Draft Number: DZ 8510

DRAFT

New Zealand Standard

Public Comment Draft

NZS 8510 – Testing and decontamination of methamphetamine-contaminated properties

Draft	Date
Public Comment Draft	12 December 2016

Committee: P 8510

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Public comment information

Status

This document is a proposed New Zealand standard under the Standards and Accreditation Act 2015. Issued as a draft in this form, it provides the required statutory opportunity for consideration and comment by the bodies and persons having an interest in the standard.

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Closing date for comments **Monday 20 February 2017.**

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(c) Please do not return marked-up drafts as comments.
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(e) Please provide supporting reasons and suggested wording, for each comment. Where you consider that specific content is too simplistic, too complex or too detailed, provide an alternative.
(f) If the draft is acceptable without change, an acknowledgement to this effect would be appreciated.
(g) Normally no acknowledgement of comment is sent. All comments received by the due date will be put before the relevant development committee. Where appropriate, changes will be incorporated before the standard is formally approved.

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Committee representation

This standard was prepared by the P8510 Committee. The membership of the committee was approved by the New Zealand Standards Approval Board and appointed by the New Zealand Standards Executive under the Standards and Accreditation Act 2015.

The committee consisted of representatives of the following nominating organisations:

Organisation

Analytica Laboratories

Andy Andersons Industrial Services

Auckland Council

Cleaning Systems Ltd

Contaminated Site Solutions Ltd

Environmental Science and Research

Forensic and Industrial Science Ltd

Hill Laboratories

Housing New Zealand Corporation

Hutt City Council

Independent Property Managers' Association

Insurance Council of New Zealand

International Accreditation NZ (IANZ)

Local Government New Zealand

MethSolutions Ltd

Ministry for the Environment

Ministry of Health

New Zealand Property Investors' Federation

NZ Decontamination Services T/A Fresh Living

NZ Remediation Services

Real Estate Institute of New Zealand

Acknowledgement

Standards New Zealand gratefully acknowledges the contribution of time and expertise from all those involved in developing this standard.

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DZ 8510

New Zealand Standard

Testing and decontamination of methamphetamine-contaminated properties

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Referenced documents

Reference is made in this document to the following:

New Zealand standards

NZS ISO/IEC 17025:2005 General requirements for the competence of testing and calibration laboratories

Joint Australian/New Zealand standards

AS/NZS 4308:2008 Procedures for specimen collection and the detection and quantitation of drugs of abuse in urine

AS/NZS ISO/IEC 17020:2013 Conformity assessment – Requirements for the operation of various types of bodies performing inspection

International

ISO/IEC 17000:2004 Conformity assessment – Vocabulary and general principles

Other publications

Australian Government. *Clandestine drug laboratory remediation guidelines.* 2011

Fowles, J, Deyo, J, and Kester, J. *Review of remediation standards for clandestine methamphetamine laboratories: Risk Assessment recommendations for a New Zealand standard*. Wellington: Institute of Environmental Science and Research Ltd (ESR), 2016.

Martyny, J W. *Methamphetamine sampling variability on different surfaces using different solvents*. Denver, Colorado: National Jewish Medical and Research Center, 2008.

Ministry for the Environment. *Contaminated land management guidelines No.5: Site investigation and analysis of soils (2011 revised draft)*. Wellington: Ministry for the Environment, 2011.

Ministry of Health. *Guidelines for the remediation of clandestine methamphetamine laboratory sites*. Wellington: Ministry of Health, 2010.

Minnesota Department of Health and Minnesota Pollution Control Agency. *Clandestine drug lab general cleanup guidance*. St. Paul, Minnesota: Minnesota Department of Health, 2010.

National Institute for Occupational Safety and Health (NIOSH). 'Method No. 9106: Methamphetamine and illicit drugs, precursors, and adulterants on wipes by liquid-liquid extraction.' In *Manual of analytical methods*. 5th edition. Cincinnati, Ohio: US Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, 2016.

National Institute for Occupational Safety and Health (NIOSH). 'Method No. 9109: Methamphetamine and illicit drugs, precursors, and adulterants on wipes by solid phase extraction.' In *Manual of analytical methods*. 5th edition. Cincinnati, Ohio: US Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, 2016.

National Institute for Occupational Safety and Health (NIOSH). 'Method No. 9111: Methamphetamine on wipes by liquid chromatography/mass spectrometry'. In *Manual of analytical methods*. 5th edition. Cincinnati, Ohio: US Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, 2016.

WorkSafe New Zealand. Fact sheet: Protecting workers from the dangers of clandestine laboratories (2015)

New Zealand legislation

Criminal Proceeds (Recovery) Act 2009

Health and Safety at Work Act 2015

Misuse of Drugs Act 1975

Other legislation

Code of Colorado Regulations, 6 CCR 1014-3, 2014, State Board of Health, Colorado

Websites

www.cdc.gov/niosh

http://www.mfe.govt.nz/land/risks-contaminated-land/managing-contaminated-land/contaminated-land-management-guidelines

www.legislation.govt.nz

Latest revisions

The users of this standard should ensure that their copies of the above-mentioned New Zealand standards are the latest revisions. Amendments to referenced New Zealand and joint Australian/New Zealand standards can be found on www.standards.govt.nz.

Review of standards

Suggestions for improvement of this standard will be welcomed. They should be sent to the Manager, Standards New Zealand, Private Bag 1473, Wellington 6140.

Foreword

The illicit manufacture and use of methamphetamine is having a major impact on communities and individuals throughout New Zealand. Methamphetamine production and use contaminates properties and exposes occupants, particularly young children, to potential health risks, and can result in property owners facing significant costs for testing and decontaminating properties, and replacing fixtures, fittings and materials that cannot be decontaminated.

The purpose of this standard is to provide guidance on reducing people's risks of exposure to harm caused by the presence of unacceptable levels of methamphetamine residues in properties and other assets, such as vehicles and caravans. It establishes methamphetamine residue clean-up levels to guide the decontamination of contaminated properties. It also sets out procedures for testing properties for contamination and steps needed to decontaminate properties.

The standard addresses all sources of methamphetamine contamination, and aims to ensure consistency, reliability, and competency in activities including screening, sampling, testing and, where necessary, decontaminating properties and disposing of contaminated materials.

This standard is intended to assist a wide range of stakeholders, and has been prepared with input from property investment interests, sampling and testing operators, decontamination contractors, local authorities, public health authorities, and laboratories. It identifies current good practice on activities, such as sampling, testing and decontamination, and is a basis for reducing risks of harm from methamphetamine contamination.

Initial funding to scope this project was provided by the Hutt City Council, and funding to develop the standard was granted later in 2015 under the Criminal Proceeds (Recovery) Act.

1 General

1.1 Scope

This standard covers the sampling, testing, and decontamination of properties that have been contaminated as a result of the use or manufacture of methamphetamine.

The standard includes:

(a) Guidance on methods of sampling and testing of properties and their contents to assess the extent of contamination by ensuring that sampling is representative, and that testing methods produce reliable and repeatable results, whether using qualitative or quantitative methods, and a consistent approach to reporting test results;
(b) Measures to manage risks to health, well-being, safety, and the environment from methamphetamine-contaminated material and chemicals used to manufacture methamphetamine;
(c) Guidance on notifying and recording details of methamphetamine-contaminated properties and their decontamination;
(d) Best practice procedures, including performance criteria, for decontaminating properties and their contents;
(e) Methods of disposing of materials that cannot be decontaminated;
(f) Information that supports processes, such as validation or auditing, which provide assurance that testing, risk assessment, decontamination of properties, and disposal of contaminated materials have been effective, and comply with relevant legislation or bylaw requirements.

1.2 Objectives

The objectives of this standard are to provide guidance on methodologies, procedures, and performance criteria aimed at ensuring the methods of testing properties provide reliable results, and the decontamination of contaminated properties is effective, reduces harm, and enables properties to be safely reoccupied. The standard will contribute to the reduction of risks to the health and safety of occupants and others who may be exposed to methamphetamine contamination. Application of the standard will provide assurance that activities such as sampling, testing, assessing, and decontamination of contaminated properties, and treatment or disposal of their contents, are carried out in accordance with good practice.

1.3 Interpretation

For the purposes of this standard, the word 'shall' refers to requirements that are essential for compliance with the standard, while the word 'should' refers to practices that are advised or recommended.

Clauses prefixed ‘C’ and printed in italic type are intended as comments on the corresponding clauses. They are not to be taken as the only or complete interpretation. The standard can be complied with if the comment is ignored.

The terms 'normative' and 'informative' have been used in this standard to define the application of the appendix to which they apply. A 'normative' appendix is an integral part of a standard while an 'informative' appendix is only for information and guidance.

1.4 Definitions

For the purposes of this standard the following definitions shall apply:

Accreditation — Formal confirmation, following assessment by a Government-recognised accreditation body, of the competence of an organisation to perform specific tasks

Chain of custody — A series of procedures to account for the integrity of each sample by tracking its handling and storage from the point of sample collection to final disposal at the laboratory [adapted from AS/NZS 4308]

Clandestine lab — A property used for the illicit manufacture of methamphetamine

Clearance certificate — Certification by a decontamination contractor, including confirmation by an independent tester, that a property has been decontaminated so

	that methamphetamine residues do not exceed the appropriate clean-up levels in Section 2 of this standard
Contaminant	A chemical residue resulting from the manufacturing, storage, processing, or use of methamphetamine
Contaminated	The presence of one or more contaminants at a level above those defined in this standard on a room by room basis
Decontamination	The process of reducing the level of contamination of a methamphetamine-affected property to a level that complies with this standard
Decontamination contractor	The person or company contracted to clean up a methamphetamine-contaminated property
Decontamination plan	A detailed plan that sets out how a property is proposed to be decontaminated, including the methods and cleaning agents to be used
Discrete sample wipe	A single, discrete sample wipe taken from an area of 100 cm^2 using a technique as outlined in one of the appropriate NIOSH standard methods or validated equivalent method
Exposure	Contact with, or close proximity to, a substance by swallowing, breathing, or direct contact with the skin or eyes. Exposure may be short term – acute, or long term – chronic
Exposure risk	The likelihood of exposure to contaminants and their effects on people
Field blank	A swab that is handled by the sampler in the same way as a real sample but shall not contact any potential contaminated surface and is then analysed
Field composite sample	A sample comprised of multiple wipes collected from separate locations. A field composite sample result represents a sum or accumulation of each of the individual wipes
Field (or in-field) screening technology	Technology used to obtain indicative data on the presence or absence of contaminants
In-field test	A field test using approved equipment and methodology that establishes, within known limits, that a specific substance is or is not present.
Laboratory composite	Discrete sample wipes sampled according to the procedures outlined in the NIOSH methods or validated equivalent methods, and sent to the laboratory. The lab extracts individual wipes but combines equal portions of the extracts together to form a new sample called a laboratory composite. A laboratory composite sample result represents an average of each of the individual wipes
Limited exposure area	An area that is not used, or intended to be used, as a living space or part of a ventilation system. This includes, but is not limited to, attics, crawl spaces and wall cavities not used as duct runs [adapted from Colorado Regulations, 2014]
Living space	An area in a property that is intended to be lived in
Manufacture	The production of methamphetamine
Methamphetamine	An amphetamine type stimulant (ATS) that is highly addictive.

