

# Occupational Dermatitis

## Dermatitis in the Workplace – What You Should Know

Occupational dermatitis is a non-infectious inflammatory skin condition resulting from direct skin contact with chemicals or other substances used in the workplace. Occupational dermatitis may take two forms: a) allergic contact dermatitis, or b) irritant contact dermatitis.

Allergic contact dermatitis occurs when a person becomes sensitized to a particular substance or chemical (allergen). Following the initial allergic response the person will continue to react to the allergen upon coming in contact with it, no matter how minute the exposure. Sensitization may occur within days of the exposure, but typically follows months or years of repeated exposure.

Irritant contact dermatitis occurs when the skin is exposed to a mild irritant (such as detergent or solvents) repeatedly over a long period of time, or to a strong irritant (such as acids, alkalis, solvents, strong soaps, or cleansing compounds) that can cause immediate skin damage. Only the part of skin that comes in direct contact with the substance will be affected.

Dermatitis is a common and potentially serious skin condition that can be prevented.

## Legal Responsibilities

Under the *Workplace Hazardous Materials Information System (WHMIS) Regulation*, R.R.O.1990, Reg. 860, employers are required to ensure supplier labels and material safety data sheets (MSDSs) are available for controlled products and workers are educated and trained in their use.

The *Occupational Health and Safety Act*, section 25(2) (h), states that an employer must “take every precaution reasonable in the circumstances for the protection of a worker”. These precautions include providing workers with education and hazard awareness training, safe handling procedures, and personal protective equipment. Additionally, section 3 of the *Control of Exposure to Biological or Chemical Agents*, Regulation 833/90 requires the employer to take all reasonable measures to protect workers from exposure (including skin absorption) to a chemical or biological substance. Workplace exposures can occur during the storage, handling, processing, dispensing or clean-up of these substances in the workplace. Furthermore, in Regulation 833/90, substances capable of being absorbed through the skin have been assigned with a "skin" notation. This means if the substance is absorbed through the skin, it may result in significant systemic toxicity.

Employers are required to assess dermatitis hazards in the workplace and develop policies and programs for preventing occupational dermatitis in the workplace. Supervisors must provide written instructions for the safe handling and use of hazardous agents and ensure workers follow instructions, work safely and use personal protective equipment where required.

The *Health Care and Residential Facilities Regulation* made under the *Ontario Occupational Health and Safety Act* requires that workers be appropriately protected when they are at risk injury from exposure of the skin to an irritant or allergen. Appropriate protection may involve specific protective equipment, hygiene practices, and readily available and accessible emergency eyewash fountains and shower equipment.

Table 1: Occupations at Risk and Irritants Involved

<b>Irritant</b>	<b>Source</b>	<b>Occupations</b>
Formaldehyde	Embalming fluid Fixatives in labs Preservatives Disinfectives Germicides Fungicides	Medical/Laboratory technicians Mortuary workers Pathology and Histology technicians Researchers
Detergents	Detergents	Dietary, housekeeping and laundry workers
Natural rubber latex proteins	Protective gloves Medical instruments	Health care workers in acute, long term and community care settings Dentists, dental assistants and dental hygienists Day care workers
Solvents	Cleaning and disinfecting tools and equipment Laboratory procedures	Laboratory technologists Maintenance workers Print shop workers
Glutaraldehyde, Ethylene oxide	Sterilizing agents used on equipment Sometimes found in developers and fixatives	Central processing department Endoscopy room and operating room workers Medical/dental clinics X-ray technicians

Table 1 indicates a number of skin irritants and sensitizers, their sources, and the health care workers who may be affected. Other irritants from the same or different sources may cause dermatitis among health care workers. (Source: European Agency for Safety and Health at Work <http://agency.osha.eu.int>)

## Symptoms

Employees will differ in their reactions to exposure. Some people may react severely to a substance, while others may not react at all.

Both types of dermatitis most often affect the hands. The face is also a common site for dermatitis through exposure to airborne allergens such as volatile chemicals, sprays, aerosols, and dusts.

