Hon Phil Twyford

MP for Te Atatu
Minister of Housing and Urban Development
Minister of Transport

12 SEP 2018

Ms Jo Kirk
Manager MedNZ Ltd
jo.owen@xtra.co.nz

Dear Ms Kirk,

Official Information Act request

I write with regards to your OIA request of 13 August 2018, in which you asked for the following information under the Official Information Act 1982:

1. The date of the letter provided from Phil Twyford to Peter Gluckman that was attached. Letter starts " Thank you for both of your letters....."

2. A copy of "both of your letters" that was written to Phil Twyford from Peter Gluckman as stated in the same letter.

3. A copy of the "public announcement in the second half of January 2018" that was released to the media as stated in the same letter.

4. Any notes/minutes/emails for the "workshop on housing and building research" as stated in the same letter. The date of any such meetings in regards to this and who was invited.

5. My original request was for:" A copy of the briefing/out lines/guidance given to Peter Gluckman from minister Twyford to conduct the report released on Methamphetamine" The information you supplied was the "funding agreement" for the report, a letter to Sir Peter Gluckman that is not dated, a letter from Sir Peter Gluckman to minister Twyford dated 15 Decemebr 2018 and a personal letter from Phil Twyford to myself . I do not consider this the original brief given to Peter Gluckman at the start of the project. Please provide "the briefing/out lines/guidance given to Peter Gluckman from minister Twyford to conduct the report released on Methamphetamine" as originally requested - not just the "Funding Agreement " that was dated 13 April 2018" and a letter dated 15 December 2017 that clearly states " In response to your request", showing further correspondence has taken place that has not been released.

6.The letter dated 15 December 2017, from Peter Gluckman to Phi Twyford states " In response to your request....." Please supply "the request" that Peter Gluckman was referring to.

7. Please can I have the date the Peter Gluckman report was sent to Dr Nicholas Kim for peer reviewing and also the date the same report was signed off for peer reviewing from Dr Nicholas Kim.

8. The Gluckman report noted on page 3 under Acknowledgements that "We would like to thank the following reviewers who provided comments on the report" Please can these said "comments" be provided that the report is referring to from the below persons mentioned in the printed final copy of Peter Gluckmans report. Dr Nicholas Kim, Dr Adam Pomerleau, Dr Leo Schep, Dr John Snawder, Dr Jeff Fowles.

9. A copy of the "Executive Summary of the report: to be provided on 29 March 2018" as in Schedule 1 4. A of the provided signed "Funding Agreement"

10.A copy of the "draft and the response on the 6th of April 2018" as noted in the supplied "FUNDING AGREEMENT" Schedule1 4. B" Draft report prior to the Report's external review: 6 April 2018"

I note parts 7 and 8 were transferred to the Office of the Prime Minister's Chief Science Advisor. I understand you have received this part of the response. Part 10 listed here is asking for the same information as your request of 6 August 2018. This information was provided to you in my response dated 7 September 2018.

Response

In response to the first part of your request, the letter was sent on 20 December 2017.

In response to the second part of your request, the two letters from Sir Peter are as attached. The letter dated 15 December 2017 was already been released to you in my response dated 2 August 2018. The letter dated 18 December largely relates to matters other than methamphetamine contamination in housing.

With regards to the third part of your request, this intention to make a public announcement about the commissioning of the report changed, and no further information was given to the media in January 2018. This was to enable the work of the PM's Chief Science Advisor to continue as independently as possible. It was decided to just release the finished report. Therefore this part of your request is being refused under section 18(e) of the Act, as 'the document alleged to contain the information requested does not exist'.

With regards to the fourth part of your request, this proposed workshop has not yet eventuated, and has not been discussed for some time. No further notes/minutes/emails can be located in relation to this, and no invitations have been sent out. Therefore this part of your request is being refused under section 18(e) of the Act, as 'the document alleged to contain the information requested does not exist or, despite reasonable efforts to locate it, cannot be found'.

