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IMPORTANT

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Japanese cars rolling downhill

The journal Automotive News reports that Japanese car manufacturers are up against mounting problems with staff, social attitudes and falling sales.

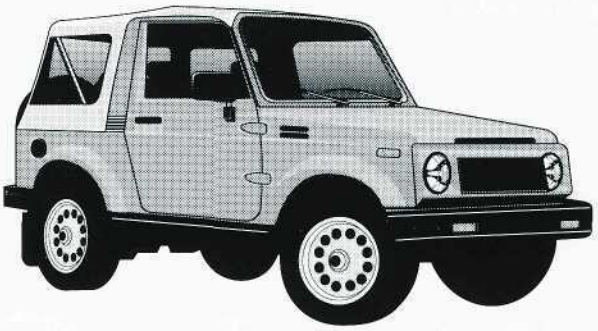
Japanese youth are reacting against work conditions in the car industry. In an attempt to solve the problems, manufacturers are offering flexi-time and part time employment, first class staff restaurants, and special housing programs for employees.

Assembly work in Japan is much less automated than, for example, similar industries in Europe.

One complaint among workers concerns the short production cycles, due to frequent releases of new car models. This places great strain on both the environment and the employees.

"Always having to be concerned about the next car model leads you into a wicked circle with no chance of rest or respite", says *Ichiro Ogiso* of the Japanese car workers' union.

Massive parking problems and police crackdowns on illegal parking have hit car sales severely. A 5% downturn is expected this year. Car manufacturers are now starting to become involved in the parking business to encourage sales.



Source: Automotive News, September 1991; Arbetsmiljö 13/91

IN THIS ISSUE:

Hold the gel!

One in five hairdressers hit by eczema

Hand eczema can probably be expected to increase in the future. Surveys show that about ten per cent of the working population suffer from the condition at some time during any year. The condition is more common in certain fields,such as cleaners, whose ratio is about double that of the rest of the work force.

Another curious fact is that there are two women for every single man suffering from hand eczema. And among the affected women, younger females are more numerous. This does not mean that all cases of hand eczema are caused in the work place: researchers suspect that a certain component of all eczema incidents is caused by wet and moist work in the home (such as laundry, dish washing, cleaning, bathing babies etc.)

A recent eczema study on two thousand people, selected at random out of a group of 20,000 people, found that those who have

suffered asthma, eczema or hay fever as children are at greater risk of contracting hand eczema as adults.

High risk jobs include cleaning and maintenance personnel. About 20% of cleaners had problems, regardless of gender. Those who most frequently sought other employment due to skin disease were hairdressers.

Hairdressing - herbal style

Brithe Gleerup, a professionally trained hairdresser from Aarhus in Denmark, was severely affected by allergenic chemicals used in her business. At 24, she was forced to leave her profession and look for something else.

Then she had an idea: what about a green hairdressing salon? Not the walls... the preparations. Brithe styled a new-look salon where all artificial products were banned and replaced with all-natural preparations.

Her customers might not be aware of the raw materials used in their stylish perms and dyes, such as coffee, wines and herbs. However, from the list of ingredients, we suspect that Birthe has added a new dimension to hairdos: smell.

Source: Meding, B: Hand eczema - an epidemiological study, Arbete & Hälsa 28/1991; Arbejdsmiljø (Arbetarskydd 12/91)

Hand care is more than skin deep

In this feature, we discuss some of the elementary points in any skin protection program. After all, the skin is a very personal thing: it's with you all the time, on and off the job. Dirty, irritated or unhealthy skin can be a major cause of medical concern, as well as psychological stress. Skin problems on your face and hands are hard to cover up: it shows all the time.

I: Your skin protection cream:

Like a duck to water... or off a duck's back?

Choosing a suitable protective skin cream can be like chasing an elusive wild goose, unless you know the simple facts of solubility.

