

Save Our Skins

Two million UK workers are worried about their skin being damaged by exposure to chemicals. Bob Rajan-Sithamparanadarajah and Diane Llewellyn from the HSE give tips on preventing skin disease from exposure to chemicals and wet work.



By taking sensible but simple approaches to controlling exposure to chemicals and wet work (where the hands are repeatedly wet during the course of a working day, or wet for long periods), employers can help to significantly reduce the scale of work-related skin disease.

Safe Working Distance (SWD)

The theme of this article is 'Safe Working Distance Saves Your Skin'. The application of the SWD approach should help to prevent or adequately control work-related skin disease. The SWD approach is illustrated on the HSE poster shown on the left. This can be freely downloaded from the HSE's 'Skin at Work' website, www.hse.gov.uk/skin

In the bottom left-hand picture on the poster, the worker is using his hand as a tool to immerse the workpiece into a coating material. In doing so, his skin is coming into contact with the chemical.

A correct approach – the application of a SWD – is shown on the picture next to it. Just as we use a knife and fork to eat food from a plate without handling it, it is often simple to use suitable tools when handling hazardous chemicals and doing wet work.

Work-related skin disease

Work-related skin disease can be defined as a disease in which workplace exposure to a physical (e.g. abrasive materials such as metal filings), chemical (e.g. nickel), or biological (e.g. bacterial) agent has been a major and necessary contributing factor in the development of the disease. In other words, skin disease caused by – or made worse by – work.

Approximately 80 per cent of all work-related skin disease is work-related contact dermatitis (here on referred to as 'contact dermatitis'). The hands are the most affected parts of the body. Why?

In many instances, the hands are routinely immersed in, or are in frequent contact with, chemicals and water. And

A recent Health and Safety Executive (HSE) publication revealed that the skin of about 15 million workers comes into contact with chemicals. Around two million of these people are concerned about their skin being exposed to such substances and the harm that can result¹.

The 2006/07 Self-reported work-related illness survey estimated that there were 29,000 people with 'skin problems' which they believed to be work-related².

It is also estimated that around 31,000 working days are lost every year as a result of work-related skin problems and these conditions costs the UK economy around £46 million.

The costs arise from factors such as lost production, sickness absence, compensation payments, rehiring and retraining of staff, plus costs to the National Health Service. A significant number of people affected by work-related skin disease live with pain and suffering. Many have been forced to give up their jobs or change career. All these are avoidable.



The HSE poster illustrating the Safe Working Distance approach.

in many situations, the hands are being used as tools rather than as an aid for handling chemicals or manipulating work pieces contaminated with chemicals.

So, the answer for preventing the majority of work-related skin diseases is easy: simply prevent your skin coming into contact with chemicals and avoid prolonged wet work.

This is where the safe working distance approach (SWD) becomes essential. This article therefore aims to help employers apply the SWD approach in their workplace.

Contact dermatitis

The term dermatitis means inflammation of the skin. Contact dermatitis results from skin coming into close contact with hazardous agents. These can be chemicals, wet work, biological agents (e.g. plants and plant products, bacteria, fungus and virus), physical agents (e.g. vibration, radiation) or mechanical agents (e.g. abrasion).

Types of contact dermatitis

In this article, we are concerned with irritant contact dermatitis (ICD) and allergic contact dermatitis (ACD) caused by chemicals and wet work.

Irritant contact dermatitis

ICD is a local inflammation of the skin. It can develop after a short but heavy single exposure or due to repeated and prolonged exposure to irritants, chemicals and wet work.

Strong irritants – such as wet-cement, strong acids and alkaline substances – can cause immediate damage. Many weaker substances may require prolonged contact before there is a visible effect.

Repeated skin contact with chemicals and wet work tends to start with minor damage unseen by the naked eye. It then progresses to ICD because the person's skin is no longer able to repair the ongoing damage to its outer layer.

Allergic skin reactions

Allergic skin reactions can involve the body's immune system. These reactions are as a result of an overreaction of a well functioning immune system to the invasion of a foreign substance. Some individuals may be exposed to an allergic substance throughout their working life, but may not develop an allergic reaction. This is purely due to their genetic

makeup. However, this fact cannot be used as an excuse for not implementing skin exposure control measures at work.

Contact urticaria

Single use latex gloves are well known to cause allergic reactions. Reactions are caused by rubber proteins released from the glove. The signs and symptoms of latex allergy occur as soon as the contact is made and disappear within 24 hours and usually within a few hours. This type of allergy is technically known as contact urticaria or Type I.

