

## Letter to the Editor

### “Fibre and Particle Release from Cigarette Filters”

EDITORS - J.L. Pauly [Beitr. Tabakforsch. Int. 24 (2010) 93–95] commented on our study of the release of respirable fibre-shaped particulates (RFPs) and respirable particles from cigarette filters [Beitr. Tabakforsch. Int. 23 (2009) 338–358]. His arguments relate mostly to the release of non-respirable "fibre lint" (the "fall-out" of fibres as mentioned in his letter). This aspect was critically reviewed in our publication as well though only for reasons of completeness without presenting our own results.<sup>1</sup>

We mentioned in our publication (and confirmed it in the detailed glossary) that fibre lint present on the surface of cigarette filters is too large for reaching even the upper parts of the lungs by means of air transport. However, respirable bio-persistent particles and particularly RFPs are regarded as hazardous when transferred into the lungs in higher doses. Therefore, in our letter we would like to address aspects regarding our examination of the release of respirable particles, including the motive for our study, the question of novelty of the methods applied and standardisation in particular.

In 2006, a DIN Ad-hoc Working Group<sup>2</sup> discussed the evaluation by the German BgVV (Federal Institute for Consumer Health Protection and Veterinary Medicine) of J.L. Pauly's publications, in which questions were raised regarding the possible release of respirable fibres from

filters. In conclusion, the Working Group proposed a pertinent study as no other publications or presentations were known, which address the subject of RFPs.

We are also not aware of a publication or presentation of studies using an aerosol spectrometer for analysing respirable particles released from filters though this technique turned out to be a straightforward and simple method. It is a real-time quantitative and qualitative analysis of the release of respirable particles from filters using commercially available instruments for smoking and particle analysis (though it needs to be performed under clean-room conditions).

For our examinations we used standard industrial tobacco products, either purchased at local wholesale (the three leading full flavour cigarette brands of Germany) or obtained from companies of the German cigarette industry. For testing the release under worst case conditions we simulated the Canadian Intense Regime (though without blocking ventilation as this does not affect the release).

In his letter, J.L. Pauly raised the question of methods standardisation. In our study, we used, and referred to, standardised methods for the analysis of workplace exposure and the examination with the aerosol spectrometer, including the smoking regime and clean room conditions. Therefore, the standardisation of the method could be achieved easily if it would be considered necessary for testing new filter materials. On the other hand, we believe that a method would not be needed for standard acetate filters as we confirmed very low exposure only. We would be glad to provide our support for standardising this method.

We assume that J.L. Pauly had the analysis of fibre lint in mind when calling for standardisation. However, what should be the target of this kind of analysis: the number of fibre lint a) formed at the cross-section of the filter or b) released in the air stream or c) transferred by some mechanical way? We are open to discuss these aspects with J.L. Pauly as we have some experience from earlier studies we did.

Other questions about fibre lint should be discussed preferentially in a direct dialogue thus avoiding the repeti-

<sup>1</sup> We have neither searched for nor detected fibre lint in the study described in our publication. The largest fibre - it was more like a fibre-shaped particulate - found by SEM analyses had the dimensions of 21 x 6 µm and was not respirable (included in Figure 7 and listed in Table 2 under Fibre-shaped particulates "non-RFP"); the other 22 fibres detected were shorter than 10 µm and, consequently, not likely to resist macrophageal clearance.

<sup>2</sup> The Working Group was composed of experts and toxicologists of the cigarette and acetate tow industries, an analytical research institute, a (public trust) institute for textile and fibre research and the Federal Institute for Risk Assessment.

tion of our arguments and explanations put forward by us earlier. A basic prerequisite would be the clear distinction between the different types of dust (i.e. fibre lint, respirable particles or particle-shaped particulates).

The assessment of the intake of fibre lint has to take into account that insoluble particles and fibres enter the cavity of the mouth and the throat from various other sources when eating or mouth breathing.

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