

Contact Dermatitis Alternatives 2004

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One of the most important aspects of treating a patient with allergic contact dermatitis is thorough patient education. When a relevant allergen is identified by patch testing, individualized patient counseling is necessary to aid the patient in avoidance. While patch testing with extended series of allergens is available in some specialized centers, most dermatologists and allergists rely on commercial patch testing kits. While such kits are easy to apply, appropriate patient counseling may be quite difficult, although no less important. This article focuses on information to aid physicians when counseling patients who have undergone such patch testing.

True Test is the first commercially available, ready-to-use patch test kit in the United States and Europe. This kit has made patch testing practical in the private practice setting. The product consists of 23 allergens and allergen mixes incorporated onto ready-to-apply strips, making it easy to apply.¹ Among dermatologists who perform patch testing, most use this commercial patch test kit.²

However, the limitations of this particular series of allergens are recognized. False-negative findings may occur when testing with fragrance, thiuram, and carba mix allergens in the True Test system, as discrepancies have been seen between these True Test allergens and these allergens applied in Finn chambers.³ In addition, a limited series of allergens does not adequately cover the unique exposures of each patient, and it is recognized that larger series of allergens can enhance accurate diagnosis of allergic contact dermatitis.^{4,5} Cohen et al. evaluated patch testing results using a standard series and an expanded series of allergens. The 20 allergens of the standard series were those available in the United States, and 18 of these (not necessarily in the identical form) are found on the current True Test. When adjusted for clinical relevance, only 15.7% of patients were completely evaluated with the standard series.⁶ It is recognized then, that many patients will require referral to specialized centers for further patch testing with a more extensive series of allergens.

Despite these limitations, the test kit does prove useful, and is often used by the general dermatologist in the initial work-up of a patient with suspected contact dermatitis. The availability of such a test kit encourages many physicians in practice to think of contact dermatitis more frequently and to identify patients for whom a work-up for allergic contact dermatitis will be beneficial. In fact, many dermatologists in a recent survey felt that they were patch testing more patients now as compared to when the True test was not available.² The test itself is easy to apply. The most difficult part of the testing process lies in appropriate counseling of those patients with a positive reaction.

The keystone of counseling is avoidance of relevant positives. Several excellent sources are available that discuss allergens in great depth,^{5,7} including sources of exposure. This type of information is absolutely crucial for patients.

However, it is also very helpful for the patient to know where an allergen is NOT found. This article focuses on specific alternatives for the patient with a positive reaction. Our goal is to provide information for the general dermatologist who may utilize this test kit, and ultimately to make the task of avoidance easier for the patient.

There are, however, several limitations to the information provided on alternatives. Some of the information on product composition is considered proprietary information, and thus is not released by the company. In these cases, we rely on statements from the company specifying that a particular allergen is absent from their product.

In addition, product composition changes frequently, and information that is correct at the time of publication may quickly change. Products may also be discontinued or no longer available. While every effort is made to provide up-to-date product information, we advise patients to carefully read the ingredient list of all purchased products.

Lastly, this article is meant to be a fast and easy reference, not an exhaustive list of the many products available to patients suffering from dermatologic disease. There are many products, manufacturers, and retailers available to our patients, and more retailers are catering to specialty markets applicable to dermatology, such as chemical-free clothing and nickel-free jewelry. With the increased ability of small specialty companies to reach a wider market through the internet, we encourage our patients to seek out these additional sources of specialty products. However, we do not investigate, qualify, or certify any of these companies. As always, we counsel our patients to use caution and to always verify a retailer's business practices before providing any information.

For those physicians seeking a more thorough list of alternatives, the Contact Allergen Replacement Database (CARD) is an excellent resource. CARD was created by Dr. James Yiannias and is provided free of charge to members of the American Contact Dermatitis Society. (www.contactderm.org) This database, updated yearly with information provided by manufacturers,⁸ can be utilized to provide information on a product's ingredients. For a patient allergic to a specific allergen, such as fragrance, CARD can provide a list of products that are free of that allergen, taking into account cross-reactors. Since many categories of personal care products are included in the database, such information can be invaluable for the patient.

In this article, the product recommendations emphasize brand name products readily available in drugstores. For those products harder to obtain, we provide contact information for retailers.

Some of the information is presented in tabular form for ease of use. Table 1 is a useful reference for patients when choosing cosmetics and personal care products. It lists products either free of, or with limited numbers, of all of the cosmetic allergens found on the True Test, including fragrance, parabens, lanolin, Kathon CG, colophony, and the formaldehyde-releasing preservatives.

Table 2 provides information on fragrance-free products in several additional categories. A variety of manufacturers are included in these tables to provide patients with more choices.

True Test Allergens (allergens are listed alphabetically)

Balsam of Peru

Balsam of Peru is a flavoring substance closely related to many fragrances. It is obtained from the bark of balsam trees, and structurally contains over 200 constituents. These are grouped into four major aromatic groups: vanilla, rose oil (benzoates), cinnamon, and clove.⁹ Benzoates include benzyl benzoate, benzoic acid, and benzyl alcohol. Among the cinnamon group, specific constituents include cinnamic acid, cinnamic alcohol, and cinnamic aldehyde.

Since balsam of Peru is a screening ingredient for fragrance allergy, persons allergic to this substance should follow the advice reviewed in the section on fragrance. They may also have oral and perioral symptoms due to flavoring ingredients that cross-react with balsam of Peru.

