Methamphetamine Decontamination Technician Course

Taught by:

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January 12, 2022

ISBN: 978-0-692-91010-8

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Glossary of Terms

1. "Decontamination Contractor" means an individual who has met the standards and is trained as a Decontamination Contractor.
2. "Chain-of-Custody Protocol" means a procedure used to document each person that has had custody or control of an environmental sample from its source to the analytical laboratory, and the time of possession of each person.
3. "Confirmation Sampling" means collecting samples during a preliminary assessment or upon completion of decontamination activities to confirm that contamination is below the decontamination standards outlined in this rule.
4. "Contamination" or "Contaminated" means polluted by hazardous materials that cause property to be unfit for human habitation or use due to immediate or long-term health hazards; or that a property is polluted by hazardous materials as a result of the use, production, or presence of methamphetamine in excess of decontamination standards.
5. "Corrosive" means a material such as acetic acid, acetic anhydride, acetyl chloride, ammonia (anhydrous), ammonium hydroxide, benzyl chloride, dimethylsulfate, formaldehyde, formic acid, hydrogen chloride/hydrochloric acid, hydrobromic acid, hydriodic acid, hydroxylamine, methylamine, methylene chloride (dichloromethane methylene dichloride), methyl methacrylate, nitroethane, oxalylchloride,perchloric acid, phenylmagnesium bromide, phosphine, phosphorus oxychloride, phosphorus pentoxide, sodium amide (sodamide), sodium metal, sodium hydroxide, sulfur trioxide, sulfuric acid, tetrahydrofuran, thionyl chloride or any other substance that increases or decreases the pH of a material and may cause degradation of the material.
6. "Decontamination Standards" means the levels or concentrations of contaminants that must be met to demonstrate that contamination is not present or that decontamination has successfully removed the contamination.
7. "Easily Cleanable" means an object and its surface that can be cleaned by detergent solution applied to its surface in a way that would reasonably be expected to remove dirt from the object when rinsed and to be able to do so without damaging the object or its surface finish.
8. "Grab Sample" means one sample collected from a single, defined area or media at a given time and location.
9. "Hazardous Waste" means toxic materials to be discarded.
10. "Hazwoper" stands for hazardous waste operations and emergency response, term appears in hazardous waste treatment regulations currently published by the Occupational Safety and Health Administration (OSHA) targeted at government contractors and first responders.
11. "HEPA" means high-efficiency particulate air and indicates the efficiency of an air filter or air filtration system.
12. "Highly Suggestive of Contamination" means the presence of visible or olfactory signs indicative of contamination, locations in and around where illegal drug production occurred, where hazardous materials were stored or suspected of being used to manufacture illegal drugs, or areas that tested positive for contamination or other portions of the property that may be linked to processing and storage areas by way of the ventilation system or other activity that may cause contamination to be distributed across the property.
13. "Impacted Groundwater" means water present beneath ground surface that contains concentrations of a contaminant above the UGWQS.
14. "Impacted Soil" means soil that contains concentrations of a contaminant above background or EPA residential Risk Based Screening Concentrations.

15. "Non-porous" means resistant to penetration of liquids, gases, powders and includes non-permeable substance or materials, that are sealed such as, concrete floors, wood floors, ceramic tile floors, vinyl tile floors, sheet vinyl floors, painted drywall or sheet rock walls or ceilings, doors, appliances, bathtubs, toilets, mirrors, windows, countertops, sinks, sealed wood, metal, glass, plastic, and pipes.
16. "Personal Protective Equipment" (PPE) means various types of clothing such as suits, gloves, hats, and boots, or apparatus such as facemasks or respirators designed to prevent inhalation, skin contact, or ingestion of hazardous chemicals.
17. "Porous" means material easily penetrated or permeated by gases, liquids, or powders such as carpets, draperies, bedding, mattresses, fabric covered furniture, pillows, drop ceiling or other fiber-board ceiling panels, cork paneling, blankets, towels, clothing, and cardboard or any other material that is worn or not properly sealed.
18. "Preliminary assessment" means an evaluation of a property to define all areas that are highly suggestive of contamination and delineate the extent of contamination. The preliminary assessment consists of an on-site evaluation conducted by the Decontamination Contractor or owner of record to gather information to demonstrate that contamination is not present above the decontamination standards or to enable development of a workplan outlining the most appropriate method to decontaminate the property.
19. "Properly Disposed" means to discard at a licensed facility in accordance with all applicable laws and not reused or sold.
20. "Return Air Housing" means the main portion of an air ventilation system where air from the livable space returns to the air handling unit for heating or cooling.
21. "Waste" means refuse, garbage, or other discarded material, either solid or liquid.

Section 1: Introduction

Course Objective

Upon completion of the course you will know;

- What is a Methamphetamine Lab? What is a User Site?
- What are the dangers of Meth and Meth related chemicals?
- Proper Testing Techniques
- How to complete a site evaluation, work plan and final report
- Introduction to decontamination techniques and processes

Purpose of Course

- The purpose of this course is to provide instruction and information to those interested in understanding the basics of Meth Decontamination.

Limitations

- The purpose of this class is not intended for first responders.
- This course is dynamic and will be constantly evolving as technology and data increases.

Section 2: Background

History of Meth(Vermont Department of Health *A Brief History of Meth)*

- **1887:** Amphetamines are first synthesized.
- **1919:** Methamphetamine, a stimulant, is developed by a pharmacologist in Japan. The drug alleviates fatigue and produces feelings of alertness and well-being.
- **1930s:** Doctors begin using amphetamines in the United States to treat asthma and narcolepsy.
- **1932:** The amphetamine Benzedrine introduced as an over-the-counter bronchial dilator for the treatment of nasal and bronchial congestion associated with colds.
- **World War II:** Methamphetamine and amphetamine are given to Allied bomber pilots to sustain them on long flights. The experiment fails because soldiers become irritable and can't channel their aggression. Primarily, amphetamines were used by soldiers to fight off fatigue, hunger and enhance performance.
- **1945-1950s:** Post-war Japan experiences the first meth epidemic. It spreads to Guam, the U.S. Marshall Islands and to the U.S. West Coast.
- **1950s:** Still marketed to treat obesity, narcolepsy and sinus inflammation, "pep pills" or "bennies" are sold for non-medical purposes. Some truckers, homemakers, college students and athletes pop pills to stay awake or keep active.
- **1960s:** Doctors in San Francisco drug clinics prescribe injections of methamphetamine to treat heroin addiction. Illegal abuse occurs in subcultures such as outlaw biker gangs and students, which cook and use the drug.
- **1970:** Methamphetamine, or speed, is regulated in the Controlled Substances Act; a public education campaign is mounted.
- **1980s:** Drug treatment counselors see increased abuse among men who have sex with men. Mexican drug manufacturers begin bringing methamphetamine north of the border. Forms of methamphetamine that could be smoked are introduced.
- **1990s:** New ways to cook methamphetamine appear. Some new versions are four to six times stronger. Greatest use is seen in the Southwest and West. Methamphetamine use begins and grows in the rural Midwest. Rural locations become ideal for cooking of methamphetamine because of geographic isolation, available supply of ephedrine, pseudoephedrine and anhydrous ammonia.
- **1996:** Congress passes the Comprehensive Methamphetamine Control Act, which regulates mail order and chemical companies selling precursor chemicals. For example, people who buy large quantities of red phosphorous, iodine and hydrochloric gas must show they will use them for legitimate purposes. Law enforcement agents are allowed to track large mail order purchases of pseudoephedrine, another precursor chemical. Chemical supply companies are punished if they sell chemicals to people who make methamphetamine.
- **2000:** In the Inland Northwest, and in much of the West, methamphetamine is the favored hard drug, surpassing crack, cocaine and heroin. It's still prescribed for some medical purposes.

Section 3: Meth Labs/User Site

What is Methamphetamine?

According to National Institute of Drug Abuse, methamphetamine is a powerful, highly addictive stimulant that affects the central nervous system. Also known as meth, chalk, ice, and crystal, among many other terms, it takes the form of a white, odorless, bitter-tasting crystalline powder that easily dissolves in water or alcohol.

What is a Meth Lab?

Meth Kills.Org states, a meth lab is a clandestine drug lab that is a collection of materials and ingredients used to make crystal meth and is made mostly from common household ingredients. These ingredients are mixed and cooked together to make meth and the harmful chemical mixtures can remain on household surfaces for months or years later. There may be health effects in people exposed to chemicals to make meth before, during and after the meth-making process. Therefore, each meth lab is a potential hazardous waste site, requiring evaluation, and if found contaminated, cleanup by hazardous waste professionals.

Clandestine laboratories often produce two chemical forms of methamphetamine, the free base (methamphetamine base) and the hydrochloride salt (methamphetamine hydrochloride).

The free base, which is the initial product of clandestine synthesis, is a liquid at room temperature. At alkaline pH, the free base of methamphetamine is soluble in organic solvents. The hydrochloride salt is produced from the free base by bubbling hydrogen chloride gas through a solution of free base. There are two stereoisomer's of methamphetamine, "dextro or d" and "levo or l". The dextro or d-isomer is the more potent, pharmacologically active stimulant of the two.

What is a User Site?

Location of Meth Use including: Houses, apartments, sheds, storage units, public buildings, autos, RVs or any other location where meth is used.

Methods of Meth Production

According to the Utah Department of Environmental Quality Certified Decontamination Contractor manual, there are three types of meth labs. (Production Methods) The production of methamphetamine is a relatively simple process that can be carried out by individuals without specific knowledge or expertise in chemistry. Generally, methamphetamine is made using a recipe obtained from a publication or gathered from an acquaintance. Many of the agents used in the process can be found in local hardware stores or hobby shops. In addition, many are found in ordinary household agents such as lighter fluid or drain cleaner.

To define an area highly suggestive of contamination, it is important to understand the nature of a clan lab, methods of production and the chemicals involved. While there are many methods used to produce meth, the Red Phosphorus method is one of the more common methods. The following text provides some general information.

It should be noted that it is not the intent of this section to provide a cookbook for meth production, only introduce the common methods and associated chemicals.

- **Red Phosphorous Method:** The Red Phosphorus method is also called “Red P”, “HI”, “Red, White and Blue” or “Ephedrine” method. This process uses ephedrine and pseudoephedrine as the primary ingredient and other chemicals as the reagents. Some chemicals potential associated with the Red Phosphorus method include: hydriodic acid, hydrochloric (muriatic) acid, sulfuric acid, sodium hydroxide (lye), sodium chloride (salt), red phosphorous, iodine, isopropyl alcohol, ethyl alcohol (ethanol), methyl alcohol (methanol), hydrogen peroxide, naptha (Coleman Fuel), charcoal lighter fluid, acetone, benzene, toluene, ethyl ether (starting fluid), Freon, hydrogen chloride gas and chloroform.

- **Birch Method:** The Birch Method is also called the “Ammonia”, "One Pot", "Shake n Bake" or “Nazi” method. This technique uses ephedrine or pseudoephedrine, sodium or lithium and anhydrous ammonia. The Birch Method has become increasingly popular because it is quick and inexpensive, requires less set up time and equipment and produces a high yield of methamphetamine. Some chemicals potentially associated with this method include: anhydrous ammonia, lithium metal, sodium metal, isopropyl alcohol, ethyl alcohol (ethanol), methyl alcohol (methanol), hydrogen chloride gas, hydrochloric (muriatic) acid, sulfuric acid, sodium chloride (salt), toluene, naptha (Coleman Fuel), freon, ethyl ether, chloroform and methyl ethyl ketone.

- **Amalgam Method:** This method primarily uses phenyl-2-propanone (P2P) and methylamine as precursors. Mercuric choloride, aluminum, hydrochloric acid, isopropyl alcohol, methanol, ethanol, acetone, benzene, chloroform and ether may also be associated with this manufacturing method. *(Breaking Bad)*

Selected Chemicals Associated with Methamphetamine Production

Many of the chemicals encountered at a clandestine drug laboratory may be divided into four general categories that include:

1.) Solvents
2.) Corrosives/Irritants
3.) Inorganic Substances
4.) Precursors

The following information relates to a few common contaminants that may be found at clan labs. The list is not all-inclusive due to the number of chemicals that may be used during the cook. Chemicals of concern should be established on a case-by-case basis.

Solvents

- **Acetone** (dimethyl ketone): Acetone is a colorless, mobile, flammable liquid with a mildly pungent and somewhat aromatic odor. Acetone is highly volatile, flammable, and the vapor is irritating to the eyes and nose in high concentrations. Inhalation of the vapor may cause dizziness, narcosis and coma. Acetone has legitimate use as a solvent and chemical intermediary for a variety of substances such as paints, lubricants, nail polish remover, glues, rubber cement and varnish removers.
- **Toluene** (methylbenzene): Toluene is a refractive liquid solvent with a benzene-like odor Toluene is flammable and highly volatile. Exposure to toluene may burn or irritate mucous membranes, eyes and respiratory tract and cause dizziness. Severe exposure may result I pulmonary edema. Toluene is used in the manufacture of benzoic acid, explosives, dyes and other organic substances. It can also be found in paints, thinners, lacquers and gasoline additives. Toluene is a solvent that can be used to extract methamphetamine base.
- **Coleman Fuel** (petroleum ether, white gas): Coleman fuel is a complex mixture of light hydrocarbons (primarily aliphatic) produced by distillation of petroleum. Coleman fuel can form flammable mixtures in air and flash at room temperature. Acute exposure may be irritating to the eyes and skin. Prolonged exposure may also adversely affect the kidneys, liver and respiratory system or aggravate pre-existing conditions in these organs. Coleman fuel is petroleum based non-polar solvent used to extract methamphetamine base.

