



# Positive Patch Test Reactions to Carba Mix and Thiuram Mix: Retrospective Analysis from the NACDG

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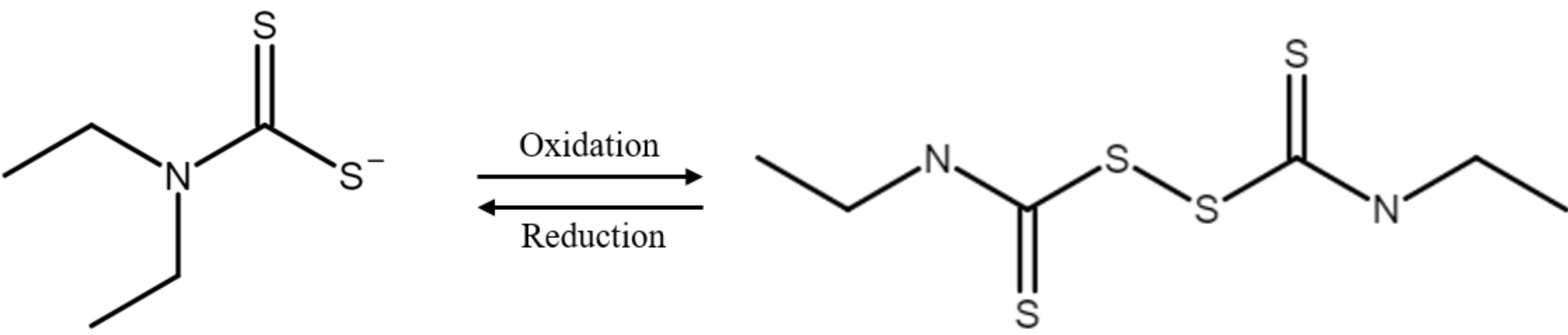
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## INTRODUCTION

- ❖ Carbamates and thiurams are important allergens
  - ❖ Often occupational
  - ❖ Rubber gloves
- ❖ High rates of cross-reactivity, via redox pair mechanism have been proposed
- ❖ Many national screening series only test for TM