Items with these flavoring ingredients include sweets (bakery goods, candy, gum, soft drinks, ice cream), condiments (ketchup, chili sauce, pickle relish), liqueurs (vermouth, bitters), products with citrus peels (marmalade, juice with pulp), and perfumed teas or tobaccos. Other products to avoid are cough medicines, lozenges, and mouthwashes.⁵

Toothpastes are another common source of cinnamic aldehyde. Toothpastes free of this flavoring include Aim, Crest Gum Care, Crest Multi Care, Mentadent, Pepsodent, Ultrabrite Whitening,⁵ and Tom's of Maine peppermint.

Black rubber mix

Although most cases of contact dermatitis due to ingredients in the black rubber mix are occupational, this substance is ubiquitous in black rubber articles. Items of clothing may prove problematic, including shoes and boots, underwear elastic, and stockings. Other exposures include tires, black rubber gloves, dental tips, and others.¹⁰ In general, avoidance of contact with black rubber is the best strategy.

Sports equipment such as scuba masks, squash balls, and windsurfing boards may also pose a problem. Some companies manufacture sporting equipment made of other materials such as silicone or vinyl derivatives; these are listed in the section on rubber accelerators.

Caine mix

Benzocaine is a common topical anesthetic of the ester type. It is found in topical products for burns, sunburns, insect bites, poison ivy and oak, anti-itch products, and hemorrhoid products.

Table 3 lists products that contain benzocaine and the corresponding alternatives free of benzocaine.

Persons allergic to benzocaine should also avoid ester anesthetics found in ophthalmologic products or in local anesthetics. The first group includes products with tetracaine or proparacaine. The second group includes procaine (Novocain), tetracaine (Pontocaine), propoxycaine (Ravocaine), and chloroprocaine (Nesacaine). Amide local anesthetics such as lidocaine (Xylocaine), prilocaine (Citanest), and bupivacaine (Marcaine) are acceptable.

Persons allergic to benzocaine may also experience cross-reactions with para-phenylenediamine in hair dyes, PABA and PABA derivatives (such as Padimate O) in sunscreens, azo dyes in clothing, and topical sulfonamides.

Carba mix, mercaptobenzothiazole, mercapto mix, thiuram mix

These four testing materials are rubber accelerators and are found in many common rubber products, such as rubber gloves, shoe insoles, and rubber elastic in clothing. Rubber accelerators are found in many other settings as well, such as contact with sports equipment, where the prevalence of allergy to these accelerators is relatively high.¹¹

Recommendations for alternatives are especially important in persons who use gloves, either for household or medical use. In the case of nonsterile gloves for household use, disposable vinyl gloves and heavy-duty vinyl gloves are free of rubber accelerators, and may be used during “wet work.” Cotton gloves are often used, but elastic cuffs should be avoided.

The proper selection of gloves for healthcare workers, although more difficult, is of particular importance. Rubber accelerators are an important cause of occupational contact dermatitis in healthcare workers,¹² and rubber gloves are an important route of sensitization. Studies have demonstrated increases over time in the incidence of thiuram-positive patch tests among healthcare workers with hand dermatitis.¹³

Unfortunately, gloves that are both free of rubber accelerators and are safe for medical use, including adequate protection against blood-borne pathogens, are often far more expensive than standard rubber latex gloves. Most vinyl examining gloves are not acceptable alternatives in a high-risk medical setting, as most do not provide reliable protection against HIV virus.¹⁴ Some procedural and sterile surgical gloves are made of synthetic materials that are free of both latex and rubber accelerators. An example is the Elastypus glove, made of a synthetic co-polymer and shown to provide protection against blood-borne pathogens. (Allerderm 1-800-365-6868 allerderm.com)

A number of other gloves, both latex and synthetic, are free of some of the rubber accelerators. When allergy to a specific rubber accelerator is documented, these gloves are suitable alternatives. Such information may be difficult to locate; however, Table 4 provides some specific information on medical gloves. Allerderm provides easily accessed information on medical glove content through their website. (allerderm.com) The remainder of the table is based on information provided in 2002 by one manufacturer, Kimberly Clark, to Dr. Wendy Huber, chair of Kaiser Permanente’s National Latex Alternative Products Cross-functional team. (personal communication, W. Huber MD)

Shoe insoles are another route of exposure. Insoles free of rubber accelerators include all leather, wool, or cork insoles. Insoles made of newer synthetic materials are another alternative, such as polyethylene foam shoe insoles made by Superfeet (800-634-6618, superfeet.com). Advice on avoidance of shoe adhesives (including those with rubber accelerators) is discussed in the section on p-tertiary-butylphenol.

Sports equipment is another avenue of rubber exposure. Rubber grips on rackets and golf clubs may be replaced with leather or vinyl grips. Newer synthetic polymers are also available, and may be better tolerated by some athletes. Examples are the synthetic polymer golf grips made by Winn (877-854-7601 www.winn grips.com). Silicone articles may be substituted for some rubber items, such as swim goggles and swim caps made by Speedo (Speedo International Ltd, Nottingham, England). Sports balls made of vinyl derivatives are produced by Hedstrom. (800-765-9665)

Contraceptive devices are yet another source of exposure to rubber accelerators, including condoms and diaphragms. Non-latex condoms free of rubber accelerators include natural skins such as Fourex, Naturalamb, and Lambskin; however, these condoms should be used only for contraception since they do not protect against HIV virus.⁵ Useful alternatives are the newer polyurethane condoms (Durex Avanti condoms, Trojan Supra), which are free of latex and rubber accelerators, are unaffected by lubricants, and provide protection against sexually transmitted diseases.¹⁵

For persons allergic to rubber accelerators, elastic found in clothing often poses a problem. An alternative for rubber elastic in underwear is spandex (lycra). Underwear without elastic is another option, such as button-tab boxers sold through the Vermont Country Store (802-362-8440). A particular brand of Jockey underwear is reported by the company to be free of thiurams, carbamates, and mercaptobenzothiazole. (Jockey Men's Classic Brief Style 9007 white with jacquard woven logo.) For infants, diaper brands Pampers and Luvs use lycra rather than latex rubber to provide the elastic material in the leg area.

