What is a Chemical Allergy?

It’s itchy • It’s painful • It’s inconvenient – and incapacitating • It’s unattractive • It’s embarrassing

And now, it’s totally unnecessary.

Ansell
Chemical Allergies are Affecting the Workplace.

A chemical allergy is an expansive allergic condition which represents approximately 30% of occupationally-induced skin diseases – and it is the second largest occupational disability reported to OSHA.

Most allergy management programs concentrate on the understanding and treatment of latex protein allergy. However, chemical allergy, also referred to as allergic contact dermatitis, remains an even more pertinent cause of disability and loss of work.

Allergic contact dermatitis brings a greater risk of bloodborne pathogen infection, because the body’s most efficacious barrier – intact skin – becomes compromised. The breakdown of the dermis may also permit the passage of latex proteins into the body, thereby facilitating latex protein hypersensitivity in some individuals.
A chemical allergy is due to an immunological reaction to a residual chemical leached from finished glove products.

The chemical involved penetrates the skin, resulting in vesiculation, erythema, swelling, cracking and itching of the skin at the site of contact. This dermatitis frequently extends beyond this area of contact (e.g. the forearm in a healthcare provider wearing a glove). The response is delayed rather than immediate, usually occurring 6-48 hours after initial contact, although symptoms can last up to 4 days. Continued exposure may lead to chronic dermatitis manifested as dry, irritated, cracked, pruritic skin with erythema. Allergic contact dermatitis (a chemical allergy) is more common than latex protein allergy, and it may precede latex protein allergy in up to 40% of individuals with latex protein allergy.
Chemical residuals in gloves are frequently responsible for the development of chemical allergies. However, over **80%** of reported glove associated contact dermatitis is attributed to chemical accelerators.

The chemicals used in the manufacture of gloves fall into broad classifications including: accelerators, accelerator activators, stabilizers, antidegradants, retarders, fillers and extenders. It is the accelerator group of chemicals (especially thiurams and carbamates) that induce the majority of the skin dermatitis reactions and to a lesser degree the thiazoles, aldehydamines and guanidines.

Of the total healthcare worker population, clinical evidence shows latex allergies representing up to **12%**, while chemical allergies represent up to **30%**, with **80%** caused by chemical accelerators.
Will Non-Latex Gloves Stop Chemical Allergy Reactions?

**F**act

No. Chemical accelerators are generally used in the manufacturing of natural rubber latex (NRL) and non-latex (synthetic) gloves.

In research conducted at the American 2010 Association of periOperative Registered Nurses (AORN) Annual Congress, **53.9%** of 954 respondents indicated that staff continued to experience allergy issues even when they switched to non-latex gloves.

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Do you or anyone at your facility continue to have allergy issues, even though you or they have switched to non-latex gloves?

Statistics based on 954 respondents

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The **world leader in hand barrier protection** for the healthcare industry, has made **fighting allergies** a priority.
Are Chemical Allergies Recognized?

**FACT**

No. A significant percentage of OR nurses surveyed at the AORN Annual Congress in March 2009, and again in March 2010, demonstrated they did not know about chemical allergies.

March 2009 quantitative research indicated that 39% of 1,125 survey participants did not know what a chemical allergy was.

March 2010 quantitative research showed that 52.7% of 942 participants did not know what a chemical allergy was.

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**Do you understand what a Type IV chemical allergy is?**

**Statistics based on 1,125 respondents**

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**Statistics based on 942 respondents**

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AORN 2009

AORN 2010
What are the Main Chemical Accelerators?

There are three main classes of chemical accelerators: thiurams, mercaptobenzothiazoles (MBT’s), and dithiocarbamates (carbamates) which are generally used in the manufacture of gloves, either individually or in combination.

The residues from these accelerators have become a major concern because of their ability to sensitize users and elicit chemical allergic reactions. It is this group of chemical accelerators (especially thiurams and carbamates) that induce the majority (80%) of chemical allergies.

**Thiurams**
The universal vulcanizing agent for rubber is sulfur, but sulfur donors, such as thiurams, are often more efficient. Formulations containing thiurams allow manufacturers to produce gloves at higher outputs, thus reducing the overall cost of the gloves. Thiurams are most commonly regarded as the primary cause of chemical allergy.

**Dithiocarbamates / Carbamates**
Dithiocarbamates absorb sulfur and carry it into the glove material to facilitate cross-linking and curing. There are more than 34 types of these compounds. They contain zinc, which is important to the solubility of the accelerator in natural rubber and synthetic rubber, and its ability to react with sulfur.

**Mercaptobenzothiazoles (MBT’s)**
MBT’s react well with zinc, assisting with the cross-linking of the sulfur bonds and adding tensile strength to the glove. The incidence of sensitization to this group of compounds is lower than other accelerator compounds.
Why are Chemical Accelerators Used?

Chemical accelerators used in the manufacture of NRL and synthetic medical gloves transform the original raw liquid state into a very thin, strong and elastic glove film.

Chemical accelerators are used because they:

- Provide elasticity (stretch) to the glove.
- Allow cross-linking of the glove material to give strength to the glove.
- Give integrity to the glove material during use.
- Stabilize the glove material for long term storage.