Corrosives/Irritants

- **Ammonia** (anhydrous ammonia): Anhydrous ammonia is a gas at room temperature and has a pungent suffocating odor. Ammonia is irritating to the upper respiratory tract, skin, and eyes. Ammonia reacts with strong oxidizers, acids, halogens, bleach and salt of heavy metals Anhydrous ammonia may be used with an alkali metal (typically lithium or sodium) in the “Nazi Method” to convert ephedrine to methamphetamine. In clandestine drug labs, anhydrous ammonia is often stored in insulated coolers, small propane fuel cylinders and five-gallon propane tanks.
- **Hydriodic Acid** (hydrogen iodide): Hydriodic acid is a corrosive acid, which is colorless when freshly prepared. With light exposure, it turns yellow to brown and vapors are irritating to the respiratory system, skin and eyes. The acid can dissolve flesh and the liquid causes severe burns to eyes and skin. If ingested, it may cause severe internal irritation and damage. Hydriodic acid is one of the main reducing agents in methamphetamine synthesis.
- **Hydrogen Chloride** (aqueous solution - muriatic acid, hydrochloric acid): Anhydrous hydrogen chloride is a colorless to slightly yellow gas at room temperature. Hydrochloric acid is a colorless or slightly yellow fuming liquid. Hydrogen chloride and hydrochloric acid are highly corrosive. Inhalation of hydrogen chloride vapor or hydrochloric acid fumes may cause irritation a burning of the eyes, nose, throat, and larynx, shortness of breath, labored breathing, chest pain and

upper respiratory tract edema. Hydrogen Chloride is used to produce the hydrochloride salt of methamphetamine and may be produced by combining sulfuric acid with sodium chloride.

- **Phosphine** (hydrogen phosphide): Phosphine is a colorless gas at room temperature that contains a fishy or garlic-type odor generally associated with the presence of diphosphine and other impurities. Toxicity from this gas is usually via inhalation. Exposure may result in headache, fatigue, weakness, thirst, chest pain or pressure, shortness of breath, tremors, dizziness, gastrointestinal upset, convulsions or coma. Phosphine is a by-product generated during the synthesis of hydiodic acid from iodine and red phosphorus. It is produced when red phosphorus contacts caustics and/or acids, especially in the presence of metal.
- **Sodium Hydroxide** (caustic soda, soda lye): Sodium hydroxide is a solid, appearing like white granules, chips or pellets. Sodium hydroxide is strongly corrosive and a powerful irritant by all routes of exposure. It can cause severe burns and permanent damage to any tissue it contacts. Acute effects, resulting from short term exposure to high concentration of sodium hydroxide, include irritation and burning of the skin, eyes, nose, windpipe and lungs. Sodium Hydroxide is used to make sodium, an alkali metal that functions as a catalyst in the anhydrous ammonia/alkali metal method (Nazi Method) that reduces ephedrine and/or pseudoephedrine to methamphetamine. The compound may also be used in the hydriodic/red phosphorus method to raises the pH of methamphetamine solutions that have and acid pH.

Inorganic Substances

- **Iodine**(iodine crystals): Laboratory grade elemental iodine consists of heavy grayish-black to purple crystals that have a metallic luster. Laboratory grade iodine may also appear as a brown powder. At room temperature, iodine crystals readily volatilize to a violet gas. Iodine is an oxidizer and highly reactive. The direct acute toxicity of iodine is due to irritant properties. In excessive amounts elemental iodine is corrosive and irritates tissue via all routes of exposure. Elemental iodine is combined with red phosphorus to make hydriodic acid, an essential ingredient in the “HI/Red P” method for converting ephedrine to methamphetamine.
- **Red Phosphorous:** Red phosphorous is a flammable solid and is readily combustible. Its appearance can be opaque, amorphous, crystalline, granular or powder and may be orange-red, dark red, violet/dark red-purple or reddish brown. Red phosphorous in pure form does not usually represent a significant health hazard. But, in situations where it is contaminated with white phosphorous and potentially other compounds, exposure may cause irritation of the skin, eyes, lungs and gastrointestinal tract. Red phosphorous is combined with elemental iodine to produce hydriodic acid, which is used to reduce ephedrine or pseudoephedrine to methamphetamine.
- Lithium (lithium metal): Lithium is a soft, silvery-white metal that becomes yellowish upon exposure to moist air. Powdered lithium may react explosively with water. Nausea, abdominal pain, vomiting, diarrhea, sedation and mild tremors characterize mild cases of acute toxicity following ingestion of lithium. Elemental lithium is used as a catalyst in the “Nazi method” to synthesize methamphetamine from ephedrine.

Precursors

- **Phenyl-2-propanone** (phenylacetone, methyl benzyl ketone): Phenyl-2-propanone is a clear, moderately viscous liquid that is irritating to the skin and eyes. Prior to 1980, P2P was the most widely used precursor in the synthesis of amphetamine/methamphetamine.
- **Pseudoephedrine:**Pseudoephedrine is a white powder often marketed as red, white or blue tablets for pharmaceutical uses. Pseudoephedrine is used to relieve the symptoms of nasal, sinus, and Eustachian tube congestion due to the common cold, hay fever or other allergies. Symptoms of acute exposure include increased blood pressure, irregular heartbeat, shortness of breath, increased breathing rate, or troubled breathing rate, unusual nervousness, restlessness or excitement or convulsions. Pseudoephedrine is a precursor in the synthesis of methamphetamine. In clandestine drug labs, the tablets may be ground up and partially dissolved in water or alcohol. The resulting sludge is filtered using coffee filters or other makeshift devices to proceed with the manufacturing of methamphetamine.
- **Ephedrine:** Ephedrine appears as a waxy solid or as white to colorless granules, powders or crystals often marketed as red, white or blue tablets for pharmaceutical uses. Symptoms of high dose, acute ephedrine exposure include severe outbreaks of sweating, enlarged pupils, spasms, and elevated body temperature with heart failure and asphyxiation leading to death. Ephedrine, which is either derived from the ephedra plant or made synthetically, is the most important ingredient in the ephedrine-reduction method because it is just one step away from the final product. Ephedrine is chemically identical to methamphetamine already except the presence of one extra atom of oxygen, which is removed by combining ephedrine with hydriodic acid. Ephedrine is a precursor in the synthesis of methamphetamine. In clandestine drug labs, the tablets may be ground up and partially dissolved in water or alcohol. The resulting sludge is filtered using coffee filters or other makeshift devices to proceed with the manufacturing of methamphetamine.

Meth Production

As explained on the previous pages, meth is not natural. Most meth labs are found in properties, garages, storage units, motels, vehicles, trailers, office buildings, etc. Below is a simplified explanation on how meth is manufactured. **This section is not intended to teach you how to produce meth but to explain how a property can become contaminated.**

1. Tablets of Ephedrine or Pseudoephedrine are ground down into a powder usually in a blender.
2. Mix with Solvents: Ephedrine or Pseudoephedrine adheres to the solvent separating it from white tablet binder.
3. Filtering Binder: The binder is removed with a filter (coffee) The remaining solvent is cooked away on low heat leaving pure Pseudoephedrine.
4. Add Red Phosphorous and Acid: Mixed on a low heat, the pseudoephedrine changed to methamphetamine but is too acidic.
5. Filter out Sludge: Red Phosphorous sludge is filtered out using a cloth over container and poured into another container.
6. Add Caustic Soda: Gives meth a solid base. This process causes extreme heat and gases that are flammable. Ice is usually used in this process to bring down heat.
7. Add Freon Separate Liquid Meth: The meth sticks to the freon and settles at the bottom of the container where it is drained out through a spigot or a punch hole in the container.
8. Bubble Hydrogen Chloride: The gas turns the meth into a salt lowering the acidity level. The meth is now consumable but is still wet. Can be injected but causes all sorts of problems.
9. The finished meth is poured on a sheet in order to dry.
10. The dried meth is in a crystal form and is ready for cutting, grinding, selling, and usage.

Most humans would not ingest any of the harmful chemicals used in the production of methamphetamine, yet users will inject these chemicals into their bodies as well as inhale the harmful fumes.

Section 4: Dangers of Meth, Exposure and Usage

According to the Harvard Medical School Family Health Guide, methamphetamine has adverse effects that range from mild to disastrous. Common psychiatric symptoms are:

- Insomnia
- Irritability
- Aggressive behavior
- Intellectual deficits
- Anxiety
- Depression
- Hallucinations
- Delusions
- Despair and Suicidal thinking after effects wear off

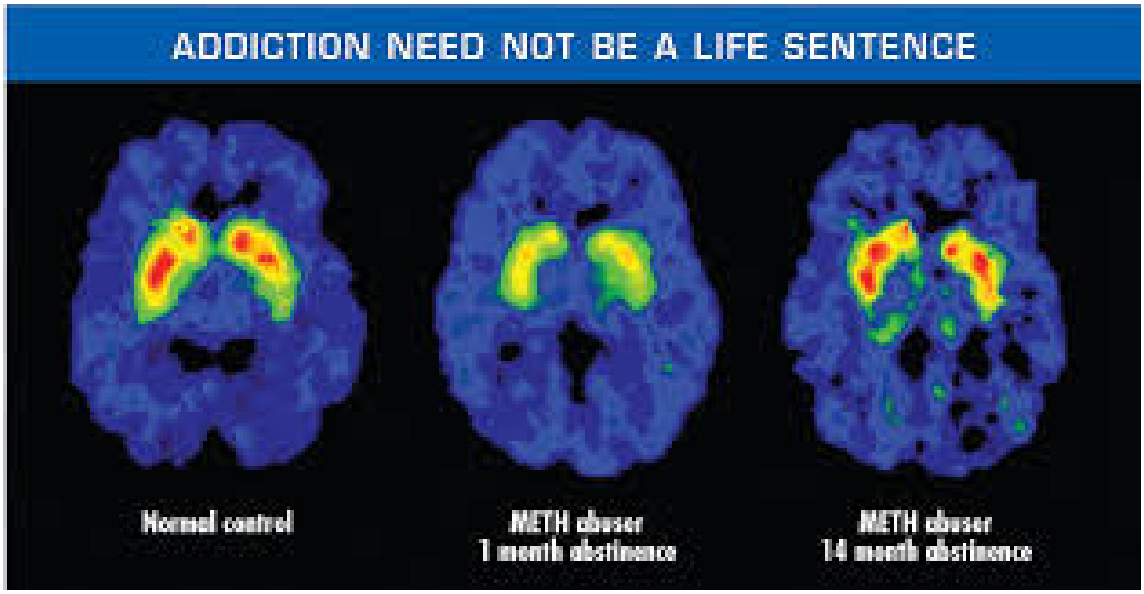
- Physical Effects

Chronic users become disorganized and unable to cope with everyday problems.

During intoxication, the body temperature rises, sometimes resulting in convulsions. Methamphetamine can damage blood vessels in the brain, causing strokes. High fevers or collapse of the circulatory system can cause death.

Methamphetamine also harms important nerve pathways, perhaps irreversibly. The drug delivers euphoria by releasing the neurotransmitter dopamine in the brain's reward system. Overstimulation eventually damages or destroys the nerve cells in these circuits, impairing dopamine transport and reducing the efficiency of dopamine receptors; the reward system is, in a sense, worn out.

The brain recovers somewhat after months of abstinence, but problems often remain. Former methamphetamine addicts may suffer from chronic apathy and anhedonia (inability to experience pleasure) for years.



According to the California Governor's Office of Criminal Justice Planning, residents (**especially children**) living at a meth contaminated property is exposed to immediate dangers and to the ongoing effects of chemical contamination. In addition, the occupants may be subjected to fires and explosions, abuse and neglect, a hazardous lifestyle (including the presence of firearms), social problems, and other risks.