Why does water run off a duck's back? Because the bird's feathers are covered with a thin film of oil. And as we all know, oil and water don't mix.

One characteristic of most protective skin creams is its solubility. That is, whether it is soluble in oil or water.

The key to skin protection cream is incompatibility. In short: an oil-based cream repels water-soluble liquids; and a water-based cream repels oily liquids.

This means that the materials you're handling dictate which type of protective cream to use:

- **An automotive mechanic comes in constant contact with grease and oil. By using a** wafer-based protective **cream, the worker's skin will be protected from the oil and grease. Water-soluble creams are good for organic solvents, mineral oils, greases, oil paints, oil varnishes, metal processing oils, and synthetic (multi-component) resins.**
- **A worker operating an industrial metal cutting machine regularly handles cooling agents which are water-soluble. In this case, an oil-based protective cream is required. Oil-based creams repel water, and could be used against water solutions, acids, alkalis, salts, water containing oils and cooling agents.**

It's very important to make the right selection. The wrong choice could act as an attractor, making it even easier for the substance to be absorbed by the skin, and to enter cracks and cuts.

Testing the suitability

If there is any doubt as to the efficacy of the cream against a particular substance, a *Suskind test* is one way to estimate the suitability of one cream in comparison with another. The creams are smeared onto a glass plate and immersed in the chemical. The longer the cream takes to dissolve, the more resistant it is to the chemicals.

The purpose of protective creams

Protective creams have more functions than just to protect the skin. Some of these functions include:

- **Strengthening the** *epidermis,* **or outer layer of the skin; the very surface**
- **Supporting the skin's ability to repair and heal itself**
- **Stimulating skin growth**
- **Making cleaning easier**

Remember that the cream itself protects only to a certain extent. The *real* protection is achieved by the ability of the cream to enhance the natural protection barrier in the outer layer of the living skin.

Why not "barrier cream"?

The terms *barrier cream* and *invisible glove* are old favourites with both manufacturers and users. However, you should keep in mind that a protective cream is not a physical barrier that keeps the user protected from all forms of danger; nor is protective cream intended to replace gloves in many cases.

Glove use

A chemical resistant glove of the right type can be the ideal way, indeed, the only way, to protect the hands from aggressive substances. It is important to select the correct glove for the respective chemical: gloves can

last from a little as a minute to several hours, depending on the type of material used.

Inside the glove, however, the hands could still be damaged. Being enclosed in an impervious glove, the hands start to sweat. Heavy sweating, in turn, can cause cracking and other skin irritation, making the skin vulnerable to very small amounts of chemicals. Moreover, if you take off your gloves to dry and air your hands, contaminants may enter the glove, where they start working on the skin the moment you put them on again.

A light cotton inner glove can increase comfort. There are also special protective creams, specifically prepared for glove use, that prevent irritation and cracking due to perspiration.

Choosing a protective cream

Here are some questions that should be asked about any protective cream:

- **Is it insoluble in the hazard?**
- **Will it last for approximately half a working shift?**
- **Does it have good adhesive strength, i.e. does it "stick" adequately to the skin?**
- **Does it penetrate well into the skin? (Note: certain special creams are designed to stay on the skin surface)**
- **Does it allow the skin to sweat/breathe?**
- **Does it contain only benign ingredients?**
- **Is it non-allergenic to a high degree?**
- **Is it free from substances that can damage tools, instruments and other work materials?**
- **Does it simplify hand cleaning after work?**
- **Is it easy to apply?**
- **Does it come in hygienic and economical packing or dispensers?**

II: Skin cleaning

There's a lot more to skin cleaning than just soap and water. Inadequate or incorrect cleaning can lead to chronic skin disease.

Washing your hands might seem a natural, routine thing to do without thinking about what you're doing. But in today's industry, skin cleaning is just as important as skin protection, and vast amounts of research, testing and product development has gone into the cleaning field.

