

Assessing presence and level of toxic chemicals associated with clandestine methamphetamine synthesis

Russell Fuller¹, Jackie Wright^{1,2}, Emma Kuhn¹, Georgia Davidson¹, Natalie Grimaldi¹, Natalie Daou¹, Jesby Thomas¹, Kirstin Ross¹, Stewart Walker¹

¹College of Science and Engineering, Flinders University, Adelaide, South Australia, Australia. ²Enriska, Sydney, New South Wales, Australia.

The growth in clandestine drug synthesis and use requires the application of analytical chemical methods to determine not only the presence and concentration of the drugs but also of by-products and precursors that may also be harmful.

Our multi-disciplinary research includes determining

- 1) the extent of contamination in materials present in clandestine laboratories during synthesis ^{1-3, 6-9}
- 2) the length of time a property remains contaminated by methamphetamine and other chemicals ^{1, -3, 5, 6, 8 and 9}
- 3) and transferal of these chemicals to material brought into a property after synthesis had ceased. ^{5, 8 and 9}

In addition we have extended beyond contaminated houses to investigate

- 4) the detection of by-products of methamphetamine synthesis in wastewaters, waste and soils ^{4 and 7}
- 5) the extent of contamination of public places where users may smoke (such as public toilets)
- 6) detection, quantification and remediation of valuable and personal materials and
- 7) the impact of inhalation of airborne methamphetamine and consequences for the adequacy of current wipe sampling procedures⁹

Jackie, Stewart and Kirstin at drug Laboratory –
"moving chemistry from 'kitchen bench' to 'illicit drug market'"



For more details see → 1) Wright J, Kenneally ME, Edwards JW, Walker GS. Adverse health effects associated with living in a former methamphetamine drug laboratory – Victoria, Australia, 2015. *MMWR Morb Mortal Wkly Rep.* 2017;65(52):1470-3.

2) Wright J, Edwards J, Walker S. Exposures associated with clandestine methamphetamine drug laboratories in Australia. *Rev Environ Health.* 2016;31(3):329-52.

3) Wright J. Exposure and risk associated with clandestine amphetamine-type stimulant drug laboratories: PhD Thesis: Flinders University; 2016.

4) Fuller, R. Analysis of compounds related to the synthesis of amphetamine type substances in wastewater and their stability, PhD Thesis, Flinders University; 2019

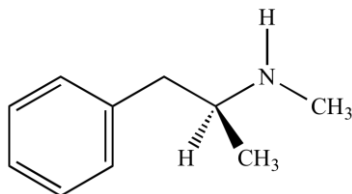
5) Wright J, Walker GS, Ross KE. Contamination of homes with methamphetamine: Is wipe sampling adequate to determine risk? *Int. J. Environ. Res. Public Health*, 2019;16(19):3568.

6) Emma Kuhn, G.Stewart Walker, Harriet Whiley, Jackie Wright and Kirstin Ross, Household contamination with methamphetamine: knowledge and uncertainties, *Int. J. Environ. Res. Public Health*, 2019, 16, 4676; 15 pp doi:10.3390/ijerph16234676

7) Kuhn E, Methamphetamine contamination in residential properties: A public health concern, Honours Thesis, Flinders University; 2019

8) Wright J, Kenneally ME., Ross, K and Walker S. Environmental methamphetamine exposure and health effects in 25 case studies *Int. J. Environ. Res. Public Health*, 2020

9) Wright J, Symons B, Angell J, Ross KE and Walker S. Current Practices Underestimate Environmental Exposures to Methamphetamine: Inhalation Exposures are Important", 19-3170.R1. Open Access. *J. Expo. Sci. Environ. Epidemiol.* Accepted 5 August 2020



We welcome contact for international collaboration
Stewart.walker@flinders.edu.au