Case Study

Former Clandestine Drug Laboratories - Key Issues and Considerations in NSW

Jackie Wright

Flinders University

Director: Environmental Risk Sciences Pty Ltd

- May 2013 – police seize equipment from property from shed on property and notified council of the presence of suspected clan lab at property
- Council issued notices to owner to remediate – owner was offender and did nothing. Council did not follow-up
- August 2013 - Owner sold home
- During sale of property checks were made (conveyancing and mortgagee) and no outstanding notices were identified
- October 2013 – family moved into home
- May 2014 – Council contacted family and informed them there was an old clan lab at their property
- Without testing Council issued a letter stating, "*due to the limited nature of illegal activity at the property it seems unlikely that any health risks will arise from continuing use of the land*".
- Council did preliminary testing in the shed only – found contamination and said they need to do more tests – Council again stated all was safe but keep the kids out of the shed
- October 2014 – additional testing done which confirmed contamination in shed but also found contamination in home well above residential criteria

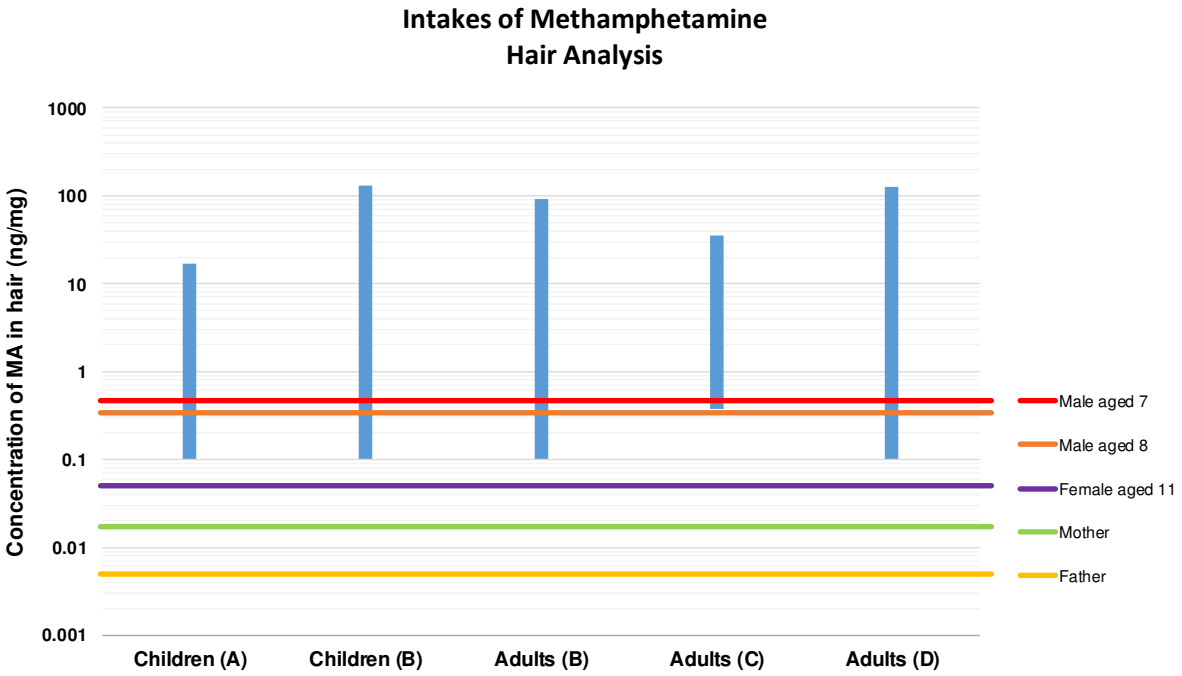
Contamination levels

External Sheds		Inside Residence	
South wall shed 2 -	35.9ug	Laundry wall -	23.1ug
North wall shed 2 -	64.7ug	Kitchen/ Dining wall	13.7ug
West wall shed 3 -	0.59ug	Hallway Wall	26.0ug
Living Room Wall	11.7ug		

- March 2015 – Family moved out of the home leaving all possessions behinds as these are deemed contaminated
- May 2016 – Council has just commenced collecting additional data to inform remediation

Effects

- Living at the home caused their youngest child to develop respiratory problems (asthma-like symptoms) and behavioral changes (similar to inattentive ADHD)
- Other family members also affected but to a lesser extent
- Respiratory effects stopped once moved out of the home
- Behavioral changes have been resolving now out of the home
- But there are other family stressors – the behavior of the Council and slow action to resolve problem



A – Drug exposed children (methamphetamine drug laboratories and homes with users) from California(Castaneto et al 2013);

B – Drug exposed children from clandestine drug laboratories and adult drug users in New Zealand (Bassindale 2012);

C – Range reported in long-term adult drug users (based on doses of 0.25 to 4 g/day of MA)(Han et al 2011);

D – Range reported in adult workplace drug use testing (Tsanaclis and wicks 2007).

It is noted that for the published studies included in this figure the reporting limit for MA in hair was 0.1 ng/mg.

How Children Ingest Meth/Symptoms

*How Do Children Ingest Meth?

- 80-97% of total exposure for a child results from dermal contact with “soft” surfaces such as carpet and hard surfaces such as linoleum.
- Ingestion (hand-to-mouth activity), accounts for just 3% of total exposure.
- The efficiency of dermal absorption of methamphetamine is 57%

*Acute Toxicity Associated with Meth in Toddlers and Children

- Altered Mental State
    - Agitation
    - Hallucinations
    - Confusion
- Tachycardia
- Hypertension
- Vomiting
- Uncontrolled Crying
- Seizures
- Rapid Eye Movements

*Chronic Effects of Meth Exposure in Children

These can be from lack of appropriate stimulation / interaction and toxic insult to specific areas of the brain.

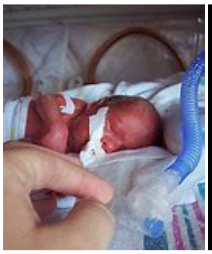
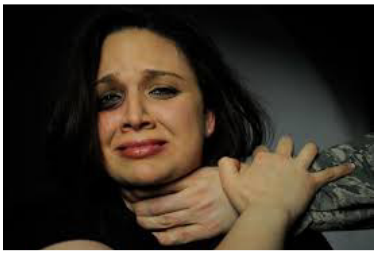
- Physical
    - Failure to Thrive/Poor Growth
- Developmental Delays
    - Speech Delays
    - Sensory Integration Issues
    - Cognitive Delays (Learning Problems
- Behavioral Problems
    - Tantrums/Aggression
    - Attention Problems (ADHD)
    - Social Maladjustment

*Methamphetamine exposure in Children: The Price is High by Kerri Weeks, MD University of Kansas School of Medicine

- **Social Problems.** Children developing within the chaos, neglect, and violence of a clandestine methamphetamine laboratory or user site experience

    - Stress and trauma that significantly affect their overall safety and health, including their behavioral, emotional, and cognitive functioning.
    - They often exhibit low self-esteem, a sense of shame, and poor social skills. Consequences may include emotional and mental health problems, delinquency, teen pregnancy, school absenteeism and failure, isolation, and poor peer relations.
    - Without effective intervention, many will imitate their parents and caretakers when they themselves become adults, engaging in criminal or violent behavior, inappropriate conduct, and alcohol and drug abuse.
    - Many children who live in drug homes exhibit an attachment disorder, which occurs when parents or caretakers fail to respond to an infant's basic needs or do so unpredictably.
    - Children typically do not cry or show emotion when separated from their parents. Symptoms of attachment disorder include the inability to trust, form relationships, and adapt. Attachment disorders place children at greater risk for later criminal behavior and substance abuse. To minimize long-term damage, children from these environments require mental health interventions and stable, nurturing caregivers.

- **Abuse and Neglect.** Children living at methamphetamine laboratories or user sites are at increased risk for severe neglect and are more likely to be physically and sexually abused by members of their own family and known individuals at the site.

- **Hazardous lifestyle**. Hazardous living conditions and filth are common in meth contaminated homes.
    - Explosives
    - Booby Traps (including trip wires, hidden sticks with nails or spikes, and light switches or electrical appliances wired to explosive devices)
    - Loaded Guns and Other Weapons.
    - Code violations and substandard housing structures:
        - Electrical Hazards (Exposed Wiring)
        - No Running Water
        - Backed up Plumbing

        - Infestations
        - Structural Issues
        - Lack of Heating / Air Conditioning
    - Poor Ventilation
    - Hazardous Waste Products
    - Used Needles, Condoms, and Razor Blades
    - Blood: hepatitis A and C, E. coli, syphilis, and HIV
    - Garbage / Filth
    - Animal and Human Feces
    - Drug Paraphernalia

- **Chemical contamination**. The contamination created by meth use, cooking meth, toxic compounds and byproducts resulting from its manufacture produce toxic fumes, vapors, and spills.

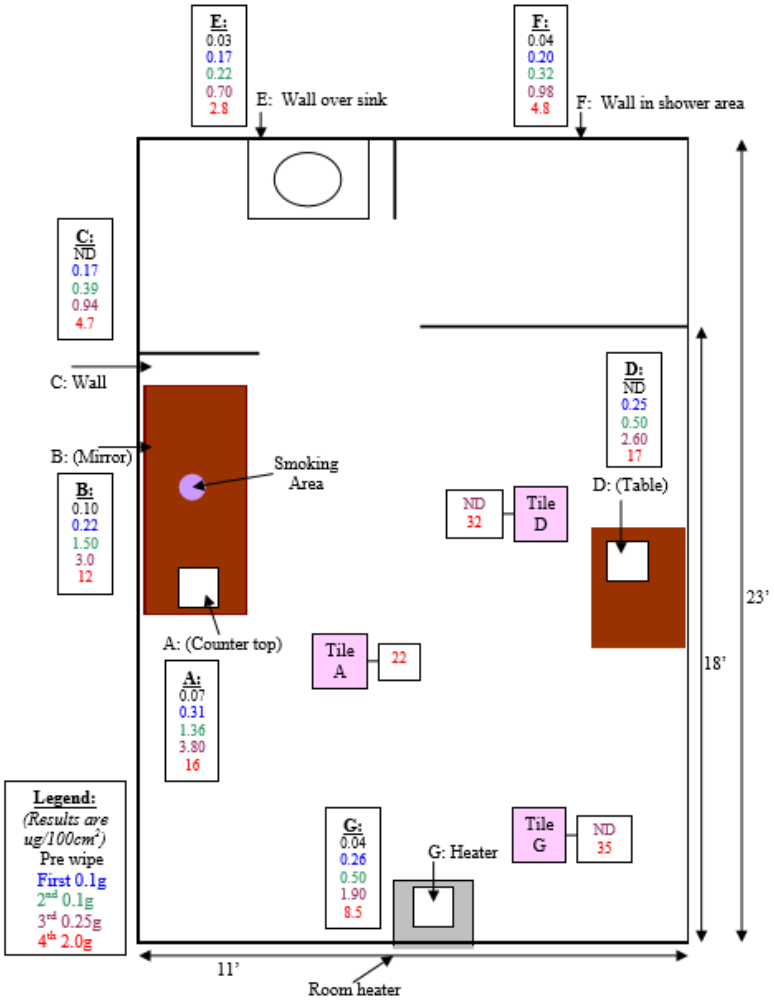
- **Fires and explosions.** Approximately 15 percent of meth labs are discovered as a result of a fire or explosion.

Section 5: Meth Contamination by Smoking/Use

Meth Smoking Experiment Conducted by National Jewish Medical and Research Center

https//www.env.nm.gov/cdli/docs/Meth_smoking_experiment.pdf

Figure 1. Location of the smoke generating area and the sampling location in the motel room.



Discussion

Based on our experiment, it is likely that persons smoking methamphetamine within a structure cause airborne methamphetamine to be released into the environment resulting in a general contamination of the environment. This is not a surprise since we have observed methamphetamine on surfaces in residences where "cooking" of the methamphetamine has not been conducted. In those cases, in which we have been involved, residences where methamphetamine has only been smoked have much lower residuals of the drug on environmental surfaces than do residences where cooking has been conducted. A single "smoke" with the smoker inhaling and capturing 90% of the methamphetamine may result in methamphetamine contamination levels in the range of 0.02 ug/100 cm^2. As more smoking is conducted, levels may exceed 30 ug/100 cm^2. It may, however, take a significant number of methamphetamine smokes before these high levels are reached.

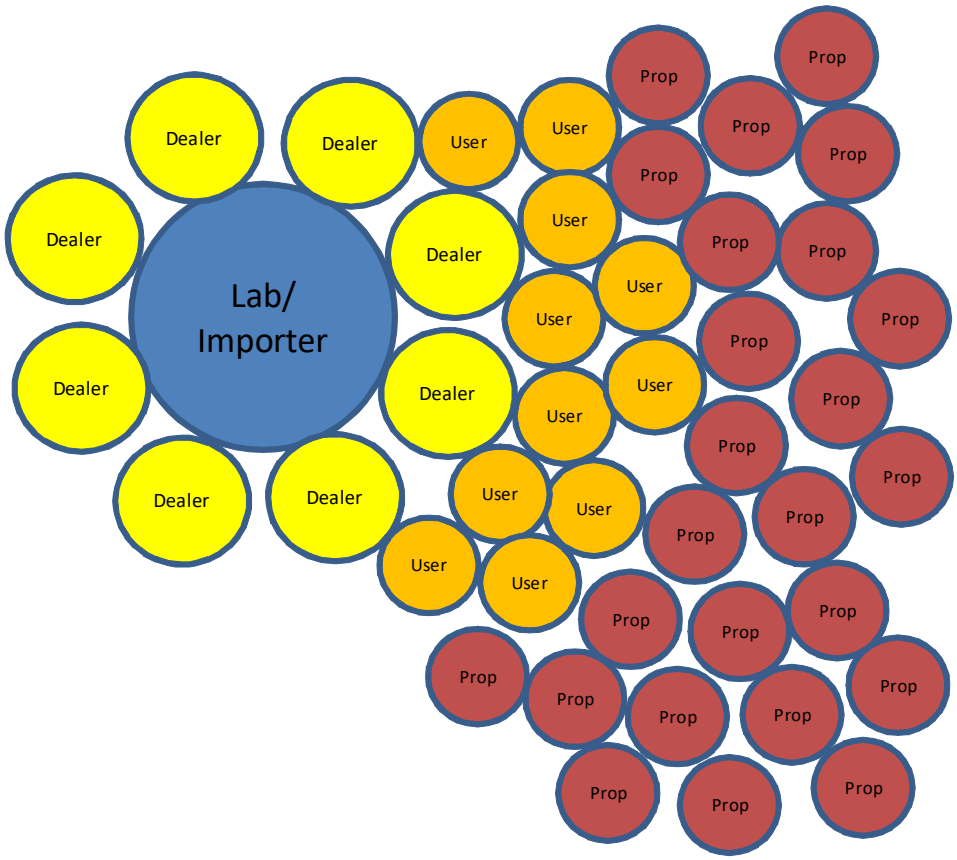
Levels observed during "smoking" are in contrast to those levels observed during cooking where levels for a single cook can result in airborne levels of methamphetamine exceeding 5000 ug/$m^3$and wipe sample levels exceeding 860 ug/100 cm^2near the cook. In addition to the lower levels of methamphetamine due to "smoking" it should also be noted that the use of the other hazardous chemicals associated with cooking are not present. With respect to expected medical concerns, it may be unreasonable to compare methamphetamine surface contamination levels in areas where only smoking has occurred, to levels in areas where a cook has been conducted since the other chemicals associated with the cook are not present in the smoking-only area. The potential for children or others to be contaminated in a home where methamphetamine has been smoked is, however, highly likely. The potential effects of this exposure to children present within these residences are unknown currently.

