



# NSW Remediation Guidelines for Clandestine Drug Laboratories and Hydroponic Drug Plantation

*A Report to Health Protection NSW*

September 2015

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## Glossary of Terms

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ACC	Australian Crime Commission
ATS	Amphetamine type stimulants
DQOs	Data quality objectives
EHO	Environmental Health Officer
EIL	Ecological (or environmental) investigation level
HIL	Health investigation level
HSL	Health screening level
NATA	National Association of Testing Authorities
NEPC	National Environment Protection Council
NEPM	National Environment Protection Measure
NSW	New South Wales
P2P	Phenyl-2-propanone
PID	Photo-ionisation detector
POEO Act	Protection of the Environment Operations Act
PPE	Personal protective equipment
QA/QC	Quality assurance and quality control
USEPA	United States Environment Protection Agency
VOC	Volatile organic compound

## Executive Summary

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The purpose of this document is to provide practical guidance on the assessment, testing, management, remediation and evaluation of clandestine drug laboratories and hydroponic plantations in residential settings in NSW. Protection of public health, specifically the future occupants of the premises is the focus of these guidelines.

These guidelines should be used in conjunction with other available resources to achieve best public health outcomes for the NSW community. Intended audience includes regulatory agencies, environmental health officers (EHOs) and consultants.

Section 1 provides a brief introduction and issues associated with clandestine drug laboratories and hydroponic plantations.

Section 2 of the document provides key indicators for identification of current or past operation of a clandestine drug laboratory or hydroponic plantation. Section 3 and 4 clearly outline the process involved in the assessment, management, and remediation of clandestine drug laboratories and hydroponic plantations.

These guidelines do not address legislative issues associated with the remediation of clandestine drug laboratories or situations where caravan/motor homes were used for drug production. Further, these guidelines do not cover occupational settings which are used for production of drugs.

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# Section 1. Introduction

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## 1.1 Background

In NSW, local councils have the regulatory responsibility for the management of residual contamination and other hazards as a result of the operation of an illicit clandestine drug laboratory or hydroponic plantation. As part of the regulatory role, councils are required to use provisions of the *Local Government Act 1993* to ensure that the owner of the premises undertakes the remedial action to ensure that residential premises are returned to a state that is fit for human habitation.

Often local government environmental health officers (EHOs) seek health advice from public health units on a range of issues including assessment, testing, management and remediation of clandestine drug laboratories and hydroponic drug plantations.

The national guidance document “Clandestine Drug Laboratory Remediation Guidelines”, was published by the Australian Crime Commission in 2011 (ACC 2011), however these guidelines do not provide practical guidance on how to undertake site remediation and apply these guidelines within a clandestine laboratory setting. In addition, the assessment and management of hydroponic plantations identified in residential homes was not adequately addressed. It is noted that Victoria and Western Australia have drafted their own practical guidance to assist with on the ground implementation of the National guidelines by local councils in their individual states.

## 1.2 Purpose

The purpose of these guidelines is to provide specific and practical guidance on the assessment, testing, management, safe remediation and evaluation of clandestine drug laboratories and hydroponic plantations in residential settings in NSW. The guidelines are intended for regulatory agencies, environmental health officers (EHOs), other authorities (as relevant) and consultants.

It is not intended to address:

- legislative issues or outline regulatory responsibilities associated with the remediation of clandestine drug laboratories in NSW
- occupational settings
- caravans and motor homes – where the decontamination of such items may be more than the worth of the item

## 1.3 Legislation

In NSW, when the local council is notified by NSW Police of the presence of a former clandestine drug laboratory or hydroponic plantation, NSW Police provide notification and advice to the property owner that these activities have occurred and assessment and remediation is required prior to further occupancy.

Outside of providing advice to homeowners in relation to the actions that need to be undertaken to assess and remediate the property, the current legislative framework provides for the issue of Orders or Notices by councils under the following:

- An Order under Section 124 of the *Local Government Act* – where the contamination was located within a residential building.
- A Notice under the provisions of Section 91 of the *Protection of the Environment Operations Act (POEO Act)* – where the contamination was located outside a building on land, drains, pathways etc.

After the laboratory has been dismantled and any bulk chemicals and equipment is removed a sticker is placed on the door of the property by NSW Police which indicates that occupancy should not occur until site remediation has been undertaken by a suitably qualified contractor to the satisfaction of the local council. This sticker provides advice to owners and occupants of the premises only.

## **1.4 Issues Associated with Clandestine Drug Laboratories and Hydroponic Plantations**

### **1.4.1 Overview**

The number of clandestine drug laboratories detected in Australia has been increasing – from 314 in 2002/2003 to 809 detected in 2011/2012, 757 in 2012/13 and 744 in 2013/14 (ACC 2015). In NSW 105 clandestine laboratories were detected in 2012/2013. The laboratories detected range from addict-based labs (which typically use only basic equipment and simple procedures to manufacture small quantities, typically less than 50 grams per production cycle) to large industrial-scale laboratories capable of producing 50 kilograms or more per production cycle. Data reported by the Australian Crime Commission (ACC) (ACC 2014, 2015) indicates the following:

- In NSW approximately 50% of the laboratories detected were the smaller addict based labs. This is significantly lower than in Queensland and Western Australia where approximately 90% were addict-based labs.
- Of the 98 labs detected in 2013/2014, 78 were associated with the manufacture of amphetamine-type stimulants (primarily methamphetamine), 1 was associated with the manufacture of MDMA (or ecstasy) and 1 was for CHB/GBL manufacture.
- The predominant method for the manufacture of methamphetamine in NSW in 2013/2014 was reported to be the hypophosphorous (iodine) method (67% of the labs). This manufacturing method is also dominant in Victoria, Queensland and South Australia; however in Western Australia the most common manufacturing method reported was the Nazi/Birch (lithium/ammonia) method<sup>1</sup>.
- The most common location of clandestine drug laboratories is in residential areas (67.8% of detected laboratories).

As there are a number of differences in the size and nature of the clandestine laboratories in each state it is important that guidance presented in this document allows for the assessment and site remediation of all the different types of clandestine laboratories likely to be found in NSW.

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<sup>1</sup> There are four main methods that have been identified in Australia in relation to the manufacture of methamphetamine (ACC 2014, enRiskS 2009):

- Hypophosphorous method (which is a variation of the red phosphorous method) where ephedrine or pseudoephedrine, iodine and hypophosphorous acid are used. This is the most common method of methamphetamine manufacture in Australia.
- Ammonia (“Birch” or “Nazi”) method where ephedrine or pseudoephedrine is reduced in a chemical process involving anhydrous ammonia and lithium or sodium metal. Despite the hazards associated with this method, it is quick and efficient.
- Red phosphorous method where ephedrine or pseudoephedrine is reduced using red phosphorous (extracted from match box striker plates) and hydriodic acid.
- Phenyl-2-propanone (P2P) method (not common in Australia), using either the Leuckart method or the “Hells Angels” method where P2P is reduced using formamide, ammonium formate, formic acid, methylamine, mercuric chloride, aluminium foil and methanol.



While no specific statistics are available for the number of premises in NSW where hydroponic plantations are detected, most of the cannabis that is seized in Australia is grown domestically rather than imported. In addition there are comparatively more detections of hydroponic plantations in residences than there are large crops of naturally-grown cannabis (McLaren & Mattick 2006).

For most clandestine laboratories or hydroponic plantations addressed in this guideline, the initial detection, hazard assessment and evaluation (for the purpose of immediate safety and collection of evidence) will be undertaken by NSW Police.

However situations arise where an EHO may discover materials, activities and/or waste associated with the illegal operation of a clandestine laboratory or hydroponic plantation. This may occur during the conduct of inspections at various properties for a range of other purposes. In these situations it is important that the EHO has sufficient information available to assist in recognising the presence of materials and wastes derived from/associated with clandestine laboratories or hydroponic plantations to ensure that the EHO is not exposed to chemicals or other hazards and so that they can inform NSW Police. **Section 2** of these guidelines presents a summary of the key aspects that an EHO needs to be aware of to assist in the identification of these premises, the associated hazards and the precautions that need to be implemented.

When first responders such as NSW Police and emergency services (as required) have attended a clandestine laboratory or hydroponic plantation, their responsibilities involve the removal of gross hazards/contaminants (i.e. containers of chemicals, plants, equipment, apparatus, drug products, waste materials and illegal weapons that may also be present). However a range of hazards remain in these premises that require assessment and remediation prior to re-occupancy by the general public. NSW Police are not responsible for the assessment and remediation of a site following completion of their investigation.

These guidelines relate to the assessment, management, remediation and validation of these residential properties once operations by NSW Police and other emergency services have been completed.

#### **1.4.2 Clandestine Drug Laboratories**

Clandestine laboratories are typically associated with the manufacture of amphetamine-type stimulants (ATS), in particular methamphetamine which is an illicit drug in NSW under the *Drug Misuse and Trafficking Act 1985*. During the manufacture of methamphetamine, a range of chemicals are used as precursors, produced as by-products, and present as drug products. These chemicals have the potential to be present in air as volatiles, aerosols or gases, remain or deposit to surfaces within the home or be present in liquid waste that may be dumped down drains, stored in various containers indoors or dumped outside (to soil or water).