	Methamphetamine is a controlled substance, classified as a Class A (very high risk) drug under the Misuse of Drugs Act
Post-decontamination assessment	Sampling and assessment following decontamination in order to determine whether the decontamination process has been effective and the property meets the limits in this standard
Precursor	A substance from which another substance is formed. In the context of this standard, it is a chemical (or one of several) used to create methamphetamine, and includes compounds or mixtures containing ephedrine or pseudoephedrine
Pre-decontamination assessment	Process to determine the extent and magnitude of methamphetamine contamination in a property
Property	A dwelling or part of a dwelling (including ancillary buildings such as sheds and garages), vehicle, boat, caravan, mobile home or other structure where people may be present for extended periods of time, such as workplaces, hotels, motels, and storage facilities
Sampler	A person who takes samples and is a suitably qualified and experienced practitioner level 1 or 2
Sampling plan	A plan detailing the type and number of samples to be taken, and the location where samples are to be taken
Screening	The process of identifying the presence or absence of methamphetamine residues or other contaminants in a property within stated detection limits and confidence
Site assessment	The act of implementing formally approved methods/procedures for determining the nature, extent and levels of methamphetamine-related contamination present on a site and the potential risk posed to human and environmental health (adapted from Australian Government, 2011)
Suitably qualified and experienced practitioner Level 1 (SQEP 1)	A person who has successfully completed an approved course of instruction for sample collection and in-field screening, handling, storage, and dispatch of samples, and who has received a statement of attainment in accordance with the New Zealand Qualifications Authority (adapted from AS/NZS 4308)
Suitably qualified and experienced practitioner Level 2 (SQEP 2)	A person who is considered competent and has been granted signatory status to carry out work within an AS/NZS ISO/IEC 17020 (or equivalent) accredited body
Tester	A person who uses in-field screening technology to test for the presence or absence of methamphetamine
Testing laboratory	A laboratory that is NZS ISO/IEC 17025 accredited to test samples provided by a sampler
Validation	A process, independent of the manufacturer, to ensure that in-field screening devices are fit for purpose in accordance with this standard [adapted from AS/NZS 4308]

1.5 Abbreviations

Abbreviations have the following meanings:

HEPA	High-efficiency particulate air

HVAC	Heating, ventilation and air-conditioning
NIOSH	National Institute for Occupational Safety and Health (USA)
PPE	Personal protective equipment
SQEP	Suitably qualified and experienced person

1.6 Notations

This standard uses the following notations:

µg/100 cm^2	Micrograms (one millionth of a gram) per 100 square centimetres

2 Overview

2.1 Information for public comment reviewers

C2.1

Two options for clean-up levels are presented in this section, along with key steps to determine the presence of methamphetamine contamination in a property. The development committee requests feedback on these options and key steps during public consultation on this draft. The committee will consider all comments, including the options presented in this section, before finally deciding how the final standard will address methamphetamine residue clean-up levels, and the processes for assessing and decontaminating affected properties.

2.1.1 *Background – ESR review and recommendations*

During the development of this standard the Ministry of Health commissioned ESR to carry out a toxicological review of current research on the health risks associated with methamphetamine residues. The ESR review was completed in October 2016 and was submitted to the committee that developed this standard for the committee's consideration.

The committee received and acknowledged the ESR review and recommendations (Fowles, Deyo, Kester 2016) at its meeting on 1 November 2016, and agreed to accept the recommended decontamination levels as interim guidelines while this standard was under development.

The ESR recommendations cover properties used for manufacturing methamphetamine (clandestine labs), and provide additional advice on clean-up levels in properties where methamphetamine has been used, but not manufactured (non-clandestine labs). Recommendations on maximum methamphetamine residue levels (after decontamination) are based on exposure risk and include:

(a) Where a property has been used as a clandestine lab, the existing maximum residue level of 0.5 µg/100 cm^2 in the Ministry's 2010 guidelines is retained. The ESR recommends no change to this guideline level.
(b) For non-clandestine labs (for example, where methamphetamine has not been manufactured but may have been smoked), which are not currently covered by the Ministry of Health's 2010 guidelines, either of the following maximum residue levels are recommended:
    (i.) 2.0 µg/100 cm^2 for non-lab properties without carpet;
    (ii.) 1.5 µg/100 cm^2 for non-lab properties with carpet.

The committee agreed at its 1 November meeting that the ESR recommendations would be added to the draft standard to be released for public comment, and that, in the interim, local authorities should continue to be guided by the guideline level of 0.5 µg/100 cm^2 where there is evidence that a property may have been used as a clandestine lab (for example, uncovered by Police, or evidence of manufacturing exists, such as drug manufacturing equipment and chemicals).

Where a property has been contaminated by the use of methamphetamine, but there is no evidence that the contamination was due to manufacture of methamphetamine, the ESR recommended clean-up levels of 2.0 µg/100 cm^2 (non-lab houses without carpet) or 1.5 µg/100 cm^2 (non-lab houses with carpet). The standards committee supported the application of these additional guideline levels as an interim measure for assessing the decontamination of non-clandestine labs until further work on developing the New Zealand standard is completed. Further work on the standard includes continued discussions with representatives of the scientific community, local councils and other key stakeholders, a review by the standards committee of all public comments, and the committee deciding on any changes that need to be made to this draft before reaching consensus on the final content of the standard.

2.1.2 *Background – Other considerations*

At a later committee meeting on 14 – 15 November 2016, a number of issues about the ESR recommendations were further discussed in detail, particularly about the practical application of the recommended three-level approach to decontamination. These issues included concerns that:

(a) It is not possible to determine if a property has been used as a clandestine laboratory or for smoking only based solely on the results of surface sampling;
(b) Physical evidence of manufacture can easily be removed or hidden;
(c) What constitutes evidence of a clandestine lab may change as manufacturing techniques change;

(d) Evidence of previous manufacture may not be apparent except for the results of surface sampling, which alone cannot be used to determine if manufacture occurred;
(e) The level of 2.0 µg/100 cm^2 was not considered conservative enough by the authors of the ESR review for a clandestine laboratory site, and it was likely that some properties would be decontaminated to this level when in fact manufacture of methamphetamine did occur but there was no clear evidence of manufacture remaining on the property;
(f) Carpets and soft furnishings can absorb and retain large quantities of methamphetamine compared to other surfaces in a typical house;
(g) For carpet and soft furnishings to be effectively sampled the process would be destructive and therefore likely to result in disposal of these items regardless;
(h) No safe level for methamphetamine in carpet and soft furnishings is available;
(i) It is unclear who would be responsible for determining which level should be used for a particular property and therefore hold the liability. If left to individual companies to decide which clean-up level should be used would depend on the experience and knowledge of the operator, and could be contested. If left to individual property owners or stakeholders to decide which level should apply could depend on economic considerations and could be contested;
(j) Having two levels for a non-clandestine laboratory scenario would be difficult to implement in practice as the level being referenced would continually change for a property as carpets are removed and replaced.

2.2 Options for methamphetamine residue clean-up levels

C2.2

Two options are presented in this draft standard, and public comment is sought on each of them.

Option A proposes three levels of decontamination that methamphetamine-contaminated properties should be cleaned to depending on whether the property was used for manufacturing methamphetamine (clandestine lab), or whether the property was used for methamphetamine use only and, in this case, whether carpets are removed. This option is based on adopting, unmodified, the three levels of decontamination recommended by the ESR review.

Option B presents an alternative approach of applying one level of clean-up, irrespective of the source of methamphetamine contamination. The level proposed has international precedence for clandestine labs and is referred to in the ESR review as being the level applied in California, one of two states that have developed health risk-based methamphetamine surface concentrations for clean-up and re-occupation of clan labs (ESR, 2016, p.9). This option reduces uncertainty when deciding which levels to apply to a property contaminated with methamphetamine. Included in this option is a separate clean-up level for 'limited exposure areas', such as uninhabited roof spaces and crawl spaces, where potential exposure to any methamphetamine contamination is low, due to limited access, and where access is likely to be limited to adults. They are also spaces that are difficult to decontaminate.

The committee welcomes feedback on Options A and B set out in 2.2.1 and 2.2.2.

2.2.1 *Option A – Three levels of clean-up*

The following are the proposed three levels of decontamination recommended in the ESR report that methamphetamine-contaminated properties should be cleaned to (see Table 1):
(a) Properties known or suspected to have been used for the manufacture of methamphetamine (clandestine labs): 0.5 µg/100 cm^2.
(b) Properties where only the use of methamphetamine (for example, smoking) is known or suspected:
    (i) without carpet: 2.0 µg/100 cm2
    (ii) with carpet: 1.5 µg/100 cm2.

Table 1 – Maximum methamphetamine residues after decontamination (Option A)

Properties known or suspected to be clandestine labs	**Properties where only the use of methamphetamine is known or suspected**	
	Original carpet retained	**Original carpet removed**

0.5 µg/100 cm^2	1.5 µg/100 cm^2	2.0 µg/100 cm^2

The ESR report (p.27) recommends that the clean-up level for clandestine labs remains at 0.5 µg/100 cm^2, pointing out that:

> *While the risk assessment of MA* (methamphetamine) *itself would support a 2.0 µg/100 cm^2, it is acknowledged that a former clan[destine] lab is likely to contain a wide variety of persistent toxicants that may be inadequately accounted for without a complete and costly analytical measurement and risk assessment of the remediated house. Thus a lower MA residue standard is proposed as a sentinel value for added precaution in such settings.*

2.2.2 *Option B – single level of clean-up for all sources of methamphetamine contamination, and a separate level for limited exposure areas*

For reasons outlined in 2.1.2 (a) to (j), this option proposes a single clean-up level for methamphetamine residue on hard surfaces of 1.5 µg/100 cm^2 or less. This level is consistent with other recent guidelines used in some US states, such as California, which were referred to in the ESR report.

This single-level approach recognises:

(a) The difficulty of distinguishing whether the source of methamphetamine contamination is from manufacture or use based solely on test results and in the absence of clear evidence of methamphetamine manufacture; and

(b) That it is difficult to remove methamphetamine contamination from carpets and other soft furnishings, which may become sources of exposure and recontamination after other hard surfaces have been cleaned.

The committee welcomes feedback on whether the clean-up level of 1.5 µg/100 cm^2 is adequate to minimise the risk of exposure to methamphetamine and other potentially hazardous chemicals used in its manufacture, given the changing methods and products involved in its manufacture.

The authors of the ESR review were not asked to address contamination in limited access areas such as unoccupied roof spaces and crawl spaces, where likely exposure risk to any methamphetamine contamination is low and access is likely to be restricted to adults. The committee considers that a recommendation on decontamination of limited access areas is necessary because of the risk that they may become reservoirs of recontamination. Option B suggests adopting the logic in the Code of Colorado Regulations for clean-up, which use a calculated adult exposure level of 4 µg/100 cm^2 for limited exposure areas. The authors of the ESR review calculated an adult exposure level, using New Zealand data, of 3.8 µg/100 cm^2 and the committee proposes that this level be used for hard surfaces in limited exposure areas (see Table 2).

Table 2 – Maximum methamphetamine residues after decontamination (Option B)

Living spaces	Limited exposure areas
1.5 µg/100 cm^2	3.8 µg/100 cm^2

2.3 Key steps to determine the presence of methamphetamine contamination and the need for decontamination

C2.3
*For the purposes of this draft standard, and until options for methamphetamine residue clean-up levels in 2.2.1 and 2.2.2 are decided in the final standard, clean-up levels will be referred to throughout this draft standard as '**the limits in this standard'**.*

2.3.1 *Health and safety*

During the initial stages of assessing a property for methamphetamine contamination all personnel who enter a property suspected of being contaminated shall take all practicable steps to minimise their exposure to contamination by methamphetamine or other hazardous chemicals used in the manufacture of methamphetamine. Proper safety measures shall continue to be taken during decontamination and until clean-up is completed and the property is cleared as safe to reoccupy (see 4.2 and the requirements of the Health and Safety at Work Act).

2.3.2 *Clandestine lab*

Under Option A (2.2.1), a property that has been used as a clandestine lab shall undergo a pre-decontamination assessment as outlined in 3.3 to determine the magnitude and extent to which the property is contaminated. The methods of sampling and testing shall be in accordance with the methods outlined in Appendix A. Under Option B (2.2.2), the property owner may decide to proceed to pre-decontamination assessment if they already have reason to suspect the property is contaminated with methamphetamine.

As shown in Figure 1, if methamphetamine residue levels are not greater than the limits in this standard, a **compliance report** can be issued (3.2.5).

If the level of methamphetamine residue exceeds the limits in this standard, the property shall be decontaminated in accordance with section 4, and be subject to post-decontamination actions as outlined in section 5.

When the property has been decontaminated to the limits in this standard, a **clearance certificate and report** can be issued (5.5).

If post-decontamination assessments show that decontamination has not reduced methamphetamine residue levels to the limits in this standard (or less), then the affected parts of the property shall be cleaned again or contaminated materials removed, or both.

