

# OCCUPATIONAL ALLERGIC CONTACT DERMATITIS DISSEMINATED FROM MULTIFUNCTIONAL ACRYLATES IN ULTRAVIOLET-CURED LACQUERS

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## Abstract

A case of disseminated allergic contact dermatitis in a screen process printer is presented. The skin lesions were caused by multifunctional acrylates (methylpropane triacrylate and pentaerythritol triacrylate – highly positive patch tests (+++) after 48 and 96 h) present in ultraviolet cured transparent lacquer used in coat printed posters to make them weather-resistant. Patch tests with lacquer were also highly positive (+++) after 48 and 96 h. According to the safety sheet of the product, lacquer contained 85–90% of multifunctional acrylates. The patient showed disseminated dermatitis, however, no hypertrophied lesions on the hand skin, a characteristic symptom in persons exposed to acrylates, were observed.

## Key words:

Acrylates, Trimethylolpropane triacrylate, Pentaerythritol triacrylate, Allergic contact dermatitis, Ultraviolet-cured lacquers, Occupation

## CASE REPORT

A 54-year-old man, without history of atopy, has been working since 1979, first as a bookbinder, then as a screen-printing operator in his self-owned small business. Skin changes appeared 2 years ago. They were disseminated in character, located in the upper and lower extremities, face, neck and upper chest and included erythema with vesicles and papules. The patient experienced severe pruritus. The dermal changes occurred after contact with clear lacquers used by the patient to coat advertising posters in order to make them weather-resistant. The lacquers (UV6000 and UV9000) were obtained from Bousfield Printing Products Ltd, Bristol, UK. The lacquer was set by UV at 320–460 µm. As per material safety data sheet, the lacquer contained: 85–90% multifunctional acrylates and 10–15% photoinitiators and surfactants. Table 1 shows the results of patch tests.

Table 1. Patch test results

	D2	D4
European Standard (Chemotechnique Diagnostics, Malmö, Sweden)		
4-Fenylendiamine (1% pet.)	+	++
(Meth) Acrylate Series-Printing (Chemotechnique Diagnostics, Malmö, Sweden)		
Trimethylolpropane triacrylate (0.1% pet.)	++	++
Pentaerythritol triacrylated (0.1% pet.)	++	+++
Lacquer UV6000 and UV9000		
20% aq.	+++	+++
10% aq.	+++	+++

## DISCUSSION

Multifunctional acrylates have been introduced into ultraviolet-cured painting inks since the 1970s. Some authors [4–6] reported allergic contact dermatitis from trimethy-

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lolpropane triacrylate (TMPTA), pentaerythritol triacrylate (PETA), and tripropylene glycol diacrylate (TPGDA) in inks. Goon et al. [7] reported a case of allergy to those chemicals in a worker of a company manufacturing acrylic polymers for making superabsorbent polymers used in diapers. Reports of varnish allergy are rare. Estlander et al. [8] reported occupational contact dermatitis from UV-cured lacquer for painting wood, containing dipropylene glycol diacrylate (DPGDA).

Our patient had dermatitis disseminata; eczema hyperkeratoticum manuum, very frequent in other patients exposed to acrylates, was not observed [3].

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