**Figure 1.** Proposed redox mechanism of carbamates and thiurams

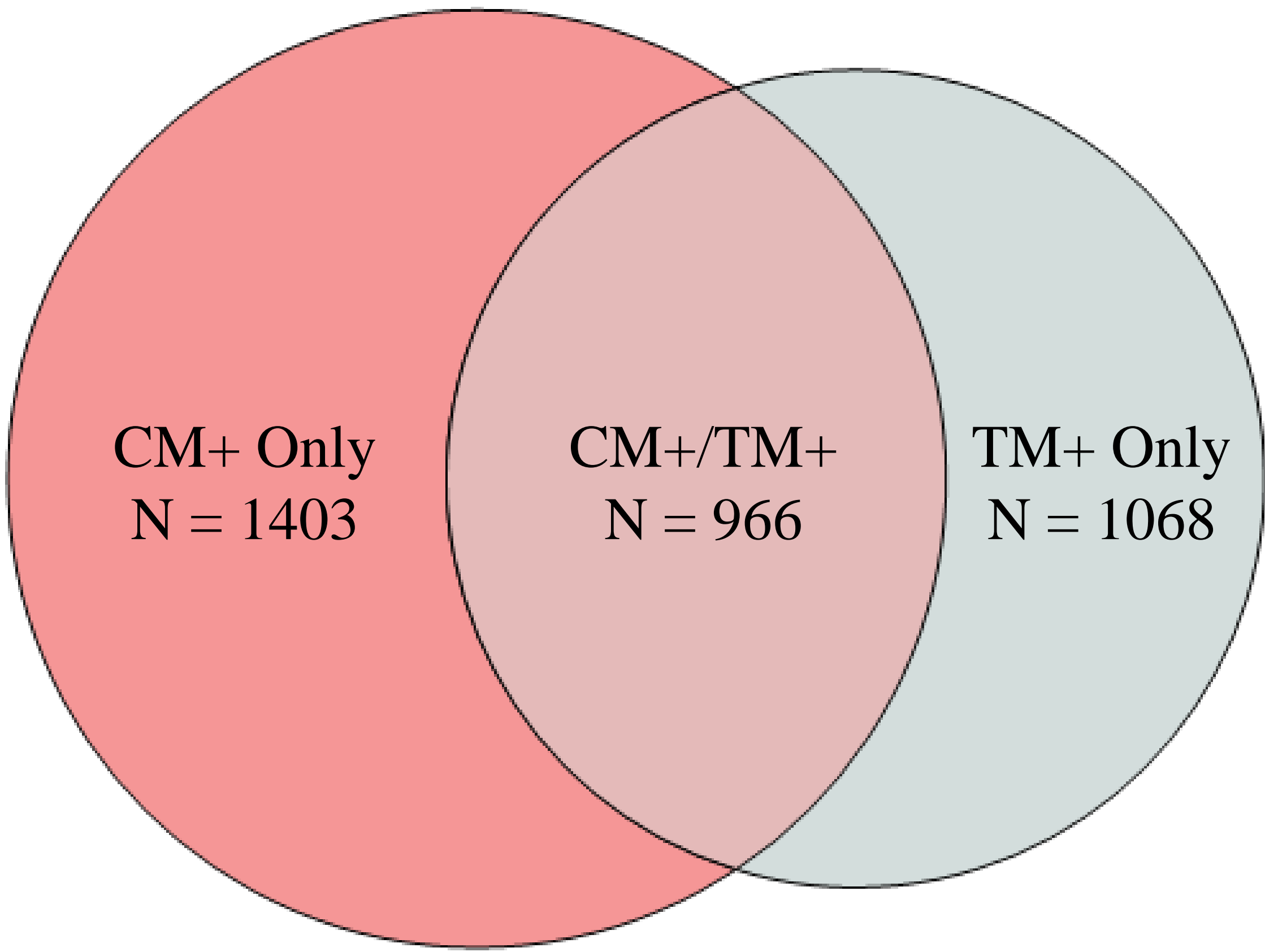
## OBJECTIVES

- ❖ To characterize positive reactions to CM and TM in a large North American population
  - ❖ Sources
  - ❖ Trends

## METHODS

- ❖ Retrospective analysis of NACDG data from 1994-2016
  - ❖ 49,758 pts tested to both CM and TM
- ❖ All patients with reactions considered “allergic” were included
- ❖ Irritant or doubtful macular reactions not interpreted as “allergic” were excluded
- ❖ Patients with allergy to CM, TM, or both were compared to patients not allergic (NA) to CM or TM

