

Contact dermatitis caused by chlorothalonil on imported roses: irritant or allergic reaction?

Gerda Lensen, Pieter Jan Coenraads, Frank Jungbauer and Marie-Louise Schuttelaar

Department of Dermatology, University Medical Centre Groningen, University of Groningen, NL-9700 RB Groningen, The Netherlands

doi:10.1111/j.1600-0536.2011.01903.x

Key words: chlorothalonil; contact dermatitis; roses.

Chlorothalonil is a pesticide that has been on the market for many years. It is used, among other things, as a fungicide in floriculture. Patch test results are difficult to interpret.

Case Report

A 58-year-old man was referred to our outpatient department with a history of eczematous reactions on his fingers, forearms and face for the past 6 months. He had to take sick leave twice because of the eczematous reactions. The eczema disappeared on both occasions, but recurred as soon as he returned to work. The patient worked in a flower auction hall, where he opened boxes of roses imported from Kenya. According to the grower of these roses, several pesticides had been used in their cultivation. A selection of pesticides for patch testing was made on the basis of information from the material safety data sheets. Patch tests with the European baseline series, fragrance series, rose oil, tulipaline, compositae mix and a dilution series with the selected pesticides in water were performed. Doubtful (+/irritant) reactions on D3 and D7 were observed to only one pesticide, and there were no positive reactions to any of the remaining allergens tested. The pesticide concerned contained chlorothalonil. Subsequently, a dilution series with chlorothalonil in methyl ethyl ketone (MEK) and in pet. was tested (Fig. 1). The test results are shown in Table 1. Tests carried out in 5 control subjects all gave negative results.

Follow-up

The patient temporarily worked with plants other than roses, owing to the eczematous reactions. His eczema



Fig. 1. Weak positive reaction to chlorothalonil 0.1% pet. at Day 3.

Table 1. Patch test results

	Day 3	Day 7
Chlorothalonil 1% MEK	+/IR	+/IR
Chlorothalonil 0.1% MEK	+/IR	+/IR
Chlorothalonil 0.01% MEK	–	–
Chlorothalonil 0.001% MEK	–	–
Chlorothalonil 0.1% pet.	+	+
Chlorothalonil 0.01% pet.	+/IR	+/IR

IR, irritant.

disappeared during this period, but recurred when he started to work with *Eryngium*. According to the grower of the *Eryngium*, the same pesticide mentioned above, containing chlorothalonil, was used in their cultivation.

Discussion

Chlorothalonil (tetrachloro-1,3-benzenedicarbonitrile, CAS 1897-45-6) is a pesticide that has been used as a fungicide. It may cause allergic and irritant contact dermatitis (1–4). The reactions that we observed to the 1% and 0.1% concentrations in MEK appeared to be of an irritant nature. This is in line with the observation by Flannigan et al. that chlorothalonil at a concentration of 0.1% in acetone tested on rabbits showed 'irritancy to a degree of clinical significance' (3). The weak positive

Correspondence: Gerda Lensen, Department of Dermatology, University Medical Centre Groningen, University of Groningen, PO Box 30.001, NL-9700 RB Groningen, The Netherlands. Tel: +31 50 361 8000; Fax: +31 50 361 9247. E-mail: g.j.lensen@derm.umcg.nl

Conflicts of interest: The authors have declared no conflicts.

reaction that we observed was to chlorothalonil 0.1% pet. Considering the findings by Flannigan et al., this reaction could have resulted from an irritant effect. Although we considered a diagnosis of irritant contact dermatitis, we believe that an allergic reaction is more likely, because none of the tested control subjects had positive reactions to chlorothalonil 1% and 0.1% in MEK or to chlorothalonil 0.1% and 0.01% pet., whereas the patient had a positive reaction at all of these concentrations. In

spite of working with the same roses, none of the patient's colleagues had any skin complaints, and the patient was the only one who developed eczema after working with *Eryngium*.

In earlier investigations, concentrations of higher than 0.01% showed irritant reactions (1, 5). Our case confirms earlier findings that interpretation of patch tests with chlorothalonil may be difficult (4).

References

- 1 Johnsson M, Buhagen M, Leira H L, Solvang S. Fungicide-induced contact dermatitis. *Contact Dermatitis* 1983; **9**: 285–288.
- 2 Lidén C. Facial dermatitis caused by chlorothalonil in a paint. *Contact Dermatitis* 1990; **22**: 206–211.
- 3 Flannigan S A, Tucker S B, Calderon V Jr. Irritant dermatitis from tetrachloroisophthalonitrile. *Contact Dermatitis* 1986; **14**: 258–259.
- 4 Lensen G, Jungbauer F, Gonçalo M, Coenraads P J. Airborne irritant contact dermatitis and conjunctivitis after occupational exposure to chlorothalonil in textiles. *Contact Dermatitis* 2007; **57**: 181–186.
- 5 Bach B, Pedersen N B. Contact dermatitis from a wood preservative containing tetrachloroisophthalonitrile. *Contact Dermatitis* 1980; **6**: 142.