GLOVE ALLERGIES AND HAND HEALTH

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SAFETY BRIEFING

INTRODUCTION

Skin conditions caused by chemical, physical or biological agents in the workplace are common among disposable glove wearers in the industrial sector. Understanding the nature and contributing causes of these conditions allows safety managers to develop policies and make purchasing decisions that will assist in both reducing the risk of allergy and managing any existing conditions.

Workers in a range of industries and professions rely on disposable gloves to provide a barrier against unwanted contact with a range of substances. These occupations are diverse – from life science and laboratory work to food processing and preparation, from the automotive industry to emergency and first responders. While each environment presents a distinctly different set of workplace activities, they all necessitate prolonged disposable glove use, regular glove changes and frequent hand washing, which can have a significant negative impact on hand health if the chosen protective solutions are not suitable.

Skin allergies from adverse reactions to glove products are generally classified into three distinct types, immediate hypersensitivity or Type I, delayed hypersensitivity or Type IV, and irritant contact dermatitis. At best, they are uncomfortable for the affected individual, but if left ignored, misunderstood, or exacerbated through the use of unsuitable hand protection, the problems can quickly become far more serious.

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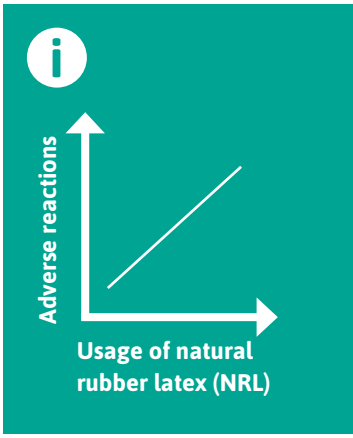
THE LIMITS OF LATEX

The use of disposable gloves made from natural rubber latex (NRL) is widespread, largely due to their relatively low cost and the comfort and features they deliver in a glove. However, with the increased usage of NRL gloves, there has been an increasing prevalence for wearers to exhibit adverse reactions since the first reported case of latex allergy in 1979.[1]

Predicting who will experience a Type I allergic response to latex can be difficult. Individuals with a personal or familial history of other allergic diseases such as asthma or eczema are more likely to develop a latex allergy and, conversely, about half of those that develop a latex allergy will also develop an allergy to certain fruits, the most common including banana, avocado and kiwi fruit.[2]

A known problem is that the risk of developing a latex allergy increases with frequent use or exposure. This means that individuals with no predisposition become likely to develop a sensitivity to latex, which at any time may lead to an allergic response.



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[1] Medical Journal of Australia.
[2] Australasian Society of Clinical Immunology and Allergy.

UNDERSTANDING ALLERGIES

Type I allergy

Adverse reactions to natural rubber latex (NRL) gloves can range from irritant contact dermatitis to serious allergic response such as anaphylaxis. Latex allergy also known as Type I allergy is a reaction to the residual allergenic proteins present in NRL products.

After repeated exposure to NRL products, the immune system of susceptible individuals produces antibodies that react immunologically with these allergenic proteins. There is an immediate adverse reaction occurring within minutes after initial contact with NRL.

The symptoms may include some, or all, of the following:
- Swelling
- Redness on the site of exposure
- Itching and burning sensation

Symptoms can spread to areas near the site of glove contact and can be accompanied by:
- Hives
- Conjunctivitis
- Hay fever symptoms, such as running nose and itchy eyes
- Coughing
- Breathing difficulties, including wheezing

Symptoms of anaphylaxis are rare, but can occur.

Type IV allergy

Allergic reactions to chemical residues from the glove manufacturing process may produce what is known as a Type IV allergy (chemical allergy) or allergic contact dermatitis (ACD).

A chemical allergy is due to an immunological reaction to a residual chemical leached from finished glove products into the skin of the wearer. It is a delayed response with symptoms exhibiting anywhere between 6-48 hours after initial contact with the glove, and symptoms may persist for up to 4 days. Sufferers experience a range of symptoms including: skin redness, blistering, oozing, swelling and itching located at the area of contact with the glove. The skin can become dry, cracked and scaly, and the rash may extend beyond the contact area site.

Irritant contact dermatitis

The most common (non-allergic) adverse skin reaction to disposable gloves is irritant contact dermatitis. The condition shares many of the same symptoms as ACD, but does not involve the immune system and the underlying cause is different. It is exacerbated by sweating or friction and occurs through frequent hand washing, exposure to harsh soaps and scrubs or the use of abrasive hand towels. It can occur within minutes or hours of contact.

Symptoms are limited to where there is direct glove exposure and include redness, chafing, dryness, and scaling or cracking. To reduce the risk of irritation, it is recommended to minimise contact with the causative agent, commit to a regular skin care regimen, avoid oil/fat based hand creams, and wear powder-free gloves.

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ISOLATE THE OFFENDER

In all cases of repeat or persistent dermatitis or allergic reaction associated with glove use, it is recommended to consult a medical practitioner. Since skin allergies vary in possible severity, solutions to these problems also vary.

Type I responses can be very serious as they can be fatal in extreme cases. Individuals need to be referred to an allergy specialist for a diagnosis. In this case, a synthetic product is appropriate and must be worn as an alternative to a NRL glove. Exposure to airborne latex protein particles resulting from co-workers using powdered latex gloves should also be avoided.

For individuals who are experiencing a Type IV reaction it is necessary to first identify and then eliminate the offending residual chemical from the disposable glove. Patch testing by a dermatologist will help identify the chemical responsible for the reaction. Once the specific chemical is confirmed, glove manufacturers can assist in identifying appropriate disposable glove options.

APPRECIATE THE NRL ALTERNATIVES

The development of NRL-free glove options formulated from nitrile, neoprene and polyisoprene reduces the incidence of Type I latex reactions.

Accelerator-free gloves from nitrile and neoprene are the latest development in response to preventing workplace skin diseases, so health and safety professionals should speak with specialist manufacturers and vendors to investigate available alternatives.

SYNTHETIC MATERIAL OPTIONS	
Polyisoprene:	Suitable for medium exposure to oil and industrial fluids and when palm and knuckle risks are present.
MECHANICAL PROTECTION	
Neoprene:	Performance falls between polyisoprene and nitrile with a good balance of comfort, strength and elasticity.
COMFORT	
Nitrile:	Higher strength, durability and puncture resistance than natural rubber latex, but does sacrifice some comfort compared to NRL.

HAND HEALTH MATTERS

Allergies and other autoimmune responses are complex, serious and potentially life-threatening. Left unchecked, there is potential to create long-term effects that reach beyond a single affected individual.

Safety managers that fully comprehend the nature of the problem are better placed to offer suitable alternative hand protection solutions and to develop processes and policies, creating a safer working environment for all staff.

Allergies and other autoimmune responses are complex, serious and potentially life-threatening.

References

Australasian Society of Clinical Immunology and Allergy, Latex Allergy [website], 2017. https://www.allergy.org.au/patients/product-allergy/latex-allergy (accessed 16 June 2017).

Medical Journal of Australia, Latex Allergy [website], 2017. https://www.mja.com.au/journal/2006/185/6/latex-allergy (accessed 06 June 2017).

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