## RESULTS



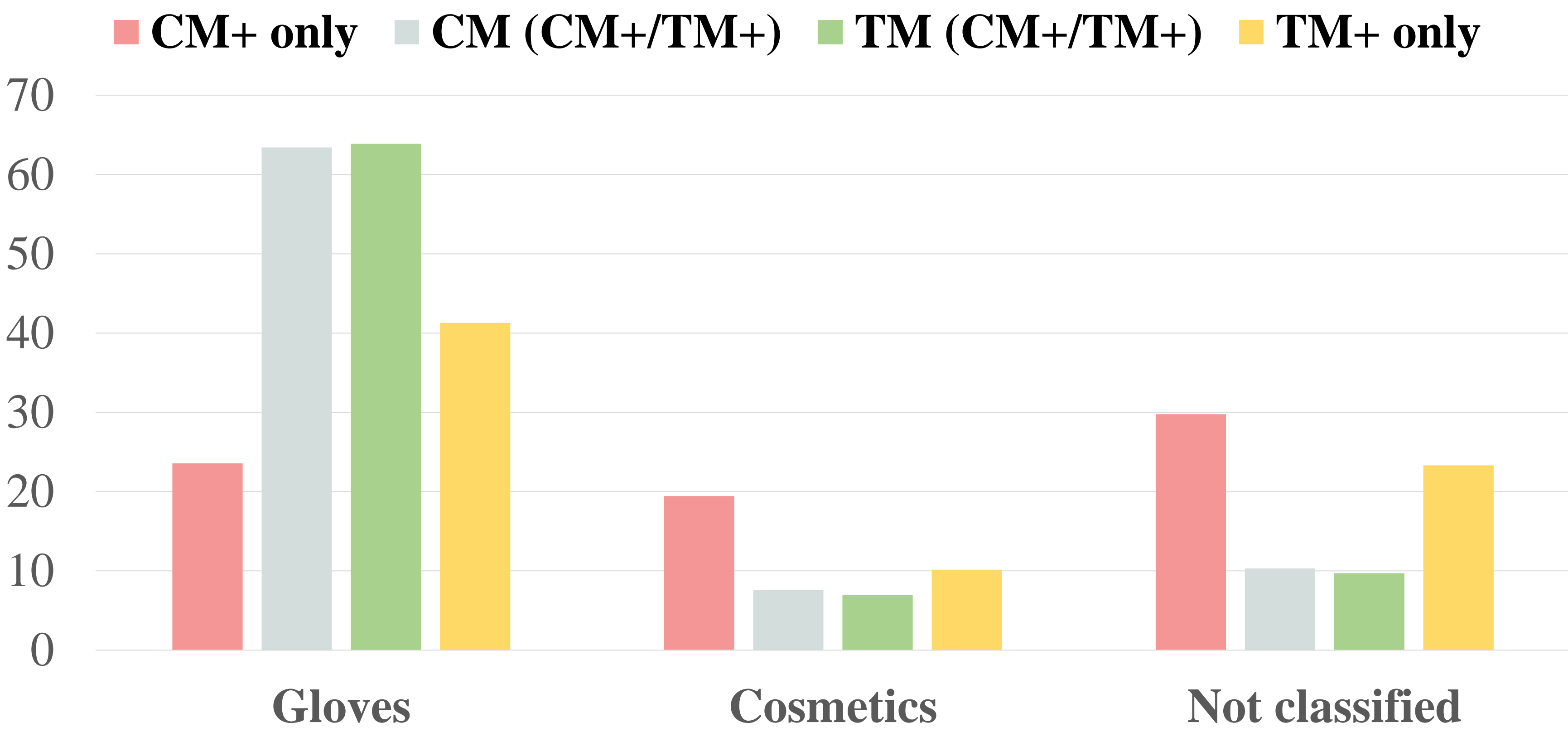
**Figure 2.** 3,437 total reactions to CM, TM, or both allergens

**47.5%** of TM-allergic patients were allergic to CM

**40.8%** of CM-allergic patients were allergic to TM

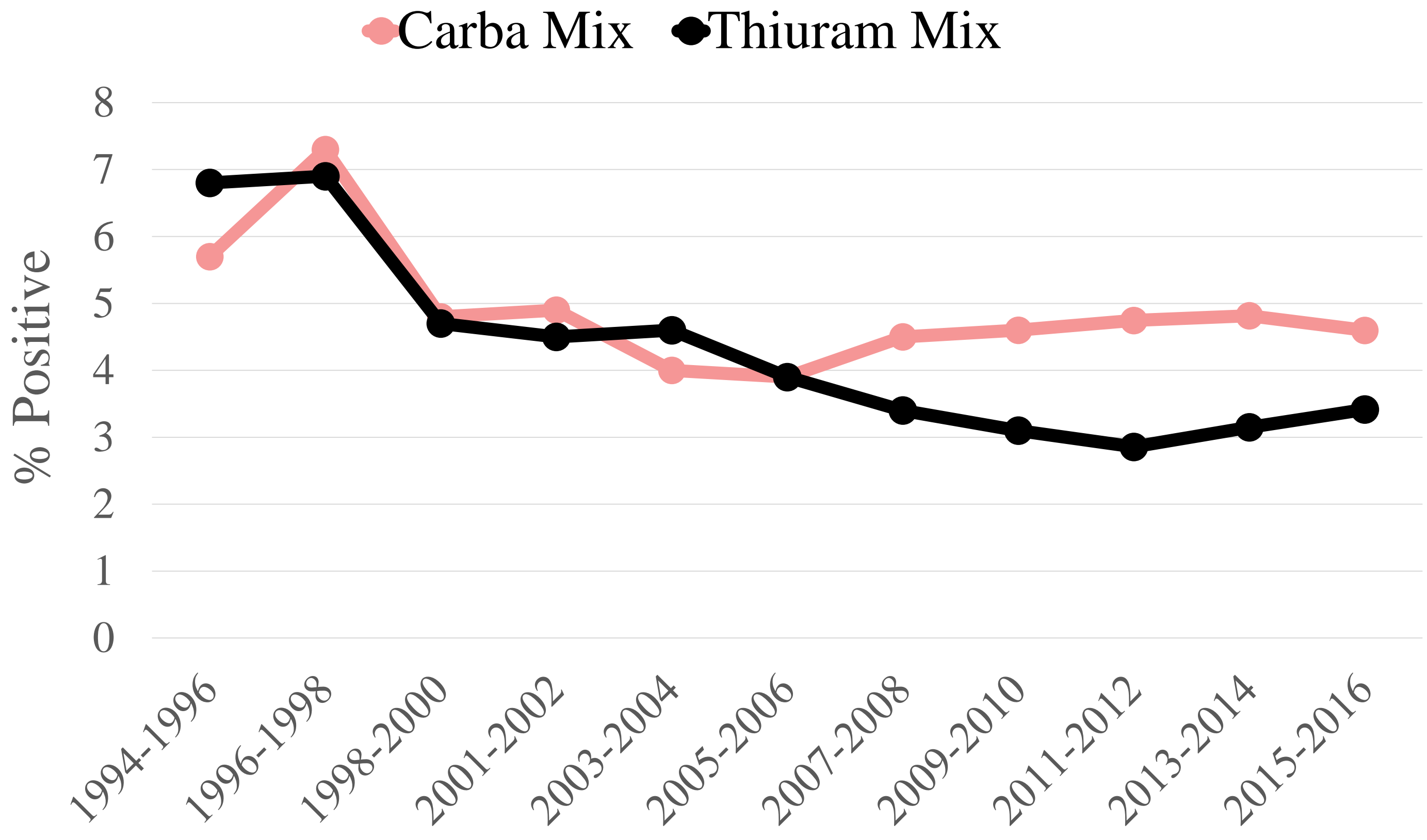
**Figure 3.** Demographics across different patient subgroups, n (%)

