

## Information Document: Formaldehyde and Passive Sampling

**Concerns have been raised at the Faculty of Occupational Hygiene Committee regarding the accuracy of measuring airborne formaldehyde concentrations using passive samplers, where the source of formaldehyde is formalin.**

The technology and application of passive sampling has expanded vastly since the turn of the century due to its ease of use. The simplicity associated with passive sampling combined with consumer desire has resulted in a market growth for passive samplers.

However, assurance of their accuracy, specifically when measuring formaldehyde originating from formalin, must be sought when using these passive samplers. There is a risk of negative interference with methanol in the formalin resulting in underestimation of exposures. This is also likely to be an issue with other aqueous formaldehyde solutions containing methanol not marketed under the 'formalin' name, such as some embalming solutions. Discrepancies have also occurred when determining formaldehyde derived from paraformaldehyde (Pengelly I, Groves J A, Levint J O, Lindahl R, An investigation into the differences in composition of formaldehyde atmospheres generated from different source materials and the consequences for diffusive sampling, *Ann Occup Hyg.* 1996;40(5) 555–567, <https://doi.org/10.1093/annhyg/40.5.555>).

The SKC Technical Note on 'Sampling Formaldehyde from Formalin using Passive Samplers,' states that, "*US OSHA does not approve the use of any passive sample for compliance sampling of formaldehyde from formalin unless data is available showing good correlation between the passive sampler and active sorbent tubes. In OSHA method 1007, OSHA explains that formaldehyde will react with methanol in the formalin solution to form methoxymethane and dimethoxymethane. Diffusive rates for these two compounds differ from formaldehyde which may produce low results with passive samplers.*"

The Technical Note continues to state that several field studies have found a good correlation between passive samplers and reference methods using pumps. However, this can depend on the temperature of the environment and the concentration of methanol within the formalin solution.

To summarise, caution must be applied when measuring formaldehyde from solutions containing methanol using passive samplers because of possible underestimation of airborne concentrations.