

CONTACT POINTS

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Thiuram patch test positivity 1980–2006: incidence is now falling

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Thiurams are accelerators commonly used in the manufacture of natural rubber latex (NRL) products, including medical NRL gloves. The thiuram mix (tetramethylthiuram disulfide, tetraethylthiuram disulfide, tetramethylthiuram monosulfide, and dipentamethylenethiuram disulfide, each at 0.25%) is used as a marker of rubber accelerator contact allergy. Although carbamates are frequently used accelerators, for some years, the carba mix has not been included in the baseline series of contact allergens. From the 1980s, there has been an increasing use of NRL gloves because of 'Universal Precautions' (1), resulting in an increased incidence of contact allergy to thiurams.

Healthcare workers account for a significant proportion of those with hand dermatitis and thiuram sensitization. For the period 1989–1995, our group demonstrated (2) a significant increase in the incidence of thiuram positivity in healthcare workers but no increase in other individuals using NRL gloves (e.g. housewives). We suggested that gloves with higher levels of accelerator residues, due to insufficient technical processing, were being introduced to meet the rapidly increasing demand in healthcare settings. We have now looked at our more recent data to determine whether higher quality gloves (reduced accelerator residues) and/or the widespread avail-

ability of non-NRL gloves have altered trends in thiuram positivity.

Methods

Our patch test data are stored electronically and list all patients patch tested from 1980 to the present day at St John's Institute of Dermatology, London, UK. We searched for thiuram-positive individuals from January 1980 until December 2006 (inclusive). The clinical notes of all subjects identified with thiuram contact allergy were then reviewed manually.

All subjects (>1000 each year) were tested using Trolab™ (Hermal, Reinbek, Germany) 1% thiuram mix (in pet.) in Finn Chambers® (Epitest Oy, Tuusula, Finland) on Scanpor Tape™ (Epitest Oy, Tuusula, Finland) with 2D occlusion. Readings were performed at D2/3 and D4/5 by a dermatologist using International Contact Dermatitis Research Group (ICDRG) criteria (3).

Results

A total of 1350 thiuram-positive patients were identified (861 female). Of these, 156 were healthcare workers

and a further 156 were housewives. The numbers of healthcare workers tested for thiuram positivity have remained between 70–100 patients per year, while the numbers of housewives have declined from more than 200 a year in the 1980s to less than 100 in the new millennium. In 2003 and 2004, only 13 and 20 housewives attended for testing, respectively.

The overall annual incidence of patch test-positive subjects to thiuram mix peaked in the mid 1990s (Fig. 1), after which there has been a falling trend. Healthcare workers show a similar pattern of incidence (Fig. 2). The incidence of thiuram positivity in housewives shows a decline since an earlier peak in the late 1980s.

Discussion

Factors explaining the reducing incidence include the following:

The increasing awareness of both type I and type VI allergies to constituents in NRL gloves since the mid 1990s led to the introduction of more stringent controls on the specifications of gloves used in the UK (4). While these specifications have not explicitly stipulated acceptable accelerator

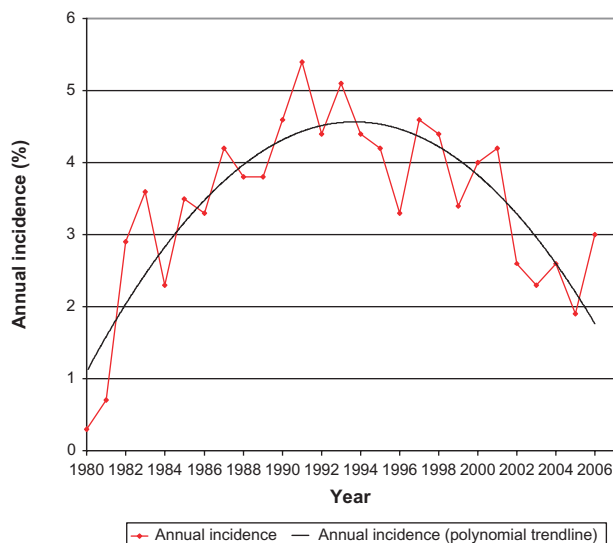


Fig. 1. Incidence of thiuram positivity in all subjects patch tested 1980–2006. Polynomial line of best fit calculated using Microsoft Excel.

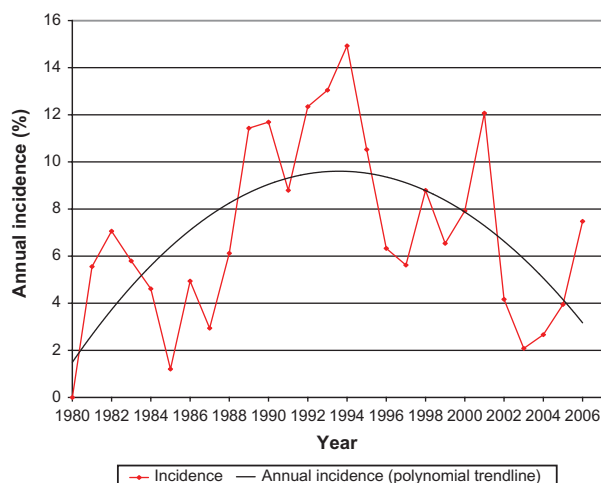


Fig. 2. Incidence of thiuram positivity in healthcare workers patch tested 1980–2006. Polynomial line of best fit calculated using Microsoft Excel.

residues, the resulting improvement in the quality of gloves may be responsible for a reduction in sensitization through reductions in accelerator residues.

Under UK legislation [Control of Substances Hazardous to Health (5)], NRL has been specified as a hazardous substance. Employers are now required to undertake risk assessments of glove usage and provide alternatives for both primary and secondary prevention of contact dermatitis and latex protein hypersensitivity. This has resulted in the increased use of nitrile and vinyl gloves, although some non-NRL alternatives may contain traces of accelerators. Importantly, a recent report has suggested that labelling of glove ingredients may not always reflect accelerators present in the final product due to the disappearance and formation of chemicals during the vulcanization process (6). Thus, the consumer may be left unsure about avoidance procedures. The clinical impact of these as alternatives should also be evaluated, given their different physical characteristics relative to NRL. Non-NRL alternatives may also cause irritant hand dermatitis.

Although the reduced numbers of housewives attending for patch testing may be due to changing trends in the workforce, it may also reflect the improved quality of gloves in the home and widespread availability of non-NRL alternatives or NRL gloves with barrier linings (e.g. cotton).

The increased incidence of sensitization seen in 2001 in healthcare workers follows the publication of 'Latex and You' (7), a UK Health

and Safety Executive leaflet aimed at healthcare workers. Subsequently, through this improved awareness of hand dermatitis from NRL gloves, individuals may also be independently avoiding latex, without formal medical diagnosis, possibly resulting in under-reporting of sensitization.

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