Point five of your request is asking for the same information as your previous requests of 20 and 21 June 2018. The information provided to you in my response dated 2 August 2018 answered this request in full. The funding agreement and the (undated) letter sent on 20 December 2017 are the only documents sent to Sir Peter in relation to the commissioning of the report '*Methamphetamine contamination in residential properties: Exposures, risk levels, and interpretation of standards*'. The letter from Sir Peter to me dated 15 December 2017 was also included as this reflected the conversation had in person on 7 December 2017, and provided the Terms of Reference for the proposed report.

The letter dated 15 December 2017 starts 'in response to your request' because Sir Peter and I had discussed the undertaking of this report in person. My office has located email correspondence from 12 December 2018 confirming this, which I am also releasing to you.

In response to part nine of your request, I am releasing to you the draft Executive Summary of the report, as dated 29 March 2018. I understand this document was given to me via the Ministry of Business Innovation and Employment.

Please note that some information within the documents being released to you is being withheld under the following sections of the act:

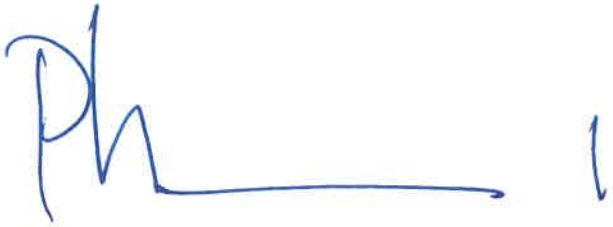
9(2)(a) – to protect the privacy of natural persons, including deceased people,

9(2)(b)(ii) – protect information where the making available of the information would be likely unreasonably to prejudice the commercial position of the person who supplied or who is the subject of the information.

In terms of section 9(1) of the Act, I am satisfied that, in the circumstances, the decision to withhold information under section 9 of the Act is not outweighed by other considerations that render it desirable to make the information available in the public interest.

You have the right to seek an investigation and review of my decision by the Ombudsman, in accordance with section 28(3) of the Act. The relevant details can be found on the Ombudsman's website www.ombudsman.parliament.nz.

Yours sincerely



Hon Phil Twyford
Minister of Housing and Urban Development

OFFICE OF THE PRIME MINISTER'S CHIEF SCIENCE ADVISOR

Professor Sir Peter Gluckman, ONZ KNZM FRSNZ FMedSci FRS
Chief Science Advisor

Hon Phil Twyford
Minister for Housing and Urban Development
New Zealand Parliament

15 December, 2017

Dear Minister Twyford,

In response to your request, the Office of the Prime Minister's Chief Science Advisor (PMCSA) will produce a report on '**Methamphetamine contamination in residential properties: Exposures, risk levels, and interpretation of standards**' by the beginning of May, 2018.

This work is aimed at providing clarification and ensuring public confidence around how to manage this issue.

The aim of the review will be to provide government decision makers and the general public with a comprehensive and up-to-date understanding of the available scientific evidence on the risks to occupants of houses previously used for methamphetamine production, or those in which methamphetamine was smoked by prior occupants. It is intended as a plain English translation of technical information about risks of secondary exposure to methamphetamine residues in places where people live. More specifically, the review will discuss what is known and not known about how levels of contamination translate to potential exposure and levels of risk, and what it means in the context of the current situation in New Zealand.

The review will also look into current practices for testing and decontamination in light of the available evidence on exposures and health risks. This synthesis should help inform your decisions and those of other parties on remediation requirements within New Zealand housing stock, and enhance public understanding of what has been a confusing and contentious issue.

The project will primarily consider the relevant peer-reviewed scientific literature from New Zealand and internationally, as well as reports published by respected scientific bodies (eg national academies, CRIs, etc) and any other data that has robust evidential quality. It will review the evidence that formed the basis of the recently released New Zealand Standard (NZS 8510:2017) and other current international standards.

