

POF031: General platform presentation

A miniature sampler for “in-mask” workplace measurements – laboratory comparisons with existing methods

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Abstract

Researchers at the Health and Safety Executive (HSE) have developed a miniature in-mask sampler for respirable dust to measure workplace exposure. The design of the miniature sampler allows it to fit inside a worker’s RPE, so it can sample respirable dust from within the wearer’s breathing zone. If a measurement is also taken outside the mask, this allows workplace protection factors to be calculated.

Validation of the miniature sampler is ongoing. Previous laboratory testing on three models of FFP3 mask found no reduction in protection when the miniature sampler was fitted, suggesting that it is safe to use. Workplace trials found no problems with worker acceptance, although some practicality issues were raised. Laboratory testing has shown good agreement with existing cyclone-type samplers, but these are too large to perform comparisons inside the mask.

The purpose of this part of the study is to compare the miniature sampler with existing methods for measuring protection factors. Testing was carried out using a dummy head connected to a breathing machine. An FFP3 mask was fitted to the dummy head, and the system exposed to a sodium chloride aerosol. Measurements were taken inside and outside the mask using different methods, including the miniature sampler and ambient particle counting.

The background to the miniature sampler will be described, and the calculated protection factors will be presented and compared for the different methods of measurement.

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