

CONTACT POINT

Occupational allergic contact dermatitis caused by phenol formaldehyde resin in an interior coating for beverage cans

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Allergic reactions to resol-type phenol formaldehyde resin (PFR2) are relatively common in consecutively patch tested patients.¹ Occupational allergic contact dermatitis caused by phenol formaldehyde resin has been reported in plywood workers,^{2,3} in foundry workers exposed to phenol formaldehyde-impregnated casting sand,³⁻⁵ in workers involved in the production and use of grinding wheels and abrasive paper composed of abrasives sealed with phenol formaldehyde resin glues,^{3,6} in workers handling resin-impregnated filter papers,^{3,6} in workers involved in the production of laminates,^{3,7} and in joiners tooling chipboard, laminate, or plywood.^{3,5}

Beverage and food cans are usually made of aluminium, and are coated both internally and externally with a protective polymer layer. Bisphenol A-based epoxy coatings have dominated the market, but bisphenol A-free alternatives are replacing them because of concerns mainly related to reproductive toxicity. Phenolic resins are common cross-linkers in these coating polymers (eg, in epoxy coatings).⁸ To our knowledge, contact allergy to phenol formaldehyde resin in metal can coatings has not been described before.

CASE REPORT

A 44-year-old food-packaging industry worker with a history of an acneiform facial eruption developed dermatitis on the wrists while working with 2 machines that spray-coated the interiors of beverage cans. In its safety data sheet, the lacquer used in the machines was declared to contain formaldehyde (no concentration given). The dermatitis healed when the patient started to use butyl rubber gloves with long sleeves and arm shields, and it relapsed a few times when his glove was broken or he otherwise had direct skin contact with the lacquer. Another coating used in the workplace was declared, in its safety data sheet, to contain 1-5% phenol formaldehyde resin. It was used in the preceding stage of the process for the outer surfaces of the cans, but the patient did not have skin contact with this coating.

On patch testing, the patient reacted to PRF2 (Chemotechnique Diagnostics, Vellinge, Sweden) 1% pet. with a ++ reaction, and to another phenol formaldehyde resin used in the Finnish woodworking industry (5% pet.) with a + reaction. The allergens of the Finnish baseline series (including colophonium, fragrance mixes I and II, *Myroxylon pereirae* [balsam of Peru], *p*-tert-butylphenol formaldehyde resin, and formaldehyde) and the individual components of the fragrance mixes gave negative results. His own lacquer was tested in a dilution series starting from 10% pet., but only slight erythema was observed (less than a ?+ reaction). According to the manufacturer, this 'water-based spray lacquer for the interior of drawn and wall-ironed (DWI) beer and beverage cans' contains phenol formaldehyde resin, and its formaldehyde concentration is <0.1%. We diagnosed occupational allergic contact dermatitis caused by phenol formaldehyde resin.

DISCUSSION

We have previously seen a printer in the metal package industry who had hand dermatitis while handling phenol formaldehyde resin-containing printing lacquers, and was found to be allergic to formaldehyde and his own lacquers, but not to the commercial phenol formaldehyde resin (PFR2) test substance. In phenol formaldehyde resin-allergic patients, it is often difficult to find any exposure.¹ Workers in the metal package industry seem to be at risk of developing contact allergy to phenol formaldehyde resin in can coatings, and it is noteworthy that this resin is not always declared in the safety data sheets of these coatings.

CONFLICT OF INTEREST

The authors declare no potential conflict of interests.

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