There are several factors that play part in the selection of a skin cleanser:

- **The way it "attacks" the particular dirt, i.e. the cleaning method**
- **The way it affects the chemistry of the human skin, i.e. skin compatibility**
- **The way it affects the skin in a physical/mechanical sense, e.g. abrasion, parching**

In essence, the best skin cleaner is the preparation that cleans off the particular dirt in the most efficient way without causing harm or discomfort to the skin.

Different types

There are four major groups of skin cleaners, depending on the circumstances and materials they are used to rid the skin of:

- **Simple soaps and detergents.**
  These are used for light dirt and general hygiene, such as in toilets and kitchens.
- **Cleaners containing scrubbers.**
  Scrubbers are abrasive materials, used to remove ingrained dirt.
- **Cleaners containing solvents.**
  The solvent dissolves oil, grease, paint, glue, resin and other sticky materials.
- **Cleaners with reducing agents.**
  Reducing agents are used to chemically neutralise dyestuff.

Which one to choose depends largely on the type of contamination. The wrong choice could lead to non-allergenic skin irritation, dermatitis, even an increased danger of contracting more severe skin conditions.

Scrubbers

Scrubbers must be selected with great care. There are many types of scrubbers, added to the cleaning liquid. Abrasive or sharp scrubbers include sand, pumice and perlite. Such materials could cause more harm than good, and are usually considered to be "of the past". Low-impact scrubbers include specially ground plastic granules, plastic powder and wood-flour. In any cleaner, the scrubber granules should stay evenly suspended within the liquid at all times, and should not sink

to the bottom or gather at the top of the container or dispenser.

Solvents

Solvents such as thinners or turps should ***not*** be used to clean skin. Solvents dry out the skin, causing irritation and cracks. Tiny cracks in the dry skin are an invitation to all manner of harmful chemical substances to attack the living skin.

Some skin cleansers contain a small amount of special solvents to take care of heavy grease and oily materials. These preparations, unlike pure solvents, usually also contain skin care and moisturising agents to prevent the skin from drying out.

The importance of pH

pH is a value that denotes the acidity or alkalinity of a substance. The scale spans from 1 to 14, where 1 is acid and 14 is alkaline. The centre value, 7, means neutral.

The human skin is slightly acidic, between pH 5.5 and 7. The best hand cleaners should match this pH level in order to be compatible with the skin. Values outside this range could cause problems with undesirable side-effects such as drying, swelling or degreasing the skin.

Ordinary soap is alkaline - that is, outside the skin's own pH range. This will disturb the skin's natural ability to combat bacterial infection.

How to clean

Hand cleaning is a simple process. Follow these simple rules:

- **Don't use too much.**
  It is not a case of *the more the better.* A well-designed dispenser is the best way to proper dosage.

- **Apply to back of hand.**
  When cleaners are applied to the palm of the hand, it usually stays there. By applying to the back of the hand, you will rub the cleaner evenly into both sides of the hand.

- **Do not apply water.**
  Rub the cleaner in thoroughly. Pay special attention to cuticles, nails and folds. A tiny amount of water may be added later to encourage lather.

- **Do not rub too vigorously.**
  Especially if you use preparations containing scrubbers: this will only damage the skin. Be patient. Keep rubbing lightly. If you're using the correct cleaner, it will remove the dirt.

- **Rinse thoroughly.**
  Again, pay special attention to cuticles and nails. It is important not to leave *any dirt or any detergent* on the skin.

- **Dry and apply skin care lotion.**
  Your skin will benefit greatly from a gentle moisturising cream, preparing it for the next working day.