The project will also involve interviews with relevant stakeholders and subject matter experts, including:

- Housing NZ
- Ministry of Health

Mail: PO Box 108-117, Symonds Street, Auckland 1150, New Zealand
Physical: Ground Floor, Boyle Building (505), 85 Park Road, Grafton, Auckland 1023
Telephone: +64 9 923 6318 **Email:** csa@pmcsa.org.nz **Website:** www.pmcsa.org.nz

- DPMC
- Standards New Zealand
- MBIE
- NZ Drug Foundation
- National Poisons Centre
- Institute of Environmental Science and Research (ESR)
- NZ Environmental Protection Authority

We will also met with some members of the drug testing and decontamination industry and seek reports or information from our equivalents in other jurisdictions.

The project is a major piece of work and will be managed by an experienced Research Analyst in the my office. Research and writing assistance by an additional contracted science writer will be engaged as required.

Although we have informally already started with initial scan, the projected timeline for the completion of the review are as follows:

Jan 22	Background research and identification of high-level headings
Feb 5	Submission of project outline for your feedback
Feb 12-26	Interviews with relevant stakeholders and subject matter experts
Mar 20	Completion of first draft and submission to selected domestic experts for review
Apr 2	Completion of expert review
Apr 9	Revised draft completed and sent to external (international) peer review
Apr 23	External review complete
May 7	Final report submitted to Minister

As we discussed, my office would appreciate some assistance to support this work, as we do not have a significant discretionary budget and this is additional to our already rather saturated workload, I would be grateful if you could approve an allocation of [redacted] to cover the staffing costs and travel for meetings involved.

s9(2)(b)(ii)

Yours sincerely

Sir Peter Gluckman ONZ KNZM FRSNZ FRS
Chief Science Advisor

Mail: PO Box 108-117, Symonds Street, Auckland 1150, New Zealand
Physical: Ground Floor, Boyle Building (505), 85 Park Road, Grafton, Auckland 1023
Telephone: +64 9 923 6318 **Email:** csa@pmcsa.org.nz **Website:** www.pmcsa.org.nz

OFFICE OF THE PRIME MINISTER'S CHIEF SCIENCE ADVISOR

Professor Sir Peter Gluckman, ONZ KNZM FRSNZ FMedSci FRS
Chief Science Advisor

18 December 2017

The Hon Phil Twyford
Minister of Housing and Urban Development
Minister of Transport

Dear Minister

This note serves to follow up on several matters discussed at our meeting last week. I would particularly ask you to note and consider the matters identified in italics.

1. **Methamphetamine Contamination and Housing**
   I have forwarded separately a proposal for your consideration. Dr Bardsley in my office has started preliminary work on the question.

2. **The State of Housing/Building Research**
   We discussed the disappointing state of housing/building research and its relatively poor contribution to finding better solutions to the costs of housing and to considering the nature of housing required given societal and demographic trends. I offered to convene a workshop of interested parties (the National Science Challenge, Engineering and Architecture schools, BRANZ, MBIE (both the science, and building groups), SCION, etc) to explore how more rapid progress could be made. I think this could be done in late February or early March. *Would you wish to be involved in this workshop (e.g. by attending or opening it or even issuing the invitation)?*

3. **A Science Advisor for Urban Affairs including Housing:**
   As we discussed I would strongly advise the appointment of a science advisor for urban affairs including housing.

   It is clear that there is a very weak coordination of research that NZ needs in the housing and building space, and little holistic thinking about urban science either in the policy space or indeed in academia. Yet overseas, urban science as an integrated topic is a focus of the European Commission, the United Kingdom and most recently Australia to name but a few relevant jurisdictions. One only needs to consider cities like Amsterdam, Belfast, Dublin, Copenhagen to see how integrated urban science can add considerably to the quality of a city from efficiency, environmental, public health and economic perspectives. The Sustainable Development Goals have given impetus to urban science. Given that 60% of New Zealanders now live in cities, the broad urban science perspective must spread across multiple policy domains and not simply at local planning levels. Further urban science would allow for a more systematic and realistic assessment of the potential of various forms of data and sensors to assist urban environments and life. Cities also face major long-term demographic dimensions that are inadequately modelled and

Mail: PO Box 108-117, Symonds Street, Auckland 1150, New Zealand
Physical: Ground Floor, Boyle Building (505), 85 Park Road, Grafton, Auckland 1023
Telephone: +64 9 923 6318 **Email:** csa@pmcsa.org.nz **Website:** www.pmcsa.org.nz

considered in urban planning, and generate potential risk (Singapore is an example of a city that addresses this issue insightfully through its Urban Redevelopment Authority planning system).

