Sent by:
rob.graham@hnzc.co.nz

15/07/2016 12:20 p.m.

To: "'Paul_Prendergast@moh.govt.nz'" <Paul_Prendergast@moh.govt.nz>,
cc:
bcc:

Subject: RE: Review of Dr Kim's background paper

Thanks Paul

As mentioned before, it is very timely that you are able to provide us with these expert comments.

Rob Graham
Manager - Auckland, Governance Advisory Unit
Housing New Zealand Corporation

DDI:
Mobile:
Email:rob.graham@hnzc.co.nz

From: Paul_Prendergast@moh.govt.nz [mailto:Paul_Prendergast@moh.govt.nz]
Sent: Friday, 15 July 2016 12:04 p.m.
To: Rob Graham
Cc: Greg Groufsky; Bruce.Taylor2@mbie.govt.nz; Jon.Saunders004@msd.govt.n; Sarah.Carson@mbie.govt.nz; Annie.Coughlan@mbie.govt.nz; jayne.mccullum@mbie.govt.nz; Helen.Sears@mbie.govt.nz; peter_abernethy@moh.govt.nz; sally_gilbert@moh.govt.nz; Phil_Knipe@moh.govt.nz; Andrew Rose
Subject: Fw: Review of Dr Kim's background paper

Hi Rob
I am not in the office today but on checking emails I see that the comments on Dr Kim's paper have just arrived from our toxicologist in California. As I gave an undertaking to get them to you as soon as possible (considering the issues you are dealing with), I am passing Dr Jeff Fowles comment on directly. I think the paper is fairly self explanatory. I have copied this to those I understood to be involved or had an interest in the recent SOC paper on housing issues.
regards
Paul

Paul Prendergast
Principal Public Health Engineer
Environmental and Border Health
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----- Forwarded by Paul Prendergast/MOH on 15/07/2016 11:42 a.m. -----

Chris Nokes <Chris.Nokes@esr.cri.nz>

To: "Paul_Prendergast@moh.govt.nz" <Paul_Prendergast@moh.govt.nz>,
Cc: "Sally_Gilbert@moh.govt.nz" <Sally_Gilbert@moh.govt.nz>, "'tox-logic@hotmail.com'"
Peter Cressey <Peter.Cressey@esr.cri.nz>
Date: 15/07/2016 10:27 a.m.
Subject: Review of Dr Kim's background paper

Hi Paul

Please find attached Jeff's commentary on Dr Kim's background paper on meth.

Jeff was apologetic about the delay in getting this to us; it turned out to be complex than he had anticipated, and he has been waiting for other senior toxicologists to get back to him on some matters.

Please get back directly to Jeff, (cced to me) if you have any questions.

Regards
Chris

Chris Nokes
T: [redacted]
E: chris.nokes@esr.cri.nz
ESR

If you have received this message in error, please notify the sender immediately and delete this message.
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This e-mail message has been scanned for Viruses and Content and cleared by the Ministry of Health's Content and Virus Filtering Gateway

Comments on: Background notes relating to the nature and health significance and persistence of trace of methamphetamine on indoor surfaces. Author: Dr. Nick Kim, Senior Lecturer, School of Public Health, Massey University, Wellington.

14 July, 2016

Jeff Fowles, Ph.D.
Tox-Logic Consulting, Santa Rosa, California.

The background provides a useful summary of several key issues for consideration in the development of a health-based surface standard or guideline for methamphetamine (MA) in reoccupied dwellings. The delineation of health-based vs instrument-based standards is importantly emphasized, and some cautions about the potential for over-interpretation of the health implications of risk assessment values are provided.

There are two independent health risk based MA values derived by the State of Colorado and California that are discussed, each based on completely different toxicological studies and with different sets of exposure assessment modelling and associated uncertainties. These two authorities (and the Australian and New Zealand guidelines that currently align with the Colorado value) subsequently have 2 different surface guideline levels (0.5 and 1.5 µg/100 cm^2). This illustrates, as discussed by Dr Kim, the degree to which the variability and uncertainty inherent in these calculations can result in variations in outcome and interpretation of health risk from a given guideline level. There are however, in my view, some technical issues that warrant further consideration when deriving or adopting a health-based guidance value for MA from homes that were formerly used as laboratories or inhabited by MA users.

