computer system is capable of providing instant information on tens of

thousands of chemicals. The database is thoroughly cross-referenced. This means that the system searches for chemicals under formulae, CAS numbers, synonyms, trade names, or proper chemical names. It also means that when one constituent is entered as a search criterion, all possible compounds containing that constituent are listed.

Sundstrom Safety are putting a lot of time, effort and money into the project, but feel that the service is only part of Sundstrom's commitment and responsibility in the field of personal protection.

The same reasons are repeated constantly: Sundstrom are dealing with people, with personal health and wellbeing and, in many cases, preservation of life.

The chemical information system may be used in several ways: firstly, to help people assess the health hazards in their own working environment, and how to minimise the risks. Secondly, to provide an instant service to users of Sundstrom breathing equipment to determine what product will

do the job best. Thirdly, to provide information on Australian and international safety legislation. And lastly, to provide instant information on the chemical properties of certain substances without having to consult an array of reference works.

The system comprises information collected from a wide variety of internationally published material. Several reference works from Sweden, West Germany, the United States and Australia comprise the main input of information. Sundstrom are planning to include Japanese data in the near future.

All this research means a thorough and substantial information bank. It also means that it takes time to build up the system. But by the end of 1986, Sundstrom are hoping to have some five thousand cross-referenced chemicals in the database.

The system is fully operational now, and Sundstrom welcomes inquiries from all interested people. Information can be provided by mail or instantly via facsimile,

**The database provides the following information:**  
CAS Number • Formula • Name and Synonyms • TLV, STEL and Ceiling values (Australian and several international) • Breathing Protection required • Gloves, Boots and Clothing required • Eye Protection required • Chemical characteristics of the substance • Applications • 11 important chemical properties • Poisoning symptoms and health risk! • First aid in emergencies (inhaled/eyes/skin/ingested) • Information to physician.

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: \_\_\_\_\_

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Safety (Australia) Pty. Ltd.