In addition to the above information on avoidance of rubber accelerators, many patients are interested in products free of latex. A wealth of information is now available on the many sources of latex exposure and specific alternatives. The American Latex Allergy Association (A.L.E.R.T., Inc.) provides updated information through their website and educational materials (888-972-5378 www.latexallergyresources.org), as does the Spina Bifida Association of America (www.sbaa.org). Latex-free medical supplies may be ordered by patients through Medline (800-950-8585 www.medline.com).

Colophony

Colophony, also known as rosin, is a mixture of compounds derived from pine trees. Although occupational exposures occur, colophony is also found in a variety of common household products. Avenues of exposure include rosin itself, adhesives, home repair products, and personal use products.

Since colophony is found in cosmetics, reading labels is a must. Several components of colophony have been shown to be allergenic, including several

oxidation products of abietic acid. The patient should therefore avoid not only colophony, but also abietic acid and abietyl alcohol in cosmetic products. Abitol (trademark) is a combination of several abietic acid derivatives, and is the commonest modified colophony used in cosmetics.¹⁶ Table 1 lists cosmetic products free of colophony.

Rosin is used by ball players and bowlers as an absorptive powder. The same function may be served by Zeasorb Powder. Although rosin is also used by violinists, there is no clearly acceptable alternative for this purpose.

Colophony is also found in various adhesive tapes, including Scotch tape.⁵ Elmer's Glue-All may be used as a substitute for most of these tapes. BandAid sheer strips can be used for skin wounds since, per the manufacturer, they do not contain colophony.

A common route of exposure to colophony is through its use as an adhesive for shoe parts made from neoprene. Avoidance of shoe adhesives is discussed in the section on p-tertiary-butyl-phenol.

Another source of exposure is home repair products, including items such as caulk, glues, linoleum, polishes, sealants, solder, solvents, varnish and paints. Cross-reactions may occur with turpentine (gum rosin). When using these substances, thick latex gloves may be worn.

Other possible sources of exposure include personal hygiene products. Epilating wax contains colophony. Substitutes include thioglycolate epilating products such as Nair products, Neet products, Nudit products, One Touch products, Better Off facial cream, Palmer's Shave Cream or Lotion, Sally Hansen exfoliating products, or Surgicream.

Several other sources of colophony bear mentioning. Recycled paper may contain colophony, and non-recycled paper should be substituted. Soft yellow laundry bar soap should also be avoided.

Sensitizing derivatives of colophony may also be used in some hydrocolloid wound dressings, including DuoDERM CGF and DuoDERM Extra Thin CGF. The original DuoDerm wound dressing does not contain colophony derivatives, and is safe to use.¹⁷

Epoxy Resin

Most contact allergy to epoxy resin occurs during occupational exposures. In addition to multiple industrial uses, epoxy resins serve as adhesives and are used in the manufacture of some plastics.⁷

In the household, the most likely route of exposure to epoxy would be from adhesives. An alternative to household epoxy glues is Elmer's Glue-All. For situations requiring a stronger adhesive, a cyanoacrylate adhesive such as Krazy Glue can be used.

Ethylenediamine dihydrochloride

Although ethylenediamine has been removed from most topical skin care products, a large number of persons have been previously sensitized to the original version of Mycolog Cream. The Mycolog II Cream available today does not contain ethylenediamine.

Although tincture of merthiolate, a topical antiseptic, does contain ethylenediamine, it is rarely used today. However, several topical antihistamines which cross-react with ethylenediamine remain on the market. These products include Di-Delamine (contains tripeleennamine) and Calamycin Cool and Clear (contains pyrillamine).¹⁸ Zonalon cream, which contains doxepin, is a topical antihistamine that does not cross-react.

Systemic allergic contact dermatitis may occur when patients use oral, intramuscular, or intravenous medications that either contain ethylenediamine or are related structurally. Aminophylline is one such medication, in which ethylenediamine is used to render theophylline soluble. Although this formulation should be avoided by asthmatic patients, other oral theophylline medications are available. If intramuscular injection is required, then dyphylline (Dilor, Lufyllin), a derivative of theophylline specifically free of ethylenediamine, is available.⁵

Patients may also experience systemic contact dermatitis upon ingestion of other ethylenediamines or the related piperazines.¹⁹ The ethanolamine antihistamines may be safely used. Patients should be specifically made aware that some of these antihistamines are available over-the-counter, either alone or as part of combination medications.

Oral antihistamines to avoid include hydroxyzine (Atarax, Vistaril) and cetirizine (Zyrtec). Alternatives that do not cross-react include diphenhydramine (Benadryl) and cyproheptadine (PeriActin).

