



Lung functional failures of aircraft crew members after “fume event”: diagnostics and biomonitoring

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Abstract

An increasing number of reports describe among others respiratory symptoms in airline crew members correlated to cabin air incidents („fume event“, FE). So far, no consensus exists about the diagnostic approach.

Methods: Symptom-related lung function diagnostics as well as blood and urine samples screened for organophosphates (OP) and/or various VOCs were performed.

Results: Out of our nearly 300 symptomatic FE patients about 75% reported respiratory symptoms such as cough, shortness of breath and dyspnoea on exertion, lasting a few days or up to several months. Lung function tests often showed small airways obstruction and/or reduced oxygen transfer without affection of the large airways. In most of the symptomatic patients different VOCs and/or OP were found time-correlated with the FE. These chemicals were mostly absent in patients' unexposed control samples without FE.

Conclusions: Our results underline the evidence of lung function impairment after FE. The plausibility of its correlation to FE was supported by the improvement over time after the FE. Furthermore, our results are evidence for an FE-correlated internal exposure with VOCs and/or OP, which are not constituents of the general environment, but of kerosene, oil or hydraulic fluids. Further independent investigations are needed to evaluate the clinical and toxicological findings and their link to FEs. Based on a realistic toxicological risk model an

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