1) As a general principle, human data are preferable to experimental animal data in risk assessment, if appropriate and sensitive endpoints exist for both. This is particularly true in cases where toxicokinetics or toxicodynamic differences between humans and the studied non-human species are large. In this case, the elimination half-life of MA is roughly an order of magnitude faster in the rat (about 1 hour) (Riviere et al., 2000) than in humans (around 10-15 hours) (Mendelson et al., 2006). While toxicokinetic differences often occur between humans and experimental animals, in this case, the effective doses for onset of toxicity are reported to vary by a factor of about 50-fold, with humans being far more sensitive (OEHHA, 2011; Salocks, 2016). Thus, unless dosimetric adjustments were made to a given rat study, extrapolation of experimental doses in rats to those in an environmental exposure situation, or in a human risk assessment context, could be problematic. Given that human data (although dated), from pregnant women exist, as summarized in the California EPA (OEHHA) assessment, it is unclear why these data have been dismissed as the point of departure for the risk

assessment calculation presented in the Background Paper. The use of decreased body weight gain as a toxicological endpoint in the study on pregnant women is questionably adverse and may be a reversible effect, however the effect was statistically significant and is consistent with reduced appetite with amphetamine users. Thus it is an indication of a plausible biological response, and in my view it is prudent to err on the conservative side to consider it adverse. There is also ample precedent in experimental animal studies in regulatory settings for considering decreased weight gain to be an adverse effect.

The receptor in the California exposure assessment, however, is not pregnant women, but rather infants and toddlers, who would have much higher exposures. Thus the exposed population for risk assessment and the toxicological study subjects are not aligned. On balance, although the human toxicological data used by OEHHA are marginal, given the lack of sensitivity of the rat model to MA toxicity, my view is that the human data should receive preference for use. The exposure assessment should consider pregnant women as the most relevant exposed population.

The Background Paper employs the rodent toxicological data used by the State of Colorado, and a benchmark dose (BMD) calculation, with new exposure estimates as the basis for an alternative risk value for MA. While the rodent data can be informative and a BMD approach is generally preferred over a NOAEL approach, I do not agree that the rat is the best choice of a toxicological starting point for the risk assessment, and the difference in point of departure between the rat and human studies could account for a substantial difference in guidance value outcome.

2) Several recent studies, including the IDEAL study conducted in New Zealand, point to lasting neurodevelopmental effects in children stemming from pre-natal exposures (Smith et al., 2015; Wouldes et al., 2014; LaGasse et al., 2011). While the doses received by the fetuses in these studies were only categorized and presumably are higher in magnitude than in the dermal exposure scenario presently under consideration, thresholds for toxicity were not established and these subtle and latent effects may indicate that fetal or early post-natal exposures are of significant concern. Profound neurodevelopmental effects are also found in neonatal rats exposed to therapeutic doses (McDonnell-Dowling et al., 2014; NTP 2005). These relatively new findings indicate that scientists do not yet completely understand the dose-response relationship of small doses of MA to unborn fetuses or early neonates. The database uncertainty factor of 3 employed by the California EPA was incorporated explicitly to acknowledge this data gap, and is, in my view, completely justified.

Given the problems with the available data sets, the different approaches taken by different authorities, and the recent findings in human studies,

ideally an updated literature review should be undertaken with a full accounting of all available human and rodent data, with a current benchmark dose modelling approach, if possible, to arrive at a reference dose for the human neurodevelopmental effects of MA. To my knowledge, no authority is undertaking this task.

3) In apparent contrast to the conclusions reached in the Background Paper, a recent publication by Van Dyke and colleagues (Van Dyke et al., 2014) examined experimental and modeled dermal exposures to MA and concluded that 1.5 µg/100 cm^2 may not provide adequate protection against the California reference dose in all instances. This group used cotton gloves which they acknowledge are likely to overestimate the transfer of surface residues as compared with human skin. Furthermore, the direct application of their data [particularly transfer efficiency] in regard to their conclusion that a "clean" value of 1.5 µg /100 cm^2 can still lead to excessive exposure, i.e., an exceedance of the RfD, is likely exaggerated. This is because transfer efficiency from a surface cleaned to 1.5 µg/100 cm^2 is likely to be different. For example, it is noted by Martyny (2008) that once a surface has been cleaned with a solvent such as "simple green" very little material remains readily dislodgeable. These authors noted that additional washings were not particularly effective in removing more material. Thus, once cleaned, the efficiency of transfer from surface-to-dermis is going to be significantly different than assessed by Van Dyke who measured efficiency using cotton gloves on a freshly contaminated surface. It is my view that the study by Van Dyke does not provide cause for concern about the health protective nature of the California guidance value, but does illustrate the widely varying results one can generate using artificial experimental exposures and modelling assumptions.

Dr Kim correctly points out that, given the many conservative assumptions that are employed in the risk assessment process, small excursions above a reference dose do not automatically translate into the onset of adverse clinical effects. Indeed, a goal of risk assessment is to help ensure that such effects never come into play. The use of uncertainty factors is thus inherently subjective and involves a degree of conservatism. However, I do not find that the use of uncertainty factors such as those used in the California and Colorado calculations to be inappropriately conservative particularly in light of point 2 above.

It may well be that a surface concentration could be different (higher or lower) than the current 0.5 µg /100cm^2 NZ Guideline value based on a detailed re-evaluation of the various toxicological considerations including recent human data, and detailed consideration of inputs to exposure models, and we are currently in the process of exploring those possibilities. The analysis presented by Dr Kim in the background paper by itself is, however, not a convincingly improved alternative to the current standard or that from California.