III: After-work skin care

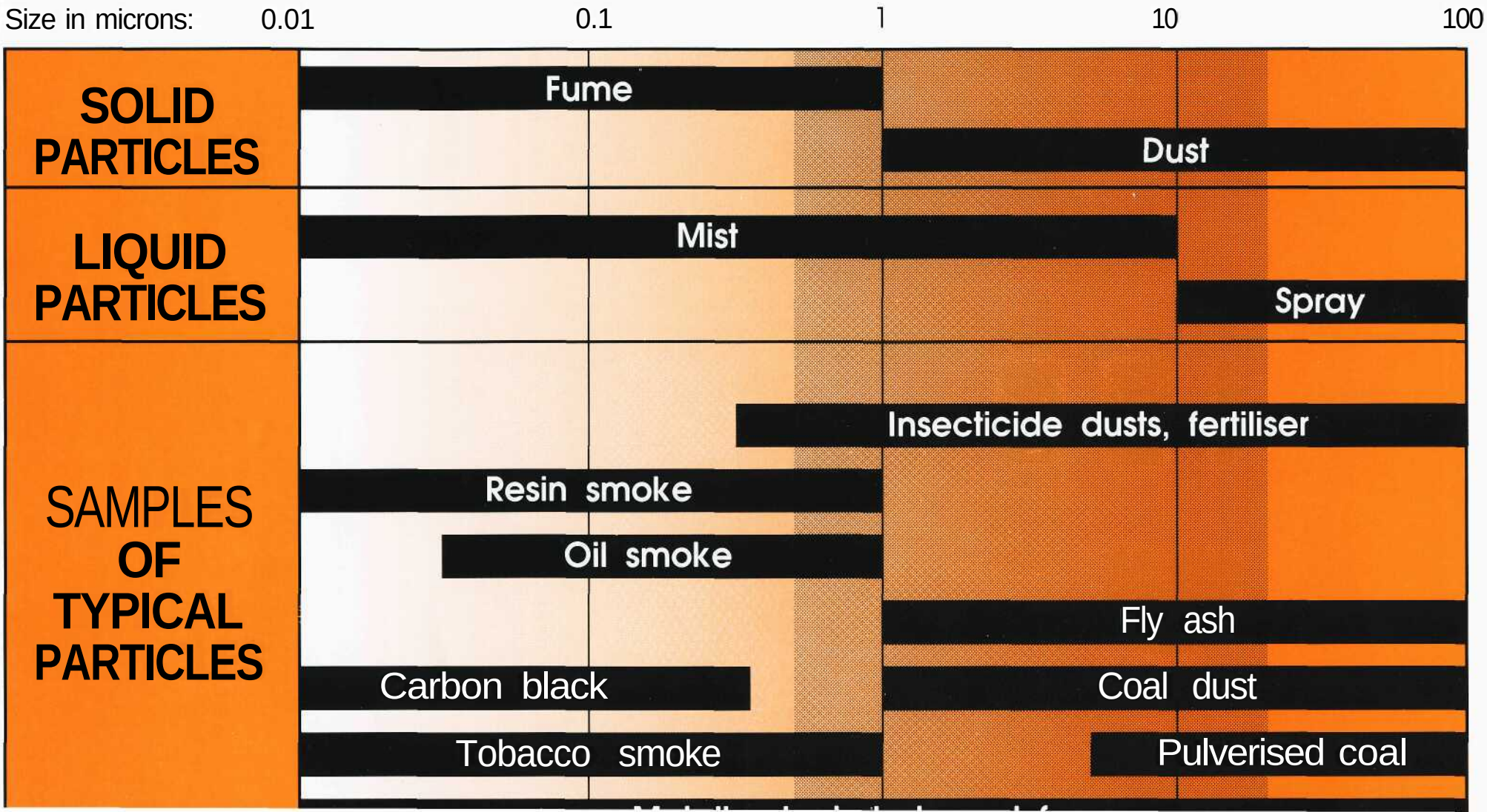
Many industries have discovered the benefits of skin protection creams and cleansers... and that's where the skin program ends. But there's a missing part: the all-important after-work care.