Table 2: Symptoms of Allergic Contact Dermatitis and Irritant Contact Dermatitis

<b>Allergic Contact Dermatitis</b>	<b>Irritant Contact Dermatitis</b>
Reddening of skin	Mild swelling of skin
Dry, scaly patches	Stiff, tight feeling in skin
Blisters that ooze	Dry cracking skin
Burning or itching	Blisters
Swelling of eyes	Localized reactions (area where contact with skin occurred)
Hives	
Darkened/cracked skin	
Reactions can spread beyond the area where contact with skin occurred	

Table 2 - The main differences between irritant and allergic contact dermatitis. (Source: Cleveland Health Clinic Information Centre)

## Skin Defenses

Our skin is made of multiple layers that act as a protective barrier. Some substances change or remove skin oils, cause the skin to become more vulnerable, and allow chemicals to penetrate into the deeper layers. Once this damage has occurred, the substance or chemicals can interact with body cells and tissues. At this point, the skin may show visible signs of chapping, scaling, and blistering. These reactions can take place within a few hours of exposure or up to 24 hours after exposure.

## Risk Factors

Various risk factors may facilitate the onset of dermatitis. The three main factors are:

### Properties of Substance

Solubility - the more soluble the substance, the more likely it is to penetrate the skin.

Form: gas, liquid, solid - agents that affect the skin can come in all forms; however, liquids are the most common skin irritants and sensitizers.

Concentration - generally, the higher the concentration, the greater the skin hazard.

Duration of exposure - the greater the exposure duration, the greater the skin hazard.

Properties of the substance - Acids and alkalis are more likely to cause skin irritation than neutral products such as those containing water.

### Environmental Conditions

Temperature, humidity, moisture - hot, humid workplaces can cause sweating. Sweat can dissolve certain types of chemicals, making them more toxic or irritating.

Contamination in the air - as the concentration of the chemical in the air increases, so does the potential for dermatitis.

### Health of Employee

Skin region (hands, arms, face) - certain chemicals penetrate the face and back quicker than the arms.

Skin condition (cuts, rashes, abrasions) - cuts and skin abrasion permit irritants or sensitizers to penetrate the skin more easily.

Dry skin - dry skin can become cracked and allow irritants or sensitizers to penetrate the skin more easily.

Sweating - sweat can dissolve certain types of chemicals, making them more toxic or irritating.

Alternatively, sweating may protect the skin by washing away or diluting substances

Age and genetic background - People may react differently when exposed to the same substance.

## Prevention

### Workers should:

- Read and understand the information contained in Material Safety Data Sheets (MSDS). They provide information on health hazards associated with the material and precautions to take. Phrases such as “may cause skin sensitization” or “skin irritant” indicates the substance can cause dermatitis.
- If using a chemical that can cause dermatitis, check whether there is a safer alternative.
- Remove any contaminated clothing quickly. *Immediately* wash skin that has been in contact with skin irritants or sensitizers with large amounts of warm clean water and a mild moisturizing soap.
- Never wash hands with solvents such as Varsol or gasoline.
- If any changes in the skin are noticed while at work or after using substances, seek medical attention as soon as possible. Early diagnosis and treatment is essential in preventing occupational dermatitis.
- Report occupationally acquired dermatitis to your supervisor and occupational health nurse (if applicable).
- Dry your hands completely after washing them and apply hand lotion frequently
- Use non-latex gloves, unless contraindicated. When latex gloves are required, use low protein, no powder latex gloves.

### Employers should:

- Ensure the workplace is in compliance with all WHMIS legislation. MSDSs must be readily available for all controlled products being used.
- If possible, change the way processes are done to effectively reduce skin contact with dermatitic agents. For example, automated mixing instead of hand mixing substantially reduces the risk of skin contact.
- In the case of an emergency, have approved emergency eyewash and shower equipment for flushing the eyes, face and skin after contact with skin irritants or sensitizers.
- Provide adequate on-site hygiene facilities for workers to wash their hands and face at the end of the job, before eating, drinking or smoking and after using the toilet.
- Develop, implement and monitor safe work practices.
- Provide training and education on safe work practices to new staff at orientation and to all workers on an ongoing basis.
- Ensure personal protective equipment or clothing is made of a material appropriate for the chemical(s) being handled. Provide non-latex gloves. For procedures requiring the use of latex gloves, provide low protein, no powder gloves.

### Joint Health and Safety Committee should:

- Review the WHMIS program annually;
- Review incident and accident statistics;
- Make recommendations to the employer for the improvement of the health and safety of workers.