It is worth noting that, since California implemented its standard, there are now 5 additional US States that have adopted this including: Minnesota, Wyoming, Washington, Virginia, and Kansas.

References:

LaGasse L, Wouldes T, Newman E, Smith L, Shah R, Derauf C, Huestis M, Arria A, Della Grotta S, Wilcox T, and Lester B. 2011. Prenatal methamphetamine exposure and neonatal neurobehavioral outcome in the USA and New Zealand. *Neurotoxicol Teratol.* 33(1):166.

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Mendelson J, Uemura N, Harris D, Nath R, Fernandez E, Jacob P, Everhart E, and Jones R. 2006. Human pharmacology of the methamphetamine stereoisomers. *Clin Pharmacol Ther.* 80(4):403.

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Wouldes T, Lagasse L, Huestis M, Dellagrotta S, Dansereau L, and Lester B. 2014. Prenatal methamphetamine exposure and neurodevelopmental outcomes in

children from 1 to 3 years. *Neurotoxicol Teratol* 42:77.

Sent by: Paul Prendergast/MOH

13/07/2016 01:41 p.m.

To: Andrew Rose <Andrew.Rose@hnzc.co.nz>,
cc:
bcc:

Subject: Re: Level.

Hi Andrew
Not a problem. FYI - I received this email from our toxicologist last night so his comments won't be far away:

Hi Paul

I will write up my concerns about Nicks analysis by tomorrow.

I have discussed with Dr Lynne Smith from UCLA medical center and expect to be contacted end of week by Dr Marylin Houston - just retired in January from her position as head of chemistry with the NIDA (national institute on drug addiction) who also has a tox background... We're getting some heavy hitters weighing in... Please bear with me as I can't line all of these people up as quickly as I would like, but their input could be critical.

Regards
Jeff

We will continue to get you the best advice we can, although it may not make the decision of your Board any easier, at least you will have a balanced range of expert international opinion.
Paul

Paul Prendergast
Public Health Engineer
Environmental and Border Health
Public Health
Ministry of Health
DDI: [redacted]

http://www.health.govt.nz
mailto:Paul_Prendergast@moh.govt.nz

Andrew Rose Good afternoon Paul. Thank you fo... 13/07/2016 01:23:32 p.m.

From: Andrew Rose <Andrew.Rose@hnzc.co.nz>
To: '"Paul_Prendergast@moh.govt.nz"' <Paul_Prendergast@moh.govt.nz>,
Date: 13/07/2016 01:23 p.m.
Subject: Level.

Good afternoon Paul,

Thank you for your help re the HNZ number. It would appear that it has help significantly in delaying the thoughts here for the moment.

Andrew Rose
Programme Manager
New Construction
Asset Development Group
Housing New Zealand Corporation

Email: andrew.rose@hnzc.co.nz

ASSET DEVELOPMENT GROUP

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Housing

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Sent by: Paul Prendergast/MOH

12/07/2016 01:39 p.m.

To: Rob Graham <Rob.Graham@hnzc.co.nz>,
cc: Andrew Booker <Andrew.Booker@hnzc.co.nz>, Charlie Mitchell <Charlie.Mitchell@hnzc.co.nz>,
bcc:

Subject: Re: Methamphetamine expert advice

Hi Rob

Good to connect with you. I will answer your questions below as best I can in blue below:

Paul Prendergast
Public Health Engineer
Environmental and Border Health
Public Health
Ministry of Health
DDI:

http://www.health.govt.nz
mailto:Paul_Prendergast@moh.govt.nz

Rob Graham Hi Paul Our discussion this morning... 12/07/2016 12:36:39 p.m.

From: Rob Graham <Rob.Graham@hnzc.co.nz>
To: '"Paul_Prendergast@moh.govt.nz"' <Paul_Prendergast@moh.govt.nz>,
Cc: Charlie Mitchell <Charlie.Mitchell@hnzc.co.nz>, Andrew Booker <Andrew.Booker@hnzc.co.nz>
Date: 12/07/2016 12:36 p.m.
Subject: Methamphetamine expert advice

Hi Paul

Our discussion this morning was most useful.