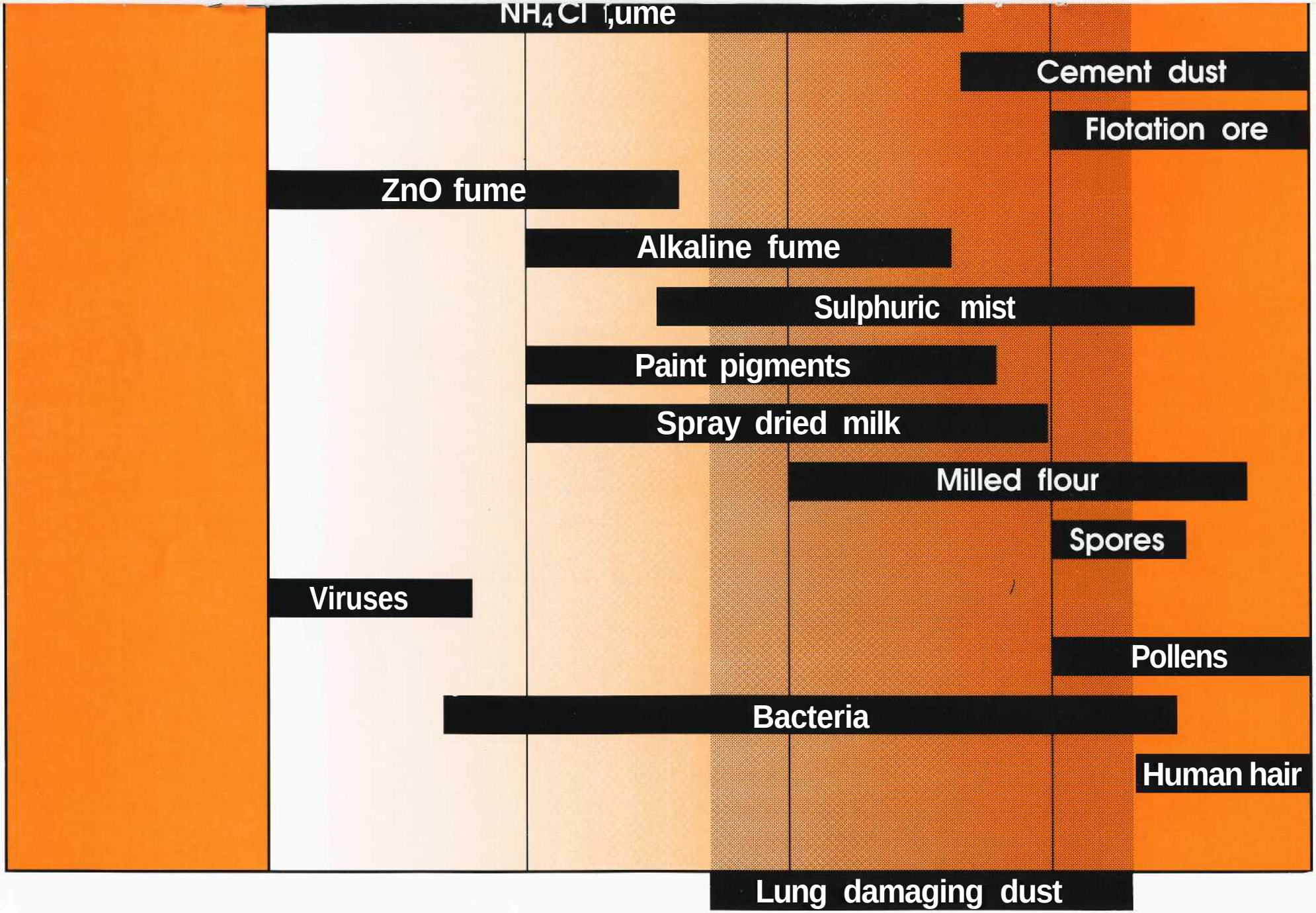
The skin protective cream will strengthen the skin and make cleaning easier. The cleanser will remove dirt without damaging the skin. The after-work skin care preparation is designed to soften the skin from a full day's work, keep it smooth and healthy, and to prepare the skin for another day's work.