Within a home one of the key issues relates to the long-term presence of residual methamphetamine and any by-products on a range of surfaces long after manufacturing has ceased. The process of manufacturing methamphetamine results in the generation of aerosols that can potentially spread throughout a home and deposit (and can be absorbed) as a residue on hard and soft surfaces. Without any site remediation, these residues may persist for months and sometimes years, which in turn may result in exposures and cause potentially adverse health effects to individuals who enter the premises or later re-occupy the premises.

Potential adverse health effects associated with exposure to residues produced in the manufacture of methamphetamine include neurochemical changes in areas of the brain that are associated with learning, potentially affecting cognitive function, behaviour, motor activity and changes in avoidance responses (Maxwell 2005); physiological and behavioural/developmental effects that include violent behaviour, depression, irritability, hallucinations, mood swings, paranoia and sleep disorders that are associated with the exposure to ATS (Denehy 2006; Maxwell 2005).

### 1.4.3 Hydroponic Plantations

Hydroponic plantations in residential premises are typically established for the purpose of growing marijuana. These operations usually contain, aside from the plants themselves, chemicals such as fertilizers and, more rarely, insecticides. In large quantities, these chemicals might be harmful but pose little risk for explosion or similar immediate dangers. Other risks usually associated with marijuana-growing operations are related to housing modifications, such as illegal electrical connections and issues associated with living in a closed, humid environment which is prone to the build-up of various moulds on the interior walls. At high concentrations, these moulds can be damaging to human health, causing and/or exacerbating immunological diseases such as hay fever, allergies, and asthma.

**There is strong evidence that supports the notion that hazards and contamination associated with the operation of a clandestine drug laboratory or hydroponic plantation inside a home can potentially pose a health risk to future occupants of the premises. While the type of hazard and level of risk posed in each situation (depending on the production method) may differ it is important that an appropriate level of assessment and clean-up/remediation is undertaken to ensure the property is safe for future re-occupancy.**

## 1.5 National Guidance

In relation to the assessment and remediation of contamination derived from the operation of an clandestine drug laboratory, a national guideline document “Clandestine Drug Laboratory Remediation Guidelines”, was published by the Australian Crime Commission in 2011 (ACC 2011). This document is intended to provide guidance to appropriate authorities and environmental professionals in the assessment and remediation of contaminated sites where such contamination arises from chemical processes associated with the manufacture of illicit drugs.

In all states of Australia, when the police have completed their investigations into a clandestine drug laboratory, they notify the environmental health officer from the relevant local council of the discovery of the laboratory and its potential hazards and risks.

The national guidance focuses on the assessment and remediation of amphetamine type stimulants (ATS) and provides four phases of site assessment and remediation:

- Phase 1: Trigger for Assessment
- Phase 2: Preliminary Assessment and Action
- Phase 3: Site Assessment and Remediation
- Phase 4: Validation

In addition, the national guidance presents human health risk-based guidelines for a range of ATS drugs, precursors and chemicals for indoor air, indoor surfaces and outdoor environments in residential, commercial and public open space areas (enRiskS 2009). These guidelines are based on the protection of long-term health by members of the public who may be exposed to these chemicals in residential homes, outdoor areas or occupational environments.

## Section 2. Identification of Clandestine Drug Laboratories or Hydroponic Plantations

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### 2.1 General

The identification of clandestine drug laboratories (and associated wastes and/or equipment) and hydroponic plantations is normally conducted by NSW Police and other emergency services. However in the conduct of other duties, EHOs or other professionals may discover waste materials, equipment, plants, chemicals or manufacturing operations associated with current or former clandestine drug laboratories or hydroponic plantations. It is important that EHOs and other professionals have some understanding of the key indicators of these hazards to ensure the proper emergency services are informed and occupational health and safety issues are quickly assessed and managed.

**If any equipment, chemicals, waste materials or operations are identified that are suspected to be associated with a clandestine drug laboratory or hydroponic plantation, the EHO or other professional should immediately leave the premises/area (without touching or handling anything) and inform the police.**

### 2.2 Clandestine Drug Laboratories

The operation of clandestine drug laboratories involves the use of a range of precursors and chemicals in a variety of reactions and processes. The production of methamphetamine (the most common drug produced in clandestine laboratories) comprises three stages: cooking, separating, and salting out. In the cooking stage, manufacturers heat the ephedrine or pseudoephedrine in the presence of other chemicals, which results in methamphetamine. Manufacturers may use a commercial heating mantle, deep-fat fryer, hot plate, or camp stove for cooking. In the separation stage, the cooked mixture is combined with other chemicals to create liquid, or “free base” methamphetamine. The liquid is separated from unwanted solids using a drain or filter (that may include coffee filters or cloth materials found in bed sheets or old clothes). The liquid methamphetamine is converted into a solid via the salting out stage when the free base reacts with hydrochloric acid. The resulting wet solid is then dried, a process that can include literally wringing the wet methamphetamine in a mop bucket or drug press. Some labs include a fourth stage during which the methamphetamine powder is exposed to acetone or other solvent to create crystal methamphetamine, or “ice.” The identification of a clandestine laboratory often involves reporting or finding equipment, containers and chemicals used in these processes. In addition, as the activities conducted are illegal, steps are often taken to hide the operations and protect the property.

There are significant quantities of waste produced from the drug manufacture process and, dependent on the particular process being employed, may generate up to 10 kg of waste for each 1 kg of drug produced. Waste from the operation of a clandestine drug lab may be dumped into streams, rivers, sewage systems, onto public land (away from the manufacturing operations) or burned in pits or other outdoor areas.

The following provides key indicators of the presence of a laboratory or waste materials dumped from the operation of a laboratory (refer to **Appendix A** for pictures of materials and items that indicate the potential presence of a drug lab):

### **Clandestine Drug Laboratory Indicators**

- Windows blacked out or blocked, and strange or unusual ventilation
- Presence of unusually high level of security
- Strong odours of acetone, ammonia, solvents or sour “cat urine” type odours
- Large numbers of matches
- Large quantities of empty cold medication packages
- Jars or containers (often modified) filled with clear liquid with white or red solids at the bottom, or containers with two layered liquids (one darker and one more pale)
- Presence of containers either empty or full (labelled as acids, starter fluids, rubbing alcohol, solvents)
- Presence of caustic drain cleaners/openers, iodine containers or crystals, instant cold packs
- Coffee filters, sheets, pillowcases or old clothing with a white pasty substance, red sludge or crystals
- Burns, powder residues, crystalline residues on benches
- Propane tanks with fittings that have turned blue
- Presence of various jars, glassware (including round or flat bottom flasks)
- Heating devices such as camp stoves and hot plates
- Presence of tubing, pumps, coffee grinder, compressed gas tanks

### **Waste Indicators**

- Presence of equipment and waste containers associated with the operation of the laboratory (as noted as indicators of the clandestine laboratory)
- Presence of staining in drains, sinks and toilets
- Presence of odours, such as ammonia or solvent odours
- Presence of unusual pH – either very low (from the dumping of acids or acidic waste products which is most common) or high (from the dumping of alkali compounds such as sodium hydroxide)

## **2.3 Hydroponic Plantations**

The presence of hydroponic plantations inside residential homes may be indicated by:

- Unusual or offensive odours – a distinctive smell of rotting cabbage or a sweet vegetative odour can indicate the presence of a hydroponic plantation. Sometimes the resident may try to disguise these odours with mothballs and air fresheners;
- Heavy condensation on windows and doors – this reflects the high levels of moisture and temperatures required to grow the crops;
- Unusually bright lights (particularly around windows and doors) and ventilation;
- Presence of isopropyl or other alcohol that may be used to process the plants into hash oil;
- Unusually high levels of security; and
- Covered or painted over windows.

## **Section 3. Assessment, Management and Remediation of Clandestine Drug Laboratories**

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### **3.1 Introduction**

Not all clandestine drug laboratories that are detected will be the same. The laboratories detected can range from small operations (including “one-pot” methods) used to manufacture illicit drugs for personal use only to large scale laboratories used to manufacture illicit drugs for supply. In addition some of the laboratories detected may include partial labs (associated with only one part of the manufacturing process) or stores of chemicals/precursors or equipment for the use in drug manufacture. The laboratories may be located in residential areas, commercial complexes or in rural settings. The dumping of waste generated from clandestine drug labs into the environment also occurs in a number of areas in NSW and requires consideration. As the range and location of clandestine drug laboratories and areas where waste may be disposed varies, it is important to recognise the level of risk associated with these areas will also vary. In NSW clandestine drug laboratories detected in past years have included the full range of laboratories and waste dumps, and a number of the labs detected were associated with larger scale operations.

In NSW the information provided to local councils by NSW Police for a specific clandestine laboratory does not provide sufficient information or detail to distinguish between a small laboratory which could be considered to be low risk, a medium sized laboratory that may or may not have extensive contamination or a larger, more commercial scale, laboratory. Hence these guidelines currently require that an initial assessment be undertaken by a suitably-qualified professional at all sites, regardless of the size or potential risk of contamination at the site.

The following guidelines are intended to provide a more detailed outline of the approach to be used for the assessment and remediation of clandestine laboratories in NSW. It is not expected that Council EHOs will undertake this work, however they need to understand the process followed in order to determine if the work has been done appropriately and that the premises is suitable for re-occupancy.