Conclusions

Based on the information that we have obtained during this study; the following conclusions can be made:

- The smoking of methamphetamine in a structure results in airborne methamphetamine being released into the environment.
- The airborne levels will depend upon how much methamphetamine is smoked and the efficiency of the smoker's technique in capturing the drug and depositing it in the lungs.
- An average smoke involving approximately 100 mg of methamphetamine will likely result in airborne methamphetamine levels ranging from 37 ug/$m^3$to 131 ug/m^3in the air. These airborne levels will likely result in average surface deposition levels in the vicinity of the smoke that approach 0.02 ug/100 cm^2. As the number of smokes increase or the total amount of methamphetamine smoked increases, the levels will increase.
- The levels of methamphetamine found on surfaces within a house where it has only been smoked and not manufactured, will likely be much lower than in a residence where it has been manufactured.
- If methamphetamine has been smoked in a residence, it is likely that children present within that structure will be exposed to airborne methamphetamine during the smoke and to surface methamphetamine after the smoke.

- **Buildings:** The problem with meth users is they move from property to property. They continue to contaminate each property, vehicle, hotel room and apartment they occupy.



There are literally millions of properties that are contaminated. Most property owners, renters, residences are unaware of the contamination and the long-term effects of the contaminated properties.

Section 6: Site Safety

General Site Health and Safety

The Decontamination Contractor is usually the second responder meaning the police or health departments have already been into the property prior to the Decontamination Contractor entering the site. Upon entering you may or may not know if this home is a **User Site** or a **Meth Lab**. It is often the preliminary testing that will help indicate the type of site the Decontamination Contractor will be remediating if a police report is unavailable or inconclusive.

Products used in the manufacture of methamphetamine can be Toxic, Flammable, Explosive or Ignitable.

Never Disturb Containers with Unknown Substances

In addition, there is potential risk of exposure to infectious wastes (including human feces) in an un-kept environment and disease in the event of skin puncture by drug paraphernalia (including sharps/needles).

Have Sharps Container on Site

Many chemicals can enter the body through Inhalation, Ingestion, Injection or skin or eye Absorption. Risk of injury or toxicity from chemical exposure is present, depending on the toxic properties of the chemicals, quantity and form, concentration, duration and route of exposure.

There is likely a greater risk of chemical exposure at a site where a laboratory is actively producing drugs than at a site where drugs were formerly processed. The Decontamination Contractor should be knowledgeable of the current environment to the extent possible prior to entering the property and performing the preliminary assessment and/or decontamination. Health and safety procedures at a clandestine drug laboratory are important for several reasons:

- Prevents work related injuries, illnesses and property damage
- Prevents exposure to the public to harmful substances
- Increases overall productivity and maintains project schedules

Cleanup personnel must establish appropriate personal protective equipment (PPE) for the site conditions before entering the property and always practice basic hygiene and decontamination procedures. Eating, drinking and smoking at the property is discouraged to prevent potential exposure.

Maintaining a safe work environment is essential, whether the tasks be preliminary assessment, decontamination or sampling. All tasks need to be evaluated prior to performing them to assess the degree of potential hazard and possible routes of exposure. This hazard assessment should form the basis of the health and safety plan.

Health and Safety Requirements

The following sections outline a general approach that may be considered when developing health and safety requirements at a clan lab. The HAZWOPER standard does not provide specific training relative to clan labs so the requirements from the standard must be interpreted and applied using professional judgment. **Ultimately, it is the responsibility of the Decontamination Contractor to assess the HAZWOPER standard with respect to the current environment and establish the necessary PPE and other health and safety requirements for the job.**

Hazwoper Training

Many states require that the Decontamination Contractor have a 24 or 40-hourHazwoper course prior to starting any meth decontamination course. The basics of the Hazwoper are.

- Medical Surveillance
- Hazard Assessment
- Personal Protective Equipment
- Site Control
- Site Characterization
- Air Quality Monitoring
- Hazard Communication
- Decontamination
- Lighting
- Drum Handling
- Emergency Response Procedures

Many of the challenges you will find in the meth contaminated properties are covered in the Hazwoper Training. *Refer to your own state regulations for minimum requirements regarding Hazwoper Training.*

Health and Safety Plan

- Medical Exam- Each person should be capable of physical work while wearing respirator
- Respirator Fit Test
- Tetanus Shot
- Hepatitis Vaccine
- Regular Health & Safety Meetings

Safe Work Practices

- Make a list of Standing Orders. This list is used on every job every time such as:
  -No smoking or eating inside contaminated area
  -Must wear Respirator, gloves and suit while performing any duties on work site

-"Lock Out Tag Out" any power source before performing work on the HVAC system or other electrical item

- Make a list of Site Specific Hazards and review them with the team prior to beginning work like:
  -Loose floor boards
  -Unsafe roof
- Know the signs and how to prevent heat stress and heat stroke
- **NEVER PUT YOUR HAND WHERE YOU CAN NOT SEE**
- Have a sharps container on site for needle disposal
- Have Naloxone on hand for opioid overdose
- Know where the closest emergency center to the job site
- Know the address of the property they are working on if you need to call 911
- First Responder/Police Numbers

Minimum PPE for Site Assessment

- Nitrile gloves
- Shoe Covers
- Dust mask or respirator
- Disposable suit

Minimum PPE for Technicians

- Nitrile Gloves:
  Thicker, medical latex gloves are recommended. Double gloving using puncture resistant gloves should be worn during debris removal then discarded.
- Full and Half Face Mask Respirators with Acid/Gas/Vapor Cartridges:
  Some activities will not require a full-face mask for decontamination and some activities such as applying chemicals will call for the full face mask respirator. Have masks fit tested by a local professional.
- Disposable Coveralls:
  It is recommended to change out coveralls between decontamination activities if they become excessively soiled or torn.
- Work Shoes/Boots:
  Puncture and water-resistant boots or shoes should be worn at all time.

The lists in this section are not all-inclusive and should be adjusted for site specific conditions.




Section 7: Site Assessment

The site assessment is divided into three general tasks:

- Information Gathering
- Pre-testing
- Site visit, consisting of a visual inspection of the property

Information Gathering

Prior to performing the preliminary assessment, the Decontamination Contractor should coordinate with local, state and federal law enforcement officials as well as the local health department to ensure the criminal investigation is complete and the property may be safely entered.

Contact the police department, Drug Enforcement Agency, narcotics task force, fire department, HAZMAT team, local health department or other first responders who were active at the site.

Request and review copies of any report relative to the clan lab as well as any material transport manifests (since they will generally list categories like solvents, corrosives, etc.) generated during the gross cleanup. The reports may help define areas highly suggestive of contamination and provide information relative to:

- Methods of cooking,
- Processing or cooking areas,
- Disposal areas,
- Hazardous material storage areas.

Pre-Testing

The only sure way to know if a house is contaminated is to test**.**

Pre-testing may have been conducted prior to your involvement. This should be researched as part of the information gathering step of the site assessment. Health departments or the owner may have copies.

- Depending on local and state laws, pre-testing may be completed by the Decontamination Contractor or may need to be sampled by a third party CIH (Certified Industrial Hygienist). Consult your local regulations.

- Based on the findings of the pre-testing, highly contaminated areas can be delineated. Evaluating items for removal or decontamination will be clearer.

Visual Inspection

Note: Please refer to your state requirements before entering meth contaminated properties.
After the information has been gathered and procedures for safe entry have been set a visual inspection of the property can be scheduled.

The purpose of the visual inspection is to look for:

- Securing issues:
  Keeping people out of the property including home owners, contractors, past tenants, squatters and others is very important during the decontamination. Properties can become re-contaminated overnight.

- Safety/Shoring Issues:
  Assess property for unsafe floors, ceilings, roofs, and walls. Create a plan for temporary shoring to ensure employee safety during decontamination.

- Inspect all areas of the property:
  Document all areas thought to be highly suggestive of contamination. All rooms, attics, crawl spaces as well as garages, shed(s), other outbuildings and the surrounding lot should be searched for signs of meth production, disposal and use.

- Determine if the property contains a septic system:
  If a septic systems system is found clear documentation will be required and further investigation will be needed.

- Look for burn piles in the yard:
  Meth producers will try to dispose of chemicals and garbage by burning rather than placing the debris in the garbage can.

- Evaluate heating and cooling systems*:*
  Verify where the ducts flow. Does the system service multiple units? Are there multiple furnaces? Where are the air intakes? Is the heat wet or dry? Are the ducts insulated or metal?

- Determine what can be decontaminated and what will be removed.
  List porous items that will need to be discarded and non-porous items to be decontaminated. Look for any signs of staining on ceilings, walls and floors that may require further testing or removal.

- Photo documentation:
  Picture all rooms, contents, areas highly suggestive of contamination, and all damages.

- Floor Plan:
  Measure and draw floor plan to be submitted with the work plan and used for confirmation sampling locations for the final report.

Signs to Look For

- Glass cookware containing chemical residue
- Bottle or containers connected with rubber tubing
- Filters, pillowcases or bed sheets stained red or containing a white powdery residue
- Stained carpet
- Glass pipes and syringes
- Burn marks on walls, ceilings (explosions)
- Missing or tampered with smoke detectors
- Burn piles in yard
- Staining on walls and floors (multi-colored)
- Closed circuit televisions or security systems
- Extreme amounts of debris (hoarding appearance)
- Writing on walls
- Missing light bulbs








Section 8: Work Plan

Identifying Information of the Property

This section should provide the street address and mailing address of the contaminated property, owner of record, legal description, county tax or parcel identification number and vehicle identification number, if the property is a mobile home, trailer, boat or other mobile source.

Property Identification Information

Street Address:	1234 E Main St.				
City:	Anywhere	State:	State	Zip:	11111
Parcel ID Number:	00-00-000-000-0000				
VIN (if applicable):	NA				

Owner Identification Information

Owner of Record:	John Doe				
Owner of Record's Representative:	John Doe				
Physical Address:	1234 E Main St.				
City:	Anywhere	State:	State	Zip:	11111
Mailing Address:	P.O. Box 79				
City:	Anywhere	State:	State	Zip:	11111
Phone Number 1:	888-888-8888	Phone Number 2:		888-999-9999	

Decontamination Crew Information

This section should include the names of the individuals performing the decontamination and the current certification and certification numbers.

Company Name:	AAA Decontamination				
Address:	P.O. Box 999				
City:	Anywhere	State:	State	Zip:	11111
Phone Number 1:	888-888-8888	Phone Number 2:		888-999-9999	
Business License Number:	XXXXX	Issuing Agency:		Anywhere USA	
Certification Number:	DS XXXX-XX				

Property Description

Describe the nature of the property, type of structures present. Information regarding areas where illegal drug processing or storage occurred, stained materials and surfaces were observed, potential chemical disposal occurred, and illegal drugs were stored are necessary to ensure the appropriate areas are decontaminated. It is also necessary to identify the ventilation system and indicate if it serves other units.

Chemicals and Contamination

Describe all locations where illegal drug manufacturing was performed, hazardous materials were stored, disposed, or suspected of being used to manufacture illegal drugs, stained materials, and surfaces were observed, visible, or olfactory signs indicative of the presence of contamination and areas linked to processing, disposal, and storage areas by way of the ventilation or plumbing systems (include septic systems and possible outdoor disposal):
The property is a one level brick construction single family home. The home was built in 1891 and is approximately 1336 square feet, it has a total of seven rooms including two bedrooms, one bathroom, living room, laundry room, kitchen, and storage room. Property is vacant with minimal debris, however no visual indicators were found to determine that this was a clandestine meth lab. Housing Authority completed a methamphetamine composite sample which showed levels above the 1.0 micrograms deemed acceptable by the state and local health department standards. See attached test results.

Contaminants of Interest

This section should provide a description of contaminants that may be present based on the cooking process. The information required in this section may be obtained from the Preliminary Assessment of the property or relevant law enforcement reports. If a CIH completed the preliminary assessment and testing this information may be found in their report.

List chemicals and equipment present at this site that indicates which method of methamphetamine manufacture was employed:
Property is vacant with minimal debris, no chemicals or equipment were found. No police report or file was found during pre-assessment investigation.

Health and Safety

The necessary level of personal protection equipment should be worn during decontamination. This must be determined by the Decontamination Contractor performing the cleanup. The work plan should outline health and safety procedures to prevent worker exposure.

Personal Protective Equipment (PPE)

Respiratory Protection:
All personnel will wear full-face respirators during demolition and decontamination.
Skin Protection:
All personnel will wear full body coverall, shoe covers, and nitrile gloves during demolition and decontamination processes.
Eye Protection:
All personnel will wear full-face respirators to protect eyes and face during demolition and decontamination processes.
The health and safety procedures that will be followed while performing the decontamination of the property:
Complete a hazards assessment prior to decontamination. Use applicable PPE as stated above during demolition and decontamination processes. All applicable information contained in HASP under 29 CFR 1910.120.

Shoring Plan

A shoring plan may be necessary if it was determined during the preliminary assessment that shoring and stabilization of the structure is appropriate prior to safely entering the property.

Decontamination Activities

A detailed summary of the proposed activities must be included in the work plan. The decontamination strategy should be based on the findings and conclusions of the Preliminary Assessment.

- Note any and all surfaces, materials or articles to be removed from the property.
- Note any and all surfaces, materials and articles to be decontaminated on-site.
- Discuss all procedures to be employed to remove and/or clean contaminated surfaces.
- The discussion should include both areas highly suggestive of contamination and other portions of the property considered not highly suggestive of contamination.

- Note all locations where decontamination activities will be performed. Discuss other sampling that may be employed to assist with decontamination.