Many workers have discovered the gentle soothing effects of cosmetic moisturising creams, mainly marketed for women. But after-work skin care is really part of the whole skin protection program in any work place. A carefully selected skin care cream for industrial use is probably more economical and more beneficial than any cosmetic product, especially since it is bought in bulk and dispensed in correct dosages to minimise waste and maximise effectiveness.

Source: Prevention of skin disease at work and in the environment; Skin cleaning; Special skin protection (Stockhausen publications, Krefeld, Germany)

Sizing up particles





Source: Rajhans & Blackwell, Practical guide to respirator usage in industry, Butterworth 1985

Hydrogen Fluoride

Other names:

hydrofluoric acid

Common uses:

aluminium smelting, welding, fertiliser production, fluorocarbon/fluoride production, uranium enriching, metal cleaning, cleaning in building industry

Properties:

Colourless liquid with sharp odour. Water miscible. Visible fumes are emitted at greater concentrations. Acid attacks metal, enamel, glass, building material, fabrics etc.

Chemical data:

Formula: *HF*

CAS number: *7664-39-3*

Boiling pt: *67°C* @ **70%** — *112°C @ 38%*

Melting pt: *-69°C* @ **70%**

Flash pt: *None (non combustible)*

Ignition pt: *None (non combustible)*

Australian exposure limit (TWA): 3 ppm (2.5 mg/m^3)

General hazards:

Very toxic and corrosive by inhalation, ingestion, skin and eye contact

Symptoms & treatment:

Inhalation:

Soreness in nose and throat; coughing; nose bleed; vomiting; impaired breathing; shock; unconsciousness. Lung oedema may occur as a delayed effect after several hours or days without discomfort. Repeated exposure to fumes may cause chronic bronchitis, dental and skeletal damage.

First Aid: *Fresh air and rest. Keep patient warm. Place in comfortable reclining position. Respiratory assistance and oxygen may be required. Avoid any body strain - increased risk of lung damage. Transport to hospital even if patient feels no discomfort.*

Skin contact:

Severe corrosive damage; intensive pain; non-healing wounds; low concentrations can penetrate into deep tissue - pain occurs after several hours.

First Aid: *Flush with copious amounts of water. Flush inside clothing before removing. Dab skin dry and rub plenty of Calcium gluconate gel 2,5% into affected areas. Keep massaging for 15 minutes after pain subdues. Transport to hospital.*

Eye contact:

Intensive pain; corrosive damage; great risk of permanent eye damage or blindness, even from diluted solutions.

First Aid: *Rinse with water for at least 15 minutes. Keep eye lids widely apart while rinsing. Urgent transport to hospital or ophthalmologist.*

Swallowing:

Burning pain; severe corrosive damage; vomiting; cramps; kidney damage; corrosive damage even from very small amounts.

First Aid: *If fully conscious, give patient two glasses of milk or water. Administer 10-15 calcium tablets, dissolved in water. Do* NOT *induce vomiting! Urgent transport to hospital.*

Precautions:

Good ventilation, also at floor level; local air extraction may be required; chemical should be kept in closed systems if possible; keep containers closed and secured; **emergency showers *and* eye rinsing stations** *should be available; keep a supply of* **calcium gluconate gel** *handy; keep a supply of* **calcium tablets.**

Personal protection:

Safety spectacles, goggles, face shields or hoods; long-sleeved overalls; long gauntlet gloves; aprons; safety boots; respirators with chlorine (grey E) filters; supplied air at higher concentrations.

Personal protection equipment should not be used as a normal hazard control: should only be used in emergencies and non-routine procedures.