Many motion sickness products are piperazines, which should be avoided. Examples include meclizine (Dramamine II, Antivert) and buclizine (Bucladin-S). Ethanolamines may be used as an alternative, including dimenhydrinate (Dramamine). Patients should specifically note the difference between Dramamine and Dramamine II.

Other categories of products may also prove problematic, due to the presence of pyrillamine, another ethylenediamine. Menstrual analgesics to be avoided include Midol and Multi-Symptom Pamprin. Pyrillamine is also found in some decongestant/antihistamine combination products, including Rynatan.¹⁹

Formaldehyde

Although formaldehyde is found in a variety of settings, the most common routes of exposure are formaldehyde-releasing preservatives in skin care products and formaldehyde-containing fabric finishes in clothing. Although patch testing with formaldehyde will not detect many persons allergic to textile resins, a positive reaction to formaldehyde along with a suitable history can be suggestive of textile allergy. Since the True Test series of allergens is inadequate screening for most cases of textile allergy, suspected cases that are negative on initial testing should be referred to a patch testing center with a full textile testing tray.

Persons with a positive test reaction to formaldehyde should follow the advice described in the section on Quaternium 15 for avoidance of formaldehyde-releasing preservatives.

Patients who are allergic to fabric finishes face a daunting task. Despite their common usage, garments are not labeled with information about chemical finishes. However, much of the cotton- and rayon-containing clothing in the

United States make use of formaldehyde resins. In general, patients can reduce their exposure by choosing appropriate fabrics, wearing loose-fitting clothing, and washing all items multiple times before use. Fabrics which generally do not use formaldehyde finishes include 100% cotton denim, hemp, silk, linen, wool, tencel, polyester (Dacron, Fortrel, Trevira), acrylic (Orlon, Creslan, Zefran), nylon, and ultrasuede. In contrast, many cotton and rayon clothes, (especially blended fabrics) are likely to contain formaldehyde finishes.

A number of companies today market chemical-free clothing, particularly organic cotton, tencel, and hemp clothing. While organic cotton refers only to the method by which the cotton is grown, many of the retailers who sell such products go a step further and sell items of clothing that are undyed and chemical-free. These companies often market to environmentally aware consumers, and may be found through links from such websites.

(www.greenpages.org, www.organiccottondirectory.net) In recent years, even large retailers have begun to carry chemical-free items; Bed Bath and Beyond (www.bedbathandbeyond.com) carries a line of chemical-free bed linens. Table 5 presents an updated, abbreviated list of companies that include chemical-free clothing and bedding.

Fragrance

Fragrance is the most common cause of allergic contact dermatitis to skin care products and cosmetics. Fragrance allergy is not only quite prevalent, it is often relevant to a patient's skin complaint. In analyzing data from the North American Contact Dermatitis Group, Maouad et al presented findings which took into account both the proportion of the population allergic to the allergen, and the likelihood of relevance as assessed by the clinician. In their study, fragrance mix ranked highest of all the allergens tested, with balsam of Peru, a related fragrance allergen, ranked third.²⁰

The fragrance mix used in the True Test is a mixture of eight of the most common fragrance ingredients causing allergic contact dermatitis. It is estimated that this fragrance mix will identify approximately 80% of persons allergic to fragrance ingredients.²¹ However, this percentage may be lower when using the True Test system, as false-negative findings were reported when compared to testing using Finn chambers.³ A second ingredient on the standard screening tray, balsam of Peru, can also be used to identify some persons with fragrance allergy. This natural extract contains several common substances used in fragrances, and is thought to identify about half of patients allergic to fragrance,²² although the proportion may vary widely, from approximately 20% to 75%.

The person allergic to fragrance faces a formidable task. Although patients immediately associate fragrance allergy with perfume, fragrance is ubiquitous and is found in such diverse items as skin care products, cosmetics, and cleaning agents.

Compounding the difficulties for patients are several other factors related to product labeling. Any product that contains fragrance usually contains a mixture of several different fragrance ingredients. Although labeling of cosmetic

ingredients is required in the United States, the listing of individual fragrance allergens is not required. Labels need only specify “fragrance.”²³ However, even products that do not list fragrance may pose a problem. Some ingredients, such as benzyl alcohol, benzaldehyde, and ethylene brassylate may not be recognized easily as fragrance allergens. Also, ingredients present in less than 1% of the final product may be listed as “and other ingredients”; these other ingredients are often fragrance allergens, and should generally be avoided.²² Over-the-counter drugs may only list active ingredients and thus omit inactive ingredients such as fragrance.

Even products labeled “unscented” or “fragrance-free” may trigger reactions, making the task of avoidance especially difficult for patients. As many dermatologists realize, unscented products often contain masking ingredients. However, even products legally labeled “fragrance-free” may contain fragrance allergens. If fragrance allergens are used in a product to serve another function, such as preservation, they may be included in fragrance-free products. A number of popular brands and products marketed as fragrance-free fall under this category.²³ Patients must also be counseled about all-natural or herbal products; although patients often turn to these, equating “all-natural” with better, these products often contain fragrance allergens.²³

There are several options for patients seeking truly fragrance-free items. CARD, the contact allergen replacement database reviewed earlier in the article, takes into account these related fragrance allergens when providing a list of products that are free of fragrance. Patients may also find that references listing allergenic ingredients (including fragrance) in multiple categories of skin care products are useful.¹⁸ A number of personal care items free of fragrance (such as lotion, cream, cleanser, hair products, sunscreens) are available in the Free and Clear and Vanicream product lines. These can be special-ordered by pharmacies, or are available directly through Pharmaceutical Specialties Inc. (800-325-8232 www.psico.com)

We provide an abbreviated list in Table 1 of personal care products that may be used by those allergic to fragrance. Table 2 lists other categories of fragrance-free products.

