

Sensitisation and Work Related Respiratory Symptoms in Workers at a Braiding Factory

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Background

- ◆ Natural rubber latex is the milky sap produced by the laticiferous cells of the tropical rubber tree *Hevea brasiliensis*. This material forms the basis of a variety of household, industrial and medical products ranging from surgical gloves to children's balloons and elastics. Latex allergy remains an important issue for both health care workers¹ and workers in other industry sectors. In this study, we investigated a group of workers at a braiding factory which utilised cotton, lycra, nylon and latex to produce elastics, tapes and cords.

Methods

- ◆ Workers were randomly selected from the site and asked if they would take part in the study. Each volunteer undertook a physician led respiratory questionnaire and lung function tests.
- ◆ Blood samples were taken and tested for specific IgE to common environmental allergens and to extracts of commercial latex, cotton and 2 different elastics from the workplace by RAST²
- ◆ Personal air samples were collected using glass fibre filters and IOM sampling heads. Total inhalable dust was measured using gravimetric analysis and inhalable latex protein (Hevb1, Hevb3, Hevb5 and Hevb6.02) using an adapted ELISA method (FITkitTM). Field blanks were included during sampling.

Results

- ◆ 44 workers agreed to take part in the study and 39 provided sera for measurement of specific IgE
- ◆ In total, 55% (24/44) of the volunteers reported work related respiratory symptoms (WRRS). 14 volunteers reported work related (WR) upper respiratory symptoms, 3 reported WR lower symptoms and a further 7 reported both upper and lower symptoms (Table 1).
- ◆ Of the 39 volunteers who provided serum, 10 were found to have specific IgE to at least one workplace allergen. 11 workers were atopic, 6 of which had workplace specific IgE demonstrating an association between the presence of workplace specific IgE and atopy ($p=0.01$).
- ◆ Only 6 of the 10 workers with workplace specific IgE had either upper or lower WR symptoms, although this finding was not significant ($p=0.651$).
- ◆ We were able to detect Hevb6.02 in 9/14 personal air samples. Hevb1, Hevb3 and Hevb5 were undetectable. Inhalable dust and Hevb6.02 concentrations ranged from $0.3\text{mg}/\text{m}^3$ to $1.8\text{mg}/\text{m}^3$ (median= $1.3\text{mg}/\text{m}^3$) and below detection to $3.1\mu\text{g}/\text{m}^3$ (median = $0.2\mu\text{g}/\text{m}^3$) respectively.
- ◆ Symptomatic workers had lower mean values for FEV1% predicted (93.8% vs 103.6%, $p = 0.041$) and FVC% predicted (95.1% vs 105.9%, $p = 0.012$), although this difference appeared to be confined to those subjects with both WRRS and specific workplace sensitisation.

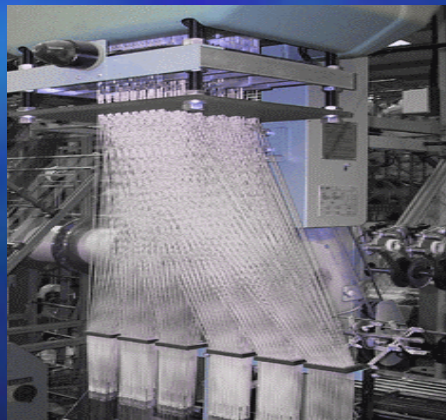
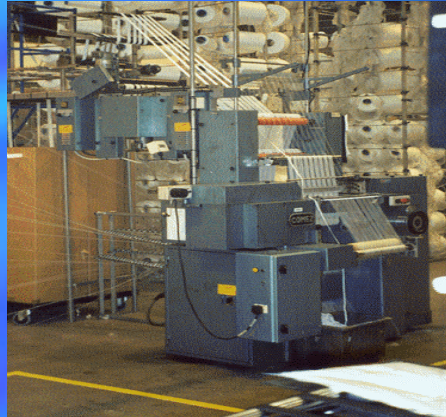


Table 1: Characteristics of study participants

Age	37.2 (SD 10.1)
Gender	22 male
Duration of work at site	61.2 month (SD 42.3)
Duration of work in industry	126.1 months (SD 108.7)
Current smoker	17 (39%)
Work related symptoms	24 (55%)
Self reported allergy	20 (45.5%)

Conclusions

- ◆ This study documented a high level of work related upper and lower respiratory symptoms in a group of workers occupationally exposed to latex. 10 of the workers had become sensitised to workplace allergens, although all of the total inhalable dust measurements were below the current UK Workplace Exposure Limit³ of $10\text{mg}/\text{m}^3$ (8-hour TWA reference period).
- ◆ This is one of the first studies to reporting sensitisation and work-related respiratory symptoms in a group of braiders potentially exposed to a variety of allergens in their workplace including Hevb6.02

References

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