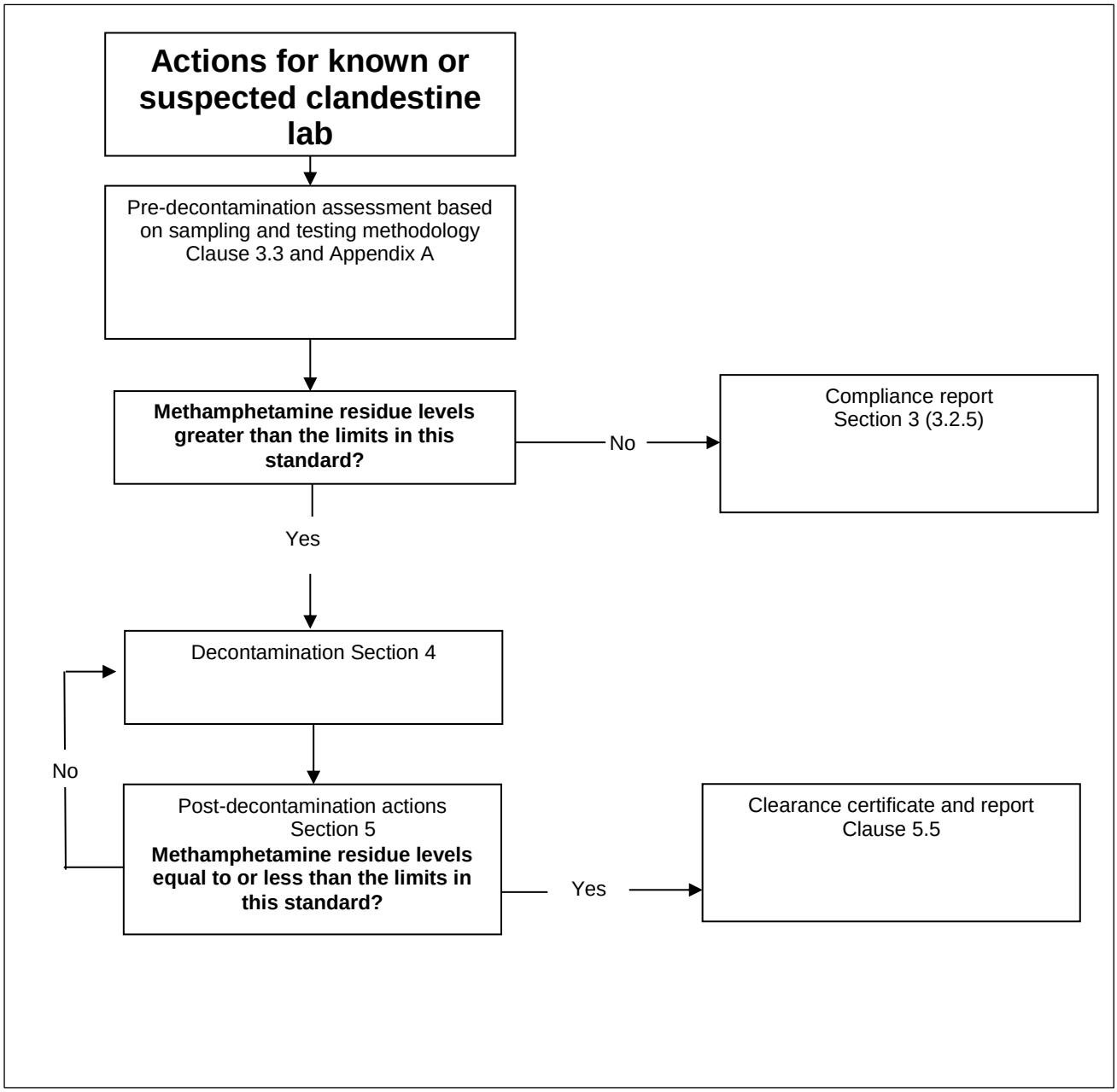

Figure 1 – Actions for known or suspected clandestine lab

2.3.3 *Methamphetamine use (not clandestine lab)*

Either Option A (2.2.1) or Option B (2.2.2) would be applicable to screening for possible methamphetamine contamination, which may be triggered by a property changing ownership or occupancy, or if there is evidence or suspicion of ongoing methamphetamine use likely to lead to contamination that creates a health risk for occupants, particularly young children.

As shown in Figure 2, there are two options for carrying out a contamination-level assessment (see section 3):

(a) Option 1 is where a contamination-level assessment uses in-field screening technology (see 3.2) as a useful first step to confirm if methamphetamine residues are present or absent, before determining the need for any further sampling and testing;
(b) Option 2 is where a contamination-level assessment uses lab-based screening protocols to determine whether pre-decontamination assessment (see 3.3) is necessary using the sampling and testing methodology set out in Appendix A.

Where a contamination-level assessment is carried out and results show that the property is not contaminated above the limits in this standard, a compliance report can be issued stating that this is the case (see 3.2.5).

If the screening technology produces a positive result indicating the presence of methamphetamine residue, further pre-decontamination assessment (using either Option X or Option Y routes) shall be carried out in accordance with 3.3 and Appendix A to determine the extent and magnitude of contamination.

If the pre-decontamination methamphetamine residue level in a property exceeds the limits in this standard, decontamination of the property shall be carried out in accordance with section 4.

2.3.4 *Decontamination and post-decontamination assessments*

As shown in Figure 2, decontamination of affected properties (or parts of them) shall reduce methamphetamine residue levels so that they do not exceed the limits in this standard.

When decontamination is completed, further post-decontamination assessments shall be carried out to determine whether decontamination has reduced methamphetamine residues to below the required levels. If not, then the affected parts of the property shall be cleaned again or contaminated materials removed, or both. If decontamination is confirmed by post-decontamination samples analysed by an accredited laboratory to be at or below the limits in this standard, a clearance certificate and report shall be issued by the decontamination contractor (see 5.5).

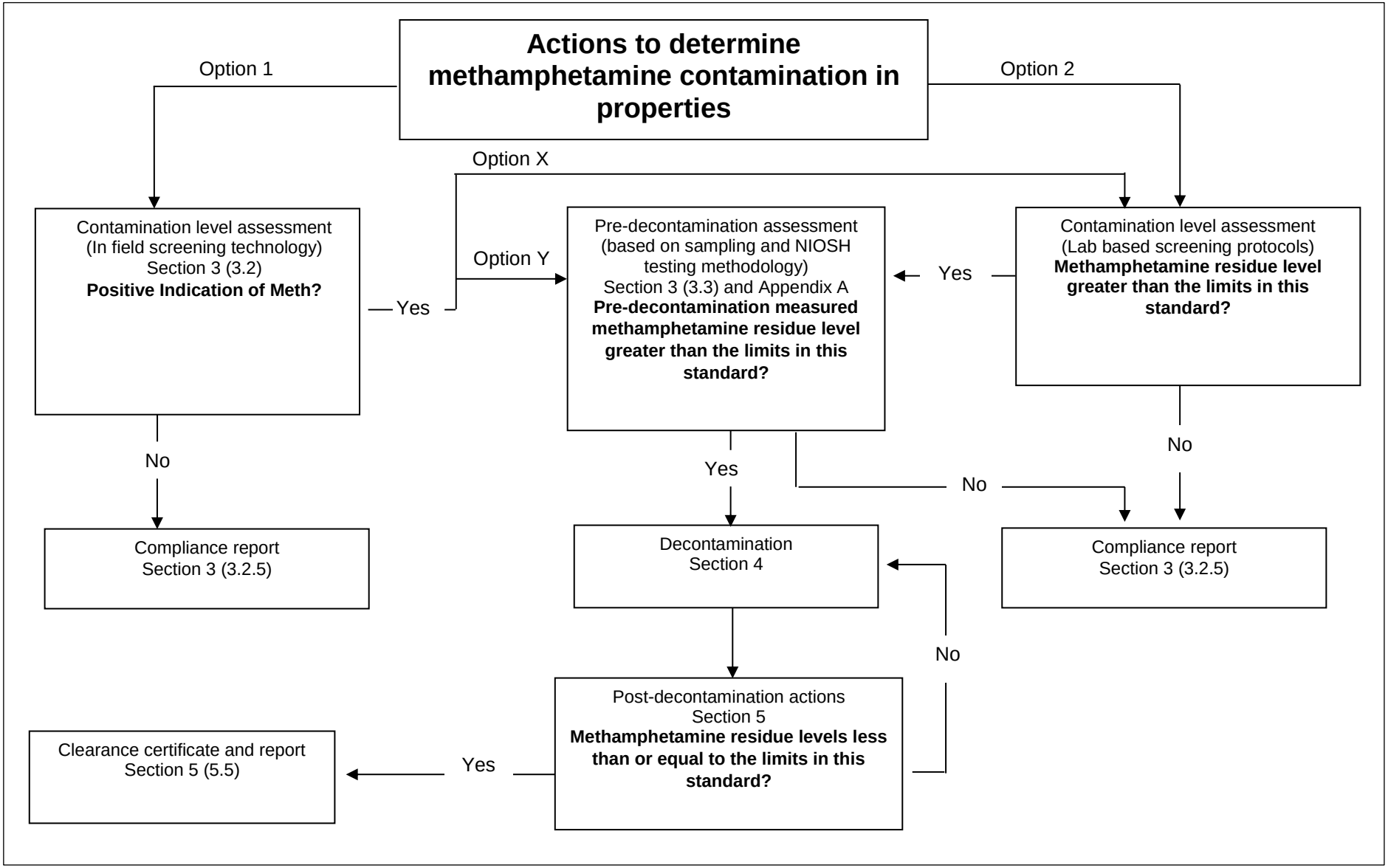

Figure 2 – Actions to determine methamphetamine contamination in properties

3 Contamination-level assessment

3.1 Overview of contamination-level assessment

This section provides guidance on undertaking a contamination-level assessment of a methamphetamine-contaminated property. A contamination-level assessment aims to:

(a) Determine the presence or absence of methamphetamine contamination;
(b) Determine the extent and magnitude of any methamphetamine contamination (if present);
(c) Inform the design of any decontamination works and waste disposal plan (if required).

3.1.1 *Contamination-level assessment purpose*

The purpose of the contamination-level assessment is to support a decision-making process about the property. For example, is it necessary to decontaminate the property, or is the property suitable for occupation? It is recommended that the outcomes and conclusions that can and cannot be made at the end of each phase are communicated to the client prior to undertaking the work. For example, use of screening technology cannot be definitive about the level of risk presented by any identified methamphetamine contamination; it is a presence-or-absence test. Therefore providing advice on whether the site should be vacated before a pre-decontamination assessment is completed may not be possible. Clearly communicating the limitations of the proposed work to the client before undertaking the work can help ensure that the client receives the service they need and mitigate issues.

3.1.2 *Contamination-level assessment phases*

A contamination-level assessment is often implemented in phases, to ensure that costs associated with the assessment are proportional to the risk the property presents. Different terminology is used to describe these phases, but what is more important are the underlying concepts.

(a) The first phase is referred to as the use of screening technology and involves determining the presence or absence of methamphetamine contamination (see 3.2). It may be appropriate to skip the screening phase where there is sufficient evidence to indicate that methamphetamine contamination is more likely than not to be present, for example, where a police investigation has uncovered that methamphetamine was manufactured at the property.
(b) The second phase is referred to as a pre-decontamination assessment and involves establishing the extent and magnitude of any methamphetamine contamination present and determining whether the property requires decontamination (see 3.3).
(c) The third phase is the development of a decontamination plan. This is completed as needed and informs the design of any decontamination works and waste disposal plan (see section 4).
(d) Testing companies undertaking a contamination-level assessment shall be independent from decontamination companies.

NOTE – Guidance on undertaking decontamination of a methamphetamine-contaminated property is provided in section 4. Guidance on completing post-decontamination sampling is provided in section 5. Guidance on sampling and testing protocols is provided in Appendix A.

3.2 Screening assessment (using in-field screening technology)

3.2.1 *Screening assessment purpose*

The purpose of a screening assessment is to identify the presence or absence of methamphetamine residues in a property. This assessment shall be carried out by a suitably qualified and experienced person Level 1 (SQEP 1)

Methamphetamine residues are targeted in a screening assessment to act as an indicator of both methamphetamine and other hazardous residues associated with the use or manufacture of methamphetamine.

A screening assessment provides an indication of risk so that more informed decisions can be made regarding next steps in management of the hazardous residues that may be present on the materials and surfaces sampled for which methamphetamine has acted as an indicator. A screening assessment determines whether a pre-decontamination assessment is needed. A pre-decontamination assessment (if needed or undertaken) subsequently informs the need to generate a decontamination plan and the completion of decontamination works (see section 4).

Screening assessments are generally undertaken when it is uncertain if a property or asset is contaminated. Examples of when a screening assessment may be undertaken include:

(a) Between tenancies;
(b) During tenancies;
(c) As part of an agreement for the sale and purchase of a property; and
(d) Where property, particularly vehicles, has been stolen and recovered.

NOTE – This is a non-exhaustive list that depends on the facts and circumstances of the situation.

The following sections outline the recommended steps in a screening assessment.

3.2.2 *Background information*

The purpose of the background information stage of a screening assessment is to develop a sampling strategy, to understand the number of samples that need to be collected, and generate a project health and safety plan.