Although the symptoms of contact urticaria may be short lived, they cause significant adverse effects to those affected. In extremely rare situations, the affected individual may suffer a life-threatening anaphylactic shock caused by a hypersensitive reaction to the allergic substance.

Workers in the health and beauty care industries are at most risk from latex protein allergy because single use latex gloves are widely used in these sectors.

Allergic contact dermatitis

Allergic contact dermatitis accounts for about 20 per cent of all work-related contact dermatitis. The ACD allergy is known as Type IV. With this type of allergy there is a period of delay (which could be days or years) between the first contact with the allergic substance and the allergic reaction. During this period, an individual's skin may be exposed on a daily basis to a sensitising substance without any visible allergic reactions.

Once a person is sensitised to a substance however, any subsequent exposure will produce allergic reactions, even if the exposure is to a tiny amount of the substance.

The sensitivity is likely to remain with the person for the rest of their life. For example, a number of construction workers have been sensitised by exposure to epoxy glues widely used in the industry. In the building sector, epoxy glues are used as tile adhesives, floor coatings and in road construction and repair.



Workers must use suitable tools and wear correct PPE to avoid skin contact with chemicals.

Signs and symptoms of dermatitis

The signs and symptoms of ICD and ACD are similar in many ways. Dry, red and itchy skin is usually the first sign. Swelling, flaking, blistering, cracking and pain can follow.

In addition to contact dermatitis, chemicals can cause severe burns to the skin. A chemical burn can be distinguished from dermatitis because it is immediate and severe and usually involves several layers of the skin.

Wet work

Wet work means having hands repeatedly wet or wet for long periods during the working day. As a general guide, it means having hands wet for more than two hours a day or washing hands more than 20 times a day.

Wet work is a major cause of dermatitis, particularly when water and other chemicals such as soaps, cleaners and disinfectants are involved. In fact, exposure of the hands to wet work is the most common work-related factor that leads to hand dermatitis.

Examples of activities where wet work is common include hairdressing, metal machining with cooling agents, catering and food processing.

Industries of particular concern

Dermatitis can occur in just about any workplace. However, HSE research shows that people working in sectors such as beauty care, cleaning, catering, construction, dental care, engineering, hairdressing, health services, printing and rubber products manufacturing are particularly vulnerable to contact dermatitis.

Skin exposure

The ways in which skin comes into contact with chemicals are described below.

- **Direct contact with hands** – skin contact takes place when hands are intentionally used for handling or manipulating chemicals or chemical containing materials and equipment.
- **Immersion (hands)** – skin contact takes place when hands, sometimes hands and forearms, are immersed in a chemical substance or a product.
- **Direct contact with other parts of the body** – skin surface other than the areas of the hands, can come into direct contact with contaminants due to the way the work is carried out.

- **Deposition** – this can happen when airborne contaminants impact or settle on the skin. Contaminants can be in the form of gas, dust, fibre, fume, or liquid mist or spray.
- **Contact with work surfaces** – the skin surface often comes into contact with contaminated work surfaces.
- **Contact with contaminated clothing and or PPE** – this provides ample opportunities for the skin to come into contact with chemicals.
- **Splashing** – splashes can land on the skin or clothing. This takes place when liquids or liquid based mixes or powders are involved. Careless or inappropriate handling of liquids or liquid mixes causes significant skin exposure.

Controlling Contact Dermatitis: The law

The Control of Substances Hazardous to Health Regulations 2002 (as amended)⁹ lay down a number of specific requirements when it comes to preventing and controlling the risk of people suffering work-related skin disease.

The first and primary responsibility is that employers should prevent their workers being exposed to hazardous substances. If this not reasonably

practicable, exposure should be adequately controlled.

The law requires that employers do not carry out any work which is liable to expose any of their employees to a substance hazardous to health, unless they have:

- Assessed the risks;
- Identified the steps needed to control the exposure; and
- Implemented the steps identified.

Control

The approach that the HSE proposes to help employers to manage the risks of workers' skin being exposed to harmful substances can be described in three simple steps: A, P, C.

- Avoid skin contact by changing the task or process;
- Protect the skin; and
- Check for early signs of dermatitis.

The most effective and reliable way to prevent work-related skin problems is to design and operate processes to avoid contact in the first place. The law demands that PPE is used only as a last line of protection.