### **3.2 Hazards and Site Safety**

Premises or land used for the manufacture of illicit drugs, or used for the disposal of waste present a range of hazards that need to be understood. It is expected that bulk chemicals (including drug products) and equipment/containers/glassware used in the manufacture of illicit drugs are removed by the police as evidence. However, even when these are removed from the premises, hazards remain and may include:

- Air quality – prior to the ventilation of the premises a number of gases (associated with the manufacturing process including phosphine, hydrogen iodide, iodine vapour, hydrogen chloride, ammonia) and volatile organic compounds (VOCs) may be present in the air (from the use, spillage and storage of solvents). Once ventilation of the premises has been undertaken the levels of these gases and VOCs (as they off-gas from soft furnishings within the property) are typically much lower (and often not detectable) (Martyny et al. 2005).
- Chemical residues (including residues that are strongly acidic or basic) may remain on all surfaces (hard and soft) as well as on all household items present within the home. These residues may remain for a long period of time and can be remobilised into the air during various activities that may take place in the premises.

- Contamination with chemicals and/or wastes in soil or in sewage systems (including septic tanks).
- Physical hazards such as:
  - Pressurised gas cylinders and glassware use in manufacture;
  - Faulty electrical wiring;
  - Modified or poorly maintained structures;
  - Presence of drug paraphernalia including used needles and syringes;
  - Presence of weapons;
  - Presence of household waste or junk;
  - Waste and pests from pets (including fleas);
  - Fungi and mould spores; and
  - Former tenants/owners and the public (e.g. former tenants/owners returning to the property after being released on bail for the manufacture of drugs).

Clandestine laboratories involve the improper storage and use of toxic and corrosive chemicals. Even in the situation where no odours or visible staining may be evident, residual chemicals and other hazards may be present.

Hence there should be no access to the property by the council EHO or any member of the public (including residents) prior to the completion of remediation (where the remediation has been undertaken to meet the guidelines outlined in this document). Any person who is required to attend a former clandestine laboratory site which has not been fully decontaminated/ remediated should utilise appropriate personal protective equipment (PPE), as outlined in **Appendix C**.

During remediation activities it is expected that the remediation plan will outline the PPE requirements for all individuals required to access the site for any purpose (including the conduct of remediation or clean-up works).

### **3.3 Assessment and Remediation Standards**

Investigation levels for contamination that may be present at a site that was formerly used as a clandestine drug laboratory are available from the following guidelines. These guidelines are based on the protection of human health for various generic land use scenarios.

- National Clandestine Drug Laboratory Remediation Guidelines (ACC 2011). These provide guidelines that are based on the protection of human health from chemicals and drugs commonly found in former clandestine drug laboratories that may have been discharged into the air, as surface residues, or discharged into water or onto soil. A number of soil and water guidelines listed in this document are based on available Health Investigation Levels (HILs), Health Screening Levels (HSLs) and water quality guidelines. The most current guidelines available for these contaminants (from the Assessment of Site Contamination National Environment Protection Measure (ASC NEPM) (NEPC 1999 amended 2013)) should be used where available.
- NEPM (NEPC 1999 amended 2013), Schedule B1, HILs for soil, and HSLs for petroleum hydrocarbons for soil and groundwater and Ecological Investigation Levels (EILs) for soil.

Most of the assessment and remediation work required to be undertaken at clandestine laboratories relates to contamination that is present inside a premises from the manufacture of methamphetamine. Indoor surface residue guidelines are available for residential and commercial premises within the National guidelines (ACC 2011; enRiskS 2009). **Table 3.1** presents a summary



of the guidelines that are available for key indicator chemicals (refer to the National guidelines for the full list). The relevance of these key chemicals at any particular site will depend on the method of manufacture.

**Table 3.1 Indoor Surface Residue Criteria**

Key Indicator Chemical	Investigation Level – Surface Residues ( $\mu\text{g}/100\text{cm}^2$ )	
	Residential Premises	Commercial Premises
Methamphetamine	0.5	10
Pseudo/Ephedrine	600	10000
Iodine*	20	450
Phosphorous*	0.07	2
Mercury***	35	800
Lead***	10#	
Lithium**	46	1000
pH (from acids and bases)	6.5-8.5	6.5-8.5

\* Relevant for the hypophosphorous and red phosphorous methods

\*\* Relevant for the ammonia (Nazi/Birch) method

\*\*\* Relevant for the P2P method

# Lead criteria based on the lower value for bare and carpeted flooring for lead in homes (NSW EPA and Planning NSW 2003). It is noted that higher criteria are available for other areas in the home (e.g. window sills)

The application of guidelines for indoor surfaces depends on the location of the surface (as this affects the potential for exposure). In practice the following categories of indoor surfaces are present in a home:

- **Normal access areas:** these are areas inside the home that can be regularly accessed on a daily basis (and do not include the low access and non-accessible areas). For these areas the guidelines outlined above are applicable.
- **Low-access areas:** these are areas that can be accessed but infrequently and for only a limited time (e.g. roof cavities and crawl-spaces). For these areas the guidelines above are considered to be overly conservative and an exposure adjustment factor<sup>2</sup> of 5 can be applied to the above guidelines for use in low-access areas.
- **Non-accessible areas:** these are areas that cannot be accessed except by demolition of existing finishes or structures (e.g. wall cavities). In these areas the above guidelines are not applicable.

<sup>2</sup> The exposure adjustment factor of 5 for low-access areas is based on the approximate difference between surface residue guidelines for lead established by the USEPA (40 CFR Part 745, 2001) for general/floor surfaces and less-accessible areas such as window sills.

In relation to indoor air quality a photo-ionisation detector (PID)<sup>3</sup> can be used to determine if there are sufficient volatile organic chemicals present to warrant more specific testing. For all indoor areas a PID level <1ppm is considered to be acceptable (USEPA 2013). If this cannot be met then more quantitative sampling of air should be undertaken.

If contamination has been identified that has impacted on an aquatic environment (such as a local waterway) guidelines relevant to the protection of fresh and marine environments available from Australian and New Zealand Environment Conservation Council (ANZECC) (ANZECC/ARMCANZ 2000) should be applied.

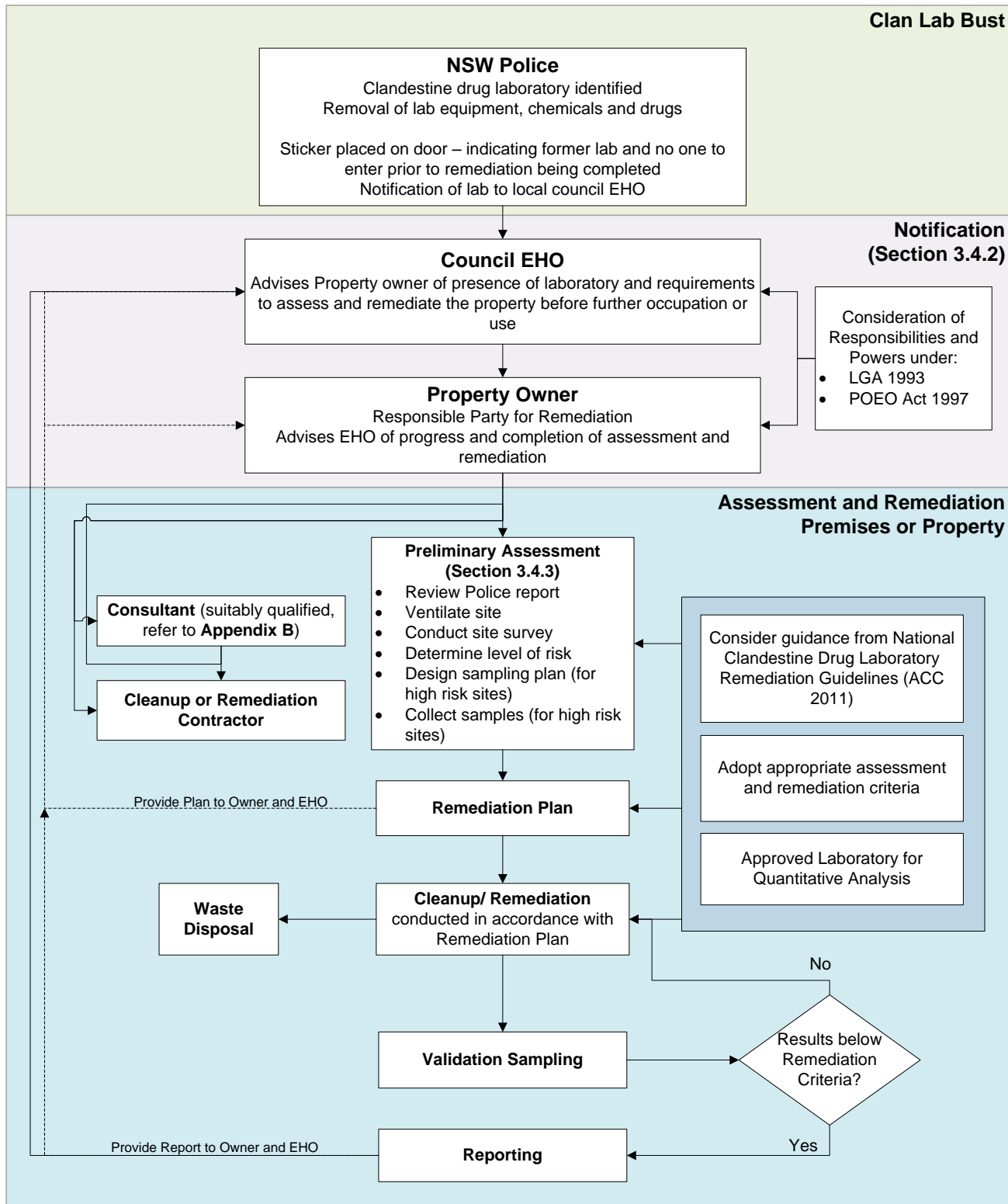
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<sup>3</sup> PIDs are ideal for field screening potential 'hot spots' before any pre-remediation testing is carried out. However users should be aware of their limitations.

