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## Assessment of indoor dermal exposure to SVOCs

Amelia C Cousins, Jeffrey H Shirai, John C Kissel (U of Washington)

**Background and Purpose/Objectives:** Increasingly available biomonitoring data provide evidence of widespread human exposure to large numbers of chemicals. In some cases, dominant exposure pathways are evident. However, in the case of non-occupational exposures to chemicals found in consumer products, multiple exposure pathways may be relatively important contributors. Although attempts to parse aggregate exposures are becoming common, data sets that actually permit use of a mass balance approach remain relatively rare. Even where mass balance is possible, use of uncertain or conservative estimates may conceal a gap between the sum of predicted inputs and observed outputs. Aggregate assessments often contain component estimates that vary dramatically in quality. Dermal exposures in particular are often dismissed on the basis of calculations that are not well considered.

**Methodology:** Potential exposures are evaluated using a fugacity-based indoor fate and transport model linked to a multi-component human PBPK model with a credible (i.e., membrane) skin barrier.

**Results/Impact/Outcomes:** Dermal exposures appear to contribute non-negligibly to expression of biomarkers for multiple indoor contaminants including pesticides, flame retardants, plasticizers and nicotine. Cross chemical comparisons can provide insight into exposure factor estimates that provide consistent explanations.

**Conclusions and Discussion:** In the case of SVOCs that persist in indoor environments, chronic dermal exposures are inevitable. Credible estimates of the magnitude of those exposures are needed to inform future consumer product regulations.

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## Recognising risk factors for persistent post-occupational dermatitis

Rosemary Nixon, Amanda Palmer, Melisa Lau, Tessa Keegel, Melanie Matheson. (Occupational Dermatology Research and Education Centre, Skin and Cancer Foundation Victoria)

**Objectives of study:** Our aim was to identify adverse prognostic factors for persistent post-occupational dermatitis (PPOD), where dermatitis persists despite cessation of relevant causative exposures.

**Methodology:** We performed a follow up study of 650 patients from our Occupational Dermatology Clinic with a response rate of 34.6%. Of these, 123 interviewed in person formed the basis of a case-control study.

**Results:** We identified 23 workers with PPOD, with a mean age of 46.7 (standard deviation (sd) 13.5) and a mean duration of follow up 5.47 years (sd 1.8). The risk factors which were not significant included gender, age, atopy, disease duration and educational level. The workers' severity at initial presentation was an important risk factor, associated with an odds ratio of 7.1 ( $p < 0.0001$ ). Severity was assessed using the Occupational Dermatitis Disease Severity Index (ODDI), which we have previously developed to incorporate a functional assessment of severity. Interestingly, smoking was also an extremely important risk factor, as were also the initial diagnosis of allergic contact dermatitis and a family history of atopy.

**Conclusion:** To our knowledge this is the first case-control study of PPOD. There has been little attention to severity as a prognostic factor in the occupational dermatitis literature previously. In addition, there has been little focus on the role of smoking in inflammatory dermatoses. These observations alert us to intervene more aggressively in workers with severe occupational dermatitis.

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