Kathon CG

Kathon CG is a relatively new preservative system that initially was used in products designed to be washed off the skin, such as shampoos. Its use has since expanded to leave-on products, such as moisturizers. In North America, Kathon CG has risen in clinical importance from the 1980s to the 1990s, perhaps explained by the increased use of this preservative in the cosmetic industries.²⁰ In Europe, however, the rate of allergy to Kathon CG seems to have stabilized after an initial rapid rise.^{24,25}

Kathon CG is not the term used on labels for skin care products in this country. The component ingredients methylchloroisothiazolinone and methylisothiazolinone are listed instead, usually as a pair of ingredients. Skin care products free of Kathon CG are listed in table 1.

Neomycin sulfate

Neomycin is a frequently used topical antibiotic in the United States. It is the most frequent sensitizer in topical antibiotic preparations.⁷ It is frequently found in ointments containing other antibacterial agents or other topical agents, and is also found in otic and ophthalmic medications. Several aminoglycoside antibiotics, including gentamycin and tobramycin, may cross-react with neomycin. As these antibiotics are also found in otic and ophthalmic medications, patients must avoid these sources of exposure as well. Table 6 lists products to avoid due to the presence of neomycin or cross-reacting antibiotics, along with suitable alternatives in each category. In addition, patients should also avoid all generic triple antibiotic ointments, as these contain neomycin.

Bacitracin is also a common cause of contact allergy. Although bacitracin does not cross-react with neomycin, many products contain both ingredients, and it is important to realize that reactions to combination products may be due to either component.²⁶

Systemic contact dermatitis may occur due to oral ingestion of neomycin, or administration of cross-reacting antibiotics. Several aminoglycoside antibiotics, including tobramycin and gentamicin, fall into this category and should be avoided.²⁷

The safest alternative topical antibiotic for persons allergic to neomycin is mupirocin (available as Bactroban ointment or cream), since this agent rarely causes allergic contact dermatitis. As an alternative, topical 5% erythromycin can be used. This may be formulated by mixing 3 grams of erythromycin powder (available at Gallipot 800-423-6967 to physicians/ pharmacies only) in a small amount of mineral oil and adding to white petrolatum (qsad 60 grams).^{28,10} This mixture rarely causes allergic contact dermatitis.

Nickel and Cobalt

In several studies reporting results of patch testing, nickel is the allergen with the highest reaction rate. This holds true for True Test allergens,¹ and with the larger series of standard allergens tested by the North American Contact Dermatitis Group.²⁹ Exposure to nickel is widespread, as it is found in many metal and jewelry items. Even some coins, such as 1- and 2-euro coins, may release sufficient nickel to be problematic.³⁰ Nickel is often present in items made of inexpensive steel and in costume jewelry alloys. It can also occasionally be present in white gold, 14-carat yellow gold, chrome, bronze, and brass in high enough concentrations to cause reactions in nickel allergic individuals (especially if worn when perspiring).

Persons allergic to nickel can generally tolerate sterling silver, aluminum, 18-carat gold, and platinum. Stainless steel is another alternative. Although stainless steel contains up to 20 percent nickel, the nickel in this substance is bound so tightly that it generally does not cause problems in nickel-allergic persons.⁵ However, stainless steel with a higher sulfur content may release more nickel and thus may elicit reactions in some nickel-allergic individuals.³¹

Retailers have recognized that nickel is an important consideration for some consumers. Accordingly, some products are specifically marketed toward

the nickel-allergic person. Optometry stores frequently sell nickel-free titanium eyeglass frames. Companies such as Simply Whispers (800-451-5700 simplywhispers.com) manufacture nickel-free articles of costume jewelry.³²

In the case of metal objects of unknown composition, patients must realize that appearance alone does not provide information on nickel content. The use of a nickel test kit will help identify objects with high nickel content. Although helpful, it is important to realize that these kits will pick up many, but not all, objects containing nickel. The dimethylglyoxime nickel test kit (available through Delasco 800-831-6273 or Allerderm 800-365-6868) does not harm the object being tested, and identifies the presence of nickel. The patient should purchase returnable items of jewelry or metal objects, test the item at home, and return it if necessary.

In some cases, the patient may wish to continue wearing a particular item of nickel-containing jewelry. Several options are possible. The object can be coated with three layers of clear nail polish. Barrier creams utilizing propylene glycol, petrolatum, and lanolin have been demonstrated to reduce the absorption of nickel through the skin, and may be helpful in milder reactions.³³

More specific measures include the use of chelating agents. Clioquinol (5-chloro-7-iodoquinolin-8-ol, or iodochlorohydroxyquin) is described as the most effective ligand for the prevention of nickel dermatitis.³³ In studies a cream containing 3% clioquinol and 1% hydrocortisone prevented dermatitis when applied under nickel objects such as earrings.³⁴ The topical medication is not recommended in infants and children due to the risk of clioquinol toxicity.³⁵ A cream containing 3% clioquinol with 0.5% hydrocortisone can be obtained from Consolidated Midland (845-279-6108). Other creams containing chelating agents, including DTPA (diethylenetriaminepenta-acetic acid), have shown effectiveness in clinical studies, and may represent another option in the future.³⁶

The patient may also be able to replace an individual component of an item of jewelry, such as the earring post, with a nickel-free jewelry component. (see Simply Whispers above) If contact dermatitis persists, the patient may even have a jeweler add a platinum coating to the inner surface of an item such as a wedding band.