You mentioned that MoH has requested further expert scientific advice including:

- advice on the Dr Kim paper (which MoH has made available to Housing NZ)
- and advice from a California-based NZ toxicologist. I understood this has two parts:
  - a review of the MoH NZ guidelines (due in October)

Below id the brief to the toxicologist for the review of the MoH guidelines

Up-date of Guideline Values for Remediation of Methamphetamine Laboratory Sites

The Ministry of Health produced 'Guidelines for Remediation of Clandestine Methamphetamine Laboratory Sites' which were published in 2010. We would like a literature review to establish what new information from published studies, guidelines or standards has become available since 2010 on:

- the health risks of exposure to residential buildings contaminated by of the various chemicals involved in clandestine Meth labs
- other jurisdictions who have set guideline or regulatory values (for residential dwellings), what those values are for each chemical they have set and a summary of the risks / exposure assumptions they have used in setting those values (if available)
- With the information obtained from above, review the Guideline values set out in Table 3, Chapter 4.4

of the Ministry's Guidelines

- Make recommendations on the suitability of the current Guideline values or whether they should be amended in light of new information including if any further chemicals that should be added to the table

- Whilst the Guideline was for remediation of Methamphetamine laboratories and the wide range of chemicals that may be involved, review and advise on the chemicals that are likely to be detected where a residence has just been used for smoking Methamphetamine recreationally and whether recreational smoking is likely to get any contamination from those chemicals up to the Guideline values. If so provide health risk advice on the risks from buildings which have been contaminated from recreational methamphetamine use only and appropriate guideline values in these circumstances.

Supplementary issues the toxicologist has been asked to address and advise:

- comparison or comment on the risks from tobacco smoke affected buildings compared to methamphetamine affected buildings.
- whether there would should be different guideline values for methamphetamine contamination depending on whether it resulted from just recreational use as against manufacture

o and a shorter-term request for comment on the Dr Kim paper, which MoH may receive in about a week?

Could you provide any further information about this shorter term advice.

- any more details about the scope of the shorter term advice that MoH has requested?

We simply asked for ESR and our overseas toxicologist (Jeff Fowles engaged through ESR) to provide comment on Nick Kim's paper which had been sent to the Standards Committee. The Standards Committee had asked for comment and I undertook to obtain this.

Initial response received from ESR is attached below (have previously given to Andrew Rose).

Comments on Kim Jul 2016.docx

- when MoH expect to receive this advice?

We expect Jeff fowles advice/comments on Nick Kim's paper any time. However whilst replying to this I have received and initial communication and thoughts from ESR/Jeff Fowles which I will forward in the next email

- when MoH could share this advice with Housing NZ?

My intention would be to share it with HNC as soon as possible so that you have the most up-to date advice we can give you given your current situation

Please note we haven't at this stage advised other parties of the name of the toxicologist (one he is engaged through ESR so we referred media enquiries on who it is to them and secondly we didn't want Media lobbying him and delaying his advice which we wanted to be independent and free from interference - so would appreciate the toxicologists' name being confidential at this time. His reports will of course be eventually made public.
Any advice that MoH could share with Housing NZ would be very timely.

If you have any queries, please do not hesitate to contact either me or Charlie Mitchell. Charlie is leading the methamphetamine related work for Housing NZ. He would be the most appropriate first point of contact.

Thanks for your help with this.

Rob Graham

Rob Graham
Manager - Auckland, Governance Advisory Unit
Housing New Zealand Corporation

Email:rob.graham@hnzc.co.nz

Comments on "Background notes relating to the nature and health significance and persistence of trace of methamphetamine on indoor surfaces" by Dr Nick D Kim, Senior Lecturer, School of Public Health, College of Health, Massey University

5 July 2016

Peter Cressey
ESR

The background note uses extant information to propose a level of surface contamination with methamphetamine which could be viewed as the lowest plausible health-effects concentration. While the general approach taken appears valid, some aspects of this analysis invite further elaboration.

Reference dose/health-based reference value

To simplify terminology these values will be collectively referred to as health-based exposure values (HBEVs). Two HBEVs are referred to in the background notes:

- A reference dose (RfD) of 0.3 μg/kg bw per day, derived by the Office of Environmental Health Hazard Assessment (OEHHA), California Environmental Protection Agency (CEPA) (Salocks, 2009).
- A reference value of 5-70 μg/kg bw per day, derived by staff from the Colorado Department of Public Health and Environment (CDPHE) and the US Environmental Protection Agency (USEPA) (Hammon and Griffin, 2007). While this value range is referred to as a 'reference value' by the study authors, it is derived in a similar manner to a reference dose.

The RfD derived by OEHHA, CEPA is based on the study "Control of Weight Gain in Pregnancy, Utilizing Methamphetamine" (Chapman, 1961). This was a double-blind placebo-controlled trial of the efficacy of methamphetamine for controlling weight gain during pregnancy. Four dose groups were included, receiving methamphetamine doses of 0.0, 0.08, 0.15 and 0.17 mg/kg bw per day. At the conclusion of the study, the dose levels had changed slightly due to weight loss/gain by some participants. Weight gain was significantly different in all treatment groups compared to the control group. While some side-effects were noted the overall prevalence did not appear to be dose-related, with similar total side-effects in the control and high-dose groups.

Babies born to mothers who had lost weight "appeared normal and healthy". All electrocardiogram and laboratory results for all patients evaluated were within normal ranges.