Source: Kühn-Birret, Merkblättergefährlische arbeitsstoffe, Ecomed 1984; Skyddsblad for kemiska produkter, Swedish Worksafe 1985; Hydrogen fluoride, Worksafe Australia 1989

Handy Hints

Avoid nasty suprises: keep first-aid kits sealed. Replace contents and reseal after use.

Here's a competition that'll suit you to a T-shirt!

We have five S.E.A. T-shirts to give out to people who know the ropes in safety. Simply circle any problem areas shown in the picture below, and connect each trouble spot to your own explanation in the list to the right. Your answers can range from personal protection to fixtures, lighting, ergonomy, electricals, noise - as long as it is a relevant safety matter. Supply an extra sheet if you run out of space. Don't just sit there: start fining in!

Name: _____

Position: _____

Company: _____

Street: _____

City: _____ P'code: _____

Phone: _____

List your troublespots here:

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WHAT YOU DON'T KNOW CAN'T HURT?

New chemicals are introduced into the industry at a breakneck speed. But their health effects are seldom established conclusively before their release in the workplace. How do you protect against the unknown risks?

The Swedish journal, Arbetarskydd, conducts a debate about flagrant examples of insouciant handling of chemicals with undocumented risks.

Case #1:

Polyurethanes are very widely used in the industry, especially in plastics and lacquers. Volatile, tertiary amines (such as triethylamine and dimethylethylamine) are often used as accelerating agents in the production of polyurethane.

A few years ago, it was discovered that workers experienced visual disturbances from these amines. Basic toxicological information on the amines is virtually non-existent, although the substances have been in very wide use around the world since the 1950s.

Case #2:

Isocyanates are the main ingredients in polyurethane. The classic one is TDI (toluene di-isocyanate). TDI is a volatile compound, and is inhaled daily by tens of thousands of workers around the globe — indeed, its use spans four decades.

Strangely enough, basic information on the metabolism of TDI is not available. It has been shown, however, that workers exposed to TDI have its respective amine, TDA, in their urine.

TDA is a well-known cancer-producing compound in laboratory animals. The substance is therefore classified as a suspected carcinogen in humans, and, in Sweden, it may only be used after express approval from the work inspection authority in each individual case.

Recent research shows that TDI causes cancer in rodents. The effects in human are until now unknown. Epidemiological research is underway.

Case #3:

Nowadays, poly-isocyanates are often used in polyurethane. These substances are often said to be harmless, but can cause damage in aerosol form.

The question of poly-isocyanates is poorly explored. Not even the chemical structure of technical poly-isocyanates is known. In effect, we don't know what's in the container!

Analysis is impossible, because independent reference substances (manufactured outside the poly-isocyanate production labs) are unavailable.

Case #4:

A few years ago, it was discovered that many workers who were exposed to a certain epoxy resin suffered from lung problems. The culprit was a relatively volatile organic acid anhydride (methyl tetrahydrophthalic acid anhydride) - which seems one of the most allergenic substances known.

There was no toxicological information - not on laboratory animals, nor on humans. This information is completely lacking, yet thousands of tonnes of this substance are probably used world-wide.

Poor morale

The basic principle in the work environment seems to be that even if you can't prove a substance's non-toxicity, you can expose workers to it without further ado.

Pharmaceuticals and pesticides must be fully documented with complete toxicological information. However, these rules don't seem to apply to industrial chemicals.

The responsibility is, presumably, with importers and manufacturers. But it appears that measures are taken only when something happens to someone.

Industrial chemicals should be treated with the same strict regulations as Pharmaceuticals and pesticides.

But who can demand this? Who will do the work? Who is going to pay for it?