To help you implement the APC approach, some examples of Do's and Don'ts in terms of preventing work-related skin problems are given in the table below.

Preventing dermatitis: Control measures

DO

Avoid skin contact

- Substitute a more hazardous material with a safer alternative.
- Be familiar with the health risks associated with chemicals and products.
- Apply adequate SWD by automating the process; enclosing the process as much as possible; using mechanical handling, tools and procedures as appropriate.
- Keep the surfaces and clothing free of contamination.

Protect the skin

- Use suitable protective gloves where necessary.
- Know how to correctly don and doff protective gloves.
- Ensure hands are washed and dried regularly, including before donning and after removing gloves.
- Use pre and after work creams to ensure good skin condition.
- Tell employees how to look after their skin.

Check for early signs of disease

- Seek medical advice if there are concerns about the condition of the skin.
- Carry out regular skin checks where there is an exposure to substances that can cause dermatitis. Skin checks can help indicate a possible lapse in your protective measures and the need to reassess the situation.

DO NOT

- Immerse hands in chemicals or allow prolonged contact with water.
- Work so as to cause chemical splashes on the skin.
- Work so as to create dust, vapours and liquid aerosols which freely enter your working environment.
- Allow skin to come into contact with contaminated workpieces, surfaces, tools, clothing, etc.

The human consequences of skin disease

“My life is ruined as far as work is concerned. I’ve tried for a number of different jobs not involving contact with water, but you’ve only got to mention dermatitis and they don’t want to know you.” (A cleaner)

“My hands were all cuts and blisters. I had to get my boyfriend to help me eat because I couldn’t hold a knife and fork – I couldn’t grip anything.” (An apprentice hairdresser)



A hairdresser’s hand affected by dermatitis.



Airborne contaminants can settle on the skin.

Help is available

No one should become a victim of work-related contact dermatitis. To tackle the problem, apply the APC principles and the Safe Working Distance approach to control the risks of skin exposure to chemicals.

HSE is working with a number of stakeholders such as the British Safety Industry Federation (BSIF), the Trade Union Congress (TUC), Safety Groups UK (SGUK), the Institute of Occupational Safety and Health (IOSH), the British Occupational Hygiene Society (BOHS) and the Institute of Occupational Medicine (IOM).

You can get help from these organisations. To start with have a look at the HSE’s ‘skin at work’ website and read the leaflet ‘Prevent work-related dermatitis – It’s in your hands’ – see www.hse.gov.uk/skin

If you wish to obtain a copy of a Toolbox Talk on how to prevent dermatitis please email us at: Bob.Rajan@hse.gsi.gov.uk

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References

- 1) ‘Workplace Health and Safety Survey Programme, 2005 worker survey first findings’, JT Hodgson, JR Jones, SD Clarke, AJ Blackburn, S Webster, CS Huxtable and S Wilkinson (HSE) www.hse.gov.uk/statistics
- 2) ‘Self-reported work-related illness and workplace injuries in 2006/07: Headline results from the Labour Force Survey’, www.hse.gov.uk/statistics
- 3) ‘Control of substances hazardous to health (Fifth edition). Approved code of practice and guidance’, L5, ISBN 0-7176-2981-3, (HSE Books), www.hsebooks.com
- 4) ‘Company fined £100,000 – employees suffered from painful allergic dermatitis over four-year period’. HSE press Release: E098:06, 06 October 2006, www.hse.gov.uk

Case study: Photobooth workers develop dermatitis

An international photobooth company was fined a total of £100,000 after it admitted safety offences in relation to three employees suffering from allergic dermatitis⁴.

The court heard that although the firm was aware of the risks to health posed by photographic development chemicals, it failed to assess those risks properly and provide proper control measures – including correct PPE – to reduce the risk of harm.

The case came after an HSE investigation revealed significant failings in the company’s management and control of exposure to chemicals. Technicians who serviced photobooths were exposed to hazardous chemicals over a four-year period leading to the onset of allergic dermatitis in at least three cases.

One worker suffered four years of his skin blistering, cracking, splitting and weeping because of this allergic contact dermatitis. Two other employees suffered the symptoms of allergic contact dermatitis. One of the employee’s fingers and hands became so badly swollen and blistered that he could not do up his shirt buttons without his fingers splitting open. An example of the skin damage is shown below.

The case illustrates the importance of adequately managing the risks posed by skin disease at work. The company in question has since implemented a number of control measures which reflect the APC and SWD approaches described in this article.

