

Glove Allergies

1. What is an allergy?

An allergic reaction is an acquired abnormal response of the body's immune system to a substance (an allergen) that does normally cause a reaction.

2. Are all people prone to reactions from using gloves?

The three types of adverse reactions associated with latex gloves affecting some users are irritant contact dermatitis, Type IV hypersensitivity and Type I hypersensitivity. The irritant contact dermatitis and Type IV hypersensitivity associated with natural rubber usage have been known for many years, however, that of Type I hypersensitivity emerged only in the late eighties.

Irritant contact dermatitis is a non allergic response, and therefore all people can get an irritant reaction to gloves. However, Type I and Type IV are allergic reactions. This means that an individual must be genetically predisposed to the chemical contact sensitizers (Type IV) or latex proteins (Type I) in order to get these allergies.

3. Who will normally get an allergic reaction from using gloves?

It is estimated that less than 1% of the general population (no specific number) are at risk

A number of high risk groups have been identified:

1. Healthcare workers: 2,8 – 16,9%
2. Spina bifida and multioperated children 32 – 50,6%
3. Rubber industry workers: 2 – 11%

Other glove users: 8 – 11%

It must be reminded that these prevalence figures were obtained many years ago when the old generations natural rubber latex gloves had very high extractable protein contents very often exceeding 1000 microgram per gram of gloves. With the advances in manufacturing process and the understanding of the protein allergy issue, the extractable latex protein present in the new generation natural rubber latex gloves is very much reduced. In the case of powdered natural rubber latex gloves, the acceptable maximum protein content is 200 microgram per dm² and for powder-free natural rubber latex gloves, it is not uncommon to have values below 50 microgram per dm². It is therefore expected that the degree of latex

sensitization is very much reduced even for healthcare workers. Nevertheless, people who have been sensitized should avoid further contact with natural rubber latex gloves.

It is said that atopy seems to be a principal predeterminant for sensitization. It is interesting to note that, however, the prevalence among potential high risk groups in natural rubber producing countries such as Malaysia and Thailand is only 2% and about 3% respectively, despite repeated exposure to latex and latex products.

4. What are some of the reactions affecting individuals through the use of natural rubber latex and synthetic gloves?

REACTION TYPE	SYMPTOMS	CAUSE
Irritant contact dermatitis (Non-allergic)	Skin rash, dry flaky skin with papules, cracks and sores.	Residual soaps, hand cream, powder, temperature and pH extremes, disinfectants and incomplete hand rinsing.
Type IV – Chemical hypersensitivity (cell-mediated allergy)	Eczema appears at 48 hours to 96 hours post exposure by skin contact.	Residues of chemicals used for processing of gloves, particularly, the thiurams and carbamates.
Type I – Latex Protein hypersensitivity (IgE mediated allergy)	Immediate localized itching, burning or discomfort, urticaria(hives) within 5 to 60 minutes after contact, rhinitis, asthma and in very serious cases, anaphylaxis (very rare).	Residual extractable proteins found in natural rubber latex products.

extracted from Malaysia rubber board monograph 1 “Latex Protein allergy and your gloves”

5. What is a glove related irritation?

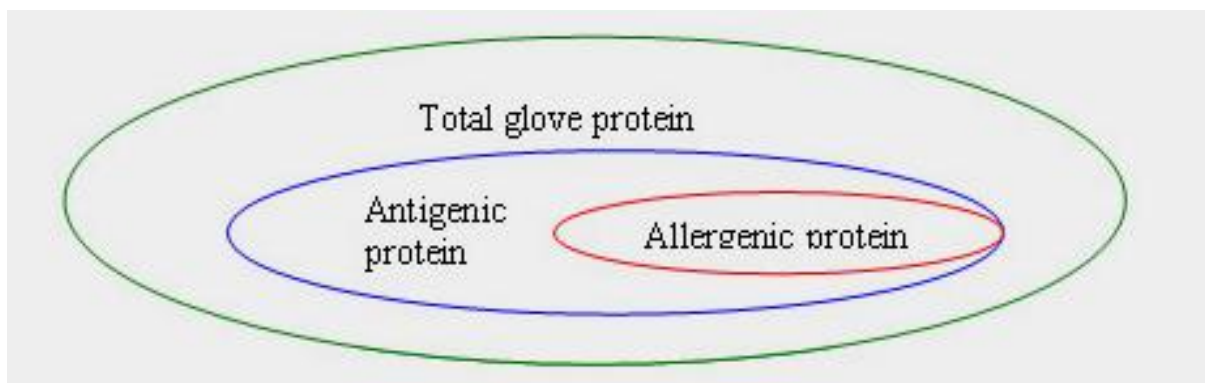
Irritation is a non – allergic condition that can be experienced by anyone. It is an inflammatory reaction of tissues due to an injury. Irritations can be caused by soaps, detergents, disinfectants, solvents or degreasing agents, ethylene oxide, alcohol and other irritants. These are irritations that are not glove related. Glove – related irritations can be caused by glove powder, chemicals and endotoxins found in both latex and synthetic gloves. Two other important irritation factors are friction and air occlusion.

If it is an acute irritation the hands can have a red, scalded appearance with possible swelling. After repeated or long – term exposure, acute symptoms can progress to a more chronic state where symptoms include hyperplasia, keratosis, ecema, peeling skin etc. Symptoms of irritation are only related to the area of glove contact. Irritation is not an allergic reaction. This reaction does not proceed beyond the boundary of the glove.

6. What is an allergen?

A substance, usually a protein that is able to elicit an IgE antibody response and activate mast cells. Allergenic proteins are proteins that the body recognizes which we call antigenic proteins and they are capable of initiating an allergy.

Every allergen is a type of antigen, but not every antigen is an allergen. Thus it can be said that in natural rubber latex gloves, not all extractable proteins are antigens and not all extractable proteins are allergenic proteins.



7. Are low levels of total proteins important?

It is not a perfect predictor of allergenic protein content, generally speaking. If the total levels of proteins in a glove are high, the higher the allergenic protein content. However the lower the total protein content is in a glove the lower the allergen. It is accepted scientifically that the sensitization of genetically predisposed individuals is amount and rate dependent; this is making it extremely important to select a glove that is low in protein allergens. The lower the level of total protein, the lower the probability of exposure to potential protein allergens.

The Malaysian Rubber Board has previously conducted a study relating level of extractable proteins of gloves to response of sensitized people in skin prick test. It can be seen that for gloves having protein level below 300 µg/g of glove, more than 80% of sensitized person do not show positive response to skin prick test.