Successful avoidance of cobalt-containing items is closely linked to avoidance of nickel-containing items, as the most common source of exposure to cobalt is nickel-plated objects.⁵ Therefore, testing for and avoiding nickel-containing objects will also prevent most exposure to cobalt. Also, the same measures (using clear nail polish and clioquinol cream) may be effective in preventing reactions to this substance.

Parabens

Parabens are the most common preservatives in use today, since they function well as antimicrobials and are generally non-irritating.³⁷ Several parabens are usually used together, including methylparaben, ethylparaben, butylparaben, and propylparaben. These ingredients are so commonly used that

avoidance of parabens may be quite difficult. Table 1 lists products free of parabens.

Paraphenylenediamine

The most common cause of contact allergy to hair-coloring products is paraphenylenediamine (PPD).³⁸ PPD and its derivatives are the primary coloring agents found in almost all currently available permanent, demipermanent, and semipermanent hair dyes.³⁹

Unfortunately, the alternatives available are not as esthetically pleasing as PPD dyes. These include temporary hair color rinses, vegetable dyes such as henna, and lead oxide dyes formulated to darken grey hair (eg Grecian formula).³⁹ Most shades of Goldwell Colorance Soft Color and Color 'n Care are acceptable alternates. They make use of basic dyes and are available in hair salons that carry the Goldwell line. Highlights are also permissible; these do not contain PPD, as they are bleaching agents rather than dyes. Another alternative is to use the newer temporary color washes which make use of FD&C and D&C dyes; patients with demonstrated allergy to PPD were able to tolerate this type of dye.⁴⁰ Clairol Loving Care is a semi-permanent hair dye which makes use of disperse dyes and is free of PPD and its derivatives. Cross-reactions may on occasion be seen between PPD and disperse dyes, so patients should still use caution.

The patient should be aware that PPD may cross-react with several other substances. These include azo dyes (in textiles, cosmetics, inks), PABA and PABA esters (in sunscreens and other topical products containing sunscreens), benzocaine (and other ester topical anesthetics), and topical sulfonamides.⁴¹

PPD has also been used to dye the skin in the form of newer black henna temporary tattoos.⁴² Traditional henna dyeing of the skin, a practice known as mehendi in India, rarely results in contact dermatitis.

Potassium dichromate

In the routine household setting, the most common exposure to chromates is in tanned leather. Some bleaches, matches, yellow paints, spackle compounds, detergents, and cements also contain chromates.⁵ Occupational exposure may result in severe difficulties in cement workers.

Tanned leather is found in the soft leather uppers on shoes (except some white leather, which is often tanned with formaldehyde). Persons allergic to chromates generally need to wear shoes with non-leather uppers, such as newer hi-tech athletic shoes with synthetic uppers or canvas Keds. Dress shoes with synthetic plastic uppers are free of chromates. Plastic or wooden clogs are also safe.⁷

Hush Puppies brand shoes come in several styles specifically free of chromates. This information is listed in table 7, and has been provided by Hush Puppies.

As an alternative, many white leather shoes can be dyed by a shoe repair store to provide stylish colored shoes without chromates. Some high-quality

leather gloves, briefcases, handbags, and belts may also contain leather tanned with chromates.

p-tert-butylphenol Formaldehyde Resin

This resin, made by reacting formaldehyde with phenol, is used primarily as an adhesive. It is frequently used in the construction of leather products, particularly shoes, and also serves as an adhesive in handbags, hats, belts, and watchstraps.⁷ This adhesive is also used in the repair of leather shoes, and is a major occupational allergen among shoemakers.⁴³

In some cases, alternatives are easy to find; metal watchstraps may be substituted for leather. In the case of shoes, hemp sandals made without glues are one option. (Tomorrow's World 1-800-229-7571; tomorrowsworld.com)

Existing leather shoes may still be used whenever it is possible to replace the shoe adhesive. To replace the adhesive used on the insole, remove the insole, scrape the glue off of both the insole and the exposed shoe surface, and apply a new insole using Elmer's Glue-All. Adhesive in shoe leather uppers, unfortunately, is not as easily removed.

When unsure of which shoe uppers are problematic, patients may perform use tests. Patients are instructed to wear only canvas Keds until all dermatitis resolves, and then add one pair of shoes every two weeks to identify any offending pairs.

Quaternium 15

Quaternium 15 is the most potent of the formaldehyde-releasing preservatives available in skin care products in this country. Persons allergic to quaternium 15 may also be allergic to formaldehyde, which is found on the True Test. Unfortunately, persons allergic to quaternium 15 are frequently allergic to other formaldehyde-releasing preservatives that are not found on the True Test, including imidazolidinyl urea (Germall 115), diazolidinyl urea (Germall II), DMDM Hydantoin (Glydant), and 2-bromo-2-nitropropane-1,3-diol (Bronopol).⁵ Therefore, when using the True Test, it is best to have persons allergic to quaternium 15 avoid all of the formaldehyde-releasing preservatives. Skin care products free of all formaldehyde-releasing preservatives are listed in table 1.

