Occupational allergic contact dermatitis to methyldibromoglutaronitrile in hand degreasing toilet paper

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We inform about a case of occupational allergic contact dermatitis (OACD) to methyldibromoglutaronitrile (MDBGN) in industrial hand degreasing moist toilet paper. To our knowledge, this is the first published case of OACD to MDBGN in industrial hand degreasing toilet papers. A cause–effect relationship seems to be clearly established. We believe that physicians must keep in mind that MDBGN is a strong allergen either mixed or as a single component of industrial moist toilet papers. MDBGN must be taken into account for OACD at an appropriate work environment.

Key words: allergic contact dermatitis; hand toilet paper; methyldibromoglutaronitrile; occupational; wipes.

Case Report

A 54-year-old male, with no previous pathologic history, who has been working as a car glass installer for the past 30 years presented, since 3 months ago, with erythema, pruritus, vesicles, crust, and laminar scaling in fingertips and in sides of the 3 first fingers of his right hand and 2 first fingers of his left hand, and occasionally on the dorsum of both hands (Fig. 1). The patient related the beginning of his symptoms with new Profi Clean® (Berner, Granada, Spain) hand degreasing moist toilet paper that he has been using more than 20 times a day for a month at the workplace. He stopped using those toilet papers 3 weeks before going to our clinic and he was better.

He was patch tested with the European and Spanish standard series and with isocyanate series (Chemotechnique®). We observed a positive reaction to Euxyl K-400 1.5% pet., methyldibromoglutaronitrile (MDBGN) 0.5% pet., and the moist toilet paper at day (D) 2 and D4. We also patch tested 10 volunteer controls with the toilet paper, and all of them were negative. We confirmed the presence of MDBGN but not phenoxyethanol in the degreasing moist toilet paper from the bucket's label (Fig. 2). We advised to avoid Profi Clean®, and his skin showed considerable improvement after a month.

Discussion

MDBGN, also known as 1,2-dibromo-2,4-dicyanobutane, along with 2-phenoxyethanol form Euxyl® K-400 in a 1:4 proportion. However, MDBGN is related frequently to sensitizations (1, 2). Euxyl® K-400 is a preservative used both occupationally and not occupationally (3). It is found in industrial products such as abrasive soaps, paints, cutting fluids, ultrasonic gels, etc. causing sensitization in metallurgic and automobile industry workers (4, 5). Additionally, it occurs in cosmetics, shampoos, soaps, creams, and leave-on products such as moist toilet and makeup-cleaning toilet papers. It is well known that both kinds of wipes have similar composition (6–9).

We performed an internet search for hand degreasing toilet papers like the one used by our patient in order to know their composition (Table 1). We contacted the manufactures, but the material safety data sheets obtained were not quite useful, and most of them said that the products do not contain 'hazardous agents'. These moist toilet papers are commercialized as effective to remove easily and quickly all kinds of grease and lubricants as well as epoxy resins, glue, and oils on plastic surfaces, paint surfaces, and tools.

Euxyl K-400® was introduced in the European market in 1985 as an alternative to other biocides such as Kathon CG (10), from which in 1996, we report a case of allergic contact dermatitis in a patient who used baby wipes containing Kathon CG for the hygiene of her child (11). Increasing publications about sensitization to Euxyl K-400® have been made, and recommendations about its use in wash-off and leave-on products have been established (12).

Although we do not know the concentration of MDBGN in these toilet papers, protracted exposition to the allergen throughout the day, in our case more than 20 times a day, could cause the sensitization. Additionally, using it as a soap replacement and leave-on product surely conditioned such sensitization.

To our knowledge, this is the first published case of an occupational

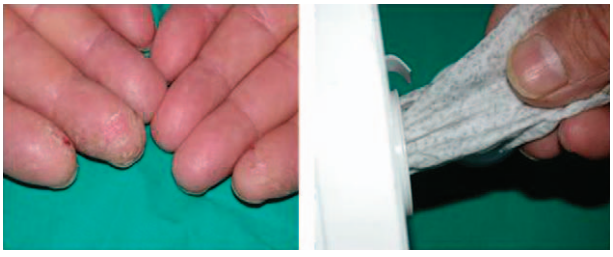

Fig. 1. Fingertips eczema in resolution. Note how the patient takes the toilet paper from the bucket and the precise relation with the location of the patient's eczema.

PROFI CLEAN® DEGREASING TOILET COMPOSITION
Aqua, Trepen Orange, C10-13 isoparaffine, Laurel sulfato sodio, C11-15 Parthen-5, Isopropylalkohol, propyklenglykol, Sorbitol, Kallium sorbato, Methyldibromoglutaronitrile, Triclosan, BHT, Parfume.

Fig. 2. Profi Clean® label.

Table 1. Industrial hand degreasing toilet paper

	MDBGN	PE	Isopropilic alcohol	Terpene orange	Others
Profi Clean®, Berner	Yes	—	Yes	Yes	Yes
Scrubs®	—	—	—	—	Yes
Limpieza Dificil® 3M	—	—	Yes	—	Yes
Desengrasante Manos® AB	—	—	—	—	Yes
Wypall Waterless Hand Wipes®, Kimberly Clark	—	—	—	Yes	Yes

MDBGN, methyldibromoglutaronitrile; PE, phenoxyethanol.

allergic contact dermatitis (OACD) to MDBGN in industrial hand degreasing toilet papers, in which a cause–effect relationship is clearly established.

We suggest that physicians must keep in mind that MDBGN is a strong allergen either mixed or as a single component of industrial moist toilet papers. It must be taken into account for OACD even at an appropriate work environment.

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