### 3.4 Approach

#### 3.4.1 Overview

The following diagram presents an overview of the approach to be adopted in the assessment, management and remediation of former clandestine drug laboratories as outlined below.



### 3.4.2 Notification

Following completion of Police operations at the site, the presence of the laboratory is notified to the local council EHO and a sticker is placed over the door to prevent (warn against) unauthorised access until the property has been appropriately assessed and remediated.

The EHO notifies and liaises with the property owner to advise the owner of their responsibility to ensure the property is properly assessed and remediated so that it does not pose a risk to the health of future occupants or the environment. The advice provided to owners should include the need for engagement of a suitably qualified consultant (refer to **Appendix B**) to undertake a preliminary assessment.

**The responsibility of remediating the property lies with the owner. The owners should ensure site is secured to prevent unauthorised access to the property.**

**No one should enter the property and the owner should engage a suitably qualified consultant to undertake a preliminary assessment.**

### 3.4.3 Preliminary Assessment/Tasks for Consultant

As outlined in **Section 3.1**, for all clandestine laboratories a preliminary assessment is required to be undertaken by a suitably qualified consultant (refer to **Appendix B**). The consultant should conduct a preliminary assessment of the information available for the premises to determine the level of risk relevant to the property being evaluated and actions required to be undertaken for assessment and remediation. The preliminary assessment should be undertaken as outlined in the following:

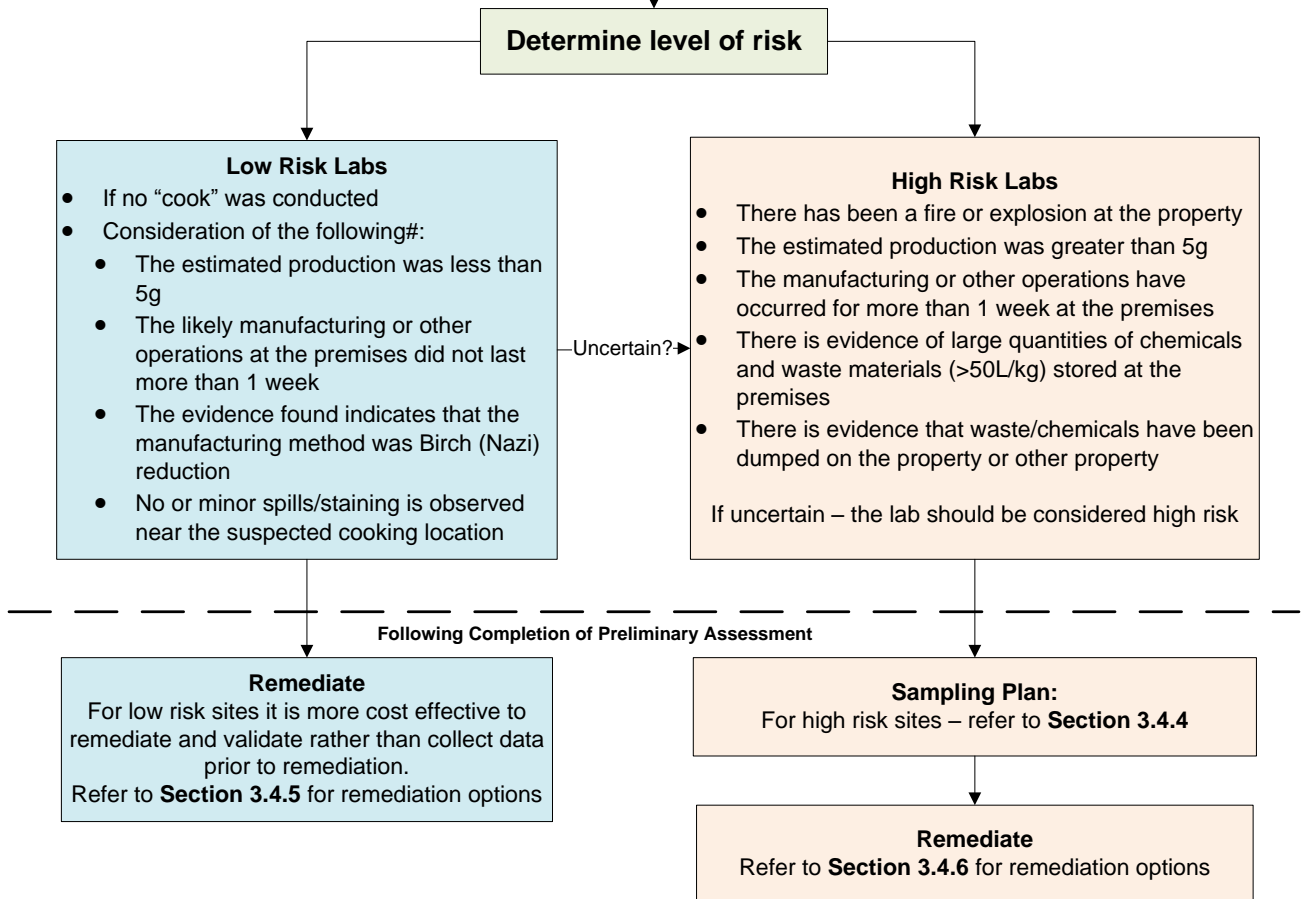
## Preliminary Assessment – Conducted by Consultant#

**Task 1: Ventilate** the premises as soon as possible (via opening windows and doors) for a minimum of 48 hours. Where possible the ventilation should continue until remediation and validation is complete. Any neighbours located close to the premises should be informed that the premises is being ventilated so they can choose to close windows\doors where necessary

**Task 2: Review of Information** to assist in the determination of the level of risk and assist in developing a sampling plan. This phase should include the following:

**A: Review of the police report provided.** Where necessary contact the police to further discuss details. This information is required to determine nature and quantities of chemicals found at the site, whether the laboratory identified was active or inactive, the drug manufactured and cook method, location of manufacturing and chemicals\equipment found and removed from the site by Police

**B: Conduct site survey** to confirm information obtained from the Police, identify and record hazards and areas where contamination may be present (from drugs, chemicals or waste materials based on evidence of staining, burns, discoloration). If illegal weapons or materials used in the manufacture of drugs are found (that were not removed by Police) during the site survey, the items should not be touched and the Police should be notified



# This provides guidance only. The Consultant engaged needs to be suitably qualified to undertake the preliminary assessment and determine the level of risk. The determination of the level of risk, particularly classifying a premises as “Low Risk” requires consideration of the factors listed (provided for guidance only) and the expertise of the suitably qualified consultant. It is up to the qualified consultant to use the site information and their expertise to make an informed decision as to whether a premises can be classified as either “Low Risk” or “High Risk”. If insufficient information is available or there is some uncertainty then the site needs to be classified as “High Risk”. The decision (and basis for the decision) needs to be documented.

### 3.4.4 Sampling

For high-risk sites a sampling plan should be developed prior to the conduct of the sampling. The sampling plan should be developed to determine the nature and extent of contamination that is required to be addressed in the remediation plan. Sampling should be undertaken to target areas where contamination is most likely. The sampling plan should address the following as a minimum:

<b>Indoor Surface contamination</b>	
Sample methods	Swab sampling from 100cm <sup>2</sup> areas in accordance with ASTM D6661-10 or approved NIOSH wipe sampling methods
Analytical methods <sup>1</sup>	Samples should be analysed by a laboratory using an approved method using GC/MS or LC/MS, relevant for the range of chemicals required to be analysed. For the analysis of methamphetamine NIOSH methods are available.
QA/QC	Field blanks and duplicates (10% of the total number of samples), laboratory duplicates, matrix blanks and spikes
<b>Locations</b>	<b>Minimum Sampling Required</b>
Normal access areas: Floors, walls, ceilings, permanent benches and fixtures (porous and non-porous items)	Area where drug manufacture occurred – 3 samples Areas/rooms directly adjacent to manufacturing – 2 per room/area Areas of visible contamination – 1 sample Other rooms – at least 1 sample (may be composite sample targeting range of accessible areas such as bathroom sink, tub, toilet, shower and tiled floor) Air conditioning duct – at least 1 sample
Appliances and movable items (furniture, refrigerators, smaller appliances, pictures etc.)	If to be removed and disposed – no samples required If to be recycled or remain in premises – 1 sample per item (2 samples for appliances, one inside and one outside)
Low-access areas (roof space, crawl-space)	Target areas of suspected contamination (closest to roof vents and manufacturing area) – 1 sample
Non-accessible areas	No samples
Multi-family premises (townhouses, duplexes and units)	Sample adjacent premises if there is a pathway of contamination such as common ventilation systems, adjoining/connecting stairways and doors. Minimum of 1 sample per adjacent premises (where required, targeting the most likely point of contamination)

Notes:

- 1 A quantitative analytical method is referenced for the analysis of surface swab samples collected. Alternate methods can be utilised provided the method can provide quantitative analysis with the required limit of reporting. Immunoassay swabbing is suitable as a screening method only for the assessment of premises where methamphetamine was manufactured (and may be used for the purpose of the preliminary assessment), and must have a stated level of sensitivity consistent with the prescribed minimum Health Investigation Level for methamphetamine of 0.5 µg/100cm<sup>2</sup> (in a dwelling).  
Where a positive detection is obtained using an immunoassay swab, an analytical swab sample must be collected from an immediately adjacent area for quantitative analysis by an accredited laboratory.  
Immunoassay sampling cannot be used where there is the potential for other drugs or contaminants to be present.