Decontamination

List all surfaces, materials, or articles to be removed (i.e. carpet, carpet padding, upholstered furniture, etc.):
All carpet, carpet pad, draperies, blinds, and debris or other porous materials will be removed and disposed of according to regulations.
List all surfaces, materials, or articles to be decontaminated and retained on site:
All interior walls, ceiling, remaining flooring, fixtures, cabinets, countertops, appliances, etc. will be decontaminatied. HVAC system will remain and be decontaminated.
Summarize all decontamination and removal procedures to be employed for all areas of the site.
After donning proper PPE, all interior porous materials will be removed as indicated. All debris will be disposed of according to state and local health department regulations. Windows will be opened during debris removal to air out property. All hard/non-porous surfaces will be HEPA vacuumed to remove remaining particulates. The furance(s) and duct work will be HEPA vacuumed and cleaned. A decontamination solution will be applied, scrubbed at least three times using new decontamination solution and rinsed using clean water. Dwell time between applications a minimum of 4 hours.
List all locations on this site where decontamination will occur:
Entire property interior including HVAC system .
Describe all containment and negative pressure enclosure plans:
Containment will be used on the HVAC systems once it has been sufficiently decontaminated, to avoid cross contamination during subsequent decontamination of structure.

Confirmation Sampling

This section should include a discussion of the post decontamination confirmation sampling, detailing sample locations and describing the techniques employed to collect the samples. Provide the name and company of the person conducting the sampling. (Check your local laws to determine if a CIH or other professional is required for post testing)

Confirmation Sampling

List all proposed post-decontamination confirmation sampling locations:	
1 - Main Flr Living Room	6 - Main Flr Northeast Bedroom
2 - Main Flr Kitchen	7 - Main Flr Storage Room
3 - Main Flr Bathroom	8 - Furnace/HVAC
4 - Main Flr Laundry Room	9 - Appliances
5 - Main Flr Southeast Bedroom	10 - Control
List of names of individuals who will gather samples:	
Mark Shepard or Kameron Thorne	

Name the analytical laboratory expected to perform testing on samples:					
Company Name:	ALS Environmental				
Address:	960 W LeVoy Dr.				
City:	Salt Lake City	State:	Utah	Zip:	84123
Phone Number 1:	801-266-7700	Phone Number 2:		801-835-9610	

- **Quality Assurance** – Discuss the number and type of field blanks and/or field duplicates that will be collected to document appropriate field sampling. The plan should outline procedures to ensure field and laboratory quality assurance are maintained. If confirmation sampling is being conducted by a CIH then they will determine the number of field blanks appropriate and you will not need to include this in your work plan.
- **Laboratory** – Provide the name of the laboratory, the analytical method proposed and a copy of the laboratory's standard operating procedures relating to the method. If confirmation sampling is being conducted by a CIH then the laboratory information will be included in their report and not needed in your work plan.

Waste Disposal

The work plan should outline the disposal procedures and the anticipated disposal facility.

Waste Disposal

Name the anticipated disposal facility:
Salt Lake County Landfill

Schedule

This section should include a schedule outlining each task and time frame to complete the proposed decontamination.

Estimate the timeline of decontamination process:
Submit work plan to Salt Lake Valley Health Department and obtain permit on day one and two, complete porous material removal and begin decontamination on day three. Decontaminate HVAC system and set containment on day four, proceed with decontamination of property interior on day five/six/seven. Complete decontamination and take confirmation sampling and submit to analytical laboratory on day eight. Obtain test results from analytical laboratory and submit final report seven to eight business days after test results submitted.

Figures and Attachments

Include the appropriate figures and attachments to help convey the proposed decontamination activities. Figures may include a site sketch, areas to be decontaminated and proposed confirmation sample locations. If possible, include copies of the law enforcement report(s) that provide information regarding the cooking method(s), chemicals present, manufacturing areas, chemical storage areas and known areas of contamination. Remember, some of these attachments may be included in the CIH's report and unnecessary for your work plan.

See Attached

Applicable Subcontractor Training and Certification:
Certificate of completion of OSHA 29CFR 1910.120 Hazardous Waste Operations and Emergency Response 40 Hour Training Course and applicable Annual 8 Hour Refreshers, Certificate of completion of Decontamination Specialist for the Department of Environmental Quality Division of Environmental Response and Remediation
Photographs of the property labeled with the date, time, property address, name of photographer, and location of photograph (i.e. bedroom walls, bathroom floor, etc.)
A reasonably scaled site map of the contaminated property, including:
Floor plan of contaminated property Local drinking wells (not applicable) Nearby Streams (not applicable) Location of contamination - entire property interior, see floor plan.

Photographs

Include sufficient photographs to document areas of contamination, surfaces/materials that need to be decontaminated and locations where samples will be collected. Other photos could include; front of house, address placard, each room, air handler, appliances, attics, and crawl spaces. These photos are used for documenting current condition of the property and could be used for insurance claims. All photos should be of high quality with the date and time.

6-Mar-14 14:05
630 E Main St, Salt Lake City UT 12345
Mark Shepard, photographer

6-Mar-14 14:05
630 E Main St, Salt Lake City UT 12345
Mark Shepard, photographer
Property Address

6-Mar-14 14:05
630 E Main St, Salt Lake City UT 12345
Mark Shepard, photographer
Main Flr Living Room

6-Mar-14 14:05
630 E Main St, Salt Lake City UT 12345
Mark Shepard, photographer
Main Flr Kitchen

Section 9: DECONTAMINATION

The Decontamination Contractor should comply with all applicable federal, state and local rules, ordinances and regulations while decontaminating the property. For decontamination procedures that require another certification or license (such as a general contractors license to perform demolition activities for asbestos, mold, etc), the Decontamination Contractor performing the activities subject to the additional licensing/certification, must obtain the additional license/certificate on their own.

Decontamination Methods

There are several methods currently in use for meth decontamination. Each method has its advantages and disadvantages. The most common methods include:

1) Demolition
2) Detergent Method also called Triple Wash
3) Removal of all contaminated Surfaces
4) Use of Harsh Chemicals
5) Formulated Products

- **Method 1:** Demolition of entire property if the property is structurally damaged.

- **Method 2:** (Detergent Method) Wash and Scrub with Household Cleaners is inexpensive as far as chemical costs are concerned but can be extremely expensive due to time and labor costs. And only surface contaminates are removed. Meth residues are not destroyed and end up unchanged in the wash solutions.

- **Method 3:** Complete removal of all contaminated surfaces is extremely expensive (The most expensive method) and time consuming. A major disadvantage is that meth is not destroyed, it is simply relocated. A further disadvantage is that contaminated dust particles may penetrate construction voids, cracks and crevices necessitating careful dust removal to ensure that re-contamination does not occur.

- **Method 4:** (Misting or Fogging with Bleach) is economical and effective at destroying meth and many other chemical contaminants but requires high levels of personal protective equipment. This method generates chlorinated by-products which are environmentally undesirable and generates chlorine gas and caustic mist both of which must be cleared from the house before safe occupancy can occur.

- **Method 4**: (Misting or Fogging with high concentrations of Hydrogen Peroxide) is easy and inexpensive but is also ineffective at removing anything but surface contamination. The use of strong peroxide solutions (35-50 percent) may also produce a delayed spontaneous ignition hazard. It will pit (rust) out all metal products in the property.

- **Method 5:** There are formulated products available that are highly effective at removing and destroying meth and related contaminants. Not all products are equally effective, and some are ineffective. The formulated products are most effective when applied with scrubbing and rinsing. The structure for the most part remains intact, and there are generally no toxic by-products or residues.

The following is a general cleanup sequence that may be considered. Ultimately, however, it is the responsibility of the Decontamination Contractor to proceed in a manner that protects human health and the environment. Decontamination should proceed in a manner that prevents cross contamination.

For the purpose of this course will be teaching Method #5, as it is the most effective and least damaging to the property.

Gross Cleanup of Lab Materials

First responders will generally remove bulk chemicals and other materials during seizure of the lab. However, the Decontamination Contractor should be prepared to address unexpected occurrences of bulk chemicals or other materials associated with the drug lab operations in the event this material was overlooked during the gross removal and criminal investigation.

If laboratory remnants or other evidence of illegal manufacturing are discovered, the Decontamination Contractor should secure the area and notify the lead law enforcement agency for direction on this matter.

The Decontamination Contractor must be prepared to coordinate with hazardous materials experts to assist with the removal of dangerous waste from the property.

Ventilation of Property

- A former lab or user site should be vented to promote volatilization.

- The property should be ventilated until vapors have been mitigated and the Decontamination Contractor is ready to proceed with removal and on-site cleaning. At this point, the ventilation system should be turned off to prevent further contaminant transport.

- Windows may be opened throughout the cleanup except when venting may impede assessment and decontamination. Care must be taken that vapors are exhausted to the outdoors and not to the air intakes of adjacent structures. Ventilation procedures should be established on a site-specific basis and only after information has been obtained about the decontaminated property.

Property Preparation

Remove debris and all porous materials such as carpet, carpet pad, ceiling tiles, insulation, insulated ductwork and any other materials required by local or state laws.

This means, materials easily penetrated or permeated by gases, liquids or powders such as carpets, draperies, beddings, mattresses, pillows, blankets, towels, clothing and/or any other material that is not properly sealed must be removed from the property and properly disposed.

In addition, all visibly stained, discolored, burned or etched fixtures such as bathtubs, sinks, toilets, insulation, sheet rock, plaster, appliances or other household items should be removed and replaced unless they can be easily cleaned on-site and tested.

In some cases, removal of grossly stained sheet rock or wallboard may be more efficient and protective over time than multiple rounds of cleaning. Demolition activities may also be considered for old sheds and other structures where this is a feasible and cost-effective remedy.

The Decontamination Contractor must take due care to avoid excessive dust during decontamination of the property and should wrap all materials that will be removed from the property in a protective cover to prevent the spread of contamination during transportation to the approved disposal facility. Photographs should be taken of each material or article removed from the property to document the decontamination.

Asbestos or lead based paint containing material must be disturbed, handled or disposed of in accordance with current local, state and federal rules and regulations. For further information on lead based paint and asbestos regulations, please contact the Department of Environmental Quality, Division of Air Quality for the state in which work is being performed.

All appliances shall be removed and properly disposed of, unless the Decontamination Contractor determines that the appliance can be cleaned on-site to meet the state or decontamination standards. Both inside and outside should be decontaminated.

Only smooth and easily cleanable surfaces may be decontaminated on-site

Dry Clean (Vacuum)

- Test the furnace to make sure it is working prior to disassembly.
- Remove all dirt and dust from all surfaces and HVAC systems using HEPA filtered equipment.

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The nature and location of the ventilation system and ventilation ducts must be defined when assessing the property since the system can harbor dust, vapors, chemical residues and methamphetamine and redistribute them throughout the property. To proceed:

- Shut off the unit and lock out all air handler units before working on each air conveyance system.
- Remove and dispose of all porous linings and filters
- Disassemble air handler by removing fan, fan housing and motor.

- Connect a fan-powered HEPA filter collection machine to the ductwork to develop a negative air pressure.


- Remove and clean all air registers on the property no matter their location on the wall, ceiling or floor. Temporary filter media should cover all air register openings.

- Beginning with the outside air intake and return air ducts, clean the ventilation system using electrical agitators to agitate debris into an airborne state. Air lances, mechanical agitators or rotary brushes may be inserted into the ducts through the air register openings to loosen all dirt, dust and other materials. Clean the supply ductwork using the same techniques. Use controls to ensure debris is not dispersed outside the air conveyance system during cleaning. After this task is complete, the openings must be covered by temporary filter media to prevent further contaminant migration.


- Inspect and clean all air handler units, including the return air housing, coils, fans, supply diffusers and drip pans.

- After cleaning, the unit must not be turned on until confirmation samples have been collected and the decontamination standards have been met throughout the property.

Mixing Apple Environmental Meth Remover

- Mix equal parts of part-1 and part-2 together in clean container. Amounts needed may vary based on the level of contamination, humidity, cleanliness of surfaces and types of surfaces that are being decontaminated.
- Mix only the amount needed to complete each portion of the job.
- Mixed Meth Remover remains viable for approximately 4 hours.

(Optional) Pre-treating property:

- For special case, heavily soiled or heavily contaminate propertied, apply full strength mixture to all surfaces using a foamer or sprayer. Agitate surfaces, let stand for minimum two hours. Be careful not to over saturate surfaces.

- Mix equal parts Apple Environmental Meth Remover Parts-1 and Parts-2 in clean container. Using a separate container, create a diluted mixture of Meth Remover and water to be used for washing all surfaces. (1:5-1:10 ratio depending on the soil load and contamination level) Using microfiber scrubber pads or soft bristle brush wash all surfaces. Extract excess wash water.

Application Procedures (Scrub)

- Apply Apple Environmental Meth Remover solution (equal parts Apple Environmental Meth Remover Part 1 & 2 combined and diluted with 1-part water (example 1 gal part 1 – 1 gal part 2- 1 gal warm water) to all surfaces using a foamer or sprayer. Scrub product into all surfaces immediately after application. Optimal dwell time is 4 hours.

- **For special case, heavily soiled or heavily contaminated propertied**, apply Apple Environmental Meth Remover solution in equal parts Meth Remover Part 1 & 2 combined (non-diluted).

- In dry climates the use of a sprayer after foaming will ensure Meth Remover remains active. Thoroughly rinse equipment with water after each use.

Dwell Time

- Meth Remover dwell time will vary based on conditions. 4-8 hours is normally sufficient. Steps to keep the Meth Remover from drying too quickly should be taken.