OEHHA, CEPA judged maternal weight loss to be an adverse effect, giving a Lowest Observed Adverse Effect Level (LOAEL) of 0.08 mg/kg bw per day (Salocks, 2009). Three components of uncertainty were applied in deriving a RfD:

- Extrapolation from the LOAEL to a No Observed Adverse Effects Level (NOAEL) (x10). Uncertainty factors for LOAEL to NOAEL extrapolation are usually in the range 3-10, with higher factors used if the effect seen at the LOAEL in considered serious.
- Inter-individual uncertainty factor (x10)
- (In)completeness of database (x3)

These factors result in an overall uncertainty factor of 300 and a RfD of 0.00026 mg/kg bw per day (rounded to 0.0003 mg/kg bw per day or 0.3 μg/kg bw per day).

In the context of the Chapman study, there must be some questions as to whether the weight loss seen represents a true adverse effect. Similarly, it must be questioned whether this effect is sufficiently serious to warrant application of a 10-fold uncertainty factor for extrapolation from LOAEL to NOAEL. However, derivation of a RfD based on the Chapman study has two advantages; it was carried out in humans and requires no interspecies extrapolation, and doses were administered by the oral route.

The reference value derived by CDPHE/USEPA was derived using benchmark doses ($BMDL_{10}$ – the lower 95th percentile confidence limit for a dose giving a 10% change in response compared to baseline) derived from animal reproductive and developmental toxicity studies (Hammon and Griffin, 2007). $BMDL_{10}$ values were in the range 1.5 to 20 mg/kg bw per day, with the lowest $BMDL_{10}$ relating to decreased foetal weight. A total uncertainty factor of 300 was applied to the $BMDL_{10}$ values, made up of components for inter-species extrapolation (x10), inter-individual extrapolation (x10) and database deficiencies (x3). This resulted in a range of reference values from 0.005 to 0.066 mg/kg bw/day, rounded to 5-70 μg/kg bw per day.

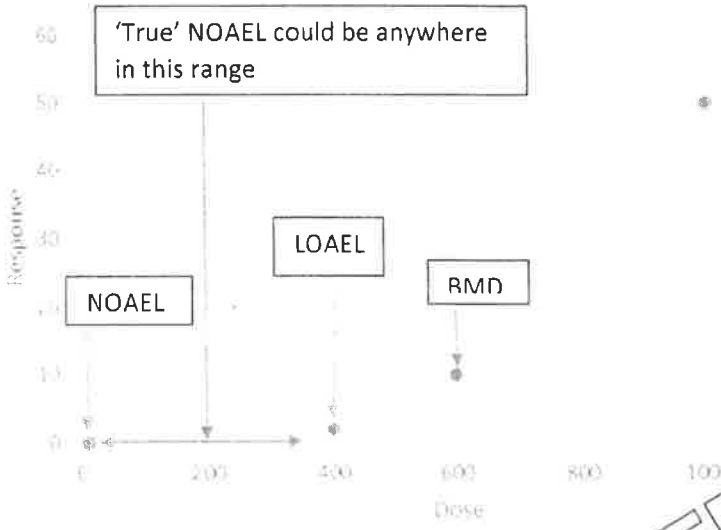
It should be noted that all animal studies used non-oral routes of dose administration (intravenous, intraperitoneal or subcutaneous) and are not immediately comparable to the routes of exposure to methamphetamine that would occur in a contaminated house.

In the background notes, Dr Kim chose to use the latter reference values (CDPHE/USEPA) as a reference point for human methamphetamine exposure, rather than the human-derived OEHHA RfD. The rationale for this decision was that "an RfD provides a level at which long-term exposure is without appreciable risk, a health-based reference value provides the lowest level at which the first onset of the most sensitive possible health effect may begin to occur". I believe that this overstates the difference between these two approaches. The CDPHE/USEPA study bases the derived HBEV on benchmark doses, from animal studies. There has been a general move to the use of benchmark doses, rather than NOAELs, because the benchmark dose can be determined with some confidence by interpolation of the dose response curve, while the NOAEL is the highest dose at which no adverse effect is seen and is not necessarily a point on the dose-response curve (see attached illustrative Figure 1). While uncertainty factors are applied to a NOEAL to arrive at a HBEV that is without appreciable risk (but not 'without any risk'), benchmark doses are most often compared to human estimated exposures, with the resulting margin of exposure (MOE) being a measure of the level of concern associated with the human exposure. The study of Hammon and Griffin essentially predefines a MOE of 300. MOEs of this magnitude, for threshold effects (non-carcinogenic) would usually be considered to represent a low level of toxicological concern. I believe that 'without appreciable risk' and 'a low level of toxicological concern' cannot be viewed as distinctly different expressions of the level of risk.

In my opinion, Dr Kim's choice of the higher HBEV requires a more substantial rationale than has currently been provided. In the absence of a clear reason to choose one HBEV over another, a conservative approach to risk assessment would suggest that the lower HBEV should be used as the reference point for assessing risks.