4. **Science Advisor to the Ministry of Transport:**
   I can confirm that Prof Simon Kingham has been offered the role on a 0.4 FTE basis and will likely take up the role of Feb 1. My Office has started on an informal induction programme.

Yours sincerely

Sir Peter Gluckman
Chief Science Advisor to the Prime Minister

Mail: PO Box 108-117, Symonds Street, Auckland 1150, New Zealand
Physical: Ground Floor, Boyle Building (505), 85 Park Road, Grafton, Auckland 1023
Telephone: +64 9 923 6318 **Email:** csa@pmcsa.org.nz **Website:** www.pmcsa.org.nz

Carla Hemmes

From: Peter Gluckman <pd.gluckman@auckland.ac.nz>
Sent: Tuesday, 12 December 2017 1:39 PM
To: Emma Kean
Cc: Megan Stunzner; Anne Bardsley
Subject: Re: FYI: Follow up query from Minister Twyford

Emma

Thanks for the confirmation the Minister wishes to proceed.
I will put a proposal and brief to the Minister before the weekend and inform the PM's chief of staff of our proposed involvement

Best

Peter

Sir Peter Gluckman ONZ KNZM FRSNZ FMedSci FRS
Chief Science Advisor to the Prime Minister of New Zealand

peter.gluckman@pmcsa.org.nz
PA Megan Stunzner: s9(2)(a)
www.pmcsa.org.nz
ph: s9(2)(a)
mob: s9(2)(a)

From: Emma Kean [mailto:Emma.Kean@parliament.govt.nz]
Sent: Tuesday, 12 December 2017 1:02 p.m.
To: Megan Stunzner < s9(2)(a)
Subject: Follow up query

HI Megan,

The Minister really appreciated his recent meeting with Sir Peter. They spoke about Sir Peter getting some info together on meth testing and Minister Twyford is keen to progress this. Can you please check in with Sir Peter how he wants to proceed on this?

Thanks,

Emma

Emma Kean

Senior Private Secretary

Office of Hon Phil Twyford

Minister of Transport |Minister of Housing and Urban Development

Private Bag 18041 | Parliament Buildings | Wellington 6160 | New Zealand

E: emma.kean@parliament.govt.nz P: 9(2)(a)

Authorised by Hon Phil Twyford, Parliament Buildings, Wellington

OFFICE OF THE PRIME MINISTER'S CHIEF SCIENCE ADVISOR

Professor Sir Peter Gluckman, ONZ KNZM FRSNZ FMedSci FRS
Chief Science Advisor

Methamphetamine contamination in residential properties: Exposures, risk levels, and interpretation of standards

Draft Executive Summary

29 March 2018

1 Background – the methamphetamine situation in New Zealand

- Methamphetamine is a powerful, addictive stimulant. Its illicit use in New Zealand is increasing, and there has been a concomitant increase in hospitalisations directly attributed to its use. It also appears to be relatively easy to access throughout the country. It is associated with significant criminal activity.

- Methamphetamine can be manufactured in clandestine laboratories (clan labs), but there is some indication that suppliers may be moving away from manufacture in favour of importing the finished product itself.

- A dwelling can become contaminated with methamphetamine residues if the drug is manufactured or smoked within it. Smoking usually results in much lower residue levels compared to manufacture. The issue that forms the basis of this report is whether and at what level is contamination a risk to human health.

- Traditional manufacturing methods involve a range of hazardous chemicals and solvents that when heated form volatile, flammable and highly toxic mixtures that contaminate the immediate area and can spread through the dwelling. Exposure to these contaminants, either by being present during the production process (and thus likely inhaling volatile toxins in the air), or by coming in contact with contaminated surfaces, poses a significant health risk.