The following information shall be obtained from the land owner, property manager or land occupier (as appropriate):
(a) A copy of any previous inspections that have been conducted;
(b) The number of living spaces and storage areas in the property;
(c) If the property has a forced-air heating or cooling system, and if so the location of the intakes;
(d) The number and location of exhaust fans within the property;
(e) If the site has a septic waste system;
(f) If any renovations or extensive cleaning has occurred;
(g) If occupant consent has been given for testing to occur; and
(h) The presence and type of pets at the property.

Guidance on health and safety precautions is provided in 4.2.

3.2.3 *Site inspection and sampling*

3.2.3.1

The purpose of the site inspection stage of a screening assessment is to indicate the presence or absence of methamphetamine in the property. Therefore, samples are collected from locations that are most likely to have elevated methamphetamine residue on them. These include:
(a) The intake points of forced-air heating or cooling systems;
(b) The intake points of exhaust fans;
(c) Stained materials or surfaces;
(d) Near fuse boxes and power points;
(e) Timber finished with stain, varnish, or polyurethane; and
(f) Areas of high airflow.

An assessment of factors that may reduce the presence of methamphetamine on surfaces available to be sampled shall be undertaken (that is, cleaning or renovation and painting), a record made, and sample site selection influenced accordingly.

Note: Professional judgement will be needed to determine the exact location of samples to be collected.

The practice of sampling locations that are most likely to have elevated methamphetamine residues is appropriate for indicating the presence or absence of methamphetamine residue during a screening assessment. However, if undertaken in isolation from sampling practices outlined here in 3.2 and in Appendix A, the practice is not suitable for determining the need for decontamination action.

3.2.3.2

Sampling shall be conducted using the techniques specified in Appendix A. The sampling technique shall be consistently applied throughout the property.

Where the nature of the surface being sampled means a template cannot be used, this will be recorded and as close an approximation to an area of 100 cm^2 as the surface being sampled will allow shall be taken.

Sampling and testing for contaminants other than methamphetamine, but associated with its manufacture, shall be conducted using the techniques specified in Appendix B.

3.2.3.3

A minimum of one sample shall be taken from every living space. For living spaces greater than 10 m^2 there shall be a sample for every additional 10 m^2 or part thereof. If there is a non-exterior-ducted extraction fan or non-exterior-ducted forced-air system at least one sample shall be taken from the roof space, if possible.

Additional samples should be collected at the samplers' discretion and processed following consultation with the property owner or agent, refer to 3.3.3.2.

NOTE –

(1) Roof spaces and crawl spaces are regarded as limited exposure areas.

(2) Additional samples will better inform decontamination strategies and process and could potentially reduce overall costs.

Where not all living spaces are able to be sampled (such as limited exposure areas), the report shall document those living spaces where sampling did not occur, and the rationale for not sampling those living spaces.

3.2.3.4

Personal possessions shall not be sampled unless specifically requested by the client. Where sampling of personal possessions is conducted, it shall be completed in a manner that means the results from the personal possessions are clearly differentiated from the property in which the possessions are located.

3.2.3.5

Sampling locations shall be recorded using one or a combination of the following methods:
(a) Written description of sample location;
(b) Off-set measurements from a fixed point (for example, a doorway);
(c) Photographs;
(d) A floor plan; or
(e) Video recordings.

As a minimum, sample location recording shall include the living space and location within the living space where the sample was taken.

3.2.4 *Testing of samples*

Sample analysis is undertaken to determine the presence of methamphetamine residues during a screening assessment.

Methamphetamine residues are targeted in a screening assessment to act as an indicator of both methamphetamine and other hazardous residues associated with the use or manufacture of methamphetamine.

If an in-field test is used a photograph of the result shall be taken and included as part of the report. In-field test shall be validated according to Appendix C.

Samples for laboratory analysis shall be analysed by the laboratory using the approved methods listed in Appendix A.

3.2.5 *Reporting*

A compliance report shall include:
(a) The address or description of the property or asset;
(b) The date of assessment;
(c) The assessor who conducted the site inspection and their qualifications;
(d) A statement of any interest the tester has in the property or asset, for example owner, landlord, purchaser, tenant, vendor, manager, and so on;
(e) A description of the property layout (for example, a floor plan) that describes the sampling locations;
(f) The method used to collect samples;
(g) The methodology employed to analyse the samples;
(h) The limitations of the sampling and testing methodology employed, including but not limited to: living spaces not sampled and the rationale as to why they were not sampled; and factors which can influence the outcome of the test result, namely, cleaning or renovation;
(i) The results of the sampling including photographs of in-field assessment, or copies of the laboratory analytical report (if relied upon); and
(j) A conclusion confirming the presence or absence of methamphetamine residues at the property.

Recommendations on next steps (such as, but not limited to, completing a pre-decontamination test or – where laboratory analysis has been completed – recommending that due to high levels of contamination that the property be vacated) may be included in a compliance report, but are beyond the scope of this standard.

3.3 Pre-decontamination assessment

3.3.1 *Pre-decontamination assessment purpose*

The purpose of a pre-decontamination assessment is to determine the extent and magnitude of any methamphetamine contamination and inform the design of any decontamination works and waste disposal plan (if required). A pre-decontamination assessment may follow a positive screening assessment or bypass such a test if contamination is already suspected or known to exist. A pre-decontamination assessment shall be carried out by a suitably qualified and experienced person Level 2 (SQEP 2).

The pre-decontamination assessment includes comparing the results of the laboratory analysis with the limits in this standard to determine whether the property requires decontamination.

If the sample results are equal to or below the clean-up levels then no adverse effects are anticipated to occur in the vast majority of the population. If the sample results exceed the clean-up levels, a potential risk to human health is indicated and decontamination is necessary to reduce the contamination.

A pre-decontamination assessment is generally undertaken when there is evidence that a property has been contaminated by methamphetamine. This evidence may come in the form of a screening assessment (see 3.2), or through alternate means.

3.3.2 *Background information*

The purpose of the background information stage of a pre-decontamination assessment is to gather enough information to develop a sampling strategy, in order to estimate the number of samples that need to be collected and generate a project health and safety plan.

The following information shall be obtained from the land owner, property manager or land occupier (as appropriate):

(a) A copy of any previous inspections that have been conducted;
(b) Copies of police reports and council letters;
(c) Information that would indicate soil contamination;
(d) The number of living spaces and storage areas in the property;
(e) If the property has a forced-air heating or cooling system, and if so the location of the intakes;
(f) If any renovations or extensive cleaning has occurred;
(g) The number and location of exhaust fans within the property;
(h) If the site has a septic waste system;
(i) If occupant consent has been given for testing to occur;
(j) The presence and type of pets that will be present at the property.

Guidance on health and safety precautions is provided in 4.2.

3.3.3 *Site inspection and sampling*

3.3.3.1

As a minimum the following should be determined as appropriate sample locations:

(a) At least one sample shall be taken from every living space in the property;
(b) Any space separated from other spaces by a door shall be considered a separate living space. Closets and cupboards that are less than 2 m² are not considered living spaces but may be suitable for sampling if extensive redecoration or renovation means they provide the best insight into the history of the property;
(c) For living spaces greater than 10 m² of floor space an additional surface shall be sampled for each additional 10 m² or fraction thereof;
(d) For structures that have no living spaces or discrete areas, a surface shall be sampled for every 10 m² of floor space;
(e) If surfaces are sampled that are likely to give low swabbing recovery, such as unpainted wallpaper, bare plasterboard, concrete, and bare timber, an additional surface in the living space shall be sampled; and
(f) If surfaces that are likely to give high swabbing recovery are sampled, such as varnished/stained timber, heat pumps, vents, and heat-transfer systems, an additional surface in the living space shall be sampled.

3.3.3.2

Additional samples shall be collected at the sampler's discretion and processed following consultation with the property owner or agent.

When determining sample-site selection the following shall be considered:

(a) A range of material types (for example, painted plasterboard, painted or varnished timber, concrete) – this is important as methamphetamine retention varies with different materials and coating types;
(b) The texture of proposed sampling locations. Greater recovery rates of methamphetamine are more likely on smooth, non-porous surfaces when using surface wipe sampling (Martyny 2008);
(c) Locations on large surface areas (for example, walls and ceilings) that are likely to show relatively high contamination levels; and
(d) Surfaces that can be difficult to decontaminate, for example bare concrete, timber framing, certain types of tiles, and powder-coated metals.

3.3.3.3

An assessment of factors that may reduce or mask the presence of methamphetamine on the surfaces available to be sampled shall be undertaken (that is, cleaning or renovation and painting), a record made, and sample-site selection influenced accordingly.

If background information indicates that a property has been recently renovated, sample collection should target surfaces that have been recently painted and those that represent the original surface (before the contamination event or events are thought to have occurred).

To determine which surfaces to target in a painting or renovation scenario, background information should first be obtained on when and where painting and renovations have occurred (for example, walls in the main living space may have been painted but not the insides of wardrobes).

As methamphetamine can migrate between paint layers, if sanding back layers of paint or conducting 'double swabbing' (where a second swab sample is taken in the same spot), care shall be taken when interpreting results due to the risk of elevated recovery.

3.3.3.4

Where not all living spaces are able to be sampled (such as inaccessible or limited exposure areas), the report shall document those spaces where sampling did not occur, and the rationale why those spaces were not sampled.

3.3.3.5

Personal possessions shall not be sampled unless specifically requested by the client. Where sampling of personal possessions is conducted, it shall be completed in a manner that means the results from the personal possessions are clearly differentiated from the property in which the possessions are located.

3.3.3.6

At least one blank sample shall be taken at every site to ensure consumables and equipment are free of contamination.

3.3.3.7

Sampling locations shall be recorded using one or a combination of the following methods:
(a) Written description of sample location;
(b) Off-set measurements from a fixed point (for example, a doorway);
(c) Photographs.
(d) A floor plan; or
(e) Video recordings.

As a minimum, sample location recording shall include the living space and location within the living space where the sample was taken.

3.3.3.8

A visual inspection of the grounds shall be conducted to identify potential soil contamination issues such as burn pits and chemical containers being stored outdoors.

Photographs and notes shall be taken to record any observations that could indicate the manufacture of methamphetamine has occurred. Site information relevant to subsequent stages of work (for example, decontamination) shall be recorded including (as appropriate):
(a) Stained or varnished timber;
(b) Areas where hazardous materials have been stored;
(c) The presence of odours;
(d) If the property has a septic system;

(e) The presence and location of ventilation system components and exhaust fans;
(f) Structural features that may indicate separate functional spaces, such as attics, false ceilings and crawl spaces, basements, closets, and cabinets; and
(g) Burn pits, outside disposal areas (such as drains), and outside storage areas. These are recorded to assist in determining the likelihood of soil contamination.

3.3.4 *Testing of samples*

Sample analysis is undertaken to determine the presence of methamphetamine residues only during a pre-decontamination test. Methamphetamine residues are targeted in a pre-decontamination assessment to act as an indicator of both methamphetamine and other hazardous residues associated with the use or manufacture of methamphetamine. It may be appropriate for post-decontamination sampling to include a wider variety of contaminants to assess the risk and better inform decontamination planning (see section 5).

Samples for laboratory analysis shall be analysed by a NZS ISO/IEC 17025 accredited laboratory using the approved methods listed in Appendix A.

3.3.5 *Reporting*

A pre-decontamination assessment report shall include:
(a) The address or location of the property;
(b) A description of the property layout (for example, a floor plan);
(c) Details of building materials, electrical fitting, and chattels present;
(d) Dimensions of living spaces. These may be approximated;
(e) Identification of methamphetamine residue concentrations obtained from behind the paint where this has been applied directly to old or original surfaces that have been exposed to methamphetamine-related contamination;
(f) The competence of the assessor(s) who conducted the site inspection;
(g) The competence of the individual(s) signing off the report;
(h) The location of the sampling points and the rationale for selecting the locations (see 3.3.3);
(i) The method used to collect samples;
(j) The analysis methodology employed;
(k) The limitations of the sampling and testing methodology employed including but not limited to: living spaces not sampled and the rationale why they were not sampled; and factors which can influence the outcome of the test result, that is, cleaning and renovation;
(l) The results of the sampling including photographs of in-field assessment, or copies of the laboratory analytical report (if relied upon);
(m) The results of quality assurance or quality control processes;
(n) A conclusion confirming the extent and magnitude of methamphetamine contamination at the property;
(o) Recommendations on next steps (if required); and
(p) Site information relevant to subsequent stages of investigation and decontamination (if required).

3.3.6 *Recommendations on next steps*

Recommendations on next steps may include:
(a) Details of decontamination required (see 3.3.8);
(b) A decontamination plan (see section 4); and
(c) Vacating the property if contamination levels exceed the limits in this standard.

