

Latex Allergy: Latex Allergy Information Fact Sheet

By Dr. Kevin J. Kelly, MD, *Facts on Latex Allergy*

- Natural Rubber Latex is a milky liquid produced by lactiferous plants or trees.
- There are >2000 lactiferous plants in the world.
- The major source for NRL is from the *Hevea Brasiliensis* tree and is used to make numerous commercial and medical products.
- NRL contains a highly cross-linked polymer with a structure of cis 1,4 polyisoprene.
- Manufacturers utilize heat vulcanization with sulfur to cross-link the polyisoprene.
- The vulcanization may be performed at a lower temperature and shorter duration by using accelerators in products made by a dipping method (e.g. medical gloves) while high temperature and prolonged duration is used for other types of rubber (e.g. car tires).
- This unique structure creates a strong, elastic barrier that tends to be virtually impermeable to water and that returns to its original shape after multiple stress forces are applied.
- The polyisoprene is immunologically inert and is not known to cause allergic reactions.
- Approximately 2% of the weight of NRL is from proteins that are produced in the lactifer plant.
- 13 of these proteins have been well characterized and known to result in IgE mediated allergic reactions.
- Most of these allergic reactions have been reported to occur from finished rubber products that are made by a dipping method with formulated natural rubber latex.
- Approximately 12% of the NRL harvested is used to make products by this dipping method.
- Manufactured latex products may contain additive chemicals that either accelerate the cross-linking or are anti-oxidants used in the process. Many of these chemicals have a propensity to cause delayed hypersensitivity reactions manifested as contact dermatitis.
- Thiurams, carbamates, and mercaptobenzothiazole chemicals are the most common rubber additive chemicals to cause contact dermatitis.
- Allergic contact dermatitis is clinical diagnoses made by a licensed independent health care provider that utilizes a medical history, physical exam, and possibly patch skin testing to the offending agent.
- Some individuals who develop IgE mediated latex allergy also have preceding or concurrent contact dermatitis.
- Many workers (possibly 30%) who use latex gloves and other gloves may get irritant dermatitis on their hands from numerous causes (e.g. sweating, powder, frequent hand washing).

- This dermatitis may precede or be concurrent with the development of IgE mediated latex allergy.
- A diagnosis of irritant dermatitis is a clinical diagnosis made by a licensed independent health care provider that utilizes a medical history and physical exam.
- IgE mediated latex allergy to NRL may cause hives, angioedema, rhinitis, conjunctivitis, asthma, and anaphylaxis with or without death.
- The allergenic proteins in latex may be carried on cornstarch powders that are used as a lubricant on some gloves resulting in respiratory exposure to patients and workers.
- Patients with spina bifida, cloacal anomalies, multiple surgeries, diabetes on insulin injections, and atopic subjects appear to be at a higher risk of developing latex allergy.
- Individuals in occupations where latex gloves are worn may develop symptoms of IgE mediated latex allergy more frequently when compared to other occupations where latex is not used.
- The definitive cause of the latex allergy epidemic in spina bifida and health care workers in the 1990's is not clear. Prevalence studies and avoidance strategies suggest that allergen content of latex gloves as well as inhaled latex allergen on powder from latex gloves may have contributed strongly to symptoms.
- Blood donor studies suggest that up to 8.2% of the general population may have detectable IgE antibody directed against latex allergen. This does not mean that 8% of the population has latex allergy. Two large cohorts of subjects skin tested to latex in Europe have shown the prevalence of positive skin test to be approximately 1%.
- Approximately 50% of latex allergic subjects show laboratory or clinical symptoms of allergy (cross-reactivity) to one or more fruit.
- Bananas, avocados, kiwi, and stone fruits appear to elicit the most clinical cross reactivity.
- Approximately 10% of fruit allergic individuals may have cross-reactivity to NRL.
- A skin testing reagent of natural rubber latex has not been cleared by FDA in the US. It should be noted that a well characterized skin test reagent has not resulted in severe untoward reactions. However, the use of non standardized latex reagents has occasionally resulted in severe allergic reactions in those subjects tested.
- Serologic testing for the presence of anti-latex IgE antibody has a sensitivity of 75-90% depending on the type of assay and substrate antigen.
- The specificity of the serologic assays for the presence of anti-latex IgE antibody has a specificity of 90-98% depending on the type of assay and substrate antigen.
- Serologic assays may result in false negative responses in 10-25% of subjects tested.
- Serologic assays may result in false positive responses in a significant proportion of subjects tested depending on the prevalence of the disease.
- The diagnosis of latex allergy is a clinical diagnosis made by a licensed independent health care provider that utilizes a medical history, physical exam, and possibly skin testing or serologic testing.