

There has been work done on second hand meth from various sources.

For risk estimate purposes, toxicologically, virtually all threats have a dose, below which there is no observable adverse effect; that dose level is referred to as the LOAEL (Lowest Observable Adverse Effect Level). Recent information developed by Dr. Charles Salocks, DABT, with the California Environmental Protection Agency has determined a LOAEL for methamphetamine as 0.08 mg/kg-day. This is for a child, for adults, the level is slightly lower (that is, the infant model is not the most sensitive model, as previously thought). Based on work by the State of California, this toxicological dose level is achieved when methamphetamine surface contamination exceeds 1.5 µg/100cm² in a residence.

Available literature supports a LOAEL for *d*-methamphetamine in children in the area of 0.2 mg/kg/day with a NOAEL of approximately 0.1 mg/kg/day (1) which is similar to the Salocks value. Some studies indicate that adults may be more susceptible to the adverse effects of methamphetamine and have reported LOAELs in the range of 0.08 mg/kg/day to 0.2 mg/kg/day. Therapeutic doses for Desoxyn[®] (*d*-methamphetamine hydrochloride) are reported to start at approximately 0.25 mg/kg/day for a child. I have attached some of Salocks stuff to this email. (I have much more if you need it)

It is well established knowledge in the Industrial Hygiene and medical professions that the use of methamphetamine in a home results in elevated exposures to the occupants via airborne migration. When methamphetamine is even just smoked, between 80% (3) and half (4) of the substance is released from the user's pipe. Of that material which is inhaled, between 33% (5) and 10% (6) of the nominal dose is not absorbed into the body, but rather exhaled back into the ambient air.

Other authors have measured the concentrations of methamphetamine in air. Unfortunately, the cited authors (Martyny et al), have recently been caught in some extremely poor junk-science issues which have reduced their credibility. (2) However, assuming that no such issues occurred with their earlier work, (7) they determined that a single use of methamphetamine, by smoking, could result in an average residential area ambient airborne concentration of methamphetamine ranging from 35 micrograms per cubic meter (µg/m³) to over 130 µg/m³. These authors found that smoking methamphetamine just once in the residence can result in surfaces being contaminated with methamphetamine. The authors concluded:

"If methamphetamine has been smoked in a residence, it is likely that children present in that structure will be exposed to airborne methamphetamine during the "smoke" and to surface methamphetamine after the 'smoke.'

At an airborne concentration of 130 µg/m³, an adult dose would be 0.024 mg/kg/day and a 20 kg child would receive 0.08 mg/kg/day. Since it is the purpose of the forced air ventilation system to move air throughout the structure, once the ventilation system is contaminated, it can remain an effective mechanism of dissemination of methamphetamine contamination and may be a continued source of contamination until appropriately addressed.

When we evaluate methamphetamine, (or virtually any other contaminant) for risk assessment purposes, we typically will perform a “body burden” model. This is what was done for the State of Colorado by Tracy Hammon and you can get a copy of that here: <http://www.forensic-applications.com/meth/supportdoc.pdf> I have also included two of Tracy’s papers in this email (I believe they are open access, and not copy right protected).

I have measured concentrations of meth in residences and found toxicologically significant doses. I have included a censored letter I prepared for a physician who purchased a contaminated house so you can see how I addressed his issues.

References

- 1) Young GC, Turner RK CNS stimulant drugs and conditioning treatment of nocturnal enuresis. Behaviour Research and Therapy 3, 93-101 (1965).
- 2) http://forensic-applications.com/moulds/NJH_Mould_Rebuttal.pdf
- 3) Cook CE, *Pyrolytic Characteristics, Pharmacokinetics, and Bioavailability of Smoked Heroin, Cocaine, Phencyclidine, and Methamphetamine* (From: Methamphetamine Abuse: Epidemiologic Issues and Implications Research Monograph 115, 1991, U.S. Department Of Health And Human Services Public Health Service Alcohol, Drug Abuse, and Mental Health Administration National Institute on Drug Abuse)
- 4) Cook CE, Jeffcoat AR, Hill JM, et al. *Pharmacokinetics of Methamphetamine Self-Administered to Human Subjects by Smoking S-(+)-Methamphetamine Hydrochloride*. Drug Metabolism and Disposition Vol. 21 No 4, 1993 as referenced by Martyny JW, Arbuckle SL, McCammon CS, Erb N, Methamphetamine Contamination on Environmental Surfaces Caused by Simulated Smoking of Methamphetamine (The publication of this study is currently pending. Copies of the study are available from the Colorado Alliance for Drug Endangered Children.)
- 5) Harris DS, Boxenbaum H, Everhart ET, Sequeira G, et al, The bioavailability of intranasal and smoked methamphetamine, Pharmacokinetics and Drug Disposition, 2003;74:475-486.)
- 6) Cook CE, Jeffcoat AR, Hill JM, Pugh DE, et al Pharmacokinetics of methamphetamine self-administered to human subjects by smoking S-(+)-methamphetamine hydrochloride Drug Metabolism and Disposition, Vol 21, No. 4, pp. 717-723, 07/01/1993
- 7) Martyny JW, Arbuckle SL, McCammon CS, Erb N, Methamphetamine Contamination on Environmental Surfaces Caused by Simulated Smoking of Methamphetamine (The publication of this study is currently pending. Copies of the study are available from the Colorado Alliance for Drug Endangered Children.)

Cheers!
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