3.3.7 *Decontamination recommendations*

3.3.7.1

The purpose of decontamination recommendations is to inform the design of any decontamination works and waste disposal recommendations (see section 4).

Decontamination recommendations are made after a pre-decontamination assessment (see 3.3) has identified the extent and magnitude of methamphetamine contamination. Property owners may wish to undertake decontamination where methamphetamine contamination is identified but does not present an unacceptable human health risk.

3.3.7.2

Decontamination recommendations should:
(a) Be included in the pre-decontamination report when a surface concentration result greater than the limits in this standard is obtained;
(b) Identify specific living spaces and materials that require decontamination;

(c) Be evidence based and rely on the experience of the site inspector and published research;
(d) Be used as a guidance document; and
(e) Cover:
    (i) Removal and disposal of refuse and possessions (if required)
    (ii) Removal and disposal of soft furnishings, such as carpet and curtains
    (iii) Removal and disposal of appliances used for food storage and preparation
    (iv) Removal and disposal of insulating materials if there is potential for exposure via an internal access hatch or vent or if ceiling linings are to be removed
    (v) Application of cleaning products or sanding/grinding or removal of materials in specific living spaces, such as timber flooring, window sills/surrounds/architraves, doors/door frames, concrete floors and so on.

The final scope of work should be confirmed by the decontamination contractor after consultation with the property owner.

3.3.7.3

Encapsulation (see 4.3.9) shall only be undertaken as a last resort for structural elements of a property where either cleaning is not possible or repeated attempts at cleaning have been unsuccessful.

3.3.7.4

If soil concerns (for example, burn pits and vegetation anomalies) are identified and the manufacture of methamphetamine is suspected, a separate inspection shall be conducted by a soil specialist following the Ministry for the Environment *Contaminated land management guidelines*.

If soil concerns are identified and the manufacture of methamphetamine is not suspected, then the location of concern should be dug out to 50 cm beyond its margins and 50 cm deep, and properly disposed of.

3.3.8 *Issuing of clearance certificate*

Where a clearance certificate for the property is to be issued (see 5.5), the person or organisation conducting a pre-decontamination assessment shall be:
(a) Accredited to NZS ISO/IEC 17025 or AS/NZS ISO/IEC 17020, as applicable, with a scope of accreditation that includes the requested work; and
(b) Independent of persons or organisations that perform decontamination; and
(c) Able to demonstrate their impartiality.

For persons or organisations accredited to AS/NZS ISO/IEC 17020 they shall meet the requirements for Type A inspection bodies.

4 Decontamination

4.1 Objective of decontamination

The objective of decontamination is to reduce the methamphetamine contamination levels in a property so that they do not exceed the limits in this standard.

4.2 Hazards and contaminants

Adequate safety precautions shall be taken by everyone who enters a contaminated property before decontamination is complete. For further information on safety measures see Worksafe New Zealand (2015).

All persons who enter a former clandestine lab or a property suspected or known to be heavily contaminated with methamphetamine shall be trained in health and safety measures, and shall wear appropriate personal protective equipment (PPE), based on site-specific conditions, to minimise exposure to methamphetamine and other harmful chemicals. PPE includes protective clothing, gloves, eye protection, and respiratory protection.

All persons undertaking decontamination activities shall assess whether additional hazards exist in the property. Additional hazards include asbestos and lead that can be present, particularly in older properties. Decontamination contractors should consult with appropriate professionals who can determine the risks and advise property owners and contractors on how to deal with additional hazards.

4.3 Decontamination process

4.3.1 *Decontamination process steps*

Steps in the decontamination process include the following:
(a) Develop a scope of work based on the pre-decontamination report and best industry practice;
(b) Ventilate all living spaces;
(c) Remove contaminated materials, including soft furnishings that cannot be properly cleaned;
(d) Check ventilation systems and heat pumps;
(e) Vacuum interior surfaces using a high-efficiency particulate air (HEPA) filter vacuum;
(f) Clean all interior surfaces using a three-stage process;
(g) Flush plumbing traps;
(h) Encapsulate structural surfaces after first attempting to decontaminate such surfaces;
(i) Dispose of waste; and
(j) Prepare a decontamination report on completion of the process.

4.3.2 *Develop a scope of work based on the pre-decontamination report*

The scope of work shall reference the test results and other information obtained during the pre-decontamination assessment, describe health and safety measures to be taken, and describe the proposed decontamination methods that will be implemented. The description of the cleaning methods shall, where relevant include:
(a) A list of the items to be removed from the property;
(b) Location, layout, and procedures for on-site decontamination;
(c) A list of the surfaces to be cleaned on-site;
(d) Cleaning materials and procedures;
(e) Areas to be encapsulated after cleaning, and the methods and materials of encapsulation;
(f) Methods to be used to prevent off-site contamination; and
(g) Methods of disposal of contaminated material.

4.3.3 *Ventilate all living spaces*

The property should be thoroughly ventilated before, during, and after decontamination activities. Open all doors and windows and use fans, blowers or a negative air machine equipped with a HEPA filter. The HVAC system for ventilation should not be used as doing so could spread contamination to previously uncontaminated or decontaminated areas of the structure. Take precautions to avoid discharging exhaust air to air intakes of adjacent structures.

After the initial airing, ventilation should continue throughout the decontamination activity.

The property shall be protected from adverse weather effects during decontamination.

NOTE –

(1) Venting does not remove methamphetamine residues and is not a decontamination method.

(2) Ensure the property is secured when not occupied.

Recommended ventilation steps include:

(a) Pre-decontamination ventilation: The property shall be ventilated prior to commencement of decontamination activities. Ventilation shall be performed for a minimum of 24 hours and preferably 48 hours prior to undertaking further decontamination activities;
(b) Continued ventilation: It is important to continue ventilation throughout the decontamination process. To protect testing or decontamination operators and to limit cross-contamination, leave windows open or install a negative air unit with a HEPA filtration system during decontamination. A negative air unit equipped with a HEPA filtration system will limit or prevent the transfer of airborne contamination from contaminated to clean areas; and
(c) Post-decontamination ventilation: The property shall be ventilated for a minimum of 2 days after decontamination is completed. After cleaning and ventilating the property, recheck for new staining and odour (the presence of which would indicate that additional cleaning is necessary).

4.3.4 *Remove contaminated materials*

4.3.4.1 *Removal and disposal*

Items that shall be removed and properly disposed of at an approved facility include any:
(a) Materials that are visibly stained, emitting odour, damaged, or likely to have been used in the manufacturing process (for example, a refrigerator used for storing chemicals);
(b) Materials that are absorbent and difficult to clean including carpeting, wallpaper, soft board/plasterboard building materials, paper materials (books, documents), and soft furnishings such as couches, mattresses, and thermal-backed curtains; and
(c) Items with a high potential for human contact, such as children's toys, bottles and food-preparation items, and surfaces.

All items to be disposed of shall be made unusable so they cannot be recycled.

If an item is of significant sentimental, monetary, or legal value, professional judgement shall be used to gauge whether to discard the item or attempt decontamination.

Table 3 sets out a process for deciding to clean or discard materials based on the value of the item and potential for future human contact:

Table 3 – Value and contact potential evaluations

High value – High contact items For example, mattresses, carpeting, large upholstered items should almost always be discarded.	**High value – Low contact items** For example, in some circumstances, photographs may be salvaged without cleaning, or large appliances may be cleaned and saved.
Low value – High contact items For example, clothing, plastic toys and toothbrush should always be discarded.	**Low value – Low contact items** For example, a screwdriver, garden rake or other metal or hard material item may be cleaned in some circumstances.
Source: Minnesota Department of Health and Minnesota Pollution Control Agency 2010.	

4.3.4.2 *Removal of insulation*

When removal of insulation is required, the following criteria shall be applied:
(a) If the ceiling or wall linings are not removed, insulation stays in situ and it will not be tested or decontaminated;
(b) If there are forced-air systems within the property, all insulation shall be removed;
(c) If the ceiling of a living space is partially removed and there is loose-fill insulation, mineral wool insulation, or chopped glass wool insulation, present, all insulation shall be removed; and
(d) If the ceiling of a living space has been partially removed, only the insulation in that area shall be removed.

NOTE – A ceiling space is not considered a living space.

4.3.4.3 *Precautions*

When decontamination is undertaken in limited exposure areas, the following should be performed:
(a) Labels/signs or similar should be used to label the hatch as 'no access/ PPE at all times' or 'by authorised access only'. Tenants should be made aware of the potential risks in the ceiling space and should not use the space as storage;

(b) All hatches should be inspected regularly and where the cover is removed it should be reattached urgently to reduce the risks of meth contamination into living spaces.

NOTE – These precautions are required if contaminated insulation is to be retained as the rate of re-emission of methamphetamine from insulation and diffusion back into living spaces is currently unknown.

4.3.5 *Check ventilation systems and heat pumps*

Some forced-air system ducts cannot be decontaminated because of the nature of the material they are lined with, such as fibreglass. In addition, flexible ducting often contains a porous inner surface, which in most cases means that decontamination is uneconomic. For this reason the ducting should be discarded and replaced after the forced-air system has been decontaminated.

NOTE – Adequate cleaning of forced-air system can require specialist training and tools.

Where dwellings have heat pumps, the decontamination of these appliances shall be assessed on a case-by-case basis with a focus on their proximity to contaminated areas.

In respect of any goods including heat pumps supplied under a contract, it is the owner's responsibility for the correct operation and regular maintenance of the equipment listed on a warranty. Before any decontamination is carried out on a heat pump appliance, the owner should consult the manufacturer about any proposed decontamination.

Where the risk of contamination from a heat pump is low and removal of the item is not cost-effective, replacing the entire indoor unit may be considered an acceptable solution.

NOTE – Because the heat pump manufacturer cannot quantify the risk associated with decontaminating a heat pump appliance, it is likely that they could assume a 'worst case' scenario resulting in total replacement of the product.

4.3.6 *Vacuum interior surfaces using a high-efficiency particulate air (HEPA) filter vacuum*

After removing the materials to be permanently discarded, thoroughly vacuum all surfaces with a vacuum equipped with a HEPA filter. Vacuuming with a HEPA filter effectively removes particulate contamination as well as dust and cobwebs that may interfere with washing. HEPA vacuuming alone is not sufficient to decontaminate most surfaces.

NOTE – Household vacuums are not recommended since they lack adequate filtration and can further spread contaminants.

4.3.7 *Clean all interior surfaces using a three-stage process*

Depending on the level of contamination, the decontamination contractor shall consult with the property owner or agent and decide whether decontamination or removal of building materials is required. This decision will be based on a number of considerations, including cost and whether it is cheaper to remove rather than decontaminate the material, and whether the surface is a critical part of the structure that cannot be removed.

NOTE: – It is important that professional advice is obtained on whether to remove any material that is likely to be a critical part of the property's structure.

4.3.7.1 *Cleaning products*

Cleaning products shall be safe to use, used in accordance with the manufacturers' specifications and instructions, and be effective for removing methamphetamine to the appropriate clean-up level in Table 1. Cleaning solutions containing ammonia or strong oxidising agents, including solutions containing the hypochlorite ion, shall not be used unless evidence can be supplied that shows that any methamphetamine degradation products have no harmful properties.

4.3.7.2 *Cleaning process*

If a surface is to be cleaned, the entire surface, and not just spots, shall be covered by the cleaning step(s). The typical procedure is to start with the ceiling, then from the top to the bottom of the walls and finally the floor. Follow the wash with a thorough rinse using clean water and clean rags. Change the wash solution, the rinse solution and rags frequently. Allow the surfaces to thoroughly dry and then repeat the wash and rinse steps at least two additional times.

4.3.7.3 *Disposal of contaminated water*

Wash and rinse water typically shall be disposed of via the property's plumbing system, provided that the property is connected to a public sewer system. The concentration of cleaning solutions can affect the functioning of an on-site sewage disposal system (septic system). If the property is not served by public sewerage, the wash and rinse water shall be collected for proper off-site disposal. Another option is to

arrange for a sewage pumping operator to empty the septic tank before decontamination begins to provide storage capacity in the tank and then pump the tank again before the liquid reaches the effluent port on the tank.

It is important to prevent recontamination of cleaned areas and items. Household items that are cleaned on-site should be bagged or wrapped in plastic after they have been cleaned. Otherwise, items should be stored offsite after they have been cleaned. Removed items should not be returned until decontamination of the property is completed.

4.3.8 *Flush plumbing traps*

Plumbing fixtures with visible signs of contamination such as etching or staining shall be removed and permanently discarded as they will be difficult to clean. Porcelain and stainless steel fixtures in which the surface is not pitted or damaged shall be cleaned using the procedures outlined in 4.3.7.3. When staining is noted around plumbing fixtures or if a strong chemical odour is emitted by the plumbing system, the drain system shall be flushed using a generous amount of water. The entire plumbing system shall be flushed at the same time.