- Closing up the house to retain humidity levels in dry areas is recommended.

- In extremely dry regions, portable humidifiers may help speed up decontamination in severely contaminated properties.

- If the property is excessively dirty or heavily contaminated, repeat the application steps prior to rinsing.

Rinse

- Using clean water rinse all surfaces thoroughly. Using extraction equipment if necessary to remove excess water from floors. Thoroughly rinse all equipment with clean water after use.

- After sufficient dwell time, rinse structure with water and extractor/wet-vac to remove excess water from floors.

  Allow property to thoroughly dry before testing.

Plumbing and Septic System

Waste products and sludge generated during the production of methamphetamine and other illegal drugs may be dumped in sinks, drains or toilets as a mechanism to dispose of the waste and avoid detection by law enforcement personnel. Field screening must be conducted to confirm or deny the presence of illegal drug lab waste. Plumbing inlets to the septic or sewer system, including sinks, floor drains, bathtubs, showers and toilets must be visually assessed for any staining or other observable residual contamination. Witness statements and other visual observations associated with the septic tank are also useful. Plumbing traps must also be assessed with a PID or mercury vapor analyzer. If there is no evidence that mercury was used in the cooking process, a mercury assessment is not required. If the volatile organic, mercury vapor or other concentrations exceed the state decontamination standards, the accessible plumbing and traps must be removed and properly disposed of properly. If the state standards are not achieved, further activities are necessary to obtain the decontamination standards.

To facilitate the investigation and cleanup of the plumbing and septic system, the Decontamination Contractor shall obtain documentation from the local health department or local wastewater company describing the sewer disposal system for the dwelling. If the dwelling is connected to an on-site septic system, a sample of the septic tank liquids must be obtained from a representative area and tested for volatile organics, and potentially metals (depending on the cooking method), unless the preliminary assessment indicates that contamination was unlikely to have occurred via this pathway.

Section 10: Waste Disposal

The decontamination contractor and property owner shall comply with all state, county, and local regulations to meet the following criteria:

- No waste, impacted materials or contaminated debris from the use or improper storage of hazardous chemicals maybe removed from the site or from the waste stream for recycling or reuse without the written approval of the local authorities.
- All items removed from the illegal drug operations and waste generated during decontamination work shall be properly disposed.
- All liquid waste, powders, pressurized cylinders, and equipment used during the production of illegal drugs shall be properly characterized by sampling or testing prior to making a determination regarding disposal or the waste shall simply be considered hazardous waste and properly disposed.
- All impacted materials and contaminated debris that are not determined by the decontamination contractor to be a hazardous waste may be considered a solid waste and property disposed.
- All infectious waste shall be managed in accordance with Federal, State and local requirements.
- The disturbance, removal and disposal of asbestos must be done in compliance with all Federal, State, and local requirements including the requirements for Asbestos Certification, Asbestos Work Practices and Implementation of Toxic Substances Control Act.
- The removal and disposal of lead based paint must be done in compliance with all Federal, State and local requirements including the requirements for Lead-Based Paint Accreditation, Certification and Work Practice Standards.

Waste that is not designated as hazardous waste shall be considered solid waste and may be disposed at a permitted landfill. The facility's procedures for the receipt and handling of contaminated waste must be followed. This waste shall be recycled or reused.

Section 11: Methamphetamine Sampling

There are two types of sampling;

1. Grab Sample/Discrete Sample
   A Grab Sample (Discrete Sample) is one sample from one area.

2. Composite sample
   A Composite Sample is multiple samples taken from multiple areas on a single test. It is recommended to do no more than three tests as a Composite Sample. The reason being is that if the test comes back as positive, it is not known which sample area was contaminated or if it was a combination of all sampled areas.

Supplies for Meth Testing

- 3"x3" Gauze Pad
- Wetting Agent (high grade Isopropyl alcohol or methanol)
- Testing square of 100 cm^2
- Rubber gloves
- Centrifuge Tube (Sample Tube)

To collect a sample:

1. Place a paper towel, aluminum foil, or sheet of paper down on flat surface as the work area.
2. Place all meth sampling supplies on the clean work area.
3. Put on rubber gloves (Use new pair of gloves for each test)
4. Open gauze package and fold gauze into fourths.
5. Apply enough wetting agent so gauze is moist, not dripping.
6. Take the testing square to testing area. Apply moist gauze to top left of square. Applying even pressure, move gauze in a Z pattern five times moving down the square. Without lifting, move the gauze in an N pattern five times moving across the square.
7. Fold gauze on itself to get a clean ¼ corner and repeat in additional areas for a composite sample.
8. Place gauze in centrifuge tube.

9. Label tube
10. Discard all trash.
11. Complete chain of custody
12. Send sample to the lab.

Always photos document where testing occurred.

Why Pre-Test

Pre-testing is completed to see if methamphetamine is present. This should be completed after a police raid, by the landlord in between tenants, by a renter before moving in, or when buying a home, condo or other property.

Completing a meth test can direct the owner of the property in the most cost-effective approach to remodeling. Decontaminating a structure prior to remodeling can save thousand by not having to dispose of the new furnishings.

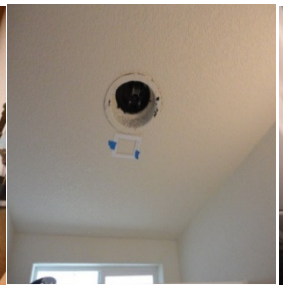
Pre-testing Locations

When Pre-testing for methamphetamine, **test the area's most likely to be contaminated**. By testing the area's most likely to be contaminated, areas less likely can be ruled out after receiving low test results.

The best places to test are areas with air flow or signs of meth use or cooking.

- Air ducts
- Cold air return
- Furnace
- Under microwave oven or hood.
- Next to bathroom fan
- Above beds in rooms where signs of use or cooking were seen

Hvac



Bath fan

Return air near furnace

Determining how many pre-tests tests to complete:

- One composite test:

  This test generally includes sampling up to four locations on one gauze pad such as the furnace, cold air return, and one other location i.e. a bathroom fan, ceiling fan, above the kitchen stove or other suspicions location. This will give you limited information and

more testing may be needed later. This method works best on small apartments and condos.

- Dividing the home into sections:

  Test the property using composite sampling and divide the home into areas that can be grouped together. For instance, two bedrooms and a bathroom on the south side of the main floor. The kitchen, living, and dining rooms on the north side of the main floor. Complete this type of testing on each level and include one composite test for the HVAC system (furnace, cold air return and a random heat vent). This type of testing will allow for more information to be gathered as well as saving money on testing. This method of testing may require additional testing if more information is needed.

- Testing each room individually:

  By testing each room individually, more data can be collected and more is known about the spread of contamination. A composite test for each room can include ceiling, wall and floor. Or, if there is carpet, test the ceiling and two different walls. However, this is a more expensive method but yields the most data.

Confirmation Sampling

Confirmation sampling is used at the end of the decontamination process to ensure the work was done properly. Multiple samples should be taken from various locations throughout the property. Such as walls, ceilings, floors, appliances, HVAC systems, and items like chairs or tables that were part of the decontamination plan. See your State Regulations for areas and number of tests required.

Interpreting test results:

Once test results are received from the analytical laboratory, the results need to be reviewed. Below are the main term needed to understand the report.

Sample ID:	Tube label
Sample Location:	Property address where sample was collected
Method:	Analytical method used by the laboratory to analyze sample
Media:	Material and method used to collect sample
Sampling Parameters:	Total area collected on the wipe sample
Analyte:	The substance whose chemical constituents are being identified and measured
Ug/sample:	Total amount of meth found from the sample collected
Ug/100cm²:	The “ug/sample” divided by the “sample parameter” (10/3=3.5)
RL: Reporting Level.	The lab only reports results over .10, anything less is reported as ND or Non-Detect

Interpreting results

ANALYTICAL REPORT

Report Date: May 14, 2015

Mark Shepard
Apple Environmental
489 E Center St
Kaysville, UT 84037

E-mail: info@appleenvironmental.com

Workorder: [redacted]
Client Project ID: [redacted]051115
Purchase Order: [redacted]
Project Manager: Paul Pope

Analytical Results

Sample ID: 1				Collected: 05/11/2015
Lab ID: 1513163001	Sampling Location: [redacted]			Received: 05/11/2015
Method: NIOSH 9111	**Media:** Wipe **Sampling Parameter: Area 300 cm²**			**Analyzed:** 05/13/2015
Analyte	**ug/sample**	**ug/100cm²**	**RL (ug/sample)**	
Methamphetamine	**10**	**3.5**	0.10	

Sample ID: 2				Collected: 05/11/2015
Lab ID: 1513163002	Sampling Location: [redacted]			Received: 05/11/2015
Method: NIOSH 9111	**Media:** Wipe **Sampling Parameter: Area 300 cm²**			**Analyzed:** 05/13/2015
Analyte	**ug/sample**	**ug/100cm²**	**RL (ug/sample)**	
Methamphetamine	**24**	**8.0**	0.10	

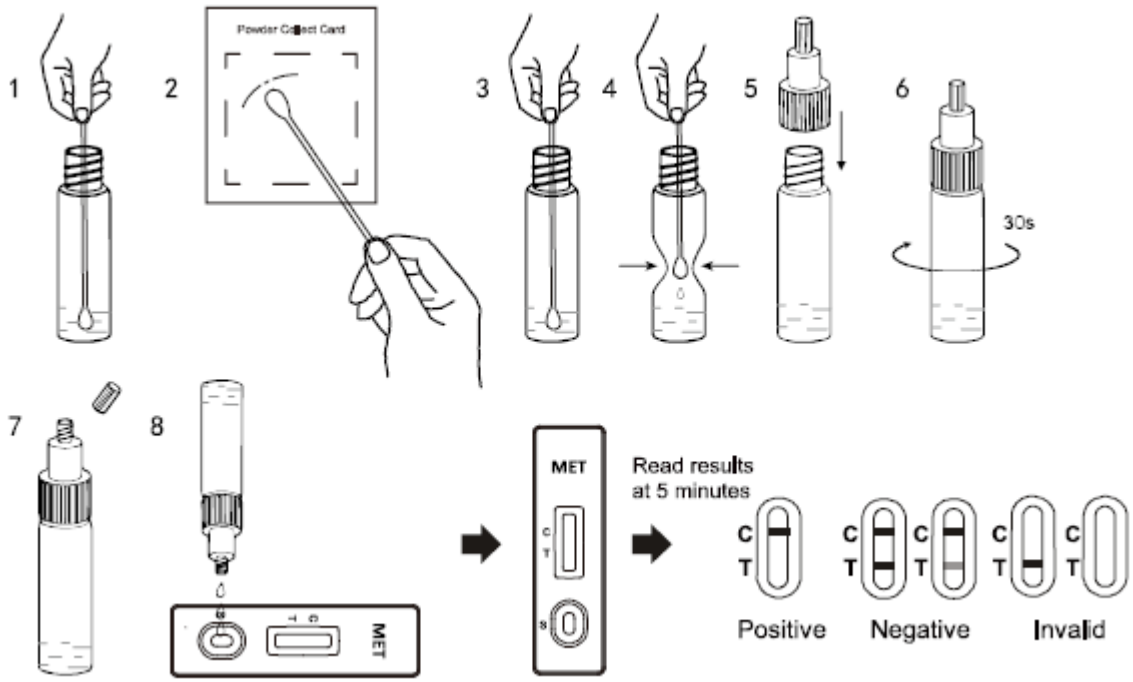
Sample ID: 3				Collected: 05/11/2015
Lab ID: 1513163003	Sampling Location: [redacted]			Received: 05/11/2015
Method: NIOSH 9111	**Media:** Wipe **Sampling Parameter: Area 300 cm²**			**Analyzed:** 05/13/2015
Analyte	**ug/sample**	**ug/100cm²**	**RL (ug/sample)**	
Methamphetamine	**0.48**	**0.16**	0.10	

Sample ID: 4				Collected: 05/11/2015
Lab ID: 1513163004	Sampling Location: [redacted]			Received: 05/11/2015
Method: NIOSH 9111	**Media:** Wipe **Sampling Parameter: Area 300 cm²**			**Analyzed:** 05/13/2015
Analyte	**ug/sample**	**ug/100cm²**	**RL (ug/sample)**	
Methamphetamine	**21**	**7.1**	0.10	

Instant Test Instructions

Directions for Use: Detailed Test

Test device (in closed pouches), samples, and controls should be brought to room temperature (59-86°F) prior to testing. Do not open pouches until ready to perform the assay.



1. Take a single sample extraction tube with buffer provided and unscrew the cap. Place the swab into the tube for 20 seconds to allow swab head to be thoroughly soaked in buffer.
2. Take out the swab and wipe the wet swab over 10 x 10 cardboard template. The best places to sample are above shoulder height on walls, above windows, doors and high airflow traffic. Keep the swab wet by dipping in buffer liquid a number of times while collecting samples. Swab sideways not pointing down.
3. Insert the swab into extraction tube and mix well for at least 1 minute.
4. Squeeze the swab several times by compressing the outside walls of the tube end against extraction tube and mix well. Finally squeeze the swab to make most of the solution stays in the extraction tube and remove the swab. Use extraction solution as test specimen.
5. Close the cap and shake it a short time. **Wait for 30 seconds.**
6. Place the test cassette on a clean and level surface. Unscrew cap cover from the bottle.
7. Invert the bottle and transfer **3 drops of specimens** (approximately 120 µ L) into region (S) at 5 second interval.
8. **Wait for control lines to appear on the membrane and read the results after 5 minutes** and do not interpret the result after 10 minutes.