- However, following a number of restrictions on the sale of solvents and certain precursor chemicals, production methods changed in New Zealand. Now the most commonly used methods do not use solvents, and the reaction is mostly performed in contained vessels that do not emit fumes. Therefore, the primary contaminant associated with both manufacture and smoking is methamphetamine itself.

Mail: PO Box 108-117, Symonds Street, Auckland 1150, New Zealand
Physical: Ground Floor, Boyle Building (505), 85 Park Road, Grafton, Auckland 1023
Telephone: +64 9 923 6318 **Email:** csa@pmcsa.org.nz **Website:** www.pmcsa.org.nz

2 Detecting methamphetamine as a contaminant in dwellings

- Techniques developed for forensic analysis to identify methamphetamine clan labs have evolved to a greater level of sensitivity and can now detect very low levels of the drug and its precursors on surfaces, to aid in the investigation of illicit drug production activity. These have increasingly been used in New Zealand to detect methamphetamine in houses, regardless of whether or not criminal manufacturing activity is suspected. This situation is largely unique to New Zealand – in other countries methamphetamine investigations focus solely around identifying clan labs, and remediating them when found. Non-clab lab contamination generally does not lead to any particular consideration or action. The question thus emerges whether the New Zealand approach is over-precautionary or appropriate.

- Because of the known risks of exposure to traditional methamphetamine manufacturing chemicals and solvents, guidelines have been developed internationally around cleaning of contaminated premises after a clan lab has been discovered. These guidelines use the detection of methamphetamine below a specified low level after remediation as a signal that other contaminants have been sufficiently cleaned away.

- In recent years, because of the increase in detection ability, there has been growing awareness of the possibility of detecting methamphetamine in all kinds of dwellings and in a wide range of communities. Thus, questions around the implications for the occupants' health have entered the public consciousness. Despite the fact that these concerns are not evidence-based, an industry of methamphetamine testing and remediation operators has flourished in New Zealand. Application of conservative clean-up guidelines, which were developed largely for other reasons as described above, has resulted in widespread 'moral panic' over the detection of even low levels of the drug, and it has become widely assumed that the mere presence of any residue poses a health risk. This has come at a large cost, both financial and social, to numerous stakeholders including homeowners, tenants, and the state.

3 Methamphetamine exposure and health

- Although better known for its illicit use, methamphetamine was initially developed as a therapeutic drug, and is still approved in the United States for treating ADHD in children and adults, and in assisting adult weight loss. Its stimulant and euphoriant properties led to its recreational misuse, and its addictiveness has led to abuse. Its use is widespread in New Zealand, perhaps reflecting the relatively low penetration of other addictive drugs with serious side effects (eg. opiates).

- A major consideration missing from the widely expressed concerns over the potential adverse health effects of methamphetamine is the *level of exposure* to the drug. Taking exposure into account is fundamentally required to determine the risk posed by any methamphetamine residues (or indeed most potential toxins). Abusers of the drug are directly exposed to very high levels, and the consequent health impacts are well established. The daily dosages used recreationally are tens to several thousands of times higher than maximum intakes considered safe by international pharmaceutical toxicity assessments of methamphetamine.

- However, passive exposure is a very different situation. Passive, third-hand exposure can arise through residing in a dwelling previously used as a clan lab or for smoking methamphetamine. Former clan labs generally have relatively high levels of methamphetamine residue on sampled surfaces (levels greater than 30 µg/100 cm^2 are thought to be indicative of manufacturing activity). There is some evidence for adverse physiological and behavioural symptoms associated with this form of exposure, but this may well relate to the other toxic chemicals in the environment created by a clan lab rather than to methamphetamine itself.

- In contrast, an extensive search of the international medical literature and valid internet sources, and in-depth interviews with public health practitioners, medical and environmental toxicologists and other New Zealand-based and international experts, has uncovered no published (or robust, unpublished) data relating to health risks of residing in a dwelling formerly used *only for smoking* methamphetamine. Yet, given the relatively low number of confirmed clan labs found, and the very low average levels of methamphetamine found in most houses that test positive for the drug, it is the latter situation that affects the majority of stakeholders in New Zealand.