Different steps may be required for the plumbing system of a property served by an on-site sewage disposal system than for one served by a public sewerage system as outlined in 4.3.7. Plumbing systems shall be checked to ensure that there are no illegal discharges of sewage to the ground or to surface water.

In instances where the property is served by an on-site sewage disposal system or an illegal discharge system is encountered, the appropriate authorities (district or city council) shall be contacted for instructions prior to flushing traps or disposing of any liquid into the plumbing system.

Additionally, if the wash and rinse water from the decontamination process is disposed of via the household plumbing system, flushing the system shall be delayed until that part of the decontamination is completed.

4.3.9 *Encapsulate structural surfaces*

Encapsulation after decontamination is only recommended for structural elements that cannot be removed from the property or asset. Encapsulation shall only be attempted after post-decontamination testing shows that cleaning or coating removal attempts have been effectively exhausted.

Encapsulation of surfaces with primers, paint, and other sealants provides additional protection against the migration of contaminants to the surface of the material.

Oil-based or epoxy coatings, or other materials that have demonstrated ability to act as an effective barrier against the solvent effect of methamphetamine shall be used to encapsulate surfaces. A minimum of two coats is necessary.

Surfaces shall be primed with a high quality, oil-based primer that will be durable over time and meets the recommendations of the finish-coat manufacturer. The manufacturer's recommendations for application methods, thickness, and drying or curing time between coats shall be followed. Complete coverage of the surface is important and may require multiple applications of finish.

Spray application can provide more thorough coverage than hand-rolling and is therefore recommended in many decontamination guidelines, particularly for textured plaster and drywall surfaces that could be damaged by hand rolling.

NOTE – Encapsulation is not a substitute for decontamination.

4.3.10 *Dispose of waste*

The following shall be performed when disposing of waste:

(a) All materials removed from a meth-contaminated site shall be treated as contaminated waste and removed to a registered contaminated waste centre;
(b) Evidence of appropriate waste disposal shall be obtained from the waste remover and submitted to the decontamination contractor;
(c) The evidence shall be made available to the property owner or agent as part of the clearance report;
(d) Waste bins shall be lined and covered with polythene with a minimum weight of 200 microns before removal.

4.3.11 *Prepare a decontamination report on completion of the process*

After decontamination has been completed, the following items shall be included in a decontamination report on the property:

(a) Physical address of the property and a description of the layout of the property;
(b) A summary of the scope of works, including any known information about chemicals that were present and removed from the site both before and during the decontamination process;

(c) Variations from original scope of work and decontamination recommendations, such as the removal of other contaminants (for example, asbestos) discovered during decontamination;
(d) The names and qualifications of the decontamination contractors and technicians;
(e) Confirmation that the decontamination was completed, including a description (with photographs) of the areas that were decontaminated and the methods used;
(f) The waste management procedures, including handling and final disposition of waste.

For additional information on reports and documentation requirements see section 6.

5 Post-decontamination actions

5.1 Post-decontamination objective

The aim of the post-decontamination actions is to gather impartial, reliable information on the effectiveness of decontamination work to date and to either certify the premises to be at or below the appropriate clean-up levels defined in this standard, or to identify areas where residual methamphetamine contamination is in excess of those levels and require further cleaning.

5.2 Post-decontamination sampling and testing

When the agreed decontamination work or the removal of contaminated material has been completed a declaration of completion shall be signed by the party that undertook the work. When the completion statement has been received or produced the owner or their agent shall request sampling and testing for the purpose of determining the effectiveness of the decontamination and removal of waste.

If sampling and testing results indicate that contamination, above the levels specified in this standard, is still present, a clearance certificate shall not be issued. The owner or their agent shall make a decision on future actions, taking into account advice from professionals such as decontamination contractors, samplers, and testing laboratories as appropriate.

Effective measures shall be taken to prevent recontamination of the site between the end of decontamination work and when the clearance certificate is issued. Sampling and testing shall take place as soon as practicable following the completion of the decontamination work. Failure to prevent recontamination could invalidate all previous decontamination, sampling, and testing and prevent the issuance of a clearance certificate.

5.3 Accreditation

Irrespective of the party that commissions the sampling and testing, the provider of these services shall be accredited to NZS ISO/IEC 17025 or AS/NZS ISO/IEC 17020, as applicable, with a scope of accreditation that includes the requested work. Providers of inspection, sampling, and testing services shall be independent of persons and organisations that perform decontamination and shall be able to demonstrate their independence and impartiality. For organisations accredited to AS/NZS ISO/IEC 17020 they shall meet the requirements for Type A inspection bodies.

To provide confidence in inspection, sampling, and testing, on which a clearance certificate may be based, reports and certificates for inspection, sampling, and testing shall be endorsed by their accreditation body.

NOTE – When appropriate qualifications become available samplers may be required to hold appropriate qualifications as a prerequisite for working as samplers for an accredited organisation.

5.4 Sampling plan

A detailed post-decontamination sampling plan shall be drafted and shall be developed by a suitably qualified and experienced person, Level 2, (SQEP 2) in consultation with the property owner or their agent, the decontamination contractor, and the sampling organisation before sampling commences. Copies of the approved plan shall be provided to and retained by the owner of the property, or the owner's agent, the decontamination contractor, and the sampling organisation.

The post-decontamination sampling plan shall take into account at least the following factors:

(a) The size and layout (complexity) of the property;
(b) The possible influence of adjoining properties and tenancies;
(c) Details of the pre-decontamination sampling plan;
(d) The level and nature of contamination prior to decontamination;
(e) The nature of materials present in the property that have been decontaminated;
(f) Encapsulation, but this should only be considered for structural elements where all reasonably steps to decontaminate have failed to lower the residue to acceptable levels.

The sampling plan shall include the location of samples, the material(s) to be sampled, and the assessment techniques to be performed on each sample.

NOTE – For properties that were found to have high levels of contamination before decontamination, or were clandestine labs, it may be appropriate to sample and test for contaminants other than methamphetamine. For properties that have been contaminated by other chemicals used in the manufacture of methamphetamine that are not covered in this standard, advice should be obtained from the relevant territorial authority (council) on any further testing or decontamination that may be required.

The sampling plan shall be based on appropriate, documented, sampling procedures (see Appendix A) to provide representative results for specific spaces within the property.

If laboratory composite sampling is agreed, details of the component samples shall be recorded and retained for at least 30 days following receipt by the laboratory.

5.5 Clearance certificate and clearance report

5.5.1 *Clearance certificate contents*

When satisfied that sufficient reliable and independent evidence of effective decontamination has been received the decontamination contractor shall issue a clearance certificate.

A clearance certificate shall contain at least the following information:
(a) Name and contact details of the decontamination contractor that issued the clearance certificate;
(b) Date when decontamination was completed;
(c) Date when the samples were taken;
(d) Address of the property to which the certificate relates, including unit details for multiple tenancy properties;
(e) A unique identification code or number for traceability;
(f) A statement that the property has been found to meet the requirements of this standard;
(g) Record of encapsulation (if any);
(h) Explicit reference to the specific sampling and testing results on which the clearance certificate is based;
(i) Name or unique identification of the person that authorised the issue of the clearance certificate.

5.5.2 *Clearance report contents*

A clearance report shall contain at least the following information:
(a) Decontamination scope of work;
(b) Copies of the post-decontamination sampling and test results with an accreditation body endorsement;
(c) Evidence of appropriate waste disposal;
(d) Rationale to support encapsulation and details of encapsulated elements;
(e) Photographs showing locations where testing, decontamination, encapsulation or any other remedial work has occurred.

If sampling and testing following decontamination indicate that levels of contamination are above acceptable levels specified in this standard, it is the responsibility of the property owner or their agent to decide what further measures are required. The property owner or their agent shall be responsible for determining the viability of further work. In this situation a clearance certificate shall not be issued.

6 Reporting and documentation

6.1 Reporting and documentation objective

This section sets out the requirements for the reports and relevant documents relating to the assessment and decontamination of properties affected by methamphetamine residues above the limits in this standard.

6.2 Reports on stages in the process

Reports shall be prepared at each of the following stages:

(a) Contamination-level assessment:
  (i) Screening assessment (presence/absence of methamphetamine residues) (by SQEP 1 sampler/tester)
  (ii) Pre-decontamination assessment (extent of methamphetamine contamination) (by SQEP 2 sampler/tester);
(b) Preparation of decontamination scope of work (by the decontamination contractor);
(c) On completion of decontamination (by the decontamination contractor);
(d) Post-decontamination (by SQEP 2 sampler/tester);
(e) Clearance certificate (by the decontamination contractor).

6.3 Report recipients

Reports shall be completed and given to those listed under each of the stages in Table 4.

Table 4 – Distribution of reports and recipients

	Property owner and occupier	Property manager and/or agent	Decontamination contractor
Contamination level assessment – screening assessment by SQEP 1	✓	✓	
Contamination level assessment – pre-decontamination assessment by SQEP 2	✓	✓	✓
Decontamination scope of work	✓	✓	✓
Decontamination completion report	✓	✓	
Post – decontamination analysis results	✓	✓	✓
Clearance certificate	✓	✓	
NOTE – These reports may be combined to form part of a clearance certificate.			

6.4 Competency of samplers and testers

6.4.1 *Competency of samplers undertaking screening level assessment*

A sampler undertaking screening level assessments shall:

(a) Be a suitably qualified and experienced person (SQEP 1);
(b) Carry out self-sampling or testing in accordance with Appendix A; and
(a) Complete a training course by an independent organisation for approved testing kits (see Appendix C).

NOTE – It is envisaged that in due course NZQA training courses will become available for using in-field screening technology.

6.4.2 *Competency of samplers undertaking contamination level assessments for pre and post decontamination*

A sampler undertaking contamination level assessments shall be a suitably qualified and experienced person (SQEP 2), with an appropriate scope, working for an AS/NZS ISO/IEC 17020 accredited inspection body or a NZS ISO/IEC 17025 accredited laboratory.

6.4.3 *Competency of testing laboratories undertaking contamination level analysis*

A testing laboratory shall be NZS ISO/IEC 17025 accredited, with a scope of accreditation that includes the requested work

6.5 Competency of decontaminators

A decontaminating contractor shall complete the following:

(a) An industry association training programme (qualification to be developed); OR
(b) An industry training organisation (ITO) programme (qualification to be developed); OR
(c) An accreditation scheme (to be developed); AND
(d) A code of ethics course (developed by an appropriate industry association).

6.6 Report contents

Reports shall detail the information on work carried out on the property including:

(a) Pre-decontamination assessment (3.3.5);
(b) Decontamination (4.3.11);
(c) Post-decontamination clearance certificate and report (5.5);
(d) Details of the operators and companies involved at each stage of the sampling, testing, and decontamination of the property, including details of their qualifications, certification, or accreditation indicating their competencies to carry out the work; and
(e) Steps taken to separate sampling and testing operations from decontamination work to avoid any actual or perceived conflicts of interests.

Reports shall state whether the completed work meets the requirements of this standard and related methods, such as the sampling and testing methods outlined in Appendix A.

6.7 Clearance certificate

A clearance certificate shall be issued by the decontamination company – see 5.5.

6.8 Insurance

Each company (samplers, decontaminators, and testers) shall at all times maintain adequate insurance to cover their liabilities.

APPENDIX A – SAMPLING AND TESTING METHODOLOGY FOR METHAMPHETAMINE

(Normative)

A1 General requirements

A1.1

Those who carry out sampling for methamphetamine shall be a suitably qualified and experienced person (SQEP), Level 1 or 2, as appropriate (see 1.4).

A1.2

To prevent any real or potential conflicts of interest, a SQEP who is retained to conduct any assessment at a given subject property shall be independent of decontamination companies.

A1.3

Testing laboratories shall be accredited under NZS ISO/IEC 17025 for NIOSH method 9106, 9109, or 9111.

A1.4

In-field screening technologies shall be validated according to Appendix C.