<b>Indoor Air Contamination</b>	
Screening:	PID level < 1ppm then no further sampling required If PID level > 1ppm then more detailed sampling is required as outlined below PID should have 10.2 eV lamp or greater
Sample methods	Sampling using evacuated canisters for analysis of VOCs using USEPA TO-15 (or modified) Sampling using thermal desorption tubes for analysis of VOCs using USEPA TO-17 (or modified)
Analytical methods	Using a NATA (or equivalent) accredited laboratory for VOCs using TO-15 or TO-17 (or as modified)
QA/QC	Field blanks (as relevant to the sampling method) and duplicates (10% of the total number of samples), laboratory duplicates, matrix blanks and spikes
<b>Location</b>	<b>Minimum Sampling Required</b>
Room where drug manufacture and chemical storage occurred	1 sample per room
Rooms where there is evidence of contamination (staining, odours)	1 sample per room

<b>Wastewater Contamination</b>	
When to sample	Where evidence (odours, staining of sinks/tubs, unusual conditions in tank, dead vegetation in leach field) suggests contamination has been disposed to wastewater, in particular a septic tank. If there is evidence of disposal to sewer the waste is likely to be well diluted, however the local utility should be notified.
Screening	Can use PID and pH test to screen septic system for presence of waste contamination (by solvents and/or acid/alkali chemicals/wastes)
Action	Pump out whole septic system and dispose to wastewater processing facility approved to accept the waste
Sample	At least 1 sample from septic bed
Analytical methods	Using a NATA (or equivalent) accredited laboratory for analysis as outlined in the NEPM (1999 amended 2013)*, addressing the contaminants of concern likely to have been present in the system
QA/QC	Field blanks (as relevant to the sampling method) and duplicates (10% of the total number of samples), laboratory duplicates, matrix blanks and spikes



<b>Outdoor Soil, Groundwater and Surface Water Contamination</b>	
When to sample	Where evidence (odours, staining, dead vegetation) suggests waste disposed to soil and/or surface water.
Sample methods	As outlined in the NEPM (NEPC 1999 amended 2013)*
Analytical methods	Using a NATA (or equivalent) accredited laboratory for analysis as outlined in the NEPM (NEPC 1999 amended 2013)*
QA/QC	As required in the NEPM (NEPC 1999 amended 2013)* and should include field blanks (as relevant to the sampling method) and duplicates (10% of the total number of samples), laboratory duplicates, matrix blanks and spikes
<b>Media/Location</b>	<b>Minimum Sampling Required</b>
Outdoor soil where there is evidence of disposal	5 samples collected based on targeted approach (focusing on area of likely contamination)
Outdoor soil where there is no specific evidence of contamination	2 samples from common use areas (or adjacent to commonly used paved areas)
Groundwater	1 groundwater sample if there is evidence to suggest contamination of groundwater may have occurred 1 bore sample if a groundwater abstraction bore is located on the property. If neighbouring properties have abstraction bores it is recommended that these are also sampled.
Surface water	2 samples from water body if there is evidence of contamination

Notes:

\* When collecting samples from the site, consideration should be given to the requirements outlined in the NEPM (NEPC 1999 amended 2013), Schedule B2 "Guideline on Data Collection, Sample Design and Reporting".

### **3.4.5 Remediation – Low Risk Sites**

Following completion of the preliminary assessment, if the site is determined to be of low-risk then a more simple remediation plan (compared with the remediation plan required for high risk sites) may be developed for the site. The plan should provide the following:

- Relevant information on the property and an outline of the extent of the contamination that remains on the property and the basis for determining the site to be of low risk;
- Areas of the property that require remediation based on the site information (e.g. remediation of the room used for production only, where appropriate);
- What materials/items are to be removed from the property (none of which are to be recycled). It is recommended that all children’s toys, clothes and infant items are removed and disposed appropriately;
- Where and how waste materials are to be disposed (in accordance with NSW guidelines<sup>4</sup>);
- How the property is to be cleaned/remediated, including all methods of cleaning or remediation. It is noted that for low-risk properties contamination can be effectively remediated by cleaning (washing or double washing, steam cleaning and vacuuming with high efficiency particulate filter) and (potentially in addition to) encapsulation with paint or other sealant;
- The level of PPE required to be worn during all phases of the cleanup (by all contactors);
- Validation sampling requirements, including the remediation criteria (i.e. demonstrating that the cleaning/remediation has been effective and the residual levels meet the required guidelines);
- Quality Assurance and Quality Control (QA/QC) practices required to be followed during validation;
- Measures to be undertaken if the validation/remediation criteria are not met;
- Who will be doing the work; and
- Schedule of works.

The remediation plan should ensure it meets all legislative requirements (e.g. if the works relate to contamination that impacts land, surface water or groundwater approval from NSW EPA may be required).

### **3.4.6 Remediation – High Risk Sites**

Following completion of the preliminary assessment, the consultant should develop a remediation plan for the site that addresses the level of risk relevant to the property. For high-risk sites this should be developed with consideration of detail provided in Section 5.4 of the National Clandestine Drug Laboratory Remediation Guidelines (ACC 2011) and should include the following:

- All relevant information on the site, including address, setting, location of neighbours (i.e. how close are they), available information relied on for the presence of hazards associated with the operation of the clandestine drug laboratory. This information will be available from the Preliminary Assessment;

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<sup>4</sup> As outlined by the NSW EPA at <http://www.epa.nsw.gov.au/waste/index.htm>

- An outline of the nature and extent of the contamination that remains on the property, including what areas need to be remediated;
- How the property is to be cleaned/remediated, including all methods of cleaning or remediation. It is important to note that the contamination that may be present within the property will have penetrated different porous surfaces. The remediation methods used must be appropriate to ensure that contamination is not remobilised during future renovation works that may be undertaken on the property;
- What materials/items are required to be removed from the property (none of which are to be recycled);
- Where and how waste materials are to be disposed (in accordance with NSW guidelines);
- The level of PPE required to be worn during all phases of the clean-up (by all contactors);
- Validation sampling requirements, including the remediation criteria;
- Quality Assurance and Quality Control (QA/QC) practices required to be followed;
- The contractors required to be engaged; and
- Schedule of works.

These aspects are outlined in more detail in the following diagram.

The remediation plan should ensure it meets all legislative requirements. In relation to septic tanks, works undertaken on the system should comply with the National Plumbing & Drainage Code (AS3500) and other relevant guidelines<sup>5</sup>.

### ***Remediation/Clean-up and Validation***

The conduct of remediation/clean-up at the property should be in accordance with the remediation plan. If unexpected contamination is identified during the course of the remediation, work should be stopped and further assessment of the contamination and review of the remediation plan should be undertaken. This is to ensure that the approach adopted for remediation/clean-up adequately addresses the nature and extent of any additional contamination identified.

Following completion of remediation works, validation sampling is required to be undertaken to demonstrate that no residual contamination remains present. If the validation sampling fails to meet the required clean-up goals, further remediation/clean-up work should be undertaken, and additional validation samples collected.

