Contact Allergens of the Year
 "Emerging Allergens"

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DISCLOSURE OF RELATIONSHIPS WITH INDUSTRY
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F039 - Contact Allergens of the Year
"Emerging Allergens"

DISCLOSURES
Celgene speaker bureau.

2009 Contact Allergen of the Year
Mixed Dialkyl Thioureas

- Thiourea is an organic compound structurally similar to urea.
- "Thioureas" refers to a class of compounds with this basic structure.
- Thiourea is a reagent used in organic synthesis.
- Rubber synthesis and antioxidant

Mixed Dialkyl Thioureas

Occupational Exposures
- Healthcare workers
- Neoprene manufacturing
  Jeweler's & Silversmiths
- Architects & builders

Consumer Exposure
- Shoe insoles
- Orthopedic braces / prosthetics
- CPAP straps
- Keyboard wrist supports
- Slimming suits
- Wet suits & diving equipment
Neoprene
- Widely used synthetic rubber.
- Soft, flexible, cushioning, and fire/oil/ozone resistant.
- Chloroprene or Polychloroprene is the common name.
- Neoprene is the trade name.

Thiourea Clinical Pearls
- Most common source of exposure = neoprene products.
- Most common occupational exposure = gloves.
- Most common consumer exposure = footwear.
- Propensity to develop papular and vesicular dermatitis at sites distant from direct skin contact with the offending article.
- Allergic patients are twice as likely to react to other rubber accelerators (thiurams, carbamates, and MBTZ).

Patch Test Details
- Included on NACDG Standard Series as mixed dialkyl thioureas 1% in petrolatum (diethylthiourea 0.5% and dibutylthiourea 0.5%).
- Relatively low rate of positive reactions 0.8%-1.3%.
- High rate of relevance with positive reactions.

Dimethyl Fumarate
- Methyl ester of fumaric acid (FA)
- Salts & esters of FA are known as “fumarates”
- Intermediate in the Citric Acid Cycle and byproduct of the Urea Cycle
- Human skin naturally produces FA when exposed to sunlight.

2011 Contact Allergen of the Year
Dimethyl Fumarate

Dietary Exposures
- FA is used as a food additive in sweets and cakes.
- FA is poorly absorbed and passes through the gut without absorption.
- FA also found in some vitamins and supplements.
Clinical Use

- Esterification of FA leads to absorption.
- FA Esters have been used to treat psoriasis for over 30 years. No currently available FDA approved agent.
- DMF appears to be the most clinically relevant ester.
- Hypothesized to shift from TH1 to TH2.

Clinical Use

- DMF approved by FDA in 2013 to treat adults with relapsing multiple sclerosis.
- Flushing and GI side effects most common adverse events.
- Other listed possible side effects include severe allergic reaction, PML, and low white blood cell count.

Consumer Exposure

- Desiccant and anti-mold sachets
- Prevent mold growth
- Leather products such as furniture, shoes, wallets

Dimethyl Fumarate Clinical Pearls

- Shoe dermatitis
- Furniture dermatitis
- Robust reactions

Patch Test Details

- Not part of the North American Standard Series.
- Recommended patch test concentration is 0.1% DMF in petrolatum.
- Potential for evaporation from syringes may be decreased if frozen.

Cross Reactivity

- Concurrent patch test reactions to other fumarates and low molecular weight acrylates are common.
- Positive patch test to methyl acrylate or ethyl acrylate may indicate DMF sensitivity.
2012 Contact Allergen of the Year

Acrylates

Acrylates

- "Acrylates" are plastic materials derived from polymerization of monomers such as acrylic acid or methacrylic acid.
- Think "strong glues" and "plastics".
- Monomers act as sensitizers & allergens.

Methyl methacrylate

- Acrylic bone cement
- Acrylic inks
- Solvent based adhesives
- Medical spray adhesives
- Dental technology

Ethyl acrylate

- Acrylic paints
- Industrial coatings
- Acrylic rubber & plastics
- Denture materials
- Floor polishes & sealants

2-Hydroxyethylmethacrylate (HEMA)

- Artificial nails
- UV Inks
- Adhesives
- Lacquers
- Dental material
- Paint resins

Ethylene glycol dimethacrylate

- Plastic bottles for soft drinks
- Dental materials
- Artificial nails
- Printing inks
- Engine coolants

Monofunctional Acrylates

- Ethyl acrylate (EA)
- Butyl acrylate (BA)
- Hydroxyethyl acrylate (2-HEMA)
- Hydroxypropyl acrylate (2-HPA)
- 2-Hydroxypropyl methacrylate (2-HPMA)
- 2-Hydroxypropyl methacrylate (2-HPMA)

Polyfunctional Acrylates

- Dimethacrylates
- Ethyleneglycol dimethacrylate (EGDMA)
- Diethylene glycol dimethacrylate (DEGDMA)
- Triethylene glycol dimethacrylate (TREGDMA)
- 1,4-Butanediol dimethacrylate (BUDMA)
- Trimethylol propane trimethacrylate (TMPTA)
- Trimethylol propane trimethacrylate (TMPTA)

Prepolymer Acrylates

- Epoxies
- Bisphenol A glycidyl methacrylate (Bis-GMA)

Cyanoacrylates

- Methyl-2-cyanoacrylate
- Ethyl-2-cyanoacrylate
- n-Butyl-2-cyanoacrylate
- 2-Octyl-2-cyanoacrylate

Occupational Exposures

- Nail Salon
- Acrylic Nails & Gel Nails
- Dentists & Health Care Providers
- Bone Cement
- Dentures
- Printing Industry
- Acrylic, UV
- Silk Screen Printing
- Painters
- Acrylic Paint
- Manufacturing & Construction
- Adhesives
- Caulk
- Ptcogl
- Machinists or Mechanics
- Loctite, Sta-Lok

Consumer Exposure

- Acrylic or "gel" nails
- Diapers
- Sanitary pads
- Dentures
- Spectacle frames
- Hearing aids
Acrylate Clinical Pearls

- Hands & airborne pattern typical in occupational cases
- Robust dermatitis
- Potential for delayed and persistent patch test reactions

Patch Test Details

- Strong irritants.
- Potential for inducing sensitization with patch testing.
- Acrylate sensitive patients often show multiple concurrent positive patch test reactions which may represent cross-reactions or co-reactions.
- Volatile and unstable chemicals. Rapidly evaporates if exposed to air over a few hours.

Late Patch Test Reactors

Corticosteroids
Metals
Acrylates
Neomycin

Protection

- Acrylate monomers penetrate most gloves within minutes (especially vinyl and latex).
- Laminated polyethylene/ethylene vinyl alcohol gloves provide the best protection but provide poor dexterity.
- Double gloving with nitrile gloves or polyethylene gloves under nitrile gloves has been suggested to be adequate for tasks under 30-60 minutes.

North American Contact Dermatitis Group Standard Series Allergens

2-Hydroxyethyl methacrylate (2-HEMA) 2% Petrolatum
Bisphenol A-epoxy resin 1% Petrolatum
Methyl methacrylate 2% Petrolatum

T.R.U.E. Test Allergens

Epoxy Resin (Diglycidylether of bisphenol A)

Citations

- North® by Honeywell Silver Shield® 2.7 mil Chemical Resistant Gloves. Image retrieved from...