However, Ansell’s innovative technology has led to the development of accelerator-free gloves with all of the same barrier properties as gloves using accelerators.
Do Other Factors Contribute to Chemical Allergic Reactions?

Yes. Irritant contact dermatitis, a pre-existing skin condition, contributes to chemical allergic reactions.

Irritant contact dermatitis is caused by a number of factors such as frequent hand washing, aggressive scrubbing techniques and inadequate hand drying. This irritation is an important cofactor in the induction of allergic contact dermatitis.
Are Chemical Allergies Manageable?

Yes. The key to managing allergies and adverse glove reactions in healthcare workers and patients lies in correct symptom recognition and appropriate action.

Healthcare workers should be encouraged to report any symptoms. Individuals experiencing recurrent or persistent dermatitis should consult with their doctor in order to establish a specific diagnosis. A diagnosis is made by a medical history, physical exam and patch testing with the offending glove chemicals.
Can You Still Work?

**FACT**

Yes. Most workers who have allergic contact dermatitis can return to work.

Glove users can help reduce the risk of allergic contact dermatitis/chemical allergy by:

1. Minimizing/eliminating contact with the causative agent.
2. Selecting gloves that are manufactured without the causative agent.
3. Instituting a regular skin care regimen to keep hands healthy, as healthy skin is the first line of defense against infection.

The first challenge when it comes to chemical allergies is understanding and recognizing them.
Are there Costs Associated with Occupational Skin Irritations?

FACT

Yes. Estimated annual costs are $1 billion and include lost work days and lost productivity associated with occupational skin irritation. The mean cost-per-dermatitis disability claim was found to be $3,552. This cost includes total temporary disability, medical treatment, partial permanent disability, and vocational rehabilitation. Also affecting productivity is the documented average disability time of 23.9 days.

Although the cost of gloves that protect from natural rubber latex and chemical allergies may initially seem higher, facilities may actually cut long-term costs by using gloves that are accelerator-free and latex-free. Visit AnsellProtects.com to calculate your facility’s financial risk for allergic contact dermatitis.
What Can an Employer Do to Protect Healthcare Workers from Chemical Allergies?

The majority of costs associated with Type IV allergies are preventable and solutions are available, reasonable, and accommodating! Employers can provide superior medical and surgical gloves that are accelerator-free.

Ansell has recognized allergic contact dermatitis as a threat and concern to our customers. Today, only Ansell provides premium medical and surgical gloves that are accelerator-free and latex-free.

Derma Prene® Ultra Surgical Gloves
Derma Prene® Ultra powder-free, neoprene surgical gloves are accelerator-free, which means the formulation is absent of chemicals (thiurams, MBT’s, and carbamates) known to cause chemical allergies. Made of a unique non-latex neoprene formulation, Derma Prene® Ultra is also safe for latex allergic professionals and patients.

Micro-Touch® NitraFree™ Examination Gloves
Micro-Touch® NitraFree™ nitrile examination gloves are manufactured without sulfur-based chemical accelerators,* helping to protect against chemical allergies. Made of synthetic nitrile, Micro-Touch® NitraFree™ also provides protection for those allergic to latex.

*Does not contain any sulfur-based accelerators such as thiurams, carbamates, thiazoles, guanidines or thioureas.
Ansell has a rich history in medical and surgical glove innovation, with almost a century of industry milestones and manufacturing breakthroughs.

Ansell’s efforts to address chemical allergies are yet another part of our ongoing commitment to provide solutions that meet very specific gloving needs.

**Ansell recognizes that chemical allergies may:**

1. Predispose some individuals to even greater risk of bloodborne pathogen infection as chemical allergies may compromise intact skin.

2. Break down the dermis, permitting the passage of latex proteins into the body, thereby facilitating latex protein hypersensitivity in some individuals.

3. Lead to the potential cause of disability and loss of work.

We also recognize that healthy intact skin plays a very important role in prevention of chemical allergies.

Ansell is the only glove manufacturer to provide premium medical and surgical gloves that are accelerator-free and latex-free. We are continually redefining our production techniques and formulations to provide products that promote the highest degree of safety and efficacy.

Ansell’s gloves meet or exceed ASTM Standards and are manufactured to quality management systems of ISO 9001, ISO 13485, FDA-QSR, and CE Certification.

Ansell provides the healthcare industry with education and awareness programs to recognize and minimize the effect of chemical allergies. An in-service program can be scheduled at your facility to help educate your staff on chemical allergies.
The world leader in hand barrier protection for the healthcare industry, has made fighting allergies a priority.

References

American Dental Association; Association Report – The Dental Team & Latex Hypersensitivity; JADA Vol. 130, February 1999
CDC/NORA (National Occupational Research Agenda)
EHS Today. Dealing With Dermal Allergies and Skin Reactions. Feb 1, 2000
EHS Today. Saving Careers with New, Non-Allergenic Gloves. Sep 24, 2002
Yip ES. Comments to the Maine legislature on proposed prohibition of sale of non-sterile latex gloves. 2003.

Note - All financial information and healthcare worker statistics are derived from USA information as described in various references (sources), as stated above. Similar information was not currently available in Canada.
At Ansell, we understand, anticipate and respond to your medical and surgical glove needs. We are committed to protecting healthcare workers and patients with the safest, most comfortable and most effective gloves available today.