### ***Issues for Neighbours***

Exposures by neighbours to contamination from a clandestine drug laboratory are expected to be low in most situations where remediation works are conducted except where there is evidence of waste being dumped on adjoining properties or the property is located in a high density residential area (enHealth 2013). In these situations the neighbour should be advised and the preliminary

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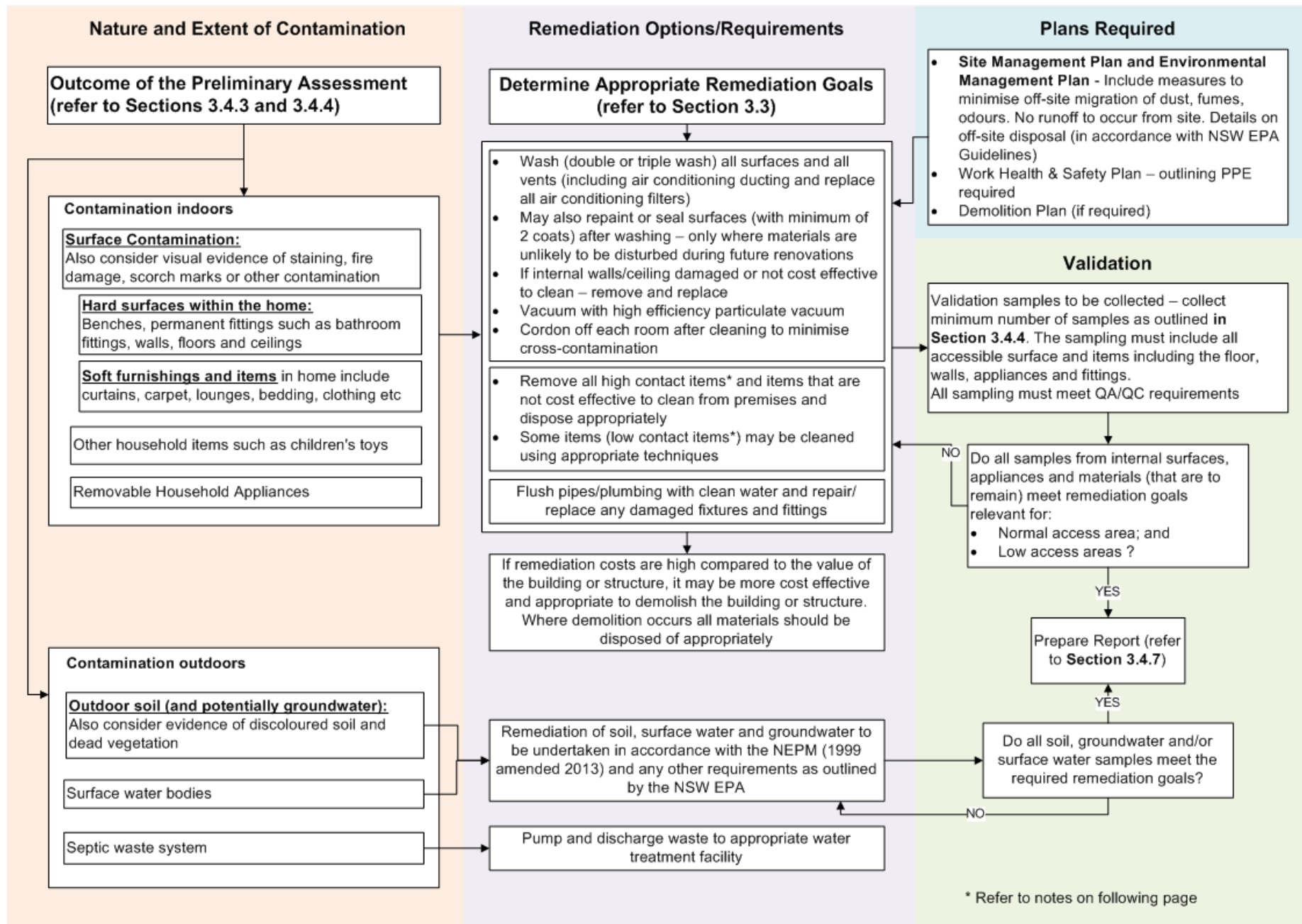
<sup>5</sup> Refer to the NSW Environment & Heritage Septic Safe Program available from:  
<http://www.environment.nsw.gov.au/water/septicssystems.htm>

NSW Health, Septic Tank and Collection Well Accreditation Guideline:  
<http://www.health.nsw.gov.au/environment/domesticwastewater/Documents/septic-guideline.pdf>

assessment (as outlined in **Section 3.4.3**) should include these properties (where the neighbours consent to the assessment) to ensure that the full extent of contamination is addressed.

For other sites it is recommended that neighbours are advised of the remediation works being conducted, the activities being undertaken and if any of these will result in annoyance to the neighbour (e.g. ventilation of the premises prior to and during remediation, odours from the use of cleaning products, noise, use of machinery to excavate contaminated soil, building works).

## Flow-Chart: Remediation of High Risk Premises



\* Recommended actions for items inside premises based on value and potential for exposure/contact as follows:

<p><b><u>High Value – High Contact/Exposure Items</u></b> This includes:</p> <ul style="list-style-type: none"> <li>● Mattresses - discard</li> <li>● Carpeting – discard</li> <li>● Upholstered items - discard</li> <li>● Window furnishings (blinds and curtains) – discard</li> <li>● Food preparation surfaces - discard</li> <li>● Plastic furniture - discard</li> </ul>	<p><b><u>High value – Low Contact/Exposure Items</u></b> This includes:</p> <ul style="list-style-type: none"> <li>● Photographs – may be salvaged without cleaning</li> <li>● Large appliances – may be cleaned (inside and out)</li> <li>● Electronics – may be cleaned (where cleaning does not damage item)</li> </ul>
<p><b><u>Low value – High Contact/Exposure Items</u></b> This includes:</p> <ul style="list-style-type: none"> <li>● Clothing – discard</li> <li>● Children’s toys – discard</li> <li>● Toothbrushes – discard</li> <li>● Kitchen items – discard</li> <li>● Books and household paper items – discard</li> </ul>	<p><b><u>Low value – Low Contact/Exposure Items</u></b> This includes:</p> <ul style="list-style-type: none"> <li>● Garage tools – may be cleaned</li> <li>● Garden tools – may be cleaned</li> </ul>

### 3.4.7 Final Report

Following completion of the remediation and validation works a final report should be prepared to document that the property has been remediated (and repaired as necessary) to meet the appropriate guidelines and is suitable for re-occupancy.

The report should include the following:

Report Contents	Required to be included for sites that are:	
	Low-Risk*	High-Risk
Property description, including: <ul style="list-style-type: none"> <li>physical address</li> <li>legal description/title</li> <li>ownership</li> <li>number and type of structures present</li> <li>description of adjacent properties</li> </ul>	✓	✓
Details on the consultant engaged to conduct the preliminary assessment	✓	✓
Information relevant to the preliminary assessment of the site and assessment of the risk level at the site, including information provided by police and observations made that relate to: <ul style="list-style-type: none"> <li>location of chemical storages (including a figure)</li> <li>location of waste disposal (including a figure)</li> <li>location of drug cooks (including a figure)</li> <li>cook method and quantity (and duration of manufacture)</li> <li>evidence of other contamination.</li> </ul>	✓	✓
Risk ranking (low or high risk)	✓	✓
Evidence the property has been ventilated for at least 48 hours prior to remediation	✓	✓
Preliminary sampling works conducted including: <ul style="list-style-type: none"> <li>location of samples collected (including figure)</li> <li>sampling methodology</li> <li>sample handling</li> <li>analytical methods</li> <li>analytical results</li> <li>QA/QC</li> <li>relevant work health and safety procedures adopted</li> <li>observations (include photographs where relevant)</li> </ul>		✓
Purpose of remediation and the relevant remediation goals adopted	✓	✓
Reference to Remediation Plan (include as an appendix where relevant)	✓	✓
Reference to Site Management Plan and Environmental Management Plan relevant to the works	✓	✓
Reference to Work Health & Safety Plan relevant to the works	✓	✓
Details on the suitably qualified consultant engaged to conduct the remediation and validation	✓	✓
Description of the remediation works undertaken, including: <ul style="list-style-type: none"> <li>All clean-up/remediation procedures and methods</li> <li>What materials, soil or items have been removed from the premises for disposal – include evidence of disposal to an appropriate facility</li> <li>If surfaces/fixtures/building materials were replaced provide details on these works including evidence of disposal of waste to an appropriate facility, works completed and any relevant permits required for the building works</li> <li>Sequence of remediation works conducted (to prevent re-contamination)</li> <li>If septic tank has been effected provide details on works undertaken to clean system</li> </ul>	✓	✓
Validation sampling undertaken including: <ul style="list-style-type: none"> <li>location of samples collected (including figure)</li> <li>sampling methodology</li> <li>sample handling</li> <li>analytical methods</li> <li>analytical results</li> <li>QA/QC</li> <li>observations (include photographs where relevant)</li> </ul>	✓	✓
Certification that the property has been remediated to meet the required levels and the property is suitable for occupation	✓	✓

\* While the scope of the report required for a low-risk site includes most of the aspects outlined in the table it is expected that the scope of works and level of detail required for the low-risk site will be less than for a high-risk site.



## Section 4. Assessment, Management and Remediation of Hydroponic Plantations

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### 4.1 Introduction

Hydroponic plantations involve a range of hazards that differ from those relevant to clandestine drug laboratories. Hence this section has been prepared to more specifically address the issues that may arise in the assessment and remediation of these properties.

The following guidelines relate to the assessment and remediation of these properties, after NSW Police operations have been completed and NSW Police has notified the EHO of the presence of a former hydroponics plantation. Once the EHO has been notified the property owner is to be contacted and advised of the requirement to clean-up/repair the property to ensure it is safe and suitable for further occupancy.

The level of risk posed by former hydroponic plantations is considered to be lower than for clandestine drug laboratories. On this basis the conduct of works required to render the property suitable for occupancy can be managed by the site owner.

EHOs and all other individuals not involved in the clean-up or repair of the property should not enter these properties until works have been completed.

### 4.2 Site Safety

People who live in or visit a property that has been formerly used for hydroponics plantations may encounter a range of chemicals and safety hazards. While it is expected that plants, equipment and any illegal items will have been removed during NSW Police operations, significant safety hazards may remain on these premises.