Thimerosal

Although studies indicate a high prevalence of contact allergy to thimerosal, most reactions are not clinically relevant.⁴⁴ This high prevalence rate is likely due to sensitization from the use of vaccines preserved by thimerosal.⁴⁵ However, vaccination with thimerosal is probably relatively safe, even for patients patch test positive. In a study by Audicana et al, more than 90% of allergic patients tolerated intramuscular challenge tests with thimerosal.⁴⁶

Most relevant reactions to thimerosal occur from its use as a preservative in eye solutions (including contact lens solutions), ear drops, and nasal products. Such products free of thimerosal are listed in table 8.

Contact allergy may also occur from the use of thimerosal in mascaras, although it is only used in a few brands. The products listed in Table 1 are thimerosal-free.

Wool alcohols

Lanolin is a moisturizing ingredient derived from the sebaceous secretions of sheep, and lanolin alcohol is the main sensitizing component. Lanolin may also be called wool wax, and lanolin alcohol may also be known as wool wax alcohol or wool alcohol. Patients should avoid products that list any of these ingredients. Other lanolin derivatives do not generally need to be avoided by lanolin-allergic persons. (eg lanolin oil, lanolin acid, etc.)²²

Lanolin is present in a number of popular over-the-counter emollients and other cosmetic products, including some that are frequently recommended by dermatologists for dermatitic skin. It is also found in a few prescription topical steroid creams. Giordano et al demonstrated that lanolin was one of the most frequent contact allergens in children with atopic dermatitis.²⁷

Skin care products and cosmetics free of these lanolin ingredients are listed in table 1.

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Table 1
Products with Few or No True Test Allergens

All products are free of colophony, Kathon CG, thimerosal, Quaternium 15, and other formaldehyde-releasing preservatives

The presence of fragrance, lanolin, or parabens in a product is indicated in parentheses

(F=fragrance, L=lanolin, P=parabens, (-)=none of the above)

Skin and Hair Care (products in alphabetical order)

Moisturizers

Acid Mantle Cream (P)
Aveeno Moisturizing Lotion (F)
Elta Swiss Skin Crème (-)
Epilyt Lotion (-)
Lubrex Lotion (P)
Johnsons Ultra Sensitive Baby Lotion (P)
Vanicream Lite Lotion (-)
Vanicream Skin Cream (-)

Cleansers

Albolene Moisturizing Cleanser (-)
Aveeno Bar (-)
Dove Unscented or Sensitive Skin Bar (F)
Ivory Soap (-)
Neutrogena Original, Dry Skin, Oily Fragrance-Free Cleansing Bars (-)
Oilatum AD (-)
Vanicream bar (-)

Shampoos

Free & Clear (-)
Neutrogena T/Sal (-)
Pentrax (-)
Psoriasis S/A (-)

Conditioners

DHS Conditioning Rinse (-)
Free & Clear Conditioner (-)
Johnson's Kids No More Tangles (F)
White Rain Conditioners; Regular, Moisturizing, Extra Body (F)

Eye Makeup

Eyeliners

Clinique Eye Shading Pencil (-)
Clinique Quik Eyes Eyeliner Pencil (-)
Clinique Quickliner for Eyes Pencil (-)
Clinique Shadowliner Eye Pencil (-)
Estee Lauder Automatic Pencil for Eyes (-)

Mascara

Clinique Naturally Glossy Mascara (P)
Lancome Definicils High Definition Mascara (-)
Lancome Magnicils (P)
L'Oreal Feather Lash Mascara (P)
L'Oreal Lash Out Mascara (-)
Maybelline Ultra Big Lash Mascara (P)

Eyeshadow

Clinique Smudgesicle Eye Shadow (-)
Clinique High Impact Eye Shadow (P)
Lancome Colour Focus Eye Shadow (P)

Facial Makeup

Foundations

Clinique Almost Makeup (F)
Clinique City Stick SPF 15 Workout Makeup (-)
Clinique Clarifying Makeup (F)
Clinique Gentle Light Makeup (P)
Clinique Pore Minimizer Makeup (-)
Cover Girl Fresh Look Makeup (P)
Lancome Palette Mix Foundation (P)
L'Oreal Quick Stick Long Wearing Foundation (-)

Powders

Almay Oil Control Pressed Powder (-)
Clinique Soft Finish Pressed Powder (P)
Lancome Poudre Libre Sheer Loose Powder (P)
L'Oreal Visible Lift Pressed Powder (P)
Revlon Skinlights Face Illuminator Loose Powder (-)

Blushers

Clinique Blushwear (-)
L'Oreal Feel Naturelle Blush (P)
Neutrogena Softcolor Blush (P)
Revlon ColorStay Cheekcolor (P)

Concealers

Clinique Acne Solution Concealing Cream (F)
Clinique Advanced Concealer (P)
Clinique City Cover Compact Concealer (-)
Clinique Concealing Stick (-)
Maybelline Cover Stick (P)
Neutrogena Under Cover Concealer Stick (P)

Lipstick

Almay Amazing Lasting Lipcolor (P)
Clinique Colour Surge Lipstick (-)
L'Oreal Colour Endure Lipcolour (-)
Maybelline Lip Express (P)
Neutrogena Lipstick (L,P)

Sunscreens

Eucerin Daily Sun Defense Lotion SPF 15 (P)
Shade Oil-free Sunblock Gel SPF30 (-)
Vanicream Sunblocks, Sunscreens (-)

Table 2
Fragrance-Free Products in Other Categories

Deodorants

Almay Unscented (all types)
Mitchum Unscented Roll-On

Shaving Cream

Clinique Shave Cream
Hers Moisturizing Shave Cream for Women (Walmart)