| Demographic  | CM+         | TM+         | NA           | CM+/TM+    | CM+ only   | TM+ only   |
|--------------|-------------|-------------|--------------|------------|------------|------------|
| Male         | 1129 (47.7) | 607 (29.8)  | 15389 (33.2) | 365 (37.8) | 764 (54.5) | 242 (22.7) |
| Occupational | 762 (32.2)  | 792 (39)    | 5751 (12.4)  | 480 (49.8) | 282 (20.1) | 312 (29.2) |
| Atopy        |             |             |              |            |            |            |
| Asthma       | 303 (12.8)  | 284 (14)    | 6686 (14.5)  | 134 (13.9) | 169 (12.1) | 150 (14.1) |
| Eczema       | 501 (21.2)  | 471 (23.2)  | 10088 (21.8) | 228 (23.7) | 273 (19.5) | 243 (22.8) |
| Hay fever    | 632 (26.8)  | 546 (26.9)  | 12966 (28.1) | 280 (29)   | 352 (25.2) | 266 (25)   |
| Hand         | 873 (36.9)  | 920 (45.2)  | 10745 (23.2) | 530 (54.9) | 343 (24.5) | 390 (36.5) |
| Leg          | 101 (4.3)   | 47 (2.3)    | 1939 (4.2)   | 22 (2.3)   | 79 (5.6)   | 25 (2.3)   |
| Face         | 247 (10.4)  | 318 (15.6)  | 7326 (15.8)  | 113 (11.7) | 134 (9.6)  | 205 (19.2) |
| Age, 40 > y  | 1743 (73.6) | 1386 (68.1) | 30770 (66.5) | 705 (73)   | 1038 (74)  | 681 (63.8) |



**Figure 4.** Most common sources of exposure

## RESULTS



**Figure 5.** Trends of allergy to CM and TM since 1994

## DISCUSSION

- ❖ Significant co-reactivity between CM and TM, but are not interchangeable in testing
- ❖ Patients with allergy to CM and TM are more likely to have occupationally related dermatitis as well as hand dermatitis
  - ❖ Consistent with exposure to rubber gloves
- ❖ Gloves remain most common source
- ❖ Though overall reduced rates of allergy to CM and TM since 1994, allergy to CM has again been increasing since 2006
- ❖ CM and TM remain important, clinically relevant allergens

## REFERENCES

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