



the newsletter of the Sheffield Occupational Health Development Group

**Further reading:**

**HSE material**

Useful leaflets can be found on the HSE website [www.hse.gov.uk](http://www.hse.gov.uk) by going to the Publications page and searching for "gloves".

- Preventing dermatitis at work. Advice for employers and employees INDG233 (Free)
- Medical aspects of occupational skin disease MS24 (Free)
- Selecting protective gloves for work with chemicals INDG330 (Free)
- Assessing and managing risks at work from skin exposure to chemical agents HSG205 (£8)
- Cost and effectiveness of chemical protective gloves for the workplace HSG206 (£8.50)

The "Skin At Work" page [www.hse.gov.uk/skin](http://www.hse.gov.uk/skin) contains links to other parts of the site that deal with skin issues such as latex allergy, and industry-specific guidance.

**Other sources**

The American OSHA website [www.osha.gov](http://www.osha.gov) also has a large section on Latex Allergy.

**Standards**

- EN374 Protective Gloves for Chemicals and Micro-organisms
- EN381 Protective Gloves for users of hand-guided chainsaws
- EN388 Protective Gloves for Mechanical Risks
- EN407 Protective Gloves for Thermal Risks
- EN420 General Requirements for Protective Gloves
- EN421 Protective Gloves for ionisation radiation including contamination and direct exposure to radiation
- EN455 Medical Disposable Gloves
- EN511 Protective Gloves for Cold
- EN659 Protective Gloves for Firemen
- EN30819 Protective Gloves for Vibration
- EN1082 Protective Gloves for working with hand knives
- EN pending Protective Gloves for welding
- EN60903 Protective Gloves for working with electricity



# The Skin at Work

Dr Anil Adisesh, Consultant Occupational Physician, Northern General Hospital and HSL

We live in a society that has high aesthetic expectations shown by the spending on personal grooming, cosmetic products and trends for cosmetic surgical procedures. For humans our skin has a major aesthetic function. It is then little wonder that skin disease causes misery which may seem disproportionate in comparison to other illnesses. Contact dermatitis causes a loss of skin functions leading to itching, redness, dryness, cracking, and bleeding and this can be painful. HSE estimated that in 2002, about 39 000 people in Great Britain were suffering from a skin disease caused by their work. Most of these cases resulted from exposure of the skin to chemical agents.



The most common skin condition caused by work is contact dermatitis. Occupational contact dermatitis is responsible for around 80% of work related skin disease. Although most workers with OCD may remain in work, studies have shown that more than half change jobs and a substantial number lose a month or more from work. The longer people are exposed to substances at work before OCD is diagnosed the less likely they are to improve (Adisesh et al 2002). The economics of occupational skin disease are a substantial burden for industry and the annual costs were estimated to be in excess of \$22million in America (Mathias CG 1985).

We have considerable information on the risks for OCD whether through irritant exposures or those causing allergic responses. We know the industries with the highest rates of OCD: manufacture of metals, extraction of crude petroleum and natural gas, manufacture of chemicals and chemical products, manufacture of other non-metallic mineral products, manufacture of motor vehicles and trailers and other transport equipment, manufacture of radio, television and communication equipment, other service activities (principally hairdressing).

We know the occupations most commonly affected: Hairdressers, Printers, Machine tool operators, Chemical, gas and petroleum plant operatives, Car assemblers and Machine tool setters.

We know the agents identified as most often responsible: rubber and rubber chemicals, epoxy and other resins, petroleum oils, nonspecific irritants, chromium compounds, cutting oils and coolants, water/wet work, soaps/detergents, ketone solvents.

**What then can be done to avoid or reduce OCD?**

Recognition - Employers and other stakeholders should consider whether there is already a problem with OCD. Sources of information may include industry sector figures, sickness absence reasons, informal or formal employee surveys, patterns of use of Personal Protective Equipment.

*continued overleaf*

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Consultant Occupational Physician, Northern General Hospital and HSL

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Senior Scientist, HSL

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## Editorial

Welcome to the Spring 2005 edition of Healthy Work Matters. In this issue and accompanying network meeting, we have focused on the issue of "Contact Dermatitis". The newsletter contains interesting articles outlining the issue surrounding the clinical aspect of contact dermatitis, how to investigate the condition and its management. The article also mentions the importance of skin health policy. The second article deals with the selection of gloves and their proper use. We have organised a network meeting and workshop.

We would also like to inform you that we will be expanding our activities in the region through "South Yorkshire and Humberside Regional Group". This group will allow us to exchange information and ideas at the regional level.

We encourage you to send in your thoughts, comments and views on the Newsletter and any occupational health issues you would like us to cover. Also don't forget to visit our website which contains useful information and back issues of the newsletter.

Jo Elms  
Shamim Rahman

tel: 01298 218000  
fax: 01298 218590  
[www.healthyworksheffield.org.uk](http://www.healthyworksheffield.org.uk)



Contact dermatitis

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**Management** - Any cases of OCD identified may be "sentinel cases" ie the tip of the iceberg. These people will need considered medical evaluation to determine the causes and how they may be best helped in continuing with their work.

**Risk assessment** - This will be a necessary step even if no current problems exist. The purpose is to determine whether any skin irritants or allergens are a part of the work and how to eliminate or reduce risks from them.

**Health surveillance** - The risk assessment may conclude that health surveillance is required under the provisions of the Management regulations or COSHH to ascertain any new cases and that the control of risk is satisfactory. How this is conducted will generally require advice from an occupational health professional.

**Information, Instruction and Training** - A requirement of the Management regulations and COSHH to ensure employees know what hazards are present and how to avoid the potential consequences. This might include skin care advice, appropriate choice and use of Personal Protective Equipment, early recognition and reporting of OCD.



