Latex in Healthcare

A Guide to Latex Sensitivity and the Latex Database

OHSAH

About OHSAH

The Occupational Health and Safety Agency for Healthcare in BC (OHSAH), initiated in an Accord between healthcare employers and union representatives, was incorporated on July 5, 1999. OHSAH's Board of Directors consists of representatives from employer and union organizations, including:

- Health Employers Association of BC (HEABC)
- Hospital Employees' Union (HEU)
- Health Sciences Association of British Columbia (HSA)
- British Columbia Nurses' Union (BCNU)
- BC Government and Service Employees' Union (BCGEU)

Our Mission

OHSAH's mission is to:

- Work with all members of the healthcare community to develop guidelines and programs designed to promote better health and safety practices and safe early return-to-work.
- Promote pilot programs and facilitate the sharing of best practices.
- Develop new measures to assess the effectiveness of programs and innovations in this area.

Latex in Healthcare

A Guide to Latex Sensitivity and the **Latex Database**

Table of Contents

Introduction

The Universal Blood and Body Fluid Precautions were introduced with the goal of reducing the risk of transmission of various pathogens, particularly viruses, between patients and healthcare workers. Since the precautions were introduced in the mid-1980s, there has been a significant increase in the use of latex gloves and other latex products within the healthcare sector. As the frequency and duration of use of these products has increased, various forms of latex sensitivity have emerged as a concern for both patients and healthcare employees.

This pamphlet provides an overview of latex and latex sensitivities, with a particular focus on the use of latex in healthcare. It also provides instructions on accessing and using the OHSAH **Latex Database**, a new tool for identifying the latex content of products and latex-free alternatives.

What is latex?

Latex is the milky sap collected from the rubber tree, *Hevea brasiliensis*. Rubber trees are cultivated for this sap, which is then processed into a variety of products. Liquid latex, also known as Natural Rubber Latex (NRL), is used to produce dipped products such as gloves, condoms, and balloons. It can also be dried (Dry Natural Rubber) and used to create products such as syringe plungers, vial stoppers, and baby bottle nipples. The desirable physical properties of natural rubber latex can be reproduced with synthetic products (e.g. nitrile).

Like most natural products, latex is a complex mixture of many components. It consists mainly of cis-1,4-polyisoprene, in addition to small amounts of proteins, carbohydrates, and lipids. The protein content of raw latex is approximately 2% to 3%. In finished latex products, such as gloves, the protein per gram of latex ranges from less than 0.05mg to 1mg of extractable protein per gram of latex, or approximately 0.1% or less by weight. Some proteins are an integral component of latex and are necessary for the formation of dipped latex products.

Why is latex a concern?

Latex allergy is an immunologic (immune system) response to either the natural proteins in latex or the chemicals used in the production of latex products.

Latex sensitivity may appear in individuals who come into contact with latex gloves or other latex products on a frequent basis, but latex does not necessarily affect everyone who is exposed. In order to develop an allergy or become sensitized, a person must have been exposed to the substance at least once previously. The body may then develop an immune response and hence become sensitized.

Not all latex proteins are allergens. Whereas the protein content of a product may be an important factor in monitoring production, the allergen content is more important in determining whether sensitive individuals will react to it.

Latex sensitivity is a particular concern in the healthcare industry. Nurses and other healthcare workers are frequently exposed to latex products and some workers have developed allergic reactions to the substance.

Types of latex sensitivity

Allergic Contact Dermatitis

Type IV delayed hypersensitivity is the most common type of latex allergy. It is not life threatening. It is a delayed reaction (6 hours to a week) involving the immune system at a cellular level. It is usually a response to chemicals used in the latex manufacturing process. Symptoms include skin rashes at point of contact, itching, and cracking, and/or blistering of hands or body parts that have come into contact with latex.