A2 NIOSH standard analytical methods-based sampling methodology

A2.1 Discrete wipe sample collection procedures

The following procedure shall be used for collecting discrete wipe samples:

(a) Sample media shall consist of 5 – 8 cm square wipes made of one of the following:
  (i) Cotton gauze material
  (ii) 4 – 8-ply non-woven cotton/polyester blend
  (iii) Tightly knitted continuous filament polyester;
(b) Delineate a 100 cm^2 area on the surface to be sampled, either by attaching a physical template to the surface (being careful not to touch the area within the template), or by an equivalently reliable and accurate method. Physical templates shall not be re-used;
(c) Take a photo of the area(s) to be sampled and indicate sample location(s);
(d) Wet the sample media with isopropanol or methanol (if required) to enhance collection efficiency. If the wipes are supplied pre-moistened with either methanol or isopropanol, ensure that the wipe has not gone dry by shaking the tube containing the wipe. If the wipe moves up and down in the tube it is moist with solvent and is suitable for use, however if it doesn't move the wipe has gone dry and should not be used;
(e) Use a new set of clean, non-powdered impervious gloves for each sample to avoid contamination of the sample media by previous samples and to prevent contact with the substance;
(f) Press the sample media down firmly, but not excessively, with the fingers, being careful not to touch the sample surface with the thumb. Blot rough surfaces uniformly instead of wiping. Wipe smooth surfaces as described in the next section below;
(g) Wipe the surface using one of the following methods:
  (i) Square method: Start at the outside edge and progress toward the centre of the surface area by wiping in concentric squares of decreasing size
  (ii) 'S' method: Wipe horizontally from side to side in an overlapping 'S'-like pattern as necessary to completely cover the entire wipe area;
(h) Without allowing the sample media to come into contact with any other surface, fold the sample media with the sampled side in;
(i) Use the same sample media to repeat the sampling of the same area using the same method. If using the 'S' method, the second pass shall be sampled by wiping with overlapping 'S'-like motions in a top-to-bottom direction:
(j) Fold sampled side in. Using the same sample media, sample the same area a third time. The third pass shall be sampled by wiping using the method not previously used (that is, use the square method if the 'S' method was originally used)
(k) Fold the sample media over again so that the sampled side is folded in. Place the sample media in a sample container, cap and number it, and note the number at the sample location on the sketch. Remove and discard impervious gloves. Include notes with the sketch giving any further description of the sample, including sample name and time of collection. Photograph each sample location
(l) A minimum of 1 in every 20 field blanks is required for screening level assessments.

A2.2 Field compositing

A2.2.1

Field compositing is the process of combining multiple wipes collected from separate locations in a property in to one container. The field compositing technique is employed to:

(a) Maximise sampling coverage while reducing the laboratory analysis costs during the screening or pre-decontamination assessments; or
(b) Obtain better overall average results for a living space.

A2.2.2

No more than five discrete wipe samples should be combined in a single field composite sample. The laboratory analysing field composite samples shall adjust the ratio of extractant to wipes (refer to section 14c of NIOSH 9106 and section D3 of NIOSH 9109).

A2.2.3

Each discrete wipe sample shall constitute a single 100 cm^2 sampling area using a sampling method specified by one of the NIOSH standard methods.

A2.2.4

A field composite sample result represents a sum or accumulation of each of the individual discrete sample wipes. The result also represents the maximum level in any one of the wipes if all the contamination present was contained in one wipe.

A2.2.5

The SQEP can determine the average µg/100 cm^2 result by dividing the result for methamphetamine (expressed as µg/sample by the laboratory) by the number of wipes in the field composite. This approach shall only be used on a living space or defined area basis (for example, bench top or car interior) to obtain a better overall average of the level of contamination.

A2.2.6

If the SQEP uses a field composite over a number of living spaces or defined areas to screen for contamination then the SQEP should not use the average result in µg/100 cm^2 as this protocol may mask a living space or defined area that infringes the standard trigger level. In some scenarios there may be one or more of the discrete wipe samples that exceeds the limits in this standard while the remaining discrete wipe samples are minimal or undetectable. In such cases an averaging approach may indicate an average µg/100 cm^2 is less than the limits in this standard while in fact there are living spaces above these limits.

A2.2.7

To interpret a field composite result (µg/sample) as a means of assessing contamination less than the limits in this standard, across a number of living spaces or defined areas, the result of the field composite should be compared directly with the acceptable level in this standard. This process assumes the worst case scenario that there may be one sample in the composite exceeding the limits in this standard while all other samples have no contamination. If the field composite result in µg/sample results is higher than the acceptable level in this standard, then more detailed discrete analyses will be required as there may or may not be any areas exceeding the limits in this standard. Great care shall be taken when interpreting field composite results over more than one living space or defined area to minimise any confusion or misinterpretation, and professional interpretation obtained if in doubt.

A2.3 Laboratory compositing

A2.3.1

Laboratory compositing is the process of taking multiple discrete sample wipes collected from separate locations in a subject according to the procedures outlined in NIOSH methods 9106, 9109 and 9111, and sending them to the laboratory for compositing. The lab extracts discrete sample wipes then combines equal portions of the extracts together to form a new sample called a laboratory composite. A laboratory composite sample result represents an average of each of the individual wipes. The laboratory retains the individual samples for a period of time (usually one month) and can analyse the individuals at a later date to provide discrete sample wipe results.

A2.3.2

No more than 10 discrete sample wipes shall be composited by the laboratory.

A2.3.3

The laboratory compositing technique is employed to:

(a) Maximise sampling coverage while reducing the laboratory analysis costs during the preliminary sampling and assessment of the subject; or
(b) Obtain better overall average results for a living space or defined area.

A2.3.4

If the SQEP 2 uses a laboratory composite over a number of living spaces or defined areas to screen for contamination then the SQEP 2 shall not conclude that the subject of the investigation meets the requirements of this standard if the lab composite result is below the current guideline. This is because the result represents an average µg/100 cm^2 across all the areas sampled, and does not take in to account the distribution of the individual discrete wipe levels in the composite. In some scenarios there may be one or more of the discrete wipe samples that exceeds the limits in this standard while the remaining discrete wipe samples are minimal or undetectable. In such cases an averaging approach may indicate an average µg/100 cm^2 is less than the limits in this standard while in fact there are individual living spaces or defined areas above the limits.

A2.3.5

To interpret a laboratory composite result (µg/sample) as a means of assessing contamination less than the limits in this standard across a number of living spaces or defined areas, the limits specified by this standard shall be divided by the number of samples in the composite. Comparing the laboratory composite result against the calculated laboratory composite maximum level assumes the worst case scenario that there may be one sample in the composite exceeding the limits in this standard while all other samples are non-detected. If the µg/sample result is higher than the calculated laboratory composite maximum level then more detailed discrete analyses will be required as there may or may not be any areas exceeding the maximum level. Great care shall be taken when interpreting laboratory composite results over more than one living space or defined area to minimise any confusion or misinterpretation The advantage of the laboratory composite is that the each of the discrete samples wipes can be analysed by the laboratory without the need to resample.

A2.4 Quality assurance

A2.4.1

Field blanks shall be included at a frequency of one per ten field samples. The field blank may be performed by swabbing a clean surface material (for example, ceramic tile) taken into the field location, or by removing the swab and wiping the surface of gloves being used. The objective of the field blank is to ensure the sampling process does not result in false positives as a result of contamination by the sampler.

A2.4.2

Sample duplicates shall be included at a frequency of one per ten field samples. Sample duplicates are collected by sampling second discrete 100 cm^2 sampling location immediately adjacent to the sample for which a duplicate is to be included.

A2.5 Chain of custody records

A2.5.1

Maintain either a physical or electronic chain-of-custody record covering the time of sample collection through to delivery to the laboratory and reporting results.

A2.5.2

Document sample(s) collected from a single methamphetamine-affected property on one chain-of-custody record.

A2.5.3

Samples shall be sealed, labelled, and secured. All collected samples shall be transported directly to the laboratory. Shipping samples overnight is considered direct transport, and the shipping label or courier ticket number shall be considered part of the chain-of-custody record. Retain all sample documents for the project record and include them in the project reports.

A2.5.4

At a minimum, the chain-of-custody record shall include the following:
(a) Subject property address;
(b) Sampler name and contact information;
(c) Unique sample identification;
(d) Sample area (for example, 100 cm^2);
(e) Number of containers for each sample;
(f) Sample collection time and date;

(g) Sampled material (for example, wall paper, painted wall);
(h) Requested analysis.

A2.6 NIOSH standard analytical methods for methamphetamine analysis

A2.6.1

Only NIOSH methods 9106, 9109 and 9111 are recognised as the standard analytical methods for the quantitative analysis of methamphetamine from wipe samples taken according to this Appendix.

A2.6.2

Laboratory test reports shall comply with NZS ISO/IEC 17025 reporting requirements. Results shall be reported as µg/sample. It is the responsibility of the SQEP to interpret the results with regard to how they carried out their sampling.

NOTE – The laboratory cannot assume that the sample result represents a discrete 100 cm2 sampling location.

A2.6.3

Laboratory quality assurance shall be readily available and able to be reported should it be required. Laboratories should include as a minimum:

(a) Procedural blanks;
(b) Swab blank results (if these are supplied by the laboratory);
(c) Matrix spike recovery results;
(d) Laboratory duplicates;
(e) Internal standard recoveries;
(f) Initial calibration and continuing calibration results.

A2.7 In-field screening technologies for methamphetamine

A2.7.1

In-field screening technologies are largely designed to screen for the presence or absence of methamphetamine in wipe samples at a targeted level (for example, 0.5 µg/100 cm^2). They can provide a rapid and affordable means to assess whether an asset is contaminated; however it is critical that the technologies have been validated to ensure reliability.

A2.7.2

In field screening technologies employed by SQEPs shall only be used during the screening level sampling and assessment process, and during the decontamination phase to direct cleaning efforts. They shall not be used for the pre-decontamination sampling and assessment, or the post-decontamination sampling and assessment processes.

A2.7.3

In-field screening technologies shall be independently verified by an NZS ISO/IEC 17025 accredited organisation according to the guidelines set out in Appendix C.

A2.7.4

In-field screening technology shall be validated to prescribed validation criteria (see Appendix C).

A2.7.5

A positive result arising from in-field screening shall undergo a NIOSH standard analytical-methods based sampling and analysis to confirm the level of methamphetamine contamination.

A2.7.6

Field screening technologies should include a quality assurance practice whereby 5 – 10% of the non-detected samples are confirmed by the NIOSH standard methods of sampling and analysis.

APPENDIX B – SAMPLING AND TESTING METHODOLOGY FOR CONTAMINANTS, OTHER THAN METHAMPHETAMINE, ASSOCIATED WITH THE MANUFACTURE OF METHAMPHETAMINE

(Normative)

B1 General Requirements

B1.1

All field technicians carrying out sampling for methamphetamine shall be suitably qualified and experienced persons (SQEPs), Level 2, (see 1.4).

B1.2

To prevent any real or potential conflicts of interest, a SQEP who is retained to conduct an assessment at a given subject property shall be independent of a decontamination contractor who is retained to decontaminate the subject property.

B1.3

Testing laboratories shall be accredited under NZS ISO/IEC 17025 for the methods listed in B2, B3, B4, B5, and B6. The method in B7 is a field method for assessing the use of corrosive agents such as acids and alkalis that may have been used during the manufacture of methamphetamine.

B2 Summary of decontamination guidelines for New Zealand residential properties

Table B1 is a summary of decontamination guidelines for contaminants other than methamphetamine associated with the manufacture of methamphetamine. This table is adapted from the Ministry of Health 2010 guidelines (Ministry of Health, 2010) where details of the citations in the table and other parts of this appendix can be found.

Table B1 – Summary of decontamination guidelines for New Zealand residential properties

Key chemical	**Indoor criteria**		**Outdoor soil** (mg/kg)	**Potable water** (mg/L)
	Surface (µg/100 cm^2)	**Air** (mg/m^3)		
Benzene	– [a]	0.0036[b]	1.1[c]	0.01[d]
Hydrogen chloride	– [a]	0.009[e]	– [f]	– [g]
Iodine	20[h]	0.0008[h]	780[i]	– [g]
Methamphetamine	0.5[h]	f	5[h]	– [g]
Phosphine	– [a]	0.0004[h]	– [j]	– [g]
Toluene	– [a]	0.3[e]	68[c]	0.8[d]
Xylenes (total)	– [a]	0.7[e]	48[c]	0.6[d]
pH	6 – 8	NA	4.5 – 8 (typical range)	6 – 8[d]

NOTE –

(1) These guidelines do not consider lead and mercury as contaminants resulting from the manufacture of methamphetamine. Clandestine methamphetamine laboratories discovered in New Zealand do not, and have not, utilise(d) lead or mercury in the manufacturing processes.

(2) These guidelines do not consider ambient air; however, any discharges to outside air during decontamination should not exceed air quality guidelines described in the Ministry for the Environment's 2008 publication, *Good practice guide for assessing discharges to air from industry*. This publication is available on the Ministry's website http://www.mfe.govt.nz/publications/air/assessing-discharges-airindustry-jun08/assessing-discharges-air-industry-jun08.pdf.