Oil acne



Non-specific dermatitis

**Skin Health Policy** - If occupational skin disease is a particular issue with an industry sector or occupation it may be prudent to adopt a specific policy to promote good skin care and maintenance.

### Research

The epidemiology of occupational skin disease in the UK is monitored through specialist based reporting schemes such as EPIDERM and OPRA funded by the HSE and by other projects. However, there are many aspects that still require better understanding such as the mechanisms of sensitisation and irritancy, including individual differences in susceptibility. The development of reliable novel blood tests for determining the presence of allergy in humans would also be useful as present tests can take five days to give a result and entail several hospital visits. The validation of test methods to determine the dermal penetration, local skin and systemic toxicity of substances is also important in finding alternatives to animal tests that are required for new chemicals.

### References

Adishes A, Meyer JD, Cherry NM Prognosis and work absence due to occupational contact dermatitis: outcome of cases reported to EPIDERM Contact Dermatitis 2002, 46, 273-279

Mathias C G. The cost of occupational skin disease. Arch. Dermatol 1985; 121: 332-334.

HSE website: <http://www.hse.gov.uk/skin/index.htm>

# Glove selection and use

Mr Martin Roff, Senior Scientist, HSL

This article poses questions about protective gloves that glove users should be asking themselves. Although some of them may seem obvious, there are others that are not. It does not give the answers, because there are too many combinations and factors to generalise, however other sources of information are given.

### Why use gloves?

The purpose of a protective glove may include one or a combination of:

- Mechanical protection - from physical damage from rough surfaces, sharp edges, needles, friction, vibration
- Thermal protection - from heat or cold
- Chemical protection - from harmful chemical agents - solids, liquids, vapours, gases, aerosols, fumes, dusts, fibres and even water
- Hygiene protection - from biological agents - micro-organisms
- Product protection - cross-contamination from the wearer.

In the last point, the product, perhaps food, an ultra-clean surface, a forensic sample or a patient, is being protected from cross-contamination from the hands of the gloved wearer. The wearer is often unaware that he or she is the hazard!

### How can gloves fail?

Gloves are easily defeated unless the user is trained and aware of how they might fail to protect. Ways in which gloves can fail to protect are:

- Permeation - the agent passes straight through the intact glove material at a molecular level
- Penetration - the agent passes through cuts, defects, pinholes or abrasions in the glove material
- Penetration - the agent enters the intact glove via the cuff or a seam
- Degradation - the glove material reacts with heat or with an agent and this causes cracks or defects to develop.

Ways in which the glove user can make an intact glove fail to protect are by:

- Transferring the agent from the outside to the inside
- Handling the contaminated outer surface
- Allowing liquid to run down the outside of the glove onto unprotected skin
- Immersing the glove below the cuff
- Using the gloves for too long, allowing the inside to become unhygienic

- Using the gloves for too long or with the wrong agent, allowing permeation, or allowing the material to deteriorate and crack.
- Allowing permeation of a substance, if it carries a more harmful agent with it that would not permeate the glove on its own.

### What to consider in selecting a type of glove

There are a number of questions that you must ask yourself when selecting a glove:

1. Does it resist permeation to the chemical(s) for long enough to do the job or last the day?  
The gloves may be selected with a particular task in mind, but used for a variety of tasks with different chemical or biological agents. They may not be suitable for them all. Manufacturer's charts often relate to single chemicals and not mixtures of chemicals. The European standard EN374 specifies 6 levels ranging from >10 minutes (Level 1) to >8 hours (Level 6)

2. Is it robust enough? Is it likely to cut, wear or tear in use? Is it flexible, elastic and sensitive enough to allow the worker to do the job at all?  
The strength, tear resistance, cut resistance, abrasion resistance of the glove are all important if they are to last for the job, or last for the whole day. There are a set of four ratings for protective gloves against mechanical risks (abrasion, cut, tear and puncture) ranging from 0 (lowest) to 5 (highest) to allow different glove brands and types to be compared. A rating of X means that the glove has not been tested for this property. Vibration is not included.

3. What about a "disposable" type of glove?  
HSE policy is that gloves should only be used for a single shift unless it can be shown that they can protect for a longer period. All gloves are thus "disposable". The preferred term nowadays for what people may understand to be "disposable" gloves is "single-use". These can often allow permeation in just a few minutes.

4. Is it manufactured to a specification that reduces defects sufficiently?  
Acceptable Quality Level in EN388 specifies the proportion of defects permitted in a batch of chemical protective gloves. Level 1 is 4%, Level 2 is 1.5%, Level 3 is 0.65%.

5. Is it long enough to prevent penetration via the cuff?  
If the arm or wrist is getting wet, it is not long enough. Sometimes the cuff is turned up to catch drips.

6. If it is latex, will it cause allergies?  
Latex allergy to Natural Rubber Latex gloves starts with sensitisation to specific proteins from the latex. Proteins may rub off onto lubricating powders on the insides, and when the gloves are removed generate clouds of dust which may be inhaled. These proteins leach more easily from poor quality gloves which may also have higher protein content. Inhalation of these proteins can provoke the development of asthma or provoke asthmatic attacks in those who have been previously sensitised to these proteins. Powder-free gloves are the preferred choice to reduce sensitisation because this lowers the risk of inhalation.

7. How will I know whether it is protecting? Can I (or my workforce) use them competently?  
Some simple checks of glove hygiene can be demonstrated using fluorescent or coloured tracers. HSE use these in seminars on handling chemicals.



### Conclusion

Correct glove selection is not easy. The consequences of not using the correct gloves are that the skin is exposed to the chemical and this may cause dermatitis. Examples of dermatitis are shown throughout this newsletter.