Sensitivity Type	Symptoms	Reaction Time
Allergic Contact Dermatitis	• Skin rash • Itching • Blistering of hands or other body parts in contact with latex	6 hours to a week
Natural Rubber Latex Allergy	• Hives • Skin rash in area of contact • Itchy eyes • Swelling of mouth • Coughing, wheezing, shortness of breath • Runny nose	Minutes to an hour
Irritant Contact Dermatitis	Scaling, drying, cracking of skin	4 to 24 hours

Natural Rubber Latex Allergy

Type I -IgE-histamine mediated natural rubber latex allergy is the least common reaction to latex. It is an immediate (a few minutes to an hour) reaction. Symptoms include itching, swelling, nausea, vomiting, and nasal congestion. This reaction may cause a severe allergic reaction - anaphylaxis - and therefore can be life-threatening. In the healthcare setting, this may affect either the person using a latex product or a person who is being examined.

Irritant Contact Dermatitis

This is another type of health problem associated with latex and rubber products. Unlike the immediate and delayed responses of other reactions to latex, irritant contact dermatitis is an inflammatory disease, not an allergic reaction, involving the immune system. However, broken skin may provide latex proteins a route of entry into the body and promote the development of an allergic response. Reaction occurs after repeated skin exposure to an irritant. The chemicals used in the production of latex products, such as the powder in latex gloves, can produce symptoms very similar to that of allergic contact dermatitis, i.e. development of dry, itchy, irritated areas on the skin. Irritant contact dermatitis should not, however, be confused with an allergic response. It is also not life threatening.

Sources of Exposure

People who have a latex sensitivity or allergy may have a reaction if they come into contact with latex products. Listed below are some common products which **may** contain latex.

General Medicine

Blood pressure cuff
Burn bandages
Elastic bandage
Electrode pad
Esophageal dilator
Esophageal protective cover
Examination glove
Eye dropper bulb
Face mask
Finger cot
Foley catheter
Hot water bottle
Latex injection parts
Rubber sheet, pillow
Rubber stoppers on medication
Syringe stopper
Tourniquet
Ultrasound cover
Warming blanket
Wheelchair tire

Dental

Bite block
Dental dam
Orthodontic elastic

Other

Adhesives
Baby bottles nipples, pacifiers
Carpet backing
Elastic in underwear
Household gloves
Paints
Raincoats
Rubber bands
Rubber toys

For information on specific products and their latex-free alternatives, refer to the latex database: **www.ohsah.bc.ca/latex**. Instructions on how to use the database can be found at the end of this booklet.

Means of Exposure

Skin

Skin exposure occurs when handling latex products, such as the products mentioned on the previous page.

Inhalation

Powder is applied to latex gloves during the manufacturing process to give the gloves a smooth finish, as well as make them non-sticky. However, latex protein can sometimes adhere to the surface of the powder. When someone removes a latex glove, the powder may be aerosolized and may cause an asthmatic reaction if inhaled.

Mucous Membranes

Latex proteins that come into contact with the mucous membranes of the mouth, vagina, urethra, or rectum can result in severe reactions in people who are sensitive or allergic to latex. This type of contact might occur during a physical examination of a patient or through cross contamination of a healthcare worker.

Intravascular

Exposure to latex allergens may occur as a result of intravascular administration of latex proteins. This can occur when using disposable syringe plungers, medications stored in vials with rubber stoppers, and intravenous tubing with latex injection ports.

Frequently Asked Questions (FAQ)

How common is latex allergy among healthcare workers?

Numerous studies have been conducted worldwide to determine how common latex allergy is in healthcare workers. The results indicate that 7% to 17% of healthcare workers have a latex allergy, much higher than the rate of 1% found in the general population [1-5].

Who may be at risk of developing a natural rubber latex protein allergy?

People who have, or have had, repeated exposure to natural rubber latex products may be at higher risk of developing a latex allergy. Healthcare workers such as doctors, nurses, lab technicians, and housekeeping staff are especially at risk because of constant glove use.

Individuals who meet one of the following criteria may also be at higher risk:

- Had multiple surgeries, childbirths, or medical procedures
- Active skin problems (such as irritant or allergic contact dermatitis)
- Allergic conditions (like eczema, hay fever, and asthma)
- Allergies to certain foods (e.g. bananas, avocados, chestnuts, kiwi fruit)

Is there a cure for natural rubber latex protein allergy?

