Airborne exposures to allergen and particles with and without carpeting. (#341)
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**ABSTRACT**
Health bodies and physicians advising on home allergen avoidance measures for asthmatics recommend removal of fitted carpets. Is this necessarily correct?

**METHODS:**
Allergen Test Dust (ATD) of known composition was aerosolised into an AC-1 (28.5m³) chamber under controlled conditions. During natural decay, room disturbance and vacuuming, serial airborne particle counts, surface and airborne allergen measurements (augmented ELISA), were undertaken for six different carpets and one hard floor.

**RESULTS:**
Following ATD introduction and during room disturbance the highest airborne particle counts (x10⁴m⁻³) were identified with the hard floor (1.0μm:157.4, >3.0μm:36.6), by comparison with (lowest) Carpet 3 (1.0μm:3.2, >3.0μm:0.5) and (highest) Carpet 2 (1.0μm:44.3, >3.0μm:0.5, p=0.05). Airborne allergen (Deep1) measurements (pg/l) were also greater during room disturbance for the hard floor (74.7) than for Carpet 3 and 2 (53.5; 43.2). Vacuuming exaggerated these differences, hard floor (252.7) versus Carpet 3 (55.5) and Carpet 2 (212.0). By contrast, surface allergen measurement (µg/m²) for the hard floor was reduced by vacuuming (14.4;0.16) while only moderately reduced for Carpet 3 (24.0;11.35) and Carpet 2 (22.5;8.33). Relevant particle counts and airborne allergen levels remained higher for the hard floor than for the carpets post vacuuming. Repeated vacuuming resulted in reduced airborne particles for hard floor and Carpet 2, whereas Carpet 3 was low throughout.

**CONCLUSION:**
This study raises significant doubts about the assumed relationship between surface and airborne allergen levels. Some carpets act as a reservoir for allergen resulting in increased surface allergen levels, yet reduced airborne exposures during room disturbance. Are such carpets acceptable?

**METHODOLOGY**

- **Sampling performed at each test stage:**
  - **Airborne Particle Counts**
  - **Airborne Allergen**
- **Surface Allergen**
- **Measure dust mite, cat and pollen allergens via Standard ELISA (Indoor Biotechnologies) or Augmented ELISA (modified in-house)**

**RESULTS**
- **Airborne Particles**
- **Airborne Allergen**
- **Surface Allergens – dust mite, cat and pollen**

- **REFERENCES**