- There is scant evidence in the literature on the effects of chronic, low-dose exposure to methamphetamine. Indeed, some animal studies suggest that this type of exposure may in fact promote brain function. Still, these studies are likely to reflect significantly higher exposures than typically passively encountered in a property used for smoking methamphetamine.

- The exposure pathways for methamphetamine residues passively entering the body from household surfaces are either through the skin, or hand-to-mouth and object-to-mouth behaviours typical of toddlers. However, the amount that would reasonably be absorbed through surface contact is far lower than that which would be necessary to elicit a physiological effect.

- Nonetheless, there are anecdotal reports of symptoms perceived to have developed after residing in methamphetamine-contaminated houses in New Zealand. These have not been directly attributed to methamphetamine

Mail: PO Box 108-117, Symonds Street, Auckland 1150, New Zealand
Physical: Ground Floor, Boyle Building (505), 85 Park Road, Grafton, Auckland 1023
Telephone: +64 9 923 6318 **Email:** csa@pmcsa.org.nz **Website:** www.pmcsa.org.nz

exposure, nor have they been correlated with measured contamination levels in the complainant's dwelling, or to any other marker of exposure such as residues in hair. Furthermore, the reported symptoms (e.g. asthma, skin rashes) are diverse and generally not known to be physiological effects of methamphetamine. The contribution of other common factors known to affect health, such as dampness and mould, or other chemical exposures in houses, has not been examined and may be equally or more likely explanations of the diverse symptoms claimed.

- Therefore, until further data are available, any claims of adverse effects posed by methamphetamine contamination from smoking, such as those perpetuated by the testing and remediation industry, cannot be substantiated.

4 Establishing health-based standards for methamphetamine exposure

Toxicity assessments

- The toxicity of methamphetamine has been thoroughly assessed in two independent reviews, by the US States of California and Colorado. There is a relatively large difference between the daily doses considered 'safe' by each agency. This is because Colorado used a large body of animal data and standard extrapolation methodology to calculate the *maximum* daily dosage that *if exceeded* may give rise to adverse health effects, while California's assessment used a single therapeutic human weight-loss study to calculate a daily dosage *not known to be harmful* – that is, it did not determine the dose at which a person may start to experience adverse health effects – rather they assessed the lowest dose that might have any effect on a human when given directly to that individual. Each assessment method has pros and cons. However, a critical point is that both incorporate a 300-fold safety buffer for precautionary reasons when calculating an acceptable exposure level.

- A person's exposure dose to methamphetamine in a dwelling can be mathematically modelled. This has been done by California and Colorado. A 2016 ESR report, using New Zealand data where possible, modelled the estimated dose to which a young child and a fetus (via a pregnant woman) would be exposed. It then applied the estimated doses against California's conservative toxicity assessment, concluding that 2 µg/100 cm^2 is an appropriate clean-up guideline for methamphetamine-contaminated houses (not known to be former clan labs).

- California's definition of safety is very conservative, so levels higher than 2 µg/100 cm^2 should not be interpreted as necessarily presenting a health risk. This level simply indicates the average contamination in a dwelling that a sensitive individual can be exposed to daily, and for a lifetime, without any physiological response and therefore even potential for harm. However, if

Colorado's toxicity assessment is used as the basis of calculation, ESR's clean-up guideline could reasonably be extrapolated to 33 µg/100 cm^2. This level more precisely reflects a layperson's understanding of risk – it indicates a level above which an adverse health effect may be observed.

- Importantly, all the exposure models used very conservative assumptions that err on the side of overestimating the total exposure. Using less conservative and more realistic modelling assumptions will raise calculated clean-up levels even further.

The New Zealand situation

- In New Zealand, from August 2010 until June 2017, the only available guideline for acceptable clean-up levels of contaminated dwellings was a Ministry of Health guideline applicable to former clan labs. This level of 0.5 µg/100 cm^2 was derived directly from an Australian risk assessment report that likewise focused on former clan labs.