Interpretation of Results

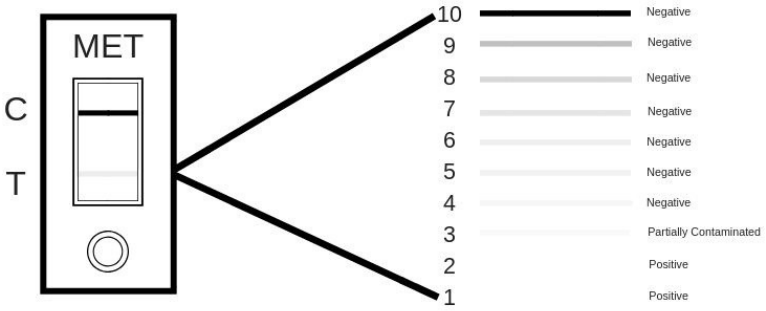
POSITIVE: A colored line appears in the control region (C) and NO line appears in the Test region (T)

NEGATIVE: A colored line appears in the control region (C) and a colored line appears in the test region (T)

PARTIALLY CONTAMINATED: A colored line appears in the control region (C) and a faint line appears in the test region (T) please refer to intensity line interpretation

INVALID: No line appears in the control region (C) Insufficient specimen volume or incorrect procedural techniques are the most likely reasons for control line failure

Intensity Line Interpretation – for partially contaminated results



Septic Tank Sampling and Testing Procedures

- Prior to sampling, the septic tank must be sufficiently excavated to assess whether the tank consists of one or two chambers.
- Samples from single chamber tanks must be collected from the baffle on the outlet end of the tank. Samples from dual chamber tanks must be collected from the baffle on the outlet end of chamber one.
- All samples must be representative of the waste from the septic tank. Sampling and testing must be performed in accordance with current EPA sampling and testing protocol for liquids.
- The liquid in the septic tank must be sampled with a new clean bailer or similar equipment. The sampling device should be inserted into the tank until it hits the bottom.
- Upon sample collection, the liquid should be decanted or poured with minimal turbulence into three new 40 ml vials properly prepared and preserved by the analytical laboratory. The vials should be filled so that there are no air bubbles in the sealed container. If air bubbles are present, the vial must be emptied and refilled.
- The samples must be properly labeled with at least the date, time, and sample location. The sample vials shall be refrigerated to maintain a temperature of 4o C until delivered to the analytical laboratory. All samples must be analyzed using the latest EPA Methods for lead and mercury. If sample concentrations are below the recommended standards no additional work is required in the septic system area unless requested by the owner of the property.

Section 12: Final Report

In states that require a final report or even states that do not, the Decontamination Contractors should be required to submit a report to the local health department within 30 days upon completion of the decontamination process. The final report is a technical document summarizing decontamination work performed at the property. It makes good sense to put the Final Report in a template version and simply input all the necessary information.

The following are key components of the final report that should be considered when developing the document. The decontamination specialist is encouraged to contact the local health department to discuss the contents of the final report prior to completing the document.

Location of the Property and Owner Information

This section should provide the street address and mailing address of the contaminated property, owner of record, legal description, county tax or parcel identification number and vehicle identification number, if the property is a mobile home, trailer or boat.

Property Identification Information

Street Address:	1234 E Main St.				
City:	Anywhere	State:	State	Zip:	11111
Parcel ID Number:	00-00-000-000-0000				
VIN (if applicable):	NA				

Owner Identification Information

Owner of Record:	John Doe				
Owner of Record's Representative:	John Doe				
Physical Address:	1234 E Main St.				
City:	Anywhere	State:	State	Zip:	11111
Mailing Address:	P.O. Box 79				
City:	Anywhere	State:	State	Zip:	11111
Phone Number 1:	888-888-8888	Phone Number 2:		888-999-9999	

Decontamination Crew Information

This section should include the names of the individuals performing the decontamination and the current certification and certification numbers.

Company Name:	AAA Decontamination				
Address:	P.O. Box 999				
City:	Anywhere	State:	State	Zip:	11111
Phone Number 1:	888-888-8888	Phone Number 2:		888-999-9999	
Business License Number:	XXXXX	Issuing Agency:		Anywhere USA	
Certification Number:	DS XXXX-XX				

Property Description

Describe the nature of the property, type of structures present, areas highly suggestive of contamination and portions of the property that are not considered highly suggestive of contamination. Information regarding areas where illegal drug processing, cooking or storage occurred, stained materials and surfaces were observed, potential chemical disposal occurred, and illegal drugs were stored are necessary to document decontamination of the property and justify cleanup activities.

Contaminants

This section should discuss contaminants of concern encountered on the property. The information may be obtained from the Preliminary Assessment or other sources, such as law enforcement reports.

Decontamination Activities

- A detailed summary of decontamination activities performed on the property must be included in this section.
- Discuss in detail all procedures used to remove or clean the contamination. The discussion should include both areas highly suggestive of contamination and other portions of the property not considered highly suggestive of contamination.
- Discuss in detail any and all surfaces, materials or articles removed from the property.
- Discuss in detail any and all surfaces, materials and articles cleaned on-site.
- Discuss in detail all locations where decontamination activities were performed (this may include the ventilation and septic system as well).

Description of Decontamination

Proper PPE was worn during demolition and decontamination processes. A decontamination agent was applied to property interior and HVAC system. HVAC system was decontaminated using negative air machine and agitation prior to additional property decontamination. After scrubbing, a decontamination agent was applied to property interior including walls, ceilings, floors, cabinets, fixtures, etc. in accordance with manufactures guidelines, this process was repeated three times and rinsed throughly. Decontamination cleaning of property in accordance with state and health department regulations.

Confirmation Sampling

Discuss sample locations and methods, analytical methods and quality assurance/quality control employed during cleanup.

Sampling Procedure

Three 10 cm x 10cm areas per room plus one sample for the HVAC system, and 1 blank performed with corresponding photographes of each sample site. Chain of custody protocol in accordance with industry standards. Nitrile gloves were worn during samplin process. Cotton gauze 3" x 3" 12 ply in sterile packages were used for all wipe sampling. The cotton gauze was wetted with analytical grade methanol for the wipe sampling. The cotton gauze was wiped at least five times in two perpendicular directions within each sampling area. After sampling, each wipe sample was placed in a new clean sample container and capped tightly. Sample container was properly labeled with the project address, date, time, and sample location. The analytical laboratory used was ALS Environmental as per work plan.

Waste Disposal

Include a summary of waste characterization/profiling conducted prior to disposal. Also, discuss materials removed from the site and provide documentation regarding final disposal (disposal manifests should be included).

Waste Characterization

All waste and porous materials were disposed of according to regulations. Disposal site Salt Lake County Landfill Site 3, see attached receipt.

Deviations

This section should discuss any deviations from the work plan.

Deviations from the Work Plan

Work plan was followed without exception. or Workplan deviation included removal and disposal of interior furniture not included in original work plan. See attached dump receipt.

Testing Results/Tables

Tables

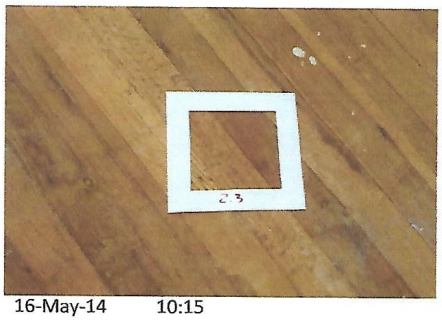
Include tables summarizing sample results and sample locations. All tables should include the decontamination standards for comparative purposes.

Confirmation Sampling Results

Sample Results XX-XXXXXX			
Number	**Location**	**Areas**	**Result**
1	Upstairs Master Bath	3	ND ug/300 cm2
2	Upstairs Bath	3	ND ug/300 cm2
3	Upstairs NE Bedroom	3	ND ug/300 cm2
4	Upstairs SE Bedroom	3	ND ug/300 cm2
5	Upstairs Master Bedroom	3	0.11 ug/300 cm2
6	Main Lvl Living Room	3	ND ug/300 cm2
7	Main Lvl Kitchen	3	ND ug/300 cm2
8	Garage Lvl Family Room	3	ND ug/300 cm2
9	Garage Lvl Laundry	3	ND ug/300 cm2
10	Garage Lvl Bathroom	3	ND ug/300 cm2
11	Basement Bathroom	3	ND ug/300 cm2
12	Basement SE Bedroom	3	ND ug/300 cm2
13	Basement Office	3	ND ug/300 cm2
14	Furnace/HVAC System	3	ND ug/300 cm2
15	Appliances	4	ND ug/400 cm2
16	Control	NA	No detection

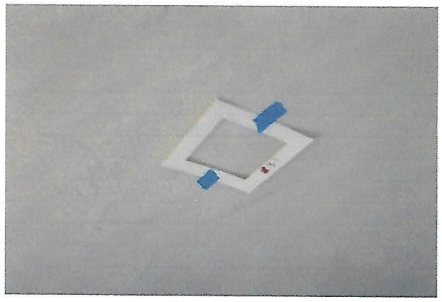
Photographs

Include photographs documenting decontamination in areas highly suggestive of contamination and areas deemed not highly suggestive of contamination. Provide photographs of each decontaminated area and confirmation sample location on the property.



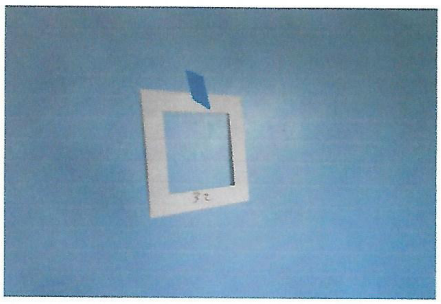
16-May-14 10:15
1234 E Main St, Anywhere ST 11111
Mark Shepard, photographer
Test 2.3 - Main Flr Living Rm Floor

16-May-14 10:15
1234 E Main St, Anywhere ST 11111
Mark Shepard, photographer
Test 2.3 - Main Flr Living Rm Floor



16-May-14 10:15
1234 E Main St, Anywhere ST 11111
Mark Shepard, photographer
Test 3.1 - Main Flr NW Bedroom Ceiling

16-May-14 10:15
1234 E Main St, Anywhere ST 11111
Mark Shepard, photographer
Test 3.1 - Main Flr NW Bedroom Ceiling



16-May-14 10:15
1234 E Main St, Anywhere ST 11111
Mark Shepard, photographer
Test 3.2 - Main Flr NW Bedroom Wall

16-May-14 10:15
1234 E Main St, Anywhere ST 11111
Mark Shepard, photographer
Test 3.2 - Main Flr NW Bedroom Wall

Analytical Results

Provide all analytical results and data packages from the laboratory.

ANALYTICAL REPORT

Report Date: May 21, 2014

Mark Shepard
Apple Environmental
489 E Center St
Kaysville, UT 84037

E-mail: info@appleenvironmental.com

Workorder: [redacted]
Client Project ID:
Purchase Order: NA
Project Manager: Paul Pope

Analytical Results

Sample ID: 1				Collected: 05/16/2014
Lab ID: 1413682001	Sampling Location: [redacted]			Received: 05/16/2014
Method: NIOSH 9111	Media: Wipe Sampling Parameter: Area 300 cm²			Analyzed: 05/19/2014
Analyte	ug/sample	ug/100cm²	RL (ug/sample)	
Methamphetamine	ND	<0.033	0.10	

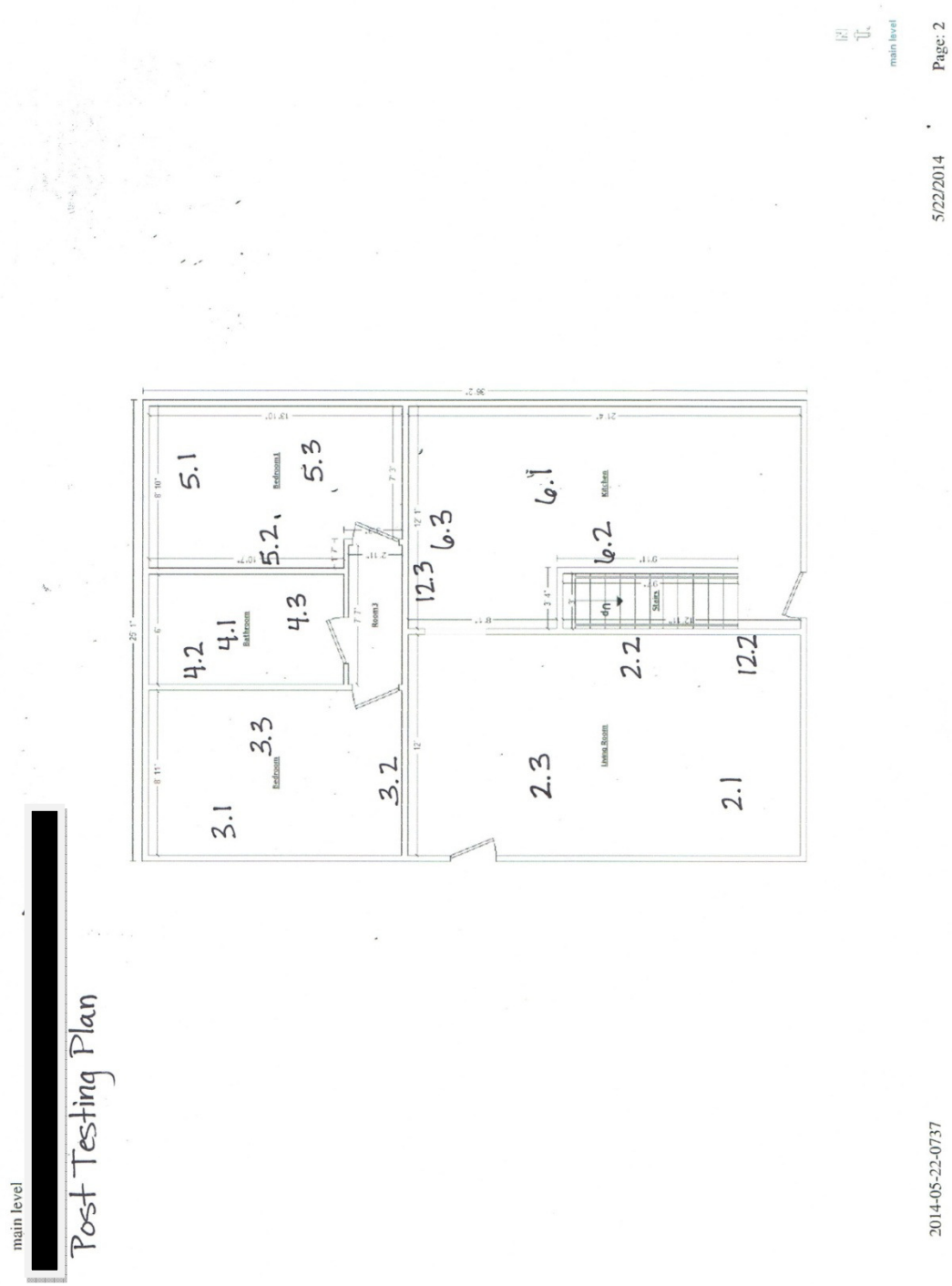
Sample ID: 2				Collected: 05/16/2014
Lab ID: 1413682002	Sampling Location: [redacted]			Received: 05/16/2014
Method: NIOSH 9111	Media: Wipe Sampling Parameter: Area 300 cm²			Analyzed: 05/19/2014
Analyte	ug/sample	ug/100cm²	RL (ug/sample)	
Methamphetamine	**0.13**	**0.043**	0.10	

