

Detection and decontamination of methamphetamine at clan labs

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Methamphetamine is a drug that is synthesised quite commonly in New Zealand, due to its popularity, easy manufacturing and abundance of raw material. This has resulted in the contamination of a number of homes, motels and other buildings around the country. This research project looks at developing a method to sample and detect methamphetamine at these former clandestine laboratory sites, as well as their effective remediation.

Dynamic solid phase microextraction (SPME) is a technique that was previously used to sample air inside a suspected lab, and test it for methamphetamine¹. However, it was not sensitive enough to detect methamphetamine at sites of low concentration. We addressed this issue by using high surface area capillary microextraction (CME) devices, coupled with gas chromatography/mass spectrometric analysis². This technique could consistently detect methamphetamine at concentrations of 0.42-4.2 $\mu\text{g m}^{-3}$, and could be pre-loaded with a deuterated internal standard for quality control.

An ideal decontamination process would breakdown methamphetamine into innocuous compounds without adversely affecting building material. We are now attempting to determine if hydrogen peroxide-based decontaminants can be used to remediate these sites. Preliminary results have shown significant decomposition, and we are currently trying to identify the reaction products formed.

1. McKenzie, E. J.; Miskelly, G. M.; Butler, P. A. G. *Analytical Methods* **2013**, *5*, 5418-5424.
2. Nair, M. V.; Miskelly, G. M. *Forensic Science International* **2016**, *268*, 131-138.