Given the approximately 17-fold difference between the two HBEVs, this decision had a major impact on Dr Kim's conclusions. It should also be noted that the toxicological endpoint associated with the reference value used by Dr Kim is decreased foetal weight, which is of questionable relevance to the most sensitive exposed individuals in a methamphetamine-contaminated property (infants).

Figure 1. Illustrative figure showing various toxicological points of departure in relation to a hypothetical dose-response curve



Human exposure to methamphetamine due to surface contamination

Dr Kim uses the exposure assessment carried out by Hammon and Griffin (2007), to determine human exposure resulting from different levels of surface methamphetamine contamination, as the basis for his conclusions. The approach taken in the study of Hammon and Griffin appears to be satisfactory and determines that exposure will be predominantly by oral exposure resulting from surface to hand to mouth transmission. Dermal absorption was assessed to contribute a lesser amount to methamphetamine exposure. Hammon and Griffin calculated exposure as an 'internal dose' assuming 100% absorption of oral doses and 10% absorption of dermal doses. The highest estimated exposures were for infants and ranged from 0.019 μg/kg bw per day at a surface contamination of 0.05 μg/100 cm^2 to 0.19 μg/kg bw per day at a surface contamination of 0.5 μg/100 cm^2 (the current New Zealand guideline level).

The exposure model used by Hammon and Griffin has a linear relationship between surface methamphetamine contamination and human exposure. Dr Kim used the linearity of this relationship to determine that exposure equivalent to the lowest Hammon and Griffin reference value (5 μg/kg bw per day) would result from a surface methamphetamine contamination of 12.5 μg/100 cm^2. It should be noted that, by the same reasoning, the OEHHA RfD exposure level would equate to a surface methamphetamine contamination of 0.8 μg/100 cm^2. While the RfD was derived from an external (administered) dose and the exposure estimates of Hammon and Griffin are internal doses, the assumption of 100% oral absorption of methamphetamine used by Hammon and Griffin means there is no conflict between the bases used for the exposure dose and RfD.

Use of the term 'contaminated'

Dr Kim argues that surface methamphetamine concentrations of less than 12 μg/100 cm^2 should not be referred to as 'contamination', as this level is unlikely to be hazardous. Dr Kim contends that 'contaminated' should only apply in situation where the substance is present at concentrations sufficient to result in harm.

In my opinion, methamphetamine can reasonably be considered to be a contaminant, rather than a normal component, of the domestic environment. Normal dictionary definitions of contamination refer to the presence of something undesirable, rather than its presence at a level high enough to cause harm. Methamphetamine's presence, at any concentration, is likely to be unwanted and undesirable. Therefore, if methamphetamine is a contaminant, then any measurable concentration of methamphetamine in a house could lead to the house being described as contaminated with methamphetamine.

Indeed, in some cases a normal component of a medium may still be referred to as a contaminant. For example, the heavy metal mercury may be naturally present at appreciable concentrations in fish. Mercury is conventionally referred to as a contaminant in this context, even when present at low concentrations.

References

Chapman JD. (1961). Control of weight gain in pregnancy, utilizing methamphetamine. Journal of the American Osteopathic Association; 60: 993-997.

Hammon TL, Griffin S. (2007). Support for selection of a methamphetamine cleanup standard in Colorado. Regulatory Toxicology and Pharmacology; 48(1): 102-114.

Salocks C. (2009). Development of a Reference Dose (RfD) for Methamphetamine. California Environmental Protection Agency. Office of Environmental Health Hazard Assessment. Integrated Risk Assessment Branch.

Sent by: Paul Prendergast/MOH

23/06/2016 05:46 p.m.

To: Charlie Mitchell <Charlie.Mitchell@hnzc.co.nz>,
cc: '"Paul_Prendergast@moh.govt.nz"' <Paul_Prendergast@moh.govt.nz>,
bcc:

Subject: Re: MoH Methamphetamine Guidelines

Hi Charlie
Well as described below, we are not exactly reviewing the Guidelines but through ESR have engaged and overseas toxicologist to provide an up-date on what has been learnt in the last 6 years and to have a look at health risks just from recreational use of Methamphetamine and make any recommendations. We are obviously seeking this information as soon as possible but my best guess is it will be about three months before we can place the report (possibly draft) to the Standards Committee. Standards is intending to have a Standard for consultation about January I think. It would probably be published as a stand alone report and when the NZ Standard is finisshed may be able to just withdraw our Guideline as obsolete.
Paul

Paul Prendergast
Public Health Engineer
Environmental and Border Health
Public Health
Ministry of Health
DDI:

http://www.health.govt.nz
mailto:Paul_Prendergast@moh.govt.nz

Charlie Mitchell — Hi Paul, I understand from the att... — 23/06/2016 04:52:17 p.m.

