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CONTACT DERMATITIS



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Contact dermatitis is a term that describes an adverse reaction of the skin that is caused by direct contact with a chemical in the environment. It is a common inflammation of the skin that is caused by exposure to an irritant or to an allergenic substance.

Irritant contact dermatitis comprises 75-80% of all cases of contact dermatitis and is caused by direct injury to the skin by the chemical. Allergic contact dermatitis is mediated by the immune system and requires previous exposure, or sensitization, to a particular chemical. Allergic contact dermatitis (ACD) comprises the remaining 20-25%

cases of contact dermatitis. Irritant contact dermatitis is one of the most common of all skin maladies and can be caused by an almost infinite number of naturally occurring and man-made substances.

Common causes of irritant contact dermatitis include acids, detergents, solvents, and soaps. (See **TABLE 1**) ACD on the other

hand has a limited number of allergenic chemicals known to be capable of eliciting an immune response. The most common causes of ACD in the United States include plants of the Rhus genus (poison ivy, poison oak, poison sumac), nickel (metal snaps on clothing and jewelry), and rubber compounds (as in latex products for example). **TABLE 2** lists some common allergenic chemicals.



Figure 2-Irritant contact dermatitis



Figure 1 - Allergic contact dermatitis - Paraben mix in sunscreen

A universal feature of contact dermatitis is itching. Development of an erythematous papular or vesicular (eczematous) rash usually occurs between 4-72 hours after exposure to the causative chemical. The diagnosis of contact dermatitis is based on the appearance of the rash in a localized distribution combined with a history of exposure to an irritant or allergenic substance. The distribution of rash is key to the diagnosis. Most cases of irritant contact dermatitis involve the hands due to frequent washing with harsh soaps, for example. A rash involving the wrists, earlobes and neck may suggest ACD to nickel in jewelry.

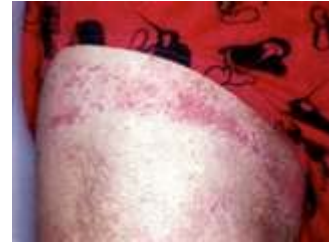


Figure 3-Irritant Contact Dermatitis to Latex (rubber chemicals)

The patch skin test is the most useful tool in helping to confirm a diagnosis of ACD. Patch testing helps to document allergic sensitization to a suspected substance. The testing involves the application to the back of a panel of chemicals known or suspected to cause ACD (the T.R.U.E. test panel of standardized allergens, **TABLE 3**).



Figure 4-Allergic Contact Dermatitis - Lanolin in Facial Cream

The patches are removed after 48 hours with the application sites reviewed at 48 and 72 hours for signs of development of a rash to a particular chemical. Any positive test result should be correlated clinically with the history. The chemicals that caused positive test results should be avoided.

Treatment of contact dermatitis involves the use of topical, and rarely, oral corticosteroid therapy to decrease the inflammatory skin reaction. Lubricants such as petrolatum ointments or fragrance-free moisturizing lotions help relieve dryness and itchiness. Antihistamine therapy may also be useful in relieving itching, secondary to sedative effects. Occasionally, antibiotic therapy is necessary to treat a secondary bacterial infection of the skin. However, the only “cure”

for contact dermatitis is avoidance of the chemical exposure.



Figure 5-Possible irritants for allergic contact dermatitis

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Table 1 - Common Skin Irritants
Soaps, detergents
Disinfectants
Solvents, degreasers
Oils, greases
Plastic resins
Paints, inks, varnishes
Glue, adhesives
Gasoline, diesel and jet fuels
Metalworking fluids
Dust, dirt, sewage
Cement, mortar, plaster
Fiberglass
Acids, alkalis
Insects, fruits, vegetables
Grasses, weeds, shrubs
Shampoos
Permanent wave solutions
Pesticides, herbicides, fungicides
Fertilizers

Table 1-From Manual of Allergy and Immunology Fourth Edition Table 8.5., pg 176

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Table 2 - Common Contact Allergens	
Plants <i>Rhus</i> Poison Ivy Poison oak Poison sumac <i>Compositae</i> Chrysanthemums Ragweed Liverwort Feverfew <i>Primula</i> <i>Primula abconica</i> Tulips Tulip bulbs <i>Lichens</i> <i>Frullania</i> Woods Rosewood Pine Cocobolo Metals Nickel Chromate Cobalt Gold Mercury Rubber chemicals Thiurams Mercapto compounds Carbamates p-Phenylenediamine antioxidants	Plastic resins Epoxies Acrylics Phenolics Formaldehyde resins Hardeners, curing agents Organic dyes p-Phenylenediamine Color developers Textile dyes Blocide preservatives Formaldehyde Quaternium 15 Imidazolidinyl urea Chloroisothiazolinone p-Chloro-m-xyleneol Parabens Topical medications Neomycin Bacitracin Thimerosal Benzocaine Miscellaneous Fragrances Colophony (rosin) Ethylenediamine di-HCl

Table 2 - From Manual of Allergy and Immunology Fourth Edition Table 8.6, pg 177

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T.R.U.E. Test Panel of Standard Allergens	
SUBSTANCE	SOURCE
Nickel sulfate	Metal objects
Wool alcohols (lanolin)	Ointments, creams, lotions, soaps
Neomycin sulfate	Antibiotic creams, lotions, ointments
Potassium dichromate	Cement, industrial chemicals
Caine mix (benzocaine, tetracaine hydrochloride, dibucaine hydrochloride)	Topical anesthetic medications
Fragrance mix	Toiletries, perfumes, flavorings
Colophony	Adhesives, sealants, pine oil cleaners
Paraben mix	Cosmetics, skin creams, paste bandages
Negative control	
Balsam of Peru	Resin used in cosmetics, perfumes, flavoring agent in cough syrups, lozenges, chewing gum, and candles
Ethylenediamine dihydrochloride	Stabilizer, emulsifier, and preservative in topical fungicides, topical antibiotics, eye drops, and nose drops
Cobalt dichloride	Metal-plated objects and costume jewelry
<i>p</i>-tert-Butylphenol formaldehyde resin	Waterproof glues, leather goods
Epoxy resin	Adhesives, surface coatings, paints
Carba mix	Stabilizer, in rubber products, pesticides, glues
Black rubber mix	Antioxidant and antiozonate in almost all black rubber products (e.g., tires, hoses)
Cl +Me—isothiazolinone	Antibacterial preservative in shampoos, creams, lotions, and other skin care products
Quarternium-15	Preservative in shampoos, lotions, soaps, and other skin care products
Mercaptobenzothiazole	Vulcanization accelerator used in most rubber products and some adhesives
<i>p</i>-Phenylenediamine	Permanent and semi-permanent hair dyes
Formaldehyde	Building materials and plastics industry
Mercapto mix	Accelerators found in rubber products
Thimerosal	Mercury-containing preservative in cosmetics, nose drops, and eardrops
Thiuram	Antimicrobials and antioxidants found in rubber products

Table 3 - From Manual of Allergy and Immunology Fourth Edition. Table 8.8., pg 181