Styling

Allercreme Hairspray (800-799-4459)
Free and Clear Hair Spray
Jhirmack Extra Hold Unscented Hairspray

Hair color

Water Works Powder Hair Color (800-624-5776)

Detergent

All Free and Clear
Arm and Hammer for Sensitive Skin
Cheer Free
Tide Free
Wisk Free

Fabric Softeners

Bounce Free
Downy Free & Sensitive

Cleaning supplies

Dishwashing liquid, housework, home deodorizer spray
HomeFree Cleaning Supplies (1-800-621-5545)

Table 3
Products with and without benzocaine

Product category	Products with Benzocaine	Alternatives NOT Containing Benzocaine
<u>Anti-Itch</u>	Ivarest Lanacaine Anti-Itch cream	Aveeno Anti-Itch, Gold Bond medicated Anti-Itch cream, Caladryl Clear, Campho-phenique, Neutrogena Norwegian soothing relief
Cuts and scrapes	Bandaid Calamine spray	Bactine Antiseptic anesthetic
Insect bites	Band-aid Bug Bite Relief Chiggerex	See Anti-Itch Skeeter gel, stick
Sunburn	Solarcaine spray and lotion	See Anti-Itch, Solarcaine aloe extra gel
Vaginal and perianal	Americaine	Anusol, Corticaine, Epifoam
Oral and nasal	Anbesol, Cetacaine, Orabase-B Max Strength, Orajel, Zilactin-B	Ulcerease, Xylocaine (Rx), Zilactin-L
Throat	Cepacol lozenges, Vick's chloraseptic lozenges	Cepastat lozenges, Vick's Chloraseptic Spray
Surgical topical anesthetic		Ela-Max cream, EMLA

Rx = Available by prescription

Table 4
Rubber accelerators in Gloves

(-) Free of rubber accelerators
(dpg) diphenylguanidine
(mbt) mercaptobenzothiazole
(dpt) diphenylthiourea

Nonsterile Gloves for Household Use

Disposable vinyl gloves and heavy-duty vinyl gloves (-)
(Allerderm 800-365-6868)
Cotton gloves without any elastic cuffing (-)

Medical exam gloves-latex

Safeskin latex gloves (free of dpg, dpt, mbt)

Medical exam gloves-synthetic

Allerderm nitrile exam gloves (free of thiurams)
Allerderm ElastyLite procedural gloves (-)
Safeskin nitrile gloves (free of dpg, dpt, mbt)

Surgical gloves-latex

Regent Biogel S, Biogel M, Biogel Ortho (free of dpg, dpt, mbt)

Surgical gloves-synthetic

Elastyplus gloves (-)
(Allerderm 800-365-6868)
Regent Biogel Neotech (free of mbt)

Table 5

Sources of chemical-free clothing and bedding

Note: Not all products are chemical-free

www.	Phone
ahappyplanet.com	1-888-946-4277
algomaya.com	1-888-NOCHEMS
allergyasthmatech.com	1-800-621-5545
Bedbathandbeyond.com	1-800-GO-BEYOND
Ecobaby.com	1-888-ECOBABY
Fhnaturals.com	1-800-3-HENNEY
Grassrootsnaturalgoods.com	1-800-226-0924
Organicmatters.com	1-800-843-9069
tomorrowworld.com	1-800-229-7571
underthecanopy.com	1-888-226-6799

Table 7
Hush Puppies Shoes free of Chromates

(Information provided by Hush Puppies Corp. as of year 2000)

Men's Business Casual

Durham, Brigham (Nubuck only)

Max, Mod (Suede only)

Men's Casual

Lunar, Orbit, Outta Body, Walla Body, Body Bing, Glen, Wayne, Earl, Duke II
(Suede only)

Ultimate Walker, Carson, Morgan (Nubuck only)

Bridgeport (Riverbuck only)

Women's Casual

Gloria, Tiffany, Anni, Heidi, Every Body, Side Body, Body Bing, Lunar, Orbit,
Splendor, Kindred, Karma, Wayne, Earl, Upbeat (Suede only)

Nova, Astra, Groove, Chill (Nubuck only)

Women's Dress Shoes

Kirsten (Black patent leather only)

Angel Lo, Angel II, Alisa, Beverly, Dione, Page Twist, Carleen, Bridget, Carin,
Regina, Megan, Helen II (All colors/materials ok)

Table 8
Products Free of Thimerosal

Artificial Tears

Bausch & Lomb Dry Eyes, Murine Lubricating Eyedrops, OcuCoat PF, Refresh Plus, Hypotears PF, Tears Naturale Free, and Tears Naturale II

Ophthalmic antibiotics

Tobrex or Tobradex (with hydrocortisone) Solution or Ointment, Ciloxan Solution, and Ocuflox Solution

Ocular Beta-blockers

Timoptic S, Ocupress, Iopidine, and Opti-Pranolol Solutions

Soft contact lens products

Opti-One Multi-Purpose Solution and ReNu Multi-Purpose Solution
ReNu Effervescent and Thermal Enzymatic Cleaners
Opti-One and Opti-Free Rewetting Solutions
Bausch & Lomb Sensitive Eyes Sterile Saline Solution

Nasal Products for nasal congestion

Afrin Saline Mist, Afrin Nasal Spray and Drops or NTZ Nasal Spray and Drops

Nasal corticosteroids

Beconase AQ and Nasilide nasal corticosteroids