From: Charlie Mitchell <Charlie.Mitchell@hnzc.co.nz>
To: '"Paul_Prendergast@moh.govt.nz"' <Paul_Prendergast@moh.govt.nz>,
Date: 23/06/2016 04:52 p.m.
Subject: MoH Methamphetamine Guidelines

Hi Paul,

I understand from the attached e-mail that MoH is reviewing its Remediation Guidelines for Methamphetamine Labs as part of its contribution to the Standards work in this area. Would you be able to give an indication of when this update is likely to be completed?

Many thanks

Charlie

Charlie Mitchell
Manager Chemical Programme
Asset Development
Housing New Zealand Corporation
DDI:
Mobile:
Email: charlie.mitchell@hnzc.co.nz

----- Message from Morag Wiley <Morag.Wiley@hnzc.co.nz> on Thu, 9 Jun 2016 21:55:37 +0000 -----

To: "'Paul_Prendergast@moh.govt.nz'" <Paul_Prendergast@moh.govt.nz>

cc: "'Jacqui_Haggland@moh.govt.nz'" <Jacqui_Haggland@moh.govt.nz>, "'Jacqui Haggland'" <jhag <Charlie.Mitchell@hnzc.co.nz>, Andrew Rose <Andrew.Rose@hnzc.co.nz>

Subject: RE: Meth guidelines

Hi Paul

Yes please contact me for any information regarding meth, I am managing the Methamphetamine Management Programme. The programme's SRO (sponsor) is Charlie Mitchell, copied in, who I am working very closely with. You can contact both of us.

I've also copied Andrew Rose into this email by way of introduction.

Cheers
Morag

From: Paul_Prendergast@moh.govt.nz [mailto:Paul_Prendergast@moh.govt.nz]
Sent: Friday, 10 June 2016 9:48 a.m.
To: Morag Wiley
Cc: 'Jacqui_Haggland@moh.govt.nz'; 'Jacqui Haggland'; sally_gilbert@moh.govt.nz
Subject: RE: Meth guidelines

Hi Morag
Jacqui is not in to-day so I am responding. I am the MoH's member on the Standards committee. I haven't met Andrew Rose yet as the committee has its first meeting on 29 June. However I think Frances Graham (who wrote our guidelines) would have met him at a workshop about last October. Frances has however left MoH. The up-date of the MoH guidelines is being undertaken as the MoH contribution to the Standard so that the committee has available the latest international advice (as the MoH guideline is 6 years old and more information may have become available since then). We will be keeping the Committee informed of progress with the review and I have also arranged through ESR to have regular telephone conference up-dates with the toxicologist carrying out the work (who is based in California). I last spoke to him a couple of weeks ago after he had done initial background work. He indicated that there is very little information/studies on the health risks associated with just contamination from the recreational use of P (all other work is on P manufacture) and he may have to derive health risk information. We have also asked him to look at the risks vis a vis tobacco smoking for comparison.

To date I have had the following contacts at HNC. Before Christmas when we were trying to get the new Standard going and briefing our Minister I spoke to Rebecca Luaana who gave me Tamiya Comrie as HNC contact. Since the new year Jacqui and I have met with Caroline Butterworth and Andrew Booker (who was in Wellington at the time).

If in the future we had to brief our Minister again, would you be the new HNC contact replacing Tamiya?
cheers
Paul

Paul Prendergast
Public Health Engineer
Environmental and Border Health
Public Health
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http://www.health.govt.nz
mailto:Paul_Prendergast@moh.govt.nz

From: Morag Wiley <Morag.Wiley@hnzc.co.nz>
To: '"Jacqui_Haggland@moh.govt.nz"' <Jacqui_Haggland@moh.govt.nz>,
Cc: 'Jacqui Haggland' <jhaggland@allenandclarke.co.nz>, '"Paul_Prendergast@moh.govt.nz"' <Paul_Prendergast@moh.govt.nz>
Date: 09/06/2016 05:04 p.m.
Subject: RE: Meth guidelines

Hi, thanks yes I know Andrew is involved on the standards work. I have oversight of that as part of our programme of work here. Are you working with him also on your guidelines?

M

From: Jacqui_Haggland@moh.govt.nz [mailto:Jacqui_Haggland@moh.govt.nz]
Sent: Thursday, 9 June 2016 3:43 p.m.
To: Morag Wiley
Cc: 'Jacqui Haggland'; 'Paul_Prendergast@moh.govt.nz'
Subject: RE: Meth guidelines

Hi Morag

Also, just to keep you in the loop, Andrew Rose is the Housing New Zealand representative on the Standards Committee that has been set up to develop the standard (NZS 8510) covering the testing and remediation of properties contaminated by the manufacture or use of methamphetamine.

It would be useful to link with him with regards any work you are doing in this space so he can keep you informed with the progress of the Standard development.