In relation to former hydroponics plantations the following hazards/safety issues need to be considered:

- **Electrical hazards:** altered, modified or tampered electrical systems may present an electrocution, fire or explosive hazard.
- **UV lights:** if these remain in the premises, when turned on they may cause eye damage.
- **Physical hazards:** the presence of hanging wires and pipes, storage of waste containers, and other materials may present physical hazards inside the premises.
- **Reduced oxygen environment and air quality:** if electricity has been cut to the premises or ventilation systems tampered with, parts of the premises that may have been sealed off for the hydroponics plantation may have poor air quality.
- **Structural hazards:** modifications to a building structure to house the hydroponic plantation, and water damage may have compromised the structural integrity of the building.
- **Moisture and mould:** the accumulation of untreated and improperly ventilated moisture in walls, roof spaces and crawl-spaces create ideal conditions for the growth of mould, many of which may pose an inhalation risk.
- **Chemical contamination:** chemical contamination from the storage and use of fertilisers and pesticides may be present.
- **Plumbing modifications and cross-connections:** modified plumbing systems and unapproved connections may have created water supply problems in the premises.

- **Building hazards:** other hazards may be present in the premises used for the hydroponic plantation that include the presence of asbestos-containing materials, lead-based paints and may require consideration particularly if there has been structural damage to the property.

Due to the presence of a range of potential physical hazards (from building modifications) an initial inspection is required to be undertaken by a building inspector who is experienced in and has been advised that the property was formerly used for a hydroponic plantation. The initial inspection should ensure that adequate ventilation is restored to the property as soon as possible by opening doors/windows and/or installing fans. Any illegal items found during the initial site inspection and subsequent works should be reported to the police.

### 4.3 Approach

The following outlines the approach to be adopted for the assessment and remediation of premises formerly used for hydroponics plantations:

1. Obtain a building assessment report and develop a plan that identifies the damage, hazards and repairs required to remediate the property.
2. The assessment, repair and remediation of the premises is required to consider the following, unless there is evidence available to preclude any of them (also refer to the following figure):
  - Repair and restore damaged building materials<sup>6</sup>, finishes, and windows, ensuring that the building is windproof, weatherproof, and waterproof.
  - Remove extraneous building materials and plastic sheeting; examine materials remaining indoors, crawl-spaces and roof spaces for evidence of water damage and/or mould growth; clean, repair, or replace materials in accordance with a professional environmental assessment and remediation plan.
  - Reduce interior clutter, and properly dispose of waste materials.
  - Repair and restore electrical systems to proper operating condition.
  - Repair and restore heating, ducting and ventilation systems to proper operating condition.
  - Repair and restore plumbing systems to proper operating condition.
  - Repair and restore any gas lines and connections to proper operating condition.
  - Remove and properly dispose of any remaining chemicals. These are likely to primarily consist of fertilisers and pesticides however there may also be some chemicals associated with THC (tetrahydrocannabinol) extraction (such as isopropyl alcohol, naphtha or ethanol). These chemicals should be removed and disposed in accordance with existing protocols as outlined by the NSW EPA<sup>7</sup> for the disposal of:

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<sup>6</sup> Ensure that any person managing all site remediation work undertaken on a property is also aware of the presence of asbestos materials and/or lead paint. If these are present then additional measures/precautions are required to be taken to manage risks associated with these materials.

Refer to: <http://www.housing.nsw.gov.au/NR/rdonlyres/F4E1131F-2764-4CB1-BC07-98EB6C594085/0/Asbestos.pdf> and <http://www.environment.nsw.gov.au/resources/pesticides/03004managinglead.pdf>

<sup>7</sup> Refer to the information available on Household Chemical CleanOut available from: <http://www.epa.nsw.gov.au/warr/cleanoutguide.htm>

- Pesticides<sup>8</sup>
- Household chemicals

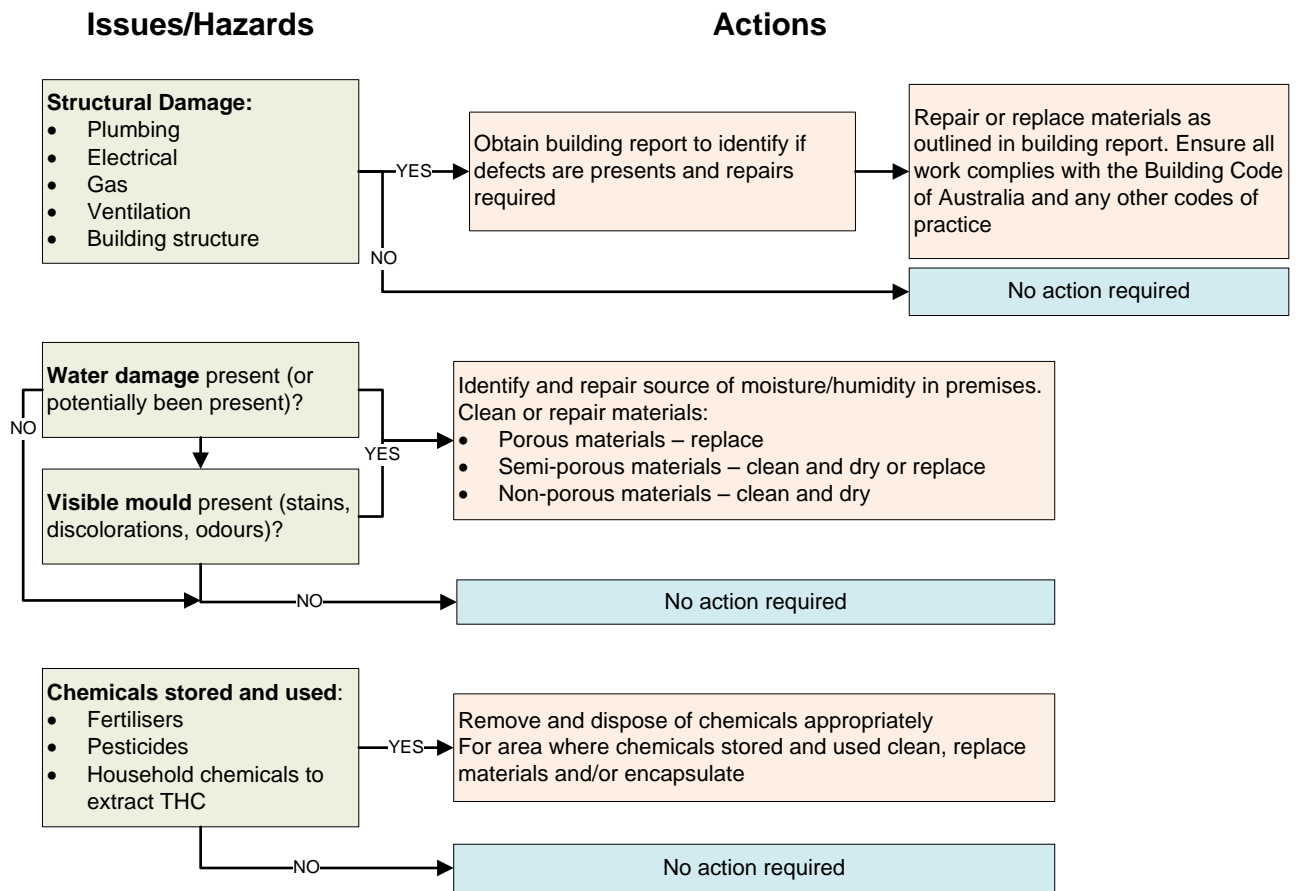
The areas where chemicals were used should be cleaned with detergent and water. If staining or odours remain the affected materials may be replaced or encapsulated with paint or sealant.

- Any moisture or water damage should be identified, the underlying causes corrected and water-damaged materials repaired or replaced.
  - Check for the presence of visible mould growth in all areas including air conditioning ducting and wall cavities. Any ongoing sources of moisture/humidity should be repaired and mould affected materials cleaned or replaced (where they cannot be cleaned or it is not accessible or cost effective to clean). Professional services may be used to check for and remediate mould issues, if required.
3. Where required, council approval for building repair works should be obtained;
  4. Where required, permits for electrical, water or gas works should be obtained;
  5. Licenced contractors are required to undertake structural, electrical, plumbing and gas works.
  6. Document all assessment, remediation and repair work in a report to demonstrate that the premises are safe and suitable for habitation.

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<sup>8</sup> Also refer to the following document from the enHealth on measures that may be used to clean-up a pesticide spill: <http://www.health.gov.au/internet/publications/publishing.nsf/Content/ohp-enhealth-manual-atsi-cnt-l-ohp-enhealth-manual-atsi-cnt-l-ch5~ohp-enhealth-manual-atsi-cnt-l-ch5.14>

## Overview of Approach for Remediation of Former Hydroponic Plantation



## Section 5. References

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ACC 2011, *Clandestine Drug Laboratory Remediation Guidelines*, Commonwealth of Australia.

ACC 2014, *2012-13 Illicit Drug Data Report*, Australian Crime Commission.

ACC 2015, *2013-14 Illicit Drug Data Report*, Australian Crime Commission.

ANZECC/ARMCANZ 2000, *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*, Australian and New Zealand Environment and Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand.

Denehy, J 2006, 'The meth epidemic: its effect on children and communities', *The Journal of school nursing : the official publication of the National Association of School Nurses*, vol. 22, no. 2, Apr, pp. 63-65.

enHealth 2013, *enHealth Position Statement: Clandestine Drug Laboratories and Public Health Risks*.

enRiskS 2009, *Derivation of Risk-Based Investigation Levels, Clandestine Drug Laboratory, Site Investigation Guidelines*, Environmental Risk Sciences. Sydney.