Currently, there is no “cure” for a natural rubber latex protein allergy. Once you develop this condition, there is the potential

for reactions to become more severe after each exposure, or that you may react to lower amounts of the allergen. It is also possible to have a severe reaction the next time you are re-exposed, even to a small amount.

How is latex allergy treated?

Early detection of symptoms, reducing exposure to latex, and seeking medical advice are important for preventing long-term health effects. Once a person develops a latex allergy, special precautions are necessary to prevent further exposure to latex. Some medications may reduce allergy symptoms, but avoiding latex entirely is the most effective way of controlling a latex allergy. It is important to note that using medications to control symptoms while failing to eliminate latex exposure may actually increase sensitivity and intensify the severity of reactions.

What should I do if I have a health problem that may be related to latex products?

If you suspect you suffer from symptoms that may be related to latex products, seek medical attention. Your doctor may refer you to a dermatologist or an allergy specialist who may conduct tests to determine if an allergy exists. If you and your doctor think the problem is work related, report your condition to your employer as soon as possible. The person receiving your report should investigate your concerns and ensure that necessary corrective action is taken.

FAQ

What should I do if I must wear personal protective equipment like gloves?

If possible, choose personal protective equipment that is free of natural rubber latex. Contact the manufacturer to ensure that latex-free equipment is protective against the chemicals/materials that you will be handling. If an alternative is not available, choose a powderless glove with low-protein content. Low-protein, powderless gloves are **not** suitable for workers with a **confirmed** natural rubber latex protein allergy; such workers should only use latex-free gloves. The use of powderless, low-protein natural rubber latex gloves by co-workers, however, may reduce airborne protein levels enough to allow a sensitized worker to continue working in the same area. It may also help prevent other workers from developing a natural rubber latex protein allergy.

Does 'hypoallergenic' have the same meaning as 'latex-free'?

When a product is labeled "hypoallergenic", it is intended to have a lower likelihood of causing an allergy. The term was originally used to identify products that contained lower amounts of chemical additives. However, the label does not guarantee that products are free of natural rubber latex. As such, these products may **not** be suitable for individuals with a natural rubber latex protein allergy.

When products are labeled "non-latex" or "latex-free" they should not contain natural rubber latex proteins. However, they may contain chemical

additives, which may also trigger a reaction such as allergic contact dermatitis. Manufacturers or suppliers should be contacted to answer questions on rubber chemical additives and the natural rubber latex protein content of their products.

Do I have to wear latex gloves to comply with universal precautions?

Gloves do not have to be made of latex to protect you from blood and body fluid exposure. Manufacturers have developed latex-free medical and surgical gloves which meet and sometimes exceed the protective abilities of latex gloves. Such glove materials include thermoplastic elastomer, vinyl, and nitrile. Contact the manufacturer for technical specifications detailing whether a product contains chemical additives or trace amounts of latex.

If I am pregnant, am I at greater risk of developing a latex allergy?

There are no published studies indicating that pregnancy is associated with increased risk of developing a latex allergy. Risk factors that have been found to be associated with latex allergy are atopy (i.e. predisposition toward developing certain hypersensitivity reactions, such as hay fever, asthma, or chronic urticaria, upon exposure to specific antigens) and the degree of latex exposure[6]. If you have a confirmed latex allergy, ensure that your obstetrician is aware of your condition and does not use latex products during medical visits and /or during labour.

References - Page 22.

Reducing your Risk of Exposure

There are a variety of actions that healthcare workers who have an ongoing exposure to natural rubber latex can take to reduce the risk of exposure.