Kind regards
Jacqui

Jacqui Haggland
Senior Advisor (Contractor)
Environmental & Border Health
Public Health
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Ministry of Health
DDI:
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http://www.health.govt.nz
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From: Morag Wiley <Morag.Wiley@hnzc.co.nz>
To: "'Jacqui_Haggland@moh.govt.nz'" <Jacqui_Haggland@moh.govt.nz>,
Cc: "'Paul_Prendergast@moh.govt.nz'" <Paul_Prendergast@moh.govt.nz>, "'Jacqui Haggland'" <jhaggland@allenandclarke.co.nz>
Date: 09/06/2016 03:06 p.m.
Subject: RE: Meth guidelines

Hi Jacqui

Thanks very much for this info. If possible, could you please keep me in the loop as the review progresses?

Many thanks
Morag

From: Jacqui_Haggland@moh.govt.nz [mailto:Jacqui_Haggland@moh.govt.nz]
Sent: Thursday, 9 June 2016 3:03 p.m.
To: Morag Wiley
Cc: Paul_Prendergast@moh.govt.nz; Jacqui Haggland
Subject: Re: Meth guidelines

Kia ora Morag

Thank you for your email. As discussed the Ministry of Health has contracted a toxicologist (through ESR) to do a review and check whether the contamination levels in the guidelines need updating. The information below provides an overview of what we've asked them to do. At this stage we do not expect a change to the timeframe originally outlined. A key outcome of this review is to inform the development of the new Standard.

Up-date of Guideline Values for Remediation of Methamphetamine Laboratory Sites

The Ministry of Health produced 'Guidelines for Remediation of Clandestine Methamphetamine Laboratory Sites' which were published in 2010. We would like a literature review to establish what new information from published studies, guidelines or standards has become available since 2010 on:

- the health risks of exposure to residential buildings contaminated by of the various chemicals involved in clandestine Meth labs
- other jurisdictions who have set guideline or regulatory values (for residential dwellings), what those values are for each chemical they have set and a summary of the risks / exposure assumptions they have used in setting those values (if available)
- With the information obtained from above, review the Guideline values set out in Table 3, Chapter 4.4 of the Ministry's Guidelines
- Make recommendations on the suitability of the current Guideline values or whether they should be amended in light of new information including if any further chemicals that should be added to the table

- Whilst the Guideline was for remediation of Methamphetamine laboratories and the wide range of chemicals that may be involved, some comment on the chemicals that are likely to be detected where a

residence has only been used for smoking Methamphetamine recreationally and whether recreational smoking is likely to get any contamination from those chemicals up to the Guideline values.

I hope that helps.

Cheers
Jacqui

Jacqui Haggland
Senior Advisor (Contractor)
Environmental & Border Health
Public Health
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From: Morag Wiley <Morag.Wiley@hnzc.co.nz>
To: "'Jacqui_Haggland@moh.govt.nz'" <Jacqui_Haggland@moh.govt.nz>,
Date: 09/06/2016 09:00 a.m.
Subject: Meth guidelines

Hi Jacqui

I'm the Programme Manager for the Methamphetamine Management Programme here at Housing. You attend a briefing here hosted by Geoff Mills and Andrew Booker a few weeks ago. At that briefing you mentioned that MoH are reviewing the meth guidelines and looking at releasing a revised version around September/October. Is that still correct? Do you have any other information on that review?

Thanks
Morag

Morag Wiley
Programme Manager
Methamphetamine Management Programme
Business Solutions

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Sent by: tarniya.comrie@hnzc.co.nz

To: "'paul_prendergast@moh.govt.nz'" <paul_prendergast@moh.govt.nz>,
cc:
bcc:

03/12/2015 10:22 a.m.

Subject: HNZC Contact

Hi Paul

Thank you for the conversation and to confirm that HNZC are very interested in being involved in the project to look at potential standards for Meth testing and associated activities such as training and sampling.

My contact details are attached.

Kind regards

Tarn

Tarniya Comrie
Health, Safety & Security Manager
Health, Safety & Security
-
PEOPLE, TECHNOLOGY AND CHANGE
Making ideas real

DDI:
Extn:
Email: tarniya.comrie@hnzc.co.nz

image001.png

Sent by: owen.blackburn@hnzc.co.nz

28/05/2015 11:26 a.m.

To: '"frances_graham@moh.govt.nz" <frances_graham@moh.govt.nz>'
cc:
bcc:

Subject: Acceptable levels of Methamphetamine contamination

Hello Frances

This email relates to a voicemail I just left for you. I need to know please, where I can find the acceptable levels of Meth contamination in NZ houses.

I've scanned through the MoH document called " Guidelines for the Remediation of Clandestine Methamphetamine Laboratory Sites" a few times and can see some tables for individual chemicals and for Methamphetamine in USA states but there doesn't appear to be any clear table for NZ residences.

I would appreciate your advice ASAP please Frances.

Many thanks, Regards,

Owen Blackburn
Standards Revision Project Manager
Property Services Group
Housing New Zealand

Email: owen.blackburn@hnzc.co.nz