Source: Skerfving, S & Skarping, G, Arbetarskydd 2/1991 p16

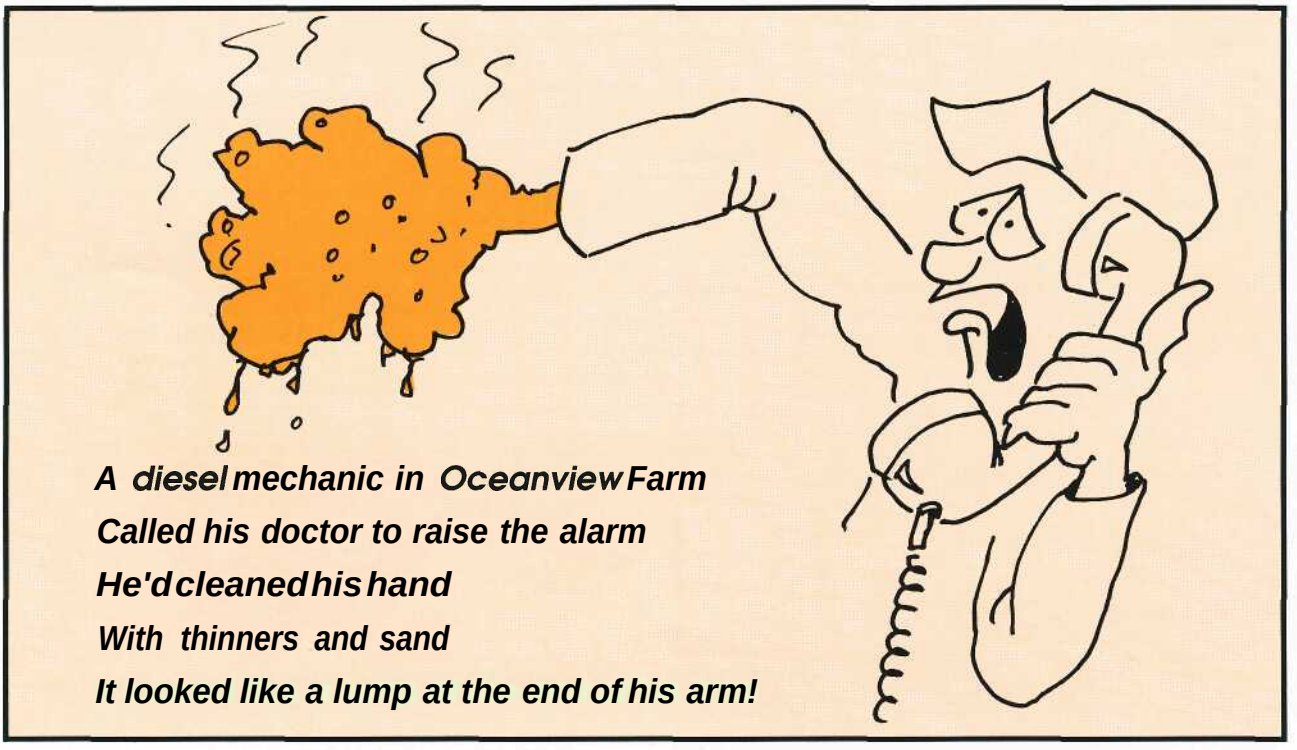
The UK adjusts the balance

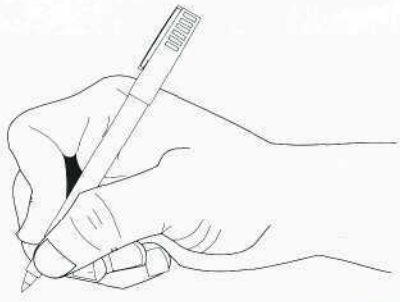
Until recently, British law has placed much higher penalties on damage to nature than hurt to a person. This has been shown in a comparison between environmental and occupational negligence.

For instance, one employer, guilty of an accident where a teenager lost a leg, was fined 200 pounds ($400), while companies that had released poisons causing environmental damage could be fined up to 20,000 pounds ($40,000).

Penalties for personal injury have now been raised to the same level as environmental harm.

Source LO/TCO newsletter (Arbetarskydd 12/91 p3)





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