Martyny, JW, Erb, N, Arbuckle, AL & VanDyke, MV 2005, *A 24-Hour Study to Investigate Chemical Exposures Associated with Clandestine Methamphetamine Laboratories*.

Maxwell, JC 2005, 'Emerging research on methamphetamine', *Current Opinion in Psychiatry*, vol. 18, no. 3, pp. 235-242.

McLaren, J & Mattick, RP 2006, *Cannabis in Australia - Use, supply, harms, and responses*, University of New South Wales.

NEPC 1999 amended 2013, *Schedule B1, Guideline on Investigation Levels For Soil and Groundwater, National Environment Protection (Assessment of Site Contamination) Measure*, National Environment Protection Council. <<http://scew.gov.au/nepms/assessment-site-contamination>>.

NSW EPA and Planning NSW 2003, *Managing Lead Contamination in Home Maintenance, Renovation and Demolition Practices. A Guide for Councils.*, NSW Environment Protection Authority and Planning NSW.

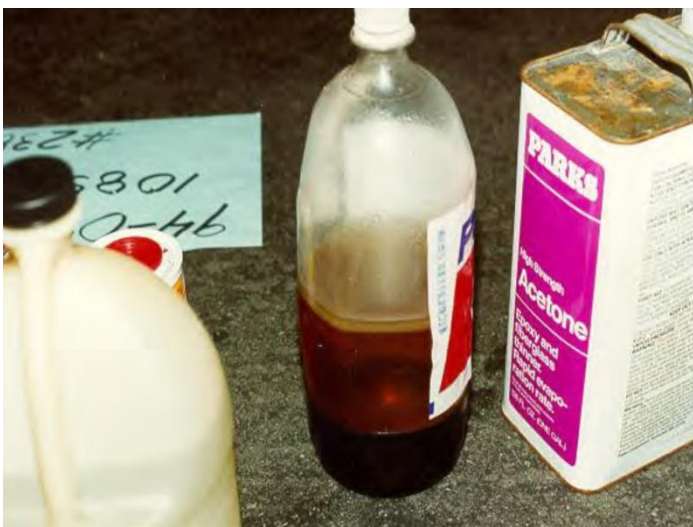
USEPA 2013, *Voluntary Guidelines for Methamphetamine Laboratory Cleanup*, U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response. <[http://www.epa.gov/oem/meth\\_lab\\_guidelines.pdf](http://www.epa.gov/oem/meth_lab_guidelines.pdf)>.

**Appendix A**

**Photographs of Indicators for the Presence of a Clandestine  
Drug Lab**



## Indicators of Potential Lab Indoors





**Indicators of Potential Dumped Waste or Manufacturing Outdoors**











**Appendix B**

**Companies Suitably Qualified for Assessment, Testing,  
Analysis and Remediation**

## B1 Assessment and Testing Service Providers:

It is important that suitably qualified professionals are used for the assessment and remediation of clandestine drug laboratories. Qualified professionals can ensure that the level of risk posed by a property/site/situation is properly assessed, appropriate work health and safety measures are implemented and managed, and that the level of remediation undertaken is appropriate for the level of risk (i.e. properties are not under-remediated [leading to elevated levels of contamination remaining] or over-remediated [leading to elevated costs]).

These professionals are required to demonstrate the following:

Assessment of clandestine laboratory	Workers involved in sampling and/or remediation
<ul style="list-style-type: none"><li>• Completion of an appropriate clandestine drug laboratory remediation course for assessors or supervisors (or equivalent). The course must be current (with the course or a refresher course completed in the past 2 years) and certified*.</li><li>• Completion of occupational health and safety training relevant to hazardous materials (e.g. HAZWOPER training).</li><li>• Demonstration of at least 40 hours on-site work with hazardous materials (including clandestine drug laboratories).</li></ul>	<ul style="list-style-type: none"><li>• Completion of an appropriate clandestine drug laboratory remediation course. The course must be current (with the course or a refresher course completed in the past 2 years) and certified*.</li><li>• Completion of occupational health and safety training relevant to hazardous materials (e.g. HAZWOPER training).</li></ul>

\* There are currently no Australian bodies under which certification for training in the assessment and remediation of clandestine drug laboratories is provided. The requirement for certification included above relates to attendance at a minimum 16 hour course (or 4 hour refresher) that includes certification from an appropriate/relevant industry or organisational (e.g. occupational hygiene) body.

Additional information on the selection of suitably qualified consultants is provided in the NEPM, Schedule B9 “*Guideline on Competencies & Acceptance of Environmental Auditors and Related Professionals*” (1999 amended 2013).

The same company/professional may provide both assessment and remediation or clean-up services (directly or will engage suitably qualified personnel to conduct these works). The scope of services provided by the company/professional engaged should be understood by home owners prior to engagement.

Laboratories selected for the analysis of samples collected for the assessment or validation of a site should hold relevant NATA (National Association of Testing Authorities) (or equivalent if an international laboratory is used) accreditation. The certification of the laboratory should be stated along with the laboratory methods utilised in the work.

## **Appendix C**

### **Personal Protective Equipment (PPE)**

## C1 Background

Clandestine laboratories involve the improper storage and use of toxic and corrosive chemicals. Although no odours or visible staining may be evident, residual chemicals may be present. Any person attending a suspected clandestine laboratory site which has not been fully decontaminated should utilise appropriate personal protective equipment (PPE). The following advice is taken from the National Clandestine Drug Laboratory Remediation Guidelines (ACC 2011). It is noted that occupational health and safety requirements for all workers in NSW are required to comply with the following:

- *Work Health and Safety Act 2011*
- *Work Health and Safety Regulation 2011*

## C2 Personal Protective Equipment

The following is provided to guide those attending sites after the police are no longer in attendance.

While the following recommendations describe PPE appropriate for the majority of cases, specific instances of heavy contamination may require the use of more sophisticated PPE for example breathing apparatus. In this event, only persons who have undergone appropriate training in the use of the equipment are to utilise same. Safety is the responsibility of those attending the site hence consultation with emergency services personnel and/or safety equipment specialists is recommended in the selection of PPE.

Before entering the site, the police officers who processed the site for safety and evidence purposes should be contacted and any potential hazards discussed. Where PPE levels are advised by police these may be adopted when entering the premises. Where no information is available from police, as a recommended minimum, those attending a site should consider the following:

- **Respiratory/eye protection:** A full face mask air purifying respirator (APR), equipped with broad spectrum cartridges that filter dusts, organic vapour, acid vapour, solvents and ammonia / methylamine. APR's are to be decontaminated after each use. Cartridges are to be replaced dependent on contaminant burden as per manufacturer's instructions and disposed of as hazardous waste after use. Those using the APR's must be trained in their use in accordance with manufacturers' recommendations. The wearing of separate eye protection and half face APR's or dust masks is not recommended as these do not provide a comparable level of protection nor the comfort of a full face APR.
- **Hand protection:** 'Nitrile' disposable gloves offer adequate hand protection against chemical contamination under most circumstances arising during sample collection. Additional protection may be achieved through the donning of a second set in instances where puncture or tearing is possible. When sharp, rough or significantly contaminated surfaces are present, consideration should be given to the use of heavy duty Neoprene gloves. Gloves should be changed regularly hence access to appropriately sized gloves in quantity will be required. Gloves are not to be re-used and are to be disposed of as hazardous waste. The use of latex or vinyl gloves is not acceptable as they do not provide adequate protection against a range of chemical substances.
- **Foot Protection:** Two alternative types of suitable foot protection are available:
  - Boots – these may be either lace up or of a rubber or 'gum' boot design, and constructed of materials which are resistant to chemical attack. These offer

protection against a range of chemical substances and may be decontaminated after each use.

- Disposable latex or plastic overshoes - these should fit properly and be disposed of as hazardous waste after single use (while paper overshoes are available, their use is not recommended. They are generally only suited for protecting against dusts and particulates and offer little protection from liquids).
- **Skin and clothing protection:** Disposable cover all suits with an integrated hood are suited for the purpose and are available in a variety of materials which offer differing levels of protection against exposure to chemical contaminants. The range from composite fabrics offering protection principally against dust and particulates only as many liquids will penetrate the fabric after relatively short exposure periods. A higher level of protection is offered by coverall suits or 'splash suits' manufactured from a variety of laminated chemical resistant materials. While these offer enhanced penetration resistance to a range of chemicals, they are not 'chemical proof'. These suits cannot be effectively decontaminated and are intended to be for single use only, after which they are to be disposed of as hazardous waste.

The choice of suit composition, and PPE in general, should be made on a case by case basis and be based on site specific information including the degree and nature of contamination, and with reference to the maker's specifications for the PPE garment.

### **C3 Air Monitoring**

When first entering an indoor site, the site is to be checked with a properly calibrated and functioning air monitoring device. The air monitor must, as a minimum, detect oxygen and lower explosion limit levels. Before beginning sampling or inspection, the air throughout the premises must be assessed. Special attention is to be paid to floor areas as many solvent vapours are heavier than air and may accumulate in low lying sections. If an air monitor triggers an alarm at any time, those present must immediately evacuate the premises and seek assistance from fire and emergency service before re-entering.