- Use latex-free gloves
- If a latex-free alternative is not available, choose gloves that are powder-free and which contain low-protein content
- When wearing latex gloves, do not use oil-based hand creams or lotions unless they have been shown to reduce latex-related problems
- Wet wipe work areas potentially contaminated with latex dust
- Learn to recognize the symptoms of latex allergy: skin rashes, hives, flushing, itching, eye or sinus symptoms, asthma, and shock
- If you suspect you are experiencing symptoms of latex allergy, avoid direct contact with latex gloves or other latex products until you have seen a physician who has experience in assessing and treating such conditions
- Whenever possible, find and use latex-free alternatives for products that you use regularly
- Remember to limit your exposure to latex outside of work as well

If you have a latex allergy, consult your physician about the following precautions: avoiding contact with latex gloves and products, avoiding areas where you might inhale the powder from gloves worn by others, and wearing a medic alert bracelet.

Latex Database

The Latex Database, developed by the Occupational Health and Safety Agency for Healthcare in BC, is a searchable database of products found in healthcare workplaces. The database uses simple forms and searches, which can be combined in a variety of ways. It provides information about the latex content of products, as well as latex-free alternatives.

The database is a free online service, and is available to all healthcare workers in British Columbia.

www.ohsah.bc.ca/latex

Or visit OHSAH at **www.ohsah.bc.ca**, and go to *Online Resources*.

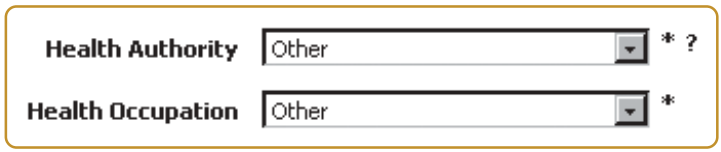
If you have questions about the Latex Database, please contact OHSAH:

604.775.4034
1.800.359.6612
webmaster@ohsah.bc.ca

How to use the Latex Database

Select Health Authority & Occupation

Select your health authority and health occupation. If neither applies, select 'Other'.



Search Options

If you know one of the following: (a) product name, (b)manufacturer product code, or (c) manufacturer name, enter it in the corresponding box. Then click 'Search'.

You may also conduct your search using multiple fields. Fill in the appropriate fields, while also selecting the ‘and’ option. Then click ‘Search’.

Example 1: If you know the product name is ‘Product X’, and the manufacturer product code is 3152, the form would look like this:

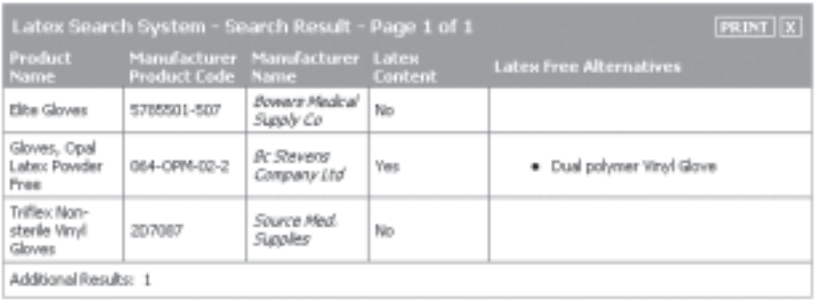
Example 2: If you know the manufacturer and the product name, enter the name of the product, select the ‘and’ option, then enter the name of the manufacturer. Then click ‘Search’.

Please note that searches are **not** case-sensitive. However, you must have the correct spelling when performing searches.

How to use the Latex Database

Search results

Search results appear in a new window. Results display the product name, manufacturer product code and name, and whether or not the product contains latex. If a latex-free alternative exists, it appears in the far right-hand column.



Latex Search System - Search Result - Page 1 of 1 PRINT X

Product Name	Manufacturer Product Code	Manufacturer Name	Latex Content	Latex Free Alternatives
Elite Gloves	5785501-507	*Bowers Medical Supply Co*	No	
Gloves, Opal Latex Powder Free	064-OPM-02-2	*Bc Stevens Company Ltd*	Yes	• Dual polymer Vinyl Glove
Triflex Non-sterile Vinyl Gloves	207087	*Source Med. Supplies*	No	

Additional Results: 1

When you point your mouse at the manufacturer name, the contact details for that manufacterer will be displayed. If a latex-free alternative exists, pointing the mouse at the name of the product will bring up contact details for the product manufacturer.