Sample ID: 3				Collected: 05/16/2014
Lab ID: 1413682003	Sampling Location: [redacted]			Received: 05/16/2014
Method: NIOSH 9111	Media: Wipe Sampling Parameter: Area 300 cm²			Analyzed: 05/19/2014
Analyte	ug/sample	ug/100cm²	RL (ug/sample)	
Methamphetamine	ND	<0.033	0.10	

Sample ID: 4				Collected: 05/16/2014
Lab ID: 1413682004	Sampling Location: [redacted]			Received: 05/16/2014
Method: NIOSH 9111	Media: Wipe Sampling Parameter: Area 300 cm²			Analyzed: 05/19/2014
Analyte	ug/sample	ug/100cm²	RL (ug/sample)	
Methamphetamine	ND	<0.033	0.10	

Figures

Include figures to document decontamination and confirmation sampling. Figures may include a drawing or sketch of areas highly suggestive of contamination, confirmation sample locations and decontaminated areas on the property.



Section 13: State and Housing Requirements

Creating Housing Standards

Questions for creating housing standards

- Are the houses on tribal lands or scattered throughout a town?
- Do you write new complete housing standards or adopt local or state guidelines?
- What is the acceptable testing level for methamphetamine per 100cm^2?
- What are the decontamination protocols?
- What is the minimum amount of testing needed for clearance?

Pretesting properties

- Do you test all houses when they go vacant or just the ones suspected of contamination?
- Do you test all rooms or just some rooms?
- Who decides when and which houses gets tested?
- Who pays for the testing?
- How detailed does the testing report need to be?

Tenant consequences

- Who is financially responsibility for the decontamination?
  The last tenant or housing
- If it is the tenant, where does the money come from?
  Are they required to pay all at once or over time?
- Do you test the tenant and what happens if they come up positive?
  Is there a mandatory rehab?
  Are they banned from housing?
- Was the tenant to blame or was it a family member?
- Is there a process in which an offender can reenter the housing program?
- Who makes the decision to call the police and when?

Will the council members sign off and enforce the rules created by the housing authority?

Section 14: Practical

- Don and Doff PPE
- Respirator onsite fit adjustments
- Walk through of decontamination process
- Mixing of Product
- Application of product
- Steps to Insure Success

Section 15: Review and Discussion

Steps for decontamination

- Property Preparation
  Removal of debris and porous materials
- Dry clean
  Hepa-Vac house and duct work
- Pre-clean (Optional)
  Apply full strength product to surfaces and allow dwelling for minimum 2 hours. Using diluted product, scrub the property to remove excess dirt
- Application Procedures
  Apply Apple Environmental Meth Remover let dwell for 4 hours minimum. Reapply and adjitate if contamination levels and environmental conditions dictate
- Rinse
  Rinse house thoroughly with water, extracting water from floors
  House should be dry before testing
- Test
  Contact applicable agency or testing company to conduct clearance testing.

Challenges

Each meth contaminated property will present challenges not previously considered in this model so decisions relating to decontamination should be made site-specifically and only after the preliminary assessment has been completed.

Some of the main challenges will include:

- Meth levels
  It is easier to decontaminate a 2ug vs. 200ug.
- Paint over the contaminated property
  By extending the dwell time meth can be pulled from behind painted surfaces. This is done by using additional application over time not by over saturating once

- Crawl spaces and attics.

  Both have limited space, are hard to maintain constant temperatures and should always have an extra crew member present in case of emergency.
- Ducts

  Heat ducts can be run in inaccessible places and will need access holes cut into the house to properly decontaminate them. This should be evaluated in the preliminary assessment and communicated to the homeowner prior to starting work.
- Property Owners

  Set the scope of work and expectations before beginning work and communicate with them throughout the process. There should be surprises at the end of the job.
- Squatters

  Drug addicts return to properties all the time. A warm empty house is a good place to spend the night and smoke or make meth. Check every morning for signs that people have been in the house.
- Weather

  The optimal temperature for a structure is minimum 70ºf/21ºc with 70% humidity after scrubbing and spraying. Covering south facing windows in the summer will help the property from drying too quickly. And adding space heaters in the winter will help to maintain heat.
- Temperature in the coverall/mask

  During summer months plan an extra day or two into the decontamination schedule due to the need for more water breaks. Watch for signs of heat stress.
- Humidity or lack thereof

  In high humidity areas over saturation becomes a concern. Use dehumidifies in the process as needed. In low humidity areas closing windows and doors before starting the decontamination process will help maintain moisture.
- Staff

  Having reliable staff in charge of the job is important with any job. However, if proper dwell time is not achieved and corners are cut during the process the property may not pass final testing.
- Lack of water or electricity

  Water can be trucked in using buckets. Not having electricity can be overcome in the summer months with the use of a generator. But in the winter months a generator should not be left on site to run heaters overnight. This should be discussed with the homeowner during the preliminary assessment stage.
- Equipment

  Having equipment stop working during a job can be more costly in labor and lost job revenue than purchasing good equipment in the first place.
- Rental properties

  Rental properties do not always get tested between tenants so contamination could have been painted over in the past. Also, changing the lock may be needed if all of the keys cannot be accounted for.
- Inspectors / Testing companies

  Get to know your government officials and testing companies that will be overseeing or testing your properties. The better the relationship the smoother the jobs go.

Appendices

Appendix 1: Decontamination Procedures

Appendix 2: Mixing Procedures

Appendix 3: Decontamination Equipment

Decontamination Procedures
Meth Remover

1. Property Preparation

    - Remove debris and all porous materials such as carpet, carpet pad, ceiling tiles, insulation, insulated ductwork and any other materials required by local or state laws.

2. Dry Clean

    - Remove loose dust and dirt from floors, walls, ceilings and HVAC using HEPA filtered equipment.

3. Mixing Product

    - Mix Part 1 with Part 2 in clean container. Amounts needed may vary based on the level of contamination, humidity, cleanliness of surfaces and types of surfaces that are being decontaminated.

4. (Optional) Pretreat Property

    - For special case, heavily soiled or heavily contaminated properties, apply mixture from Step 3 to all surfaces using foamer or sprayer. Agitate surfaces, let stand for two hours.

5. Wet Clean

    - Mix equal parts Apple Environmental Meth Remover Parts 1 and Parts 2 in clean container. Using a separate container, create a diluted mixture of Meth Remover and water to be used for washing all surfaces. (1:5-1:10 ratio depending on the soil load and contamination level) Using microfiber scrubber pads or soft bristle brush wash all surfaces. Extract excess wash water.

6. Product Application

    - Apply Apple Environmental Meth Remover solution (equal parts Apple Environmental Meth Remover Part 1 & 2 combined and diluted with 1-part water) to all surfaces using a ULV fogger, sprayer or foamer. Lightly brush products into all surfaces immediately after application. Optimal dwell time is 4 hours.

    - **For special case, heavily soiled or heavily contaminated propertied**, apply Apple Environmental Meth Remover solution in equal parts Meth Remover Part 1 & 2 combined.

7. Rinse Property.

    - Using clean water rinse all surfaces thoroughly. Using extraction equipment if necessary to remove excess water from floors. Thoroughly rinse all equipment with clean water after use.

    - If property is excessively dirty or heavily contaminated, repeat steps 5 and/or 6 prior to rinsing.

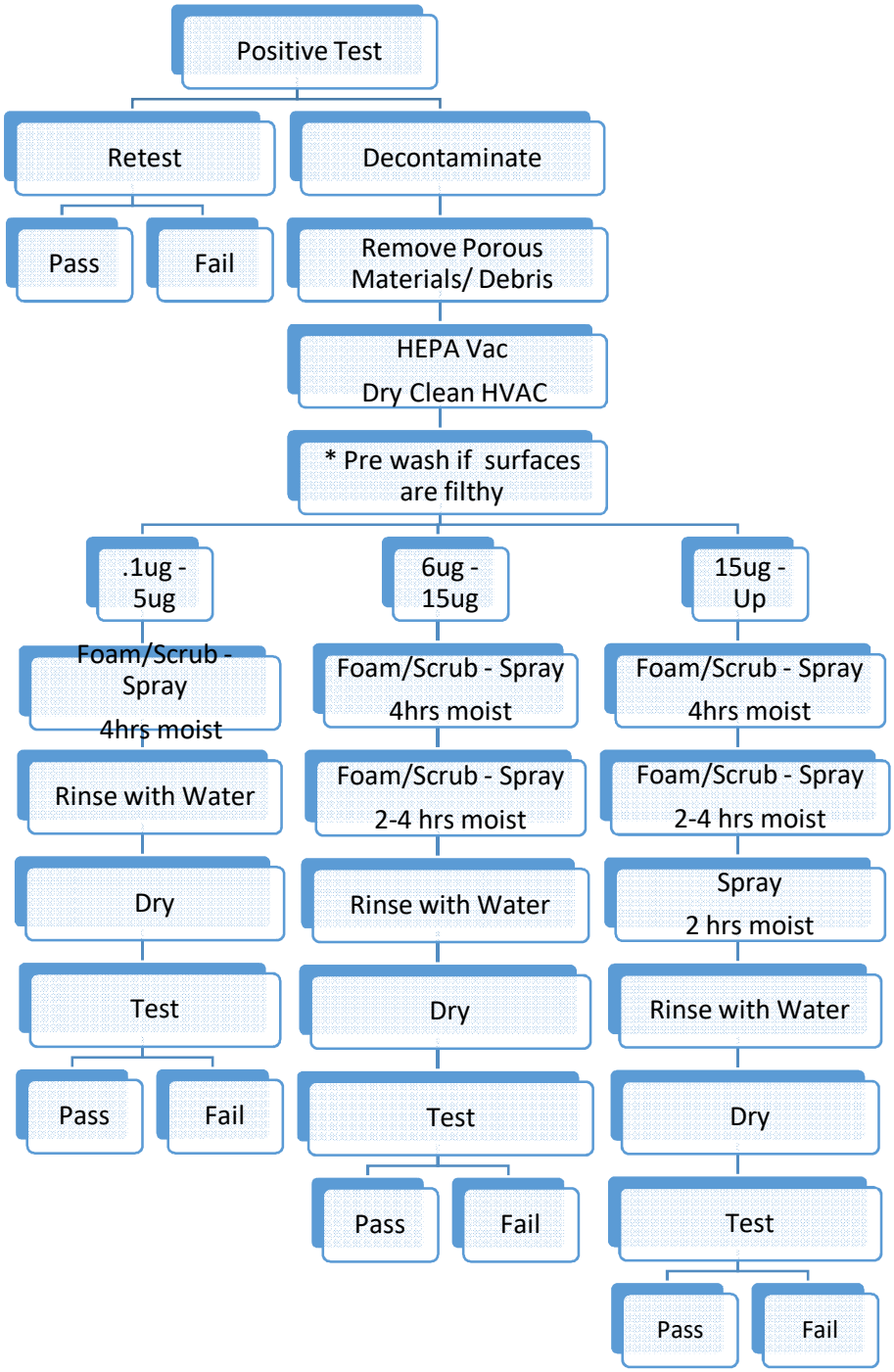
8. Allow property to dry before clearance testing

Mixing Procedures

Pre-wash (to remove filth)	1 Part Product/5 Parts Water
Foam application	2 Parts Product/1 Part Water
Spray application	Full Strength
Rinse	Water Only

For States that require .5ug or lower use middle or right columns

Product Use



Equipment Needed

6-12ft extension pole

Double bucket 19 Qt

Plastic T-Bar 14"

Car wash brush 8 x 2.5"

Scrubber pads 14"

Small Space Heater

Paint sprayer

Foam-It Jr. Electric Foamer With 100 ft hose

Shop wet/dry vac

North full face respirator

North half face respirator

Respirator cartridges

Multiguard suits

Apple Environmental Meth Remover

Duct Cleaning Equipment: Vacuum i.e. Hepa Aire 2500, compressor, and whips

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