(3) A value for total volatile organic compounds (TVOCs) has not been considered in these guidelines. Although measurements of TVOCs are often made – for example, as an indicator of the likelihood that there will be effects on health – their use for this purpose is declining. This is because little data is available on the interactions among more than two chemicals that do not usually address issues of chronic toxicity at concentrations representative of actual human exposure (European Commission 2007). For the purpose of these guidelines it was seen as preferable to consider individual VOCs rather than TVOC and consider several examples of contaminants likely to be found in a former clan meth lab. Therefore guideline values for xylenes (total) and benzene (as well as toluene) have been included because these chemical compounds are important common impurities in commercial grades of toluene.

(4) Iodine has been documented in the literature as an important element for human beings. This is because it is involved in the composition of the thyroid hormone and its absence causes goitre (Aubert and Pinta 1977). In clan meth labs iodine is combined with phosphorus-containing compounds to make hydroiodic acid, an essential ingredient in the manufacture of methamphetamine from ephedrine. Elemental iodine readily volatilises at room temperature. However, it is likely there will be circumstances where iodine compounds may remain on surfaces long enough to require consideration with respect to long-term exposure. Iodine also has the potential to stain surfaces, which means that visual issues should be addressed in the decontamination of iodine on surfaces in any premises (Environmental Risk Sciences 2009). In soil, iodine is oxidised to iodate (IO_3^-) and reduced to iodide (I-) ions which have a relatively low order of toxicity as well as being essential micronutrients in the human diet (Environmental Risk Sciences 2009). New Zealand's soils may be low in available iodine so that vegetables, fruits and grains grown in New Zealand are likely to have very low levels of iodine compared with food produced in other parts of the world. However, while 2–3 mg/kg is not uncommon for many mineral soils, significantly higher concentrations in clay-rich and some organic rich soils varying from 25 mg/kg to 100 mg/kg have been reported (N Kim, Environment Waikato, personal communication, 2010). In New Zealand the recommended daily intake for adults is approximately 150 µg/day. Requirements are higher for pregnant and breastfeeding women and lower for children, infants and toddlers (Australian National Health and Medical Research Council and the New Zealand Ministry of Health 2006).

(5) A number of corrosives are used in the manufacturing process. These agents cause surface contamination through accidental spillage during handling and cooking and the accumulation of these hazardous substances from their aerosols or vapour. Therefore, the acceptable range for pH has been set between 4.5 and 8 in soil or surface residues. Extreme values (< 4 and > 11) may adversely affect health.

(6) The Ministry of Health's rationale for the decontamination guidelines assumes that if decontamination activities are sufficient to remove methamphetamine and volatile organic compounds (also iodine) to acceptable levels, other chemicals for which a decontamination guideline value has not been given will have been sufficiently removed as well.

a No surface residue guideline has been provided for this chemical as it is considered volatile and would not be present as surface residues (or dust) for a sufficient period to be of concern.

b Derived from the New Zealand ambient air quality guidelines (Ministry for the Environment 2002).

c Derived from the *Guidelines for assessing and managing petroleum hydrocarbon contaminated sites in New Zealand* (Ministry for the Environment 1999). Values for residential soils have been applied and within those, sandy soils and soils less than 1 metre in depth, as a default.

d These guideline values for contaminants for potable water use have been derived from the health-based determinants (maximum acceptable values) set out in the *Drinking-water standards for New Zealand 2005 (revised 2008)* (Ministry of Health 2008). These guideline values have been developed with a particular reference to the protection of public health, giving consideration to exposure via the ingestion of water, the inhalation of volatile compounds and absorption following direct contact.

e Derived from the OEHHA (2008).

f No guideline has been derived for these key chemicals. Only volatile chemicals (or gases) have been considered as they may continue to off-gas from porous surfaces over time. For example, anhydrous hydrogen chloride will readily combine with soil moisture and infiltrate the soil, dissolving some of the soil material, especially carbonates. Neutralisation of the acid will occur (OEHHA 2008).

g At the time of writing no relevant guideline values for these chemicals were available from peer-reviewed sources of relevance for the protection of human health.

h Derived from Environmental Risk Sciences (2009).

i Derived from USEPA Regional Screening Levels (formerly called Preliminary Decontamination Goals).

j It is not considered necessary to attempt to measure for phosphine in soil because phosphine gas is not expected to be present in soil for a sufficient period of time to be of concern.

NA Not applicable as pH is not a chemical compound.

B3 Methods Summary

Table B2 summarises the suggested sampling and analytical methods for contaminants other than methamphetamine associated with methamphetamine manufacture.

Table B2 – Sample type and analytical methods

Contaminant	Sample type	Analytical methods
Hydrogen chloride	Air sample – silica gel sorbent tube	NIOSH 7903; SKC-226-10-06 solvent extraction with ion chromatography
VOCs	Air sample active sampling with sorbent tube	USEPA Method TO17; NIOSH Some passive sampling techniques may also apply where validated
Iodine (if stained surfaces are to be retained)	Air sample – sorbent tube Surface wipe	Ion chromatography NIOSH 6005– modified for ICP – MS analysis At the time of writing there was no standard method

For information on the site investigation and analysis of soils refer to the Ministry for the Environment *Contaminated land management guidelines*, which summarises a number of different instrumental methods that can be used for analysing substances in soils.

B4 Volatile organic compounds (VOCs)

Volatile organic compounds (VOCs) which include a variety of chemicals are emitted as gases from certain solids or liquids.

Techniques such as photoionisation detection (PID) screening should be carried out at both the pre-decontamination assessment stage to assess total levels of volatile organic compounds present and at the post-decontamination stage to assess whether decontamination undertaken has been successful. PIDs are ideal for field screening potential 'hot spots' before any pre-decontamination testing is carried out. However, users should be aware of their limitations.

The method of analysis recommended for individual VOCs is the USEPA Method TO-17 *Compendium of methods for the determination of toxic organic compounds in ambient air*, which explains sorbent tube/thermal desorption/gas chromatographic-based monitoring methods for VOCs in ambient air at 0.5 to 25 parts per billion (ppb) concentration levels.

More recently, methods based on the passive sampling approach have been validated against the USEPA Method TO-17. These may be applicable in some cases for example, with benzene (Plaisance et al 2008).

Table B3 – VOC analytical methods

VOC analysis method	Indicative detection limit	Sampling device
GC-FID/FID	2 µg/sample	SKC 226-01 CSC tube
GC-MS	0.1 µg/sample 0.2 µg/sample	As above
ATD-GC-MS	0.005 µg/sample	Passive sampler (for example, SKC 575–100)

B5 Iodine

In most cases where surfaces or appliances show visible signs of staining consistent with that of iodine staining, they will typically be removed and will not need to be sampled (USEPA 2009).

Most standard collection and analysis methods for iodine use a sorbent tube and air sampling pump followed by solvent extraction and analysis by ion chromatography (NIOSH 1994a). These methods have detection limits in the range of 0.002 to 0.2 mg/m^3 (McKenzie 2008).

If there is evidence of iodine contamination on materials or surfaces that will **not** be removed, it is recommended that surface wipe samples for iodine do not exceed a concentration of 20 µg/100 cm^2. At the time of writing there was no recognised standard surface wipe method for iodine. Standard methods for testing surface iodine are inadequate for the required detection limits and research and development of more sensitive standard methods using ICP-MS is required.

For information on outdoor contaminants such as iodine in soils refer to the Ministry for the Environment's publication *Contaminated land management guidelines No. 5*. This publication refers to the USEPA Method 200.2.

The Ministry of Health's *Drinking-water standards for New Zealand 2005 (revised 2008)* sets out sampling requirements and referee methods of analysis for the key chemicals listed in its guidelines as they relate to potable water.

B6 Hydrogen Chloride

Standard methods for sampling and analysis of hydrogen chloride in air are detailed in NIOSH method 7903.

Hydrogen chloride may also be detected using a real-time ppb-range portable gas analyser. However the use of these analysers would be subject to verification testing in New Zealand.

B7 pH

pH is a term used to indicate the corrosiveness of a substance as ranked on a scale from 1.0 to 14.0 (USEPA 2009). Food preparation areas and any surfaces with visible staining, etching or corrosion should be pH tested. The United States Environmental Protection Agency also states that anything that leads to on-site effluent treatment systems (septic tank system) should be pH tested. In addition, the USEPA also states that pH testing should also occur with the on-site effluent treatment system, on at least three locations in each room with areas of visible contamination and within areas known to have been used for storage or handling of chemicals (USEPA 2009).

As stated in the Minnesota Department of Health's *Clandestine drug lab general clean-up guidance* (2010):

> *For **horizontal surfaces**, deionised water shall be applied to the surface and allowed to stand for at least three minutes. The pH test strip shall then be placed in the water for a minimum of 30 seconds and read.*
>
> *For **vertical surfaces**, a Whatman 40 ashless filter paper or equivalent filter paper shall be wetted with deionised water and wiped over a 10 cm x 10 cm area at least five times in two perpendicular directions. The filter paper shall then be placed into a clean sample container and covered with deionised water. The filter and water shall stand for at least three minutes prior to testing. The pH test strip shall then be placed in the water for a minimum of 30 seconds and read.*

APPENDIX C – VALIDATION OF FIELD SCREENING METHODOLOGY FOR METHAMPHETAMINE CONTAMINATION

(Normative)

C1 Validation of in-field screening methodology for methamphetamine contamination

C1.1 In-field screening technologies

C1.1.1

In-field screening technologies employed by SQEPs shall only be used during the screening level sampling and assessment process, and during the decontamination phase to direct cleaning efforts. They shall not be used for the pre-decontamination assessment to evaluate the degree and level of contamination, or the post-decontamination assessment process.

C1.1.2

In-field screening technologies shall be independently validated by an organisation accredited to NZS ISO/IEC 17025 to be able to detect levels at the acceptable decontamination level and half the acceptable decontamination level set in this standard from multiple common household surfaces. The operating instructions of the device shall be reviewed as part of the validation process.

C1.2 Validation process

C1.2.1

The validation procedure shall involve analysing both unspiked (negative) and spiked common household surfaces at the limit(s) in this standard, and half the limit(s) in this standard, as in Table C1.

Table C1 – Spike levels for the validation procedure

Spike level	Methamphetamine concentration
Unspiked	0 µg/100 cm^2
Spike 1 (half the limit(s) in this standard)	X µg/100 cm^2
Spike 2 (the limit(s) in this standard)	Y µg/100 cm^2

C1.2.2

The common household surfaces to be tested shall include, as a minimum, ceramic tiles, painted wood, painted plasterboard, polyurethane-coated wood, smooth wallpaper, textured wall paper, and concrete.

C1.2.3

Validation shall involve a minimum of one unspiked and two spiked analyses on each surface as detailed in *C1.2.2.* A positive result from an unspiked surface will constitute a false positive, and a negative result from a spiked surface will constitute a false negative. No more than 10% failures are permitted (for example, 2 out of 20 determinations). Failures are defined as false positives or false negatives. If the number of failures exceeds 10%, the technology shall not be permitted to be used under this standard.

C1.2.4

Additional validation shall also be obtained whereby the screening technology is compared in parallel with the NIOSH standard sampling and analytical method. The acceptance criteria for the screening technology results are detailed in Table C2.

Table C2 – Acceptance criteria for screening technology results

NIOSH method result	Acceptable screening technology result
0 – 0.02 µg/100 cm^2	Negative
<X µg/100 cm^2 (half the limit(s) in this standard)	Negative or positive
>X µg/100 cm^2 (> half the limit(s) in this standard)	Positive

No more than 10% failures are permitted (for example, 2 out of 20 determinations). Failures are defined as unacceptable screening technology results. If the number of failures exceeds 10%, the technology shall not be permitted to be used under this standard

C1.2.5

A review of the operating instructions shall be carried out to ensure that they are clear, unambiguous, and can be followed by both scientific and non-scientific operators.

C1.2.6

The results of the validation shall be documented in a formal report and be available to be peer reviewed by another NZS ISO/IEC 17025 accredited laboratory.

C1.2.7

The report shall be made available to the requesting authority, accrediting agency and the wider industry to provide assurance that only validated technologies are being used.

A list of validated technologies shall be maintained and made available to interested parties.

C1.2.8

It is recommended that re-validation is carried out under the following situations:

(a) Change to the limit(s) in this standard;
(b) If the integrity of the device is suspected to have been compromised (for example, water damage, physical damage);
(c) Change to the device technology.