To perform a new search, simply close the search result window, and start over on the search screen.

Customize your Search

If you are already familiar with the Latex Database, you may desire to further customize your search. You can do this by selecting different options that limit and narrow your search.

Contains Select this option if you know a part of the name of a product (e.g. if you know the product name contains 'X').

Equals Select this option if you know the exact information for that field (e.g. if you know the product name is definitely 'Product X').

Begins with Select this option if you know how the field begins (e.g. entering 'Ab' in the field, if the manufacturer name is 'Abbott').

Ends with Select this option if you know how the information in that field ends (e.g. if you know the product name ends with 'X').

References and Further Information

Occupational Health and Safety Agency For Healthcare In British Columbia (OHSAH)

#301-1195 West Broadway
Vancouver BC, V6H-3X5
Phone: 604.775.4034
Toll-free: 1.800.359.6612
Fax: 604.775.4031
www.ohsah.bc.ca

Canadian Centre for Occupational Health and Safety

135 Hunter Street East
Hamilton ON L8N 1M5
Phone: 1.800.263.8466
www.ccohs.ca

Workers' Compensation Board of British Columbia

P.O. Box 5350 Stn Terminal
Vancouver BC, V6B 5L5
Phone: 604.276.3100
Toll-free: 1.800.621.7233
www.worksafebc.com

A.L.E.R.T., Inc.

American Latex Allergy Association
P.O. Box 13930
Milwaukee, Wisconsin 53213-0930
Phone: 888.972.5378
www.latexallergyresources.org

National Institute for Occupational Safety and Health (NIOSH)

Centers for Disease Control and Prevention (CDC)
Hubert H. Humphrey Building
200 Independence Avenue, S.W.
Washington, D.C. 20201
Phone: 800.35.NIOSH (800.356.4674)
www.cdc.gov/niosh

Johns Hopkins Medical Institution

615 North Wolfe Street
Baltimore, MD 21205-2179
Phone: 410.955.1680
www.jhu.edu

American Nurses Association

600 Maryland Avenue, S.W., Suite 100 West
Washington, D.C. 20024
Phone: 1.800.274.4262
www.ana.org

Occupational Safety and Health Administration (OSHA)

U.S. Department of Labor
OSHA Coordinator for International Affairs
200 Constitution Avenue
Washington, D.C. 20210
1.800.321.OSHA
www.osha.gov

References and Further Information

FAQ References

1. Di Lorenzo, G., F. Vitale, et al. (2002). "Prevalence of latex sensitization in health care workers of a general hospital in Palermo, Sicily." J Investig Allergol Clin Immunol 12(2): 114-9.

2. Grzybowski, M., D. R. Ownby, et al. (1996). "The prevalence of anti-latex IgE antibodies among registered nurses." J Allergy Clin Immunol 98(3): 535-44.

3. Liss GM et al. (1997) "Latex allergy: epidemiological study of 1351 hospital workers." Occupational and Environmental Medicine 54(5):335-42.

4. Sussman, G. L. and D. H. Beezhold (1995). "Allergy to latex rubber." Ann Intern Med 122(1): 43-6.

5. Verna, N., L. Di Giampaolo, et al. (2003). "Prevalence and risk factors for latex-related diseases among healthcare workers in an Italian general hospital." Ann Clin Lab Sci 33(2): 184-91.

6. Chen, F. C., D. von Dehn, et al. (1999). "Atopy, the use of condoms, and a history of cesarean delivery: potential predisposing factors for latex sensitization in pregnant women." Am J Obstet Gynecol 181(6): 1461-4.

National Institute for Occupational Safety and Health. Latex Allergy: A Prevention Guide. DHHS (NIOSH) Publication No. 98-113. www.cdc.gov/niosh

Occupational Health and Safety Agency for Healthcare (OHSAH) in BC

Suite 301 - 1195 West Broadway, Vancouver, BC V6H 3X5
phone: 604.775.4034 toll free: 1.800.359.6612
fax: 604.775.4031 web: www.ohsah.bc.ca