

Have you found a problem with buying clothing? Here's just one reason why shopping for clothes may not be a pleasant experience. A medical article "*Diagnosis and treatment of Dermatitis due to Formaldehyde Resins in Clothing. \*Carlson R.M., Smith M.C. & Nedorast S.T. Dermatitis 2005; 15(4): 169-175*" has some interesting information that is also useful for those with chemical, (especially formaldehyde), sensitivity.

Textile formaldehyde resins have been used on fabrics since the mid 1920's by the textiles industry to make wrinkle and stain resistant garments (eg permanent press clothing; stain-resistant). These resins can release significant amounts of formaldehyde. *Not a good situation for those with chemical sensitivity.*

***Types of materials/fabrics most likely to have been treated with formaldehyde resins are:***

Rayon

Blended cotton

Corduroy

Wrinkle-resistant 100% cotton

Shrink-proof wool

Any synthetic blended polymer (Eg rayon, polyester-cotton)

Heavy stiff fabrics

Materials/fabrics treated with textile formaldehyde resins are also used for upholstery, craft work and manchester.

***Just how much do they release:***

The concentration of formaldehyde resin in treated products varies between manufacturers. In the textile industry Formaldehyde resins used in durable-press fabrics are classified as high, medium & low formaldehyde releasers. High = > 1,000 ppm formaldehyde, Low = < 100 ppm (~75ppm) formaldehyde and Very Low = 30 ppm formaldehyde.

The newer resin-yielding fabrics claim to contain fewer than 75 ppm free formaldehyde and according to the authors may cause occasional reactions but are more likely to be tolerated by patients with textile dermatitis. *For those with chemical sensitivity this is still too much.*

**Common Formaldehyde Resins used in the US textiles industry** (Data compiled by the authors\*).

**RESIN TYPE**

**RELATIVE FORMALDEHYDE RELEASE**

Urea formaldehyde/ DMU (Dimethylol urea)

## Formaldehyde in Clothing

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High

Melamine formaldehyde

High

DMDHEU (Fixapret CPN)

Low

DMDHEU blended or modified with glycols (Fixapret ECO)

Very Low

Dimethyl dihydroxyethylene urea (methylated DMDHEU)

Very Low

Dimethyl dihydroxyethylene urea (Fixapret NF)

None

DMDHEU = dimethylol dihydroxyethyleneurea. High = > 1,000 ppm formaldehyde, Low = < 100 ppm (~ 75ppm) formaldehyde and Very Low = 30 ppm formaldehyde.

The amount of formaldehyde released from clothing is also affected by climate as humidity and perspiration may cause more resin to leach from garments. So selecting the right garment is particularly important for those living in warmer areas, or engaged in heavy physical activity.

### ***More about Textile Manufacturers:***

There is a variation in different country's standards for formaldehyde release from textile finishes. Japan has the highest standards at 75 ppm for formaldehyde-releasing resin, compared with 300 ppm in the US. Some US manufacturers are now using newer low formaldehyde or 'no-formaldehyde' finishes.

Companies which the authors found that claim to use low-formaldehyde resins in "dress" clothes include Japanese manufacturers & American companies that market in Japan where they adhere to the stricter Japanese standards.

**US Companies that Market in Japan:** Gap; Talbots; J. Crew; Coromo, Inc; Avatal U.S.; Vermont Country Store.

**Companies that adhere to Japanese Standard:** Gap/Old Navy/Banana Republic; Eddie Bauer; Liz Claiborne; Levi Strauss

### ***Washing a new garment doesn't help:***

Washing new formaldehyde resin treated clothing may reduce the levels of free formaldehyde but is not sufficient to prevent a textile resin reaction in a previously sensitised patient. Multiple washes combined with airing in the sun may reduce levels further but remember the manufacturers put in a lot of work into making these finishes 'permanent'.

### ***What materials are not treated with formaldehyde resins:***

100% silk; 100% linen (if it wrinkles easily); 100% polyester; 100% acrylic; 100% nylon; Spandex; Flannel (if soft); Denim (jeans); Wool. Generally Garments that are soft, easily wrinkled fabrics. *Of course some of these fabrics may not be suitable for those with chemical sensitivities for a variety of reasons.*

### ***The results and conclusions drawn by the authors:***

#### **On Diagnosis of Formaldehyde Resin Allergic Contact Dermatitis..**

- v Those with formaldehyde resin ACD more often have recurrent, chronic ACD with a low index of suspicion from patch test results
  
- v Rash appears on the skin where clothing may fit tightly eg posterior neck, upper back etc.

#### **On prevalence..**

- v Prevalence of textile formaldehyde resin dermatitis in the US 1.2 to 2.3% of an eczematous population. But variations occur between medical centres.
  
- v They have seen an increase in the number of patients with Allergic Contact Dermatitis

(ACD) secondary to formaldehyde resins used for textile finishes

v In this study they found an incidence rate of 10% in men and 5% in women for formaldehyde allergy alone with a greater number of men cross-reacting to formaldehyde textile resins.

### **On Testing...**

v Patch test reactions are often negative at 48 hrs & may not develop until days 5 to 7.

v Testing of patients with formaldehyde alone may not identify all patients and patch testing with resins is also indicated. In this study only 70 % of the ACD patients reacted to formaldehyde alone.

***So if you think something is wrong about a garment put it back – you are probably right.***

For Information on **Internet Sites for Organic Clothing/Materials** visit the weblink page for [Organic clothing, Baby ware, Fabric](#)

The internet sites listed for organic/natural clothing, bedding, and materials is by no means complete and I have not personally purchased anything from these sites.

Written By By Dr Sharyn Martin March 2005