- Based on the 2016 ESR report, in June 1017 a new standard of 1.5 µg/100 cm^2 was selected as the clean-up level in the New Zealand Standard on the testing and decontamination of methamphetamine-contaminated properties (NZS 8510:2017). This threshold was not specifically chosen for health-based reasons, but for reasons of practicality. Although less conservative than the 2010 Ministry of Health guidelines, safety concerns over levels that do exceed this figure remain pervasive within the general public, and are likely driven by vested interests of the testing and remediation industry, who continue to post misleading statements about health effects on their websites and advertising materials.

- An ESR analysis of properties where methamphetamine has been detected provides an idea of 'baseline' levels that can be expected from smoking contamination. About three-quarter of samples taken had levels under 1.5 µg/100 cm^2, and the average level in positive samples was 2.7 µg/100 cm^2. Thus, smoking-related levels, although generally exceeding the NZ standard clean-up level, are still relatively low.

- Less than 1% of the samples in the ESR dataset tested above 30 µg/100 cm^2, suggesting a low prevalence of properties potentially used for manufacture. Even then, toxic compounds such as lead and mercury that are typically used in traditional production methods have not been found in New Zealand.

5 An evidential and health risk-based approach for managing potential exposure and contamination

- Most houses in New Zealand in which methamphetamine can be detected have only low levels of contamination that is not widespread throughout the

house. This situation is likely to be caused by methamphetamine use rather than manufacture.

- Remediation is certainly warranted if high levels of methamphetamine are present (levels >30 µg/100 cm^2 signify that manufacture may have taken place).

- Where lower levels are detected, remediation is often not justified. However, as low levels cannot definitively rule out manufacture, remediation may be prudent if there is also *reason to suspect previous clan lab activities*. This would be as a precautionary measure to remove other toxicants that may be present but not measured.

- It is worth placing the risks posed by methamphetamine into perspective. There are several other factors related to housing that may pose potentially greater risks than methamphetamine to occupants, such as mould, lead in paint, and asbestos.

Implications for methamphetamine screening in affected properties

- Combining multiple samples taken throughout a dwelling into a single composite sample, as permitted in NZS 8510:2017, has limited value in accurately reflecting levels of risk, and depending on how the data are integrated can lead to quite misleading interpretation and false impressions of high exposure triggering another round of expensive testing.

- There is merit in using test that rapidly provide a simple positive or negative result in multiple locations for detection of higher levels (for example >10 µg/100 cm^2) on site, followed by sensitive testing in targeted to areas that produce a positive signal. In most cases, if methamphetamine is not detected at this level anywhere within a property, there is little cause for concern unless there are other reasons to suspect methamphetamine manufacturing activity.

6 Conclusions

- There is little or no evidence (in both humans and animals) that the levels typically resulting from third-hand exposure to smoking residues on household surfaces can elicit an adverse health effect.

- Toxicity assessments and exposure dose models have deliberately adopted very conservative assumptions, with large safety margins built in.

- Taken together, these factors indicate that methamphetamine levels that exceed the NZS 8510:2017 clean-up standard of 1.5 µg/100 cm^2 should not be regarded as signalling a health risk. Indeed, exposure to methamphetamine levels below 5 or even 10 µg/100 cm^2 would be highly unlikely to give rise to any physiological effects.

Mail: PO Box 108-117, Symonds Street, Auckland 1150, New Zealand
Physical: Ground Floor, Boyle Building (505), 85 Park Road, Grafton, Auckland 1023
Telephone: +64 9 923 6318 **Email:** csa@pmcsa.org.nz **Website:** www.pmcsa.org.nz

- It is crucial that guidelines for mitigation measures are proportionate to the risk posed, and that remediation strategies should be informed by a risk-based approach.

Mail: PO Box 108-117, Symonds Street, Auckland 1150, New Zealand
Physical: Ground Floor, Boyle Building (505), 85 Park Road, Grafton, Auckland 1023
Telephone: +64 9 923 6318 **Email:** csa@pmcsa.org.nz **Website:** www.pmcsa.org.nz