

Short Communication

Occupational airborne allergic contact dermatitis from dibutylthiourea

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Case Reports

2 patients developed airborne allergic contact dermatitis from dibutylthiourea (DBTU) (Table 1). Patch testing, prick testing and scoring were performed as previously described (1), DBTU being obtained from Trolab, Hermsdorf, Germany.

Patient no. 1 had worked for 5 months when he developed patchy dermatitis of the face. Within a week, the dermatitis spread to the whole face and the neck. Later, he developed dermatitis on the hands and forearms. The dermatitis cleared when he was off the job, and relapsed after as little as 1 day back at work. The patient worked as a polyurethane (PU) machine operator and used a DBTU-containing paint remover (Stripper 100, Oy Trans-Meri Ab, Helsinki, Finland), as often as 1× an hour, to remove PU from the coil used to mix the polyurethane.

Patient no. 2 developed dermatitis first on her eyelids,

from where it spread to the cheeks, neck and retroauricular areas. Eventually, severe oedema developed around one eye. This was treated with antibiotics, and then allergy medication, before the diagnosis was made. She was a laboratory technician in a factory manufacturing metal sheets. Her duty was to test the adhesion of paints to metals. She painted metal pieces, e.g., roof plates, which were then heated. Subsequently, she removed part of the paint with Stripper 100 paint remover, which she used up to 10× per day. Previously, she had not had atopic eczema, but as a child had had allergic rhinitis. Inexpensive jewellery had provoked dermatitis.

Discussion

Allergic contact dermatitis (ACD) caused by thiourea compounds is relatively rare (1). A mouse lymph node assay indicated that, of 4 thiourea compounds, di-

Table 1. Characteristics and patch test results of the patients

Characteristic	Patient no. 1	Patient no. 2
age (years)	18	27
sex	male	female
occupation	polyurethane machine operator	laboratory technician
exposure before symptoms	5 months	7 years
location of dermatitis	face (eyelids, cheeks), neck, fingerwebs, backs of hands, lower arms	eyelids, cheeks, back of the neck
other symptoms	none	rhinoconjunctivitis
atopy (own/family)	-/-	+/-
prick tests (standard environmental allergens)	none	Finnish deciduous trees (pollens) Finnish grasses (pollens)
patch tests		
standard series	negative	nickel sulfate (+++)
thiourea compounds	DBTU (++)	DBTU (++)
other thiourea and rubber chemicals	negative	negative
other series	diisocyanates: negative	plastics and glues, epoxy resin compounds, (meth)acrylates negative
"own substances"	stripper 100 5%, 2% and 0.5 % pet. (+++)	NT
dilution series	DBTU 5%, 2%, 1%, 0.5% pet. (++)	

DBTU: dibutylthiourea; NT: not tested.

phenylthiourea (DPTU) had the greatest sensitization potential, followed by dilaurylthiourea, DBTU and diethylthiourea (DETU) (2). Other thioureas, such as dimethylthiourea (DMTU), ethylenethiourea (ETU), ethylbutylthiourea (EBTU) and trimethylthiourea (TMTU), have also caused allergic contact dermatitis (1). DBTU has previously been reported as causing non-occupational allergic contact dermatitis from divers' footwear (3), swimming goggles (4), a rubber elastic knee guard (5), and occupational allergic contact dermatitis from protective plastic glasses (5), and the thermocoating layer of phonecards (6). Here, we report 2 cases of airborne allergic contact dermatitis from a DBTU paint and glue remover that has previously been reported as a sensitizer (7).

The product (Stripper 100) is highly irritant to the skin, in addition to being allergenic, because it contains methylene chloride, formic acid, and an anionic detergent (7), these constituting over 94% (w/w) of the product. The initial sensitization may have occurred from splashes onto the skin (8), and later, the symptoms were mainly caused by airborne exposure.

Patient no. 1 showed patch test reactions to DBTU and the paint remover that he used at work. The manufacturer informed us that the paint remover contained 0.9 % DBTU. Other thioureas were negative on patch testing. The thioureas most commonly used for patch testing, namely DPTU, DETU, DBTU and ETU, do not usually cross-react (1), and therefore each thiourea compound needs to be tested separately.

Patient no. 1 was also exposed to polyurethanes and a prepolymer containing 52.5% 4,4'-diphenylmethane diisocyanate (MDI). Patch testing with MDI and other diisocyanates were negative, and the patient had no respiratory symptoms, indicating that sensitization to isocyanates (9, 10) had not occurred. Patient no. 2 was exposed to a large number of paint allergens, including epoxy resins, (meth)acrylates and other plastics and glues (11), but these were negative on patch testing.

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