CRITERIA FOR THE ASSESSMENT AND REMEDIATION OF METHAMPHETAMINE LABORATORIES

County of Stanislaus
Department of Environmental Resources

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HazMat Team Cleanup of Meth Labs

The number of illegal drug labs producing methamphetamine has increased dramatically in recent years. California produces approximately 85% of methamphetamine used in the United States.[1] Methamphetamine---"meth" or "crank"---is made mostly from common household ingredients.

There are several different techniques used to produce methamphetamine. The manufacturer uses a variety of chemicals including explosives, solvents, metals, salts, and corrosives. During the cooking process, additional dangerous by-products are produced. Exposure to fumes, vapor, and spillage associated with cooking meth can have various negative health effects.

Red Phosphorus Method

In Stanislaus County, the most common method used to produce meth is the red phosphorus method. This cooking process is also called "Red P", the "HI" method, or the "red, white and blue method." "Red P" typically includes hydriodic acid (HI), hydrochloric (muriatic) acid, sulfuric acid, sodium hydroxide (lye), sodium chloride (salt), red phosphorus, iodine, isopropyl alcohol, ethyl alcohol (ethanol), methyl alcohol (methanol), hydrogen peroxide, naphtha (Coleman fuel), charcoal lighter fluid (mineral spirits, petroleum distillate), acetone, benzene, toluene, ethyl ether (starting fluid), freon, hydrogen chloride gas, and chloroform. Other chemicals that may be used include acetic acid, methyl-ethyl-ketone (MEK), and hypophosphorus acid. Wastes generated include potentially flammable extraction-process sludge and hydrogen chloride gas.

Vapors from meth lab production can easily stain and seep into walls and sheetrock, furniture, and children's toys made of absorbent materials if the meth was produced or cooked in the vicinity of these items. This contamination cannot be readily cleaned; to prevent future contamination to humans, animals, and the environment, these items must be properly discarded as hazardous waste.

Prior to beginning cleanup of a meth lab, the Stanislaus County Department of Environmental Resources Hazardous Materials Response Team (SCDER Response Team) conducts a preliminary assessment to evaluate potential contamination and health risks associated with the meth lab. After the site has been secured and no longer subject to criminal investigation, the cleanup process begins.

The SCDER Response Team determines if the home, trailer, surrounding areas, or roadside dumpsites have been contaminated with meth lab products, reagents or solvents, and if a Certified Industrial Hygienist (CIH) should be called to the scene for

[1] Karen Swetlow, U.S. Department of Justice Office of Justice Programs, Office for Victims of Crime. *Children at Clandestine Methamphetamine Labs: Helping Meth's Youngest Victims*. OVC Bulletin. June 2003, p.3.

cleanup of home surfaces and removal of sheetrock. A CIH, or equivalently licensed professional, removes contaminated materials from a home or trailer itself for proper disposal, and appropriately cleans surfaces of the home or trailer. Some CIHs only perform the inspection and instruction for disposal and cleanup of contamination within in a home or trailer.

Many hazardous materials are typically left behind at a meth lab or roadside lab waste dumpsite, such as contaminated cat litter containing phosphine gas, propane cylinders or other cylinders that have been converted into hydrochloric acid (HCl) generators, and contaminated clothing. The SCDER Response Team, to determine proper disposal needs, tests observed liquids for acidity or alkalinity. Contaminated clothing, stained during the production process with red phosphorous, is bagged and removed for proper disposal. HCl cylinders are especially dangerous to move and require special steps to be taken prior to disposal. If HCl cylinders were to be moved, the chemical reaction process could be started again with the chemicals left inside of the cylinder, and may result in expulsion of the hazardous materials through the valve or other weak areas of the cylinder. The SCDER Response Team notifies the Department of Toxic Substances (DTSC) when HCl cylinders are discovered, and DTSC then contracts with a specialty environmental company to assist with the specialized disposal needs.

In addition to the dangers of active drug labs and possible harm caused by lab residues, methamphetamine use and manufacture is associated with:

- Increased crime, particularly child abuse;
- Increased demand for medical and social services;
- Increased demand on jails; and
- Increased costs to taxpayers, businesses, healthcare, and the environment.

It is believed that criminal activity and injuries, especially involving children, associated with the use and manufacture of methamphetamine are more frequent than the number of reported cases.

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1.0 PURPOSE

This document has been developed to provide uniform procedures for the assessment and remediation of clandestine methamphetamine manufacturing sites within Stanislaus County. As drug labs for other than methamphetamine production are not commonly found in this area, this document is purposely limited to methamphetamine. It is to be used by property owners and remediation consultants to develop and implement an appropriate remediation strategy, and by County authorities to evaluate work plans and assessments in a manner consistent with best available practices.

Further, this document communicates the expectations of Stanislaus County relative to the standard of care that is to be used in assessment and remediation work. To this end, pre- and post-remediation assessments are to be conducted according to work plans developed by a Licensed Hazardous Materials Contractor per section 25400.40 of the Health and Safety Code, unless the Stanislaus County Department of Environmental Resources (DER) determines based on the preliminary site assessment (PSA), that the limited contamination present can be removed by the property owner at a minimum of risk. The Preliminary Site Assessment (PSA) work plan and PSA report shall be signed and notarized by the contractor responsible for the completion of the PSA and by a Certified Industrial Hygienist (CIH) for sufficiency and completeness per section 25400.38 of the Health and Safety Code. If soil and groundwater investigation is required, the document must also be signed by a State of California Professional Geologist (PG) or Registered Civil Engineer (RCE).

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2.0 INTRODUCTION

Clandestine methamphetamine laboratories (Meth Labs), which illegally manufacture methamphetamine are frequently discovered in Stanislaus County and subsequently seized by law enforcement personnel. While officials arrange for the removal of chemicals and process equipment for evidence, the property owner is left to remediate the property, which may be contaminated with the final drug product. If the DER declares that the property is contaminated with methamphetamine residue, the property is found "unfit for occupancy," and the owner is responsible for assessing the level of contamination and remediating the property.

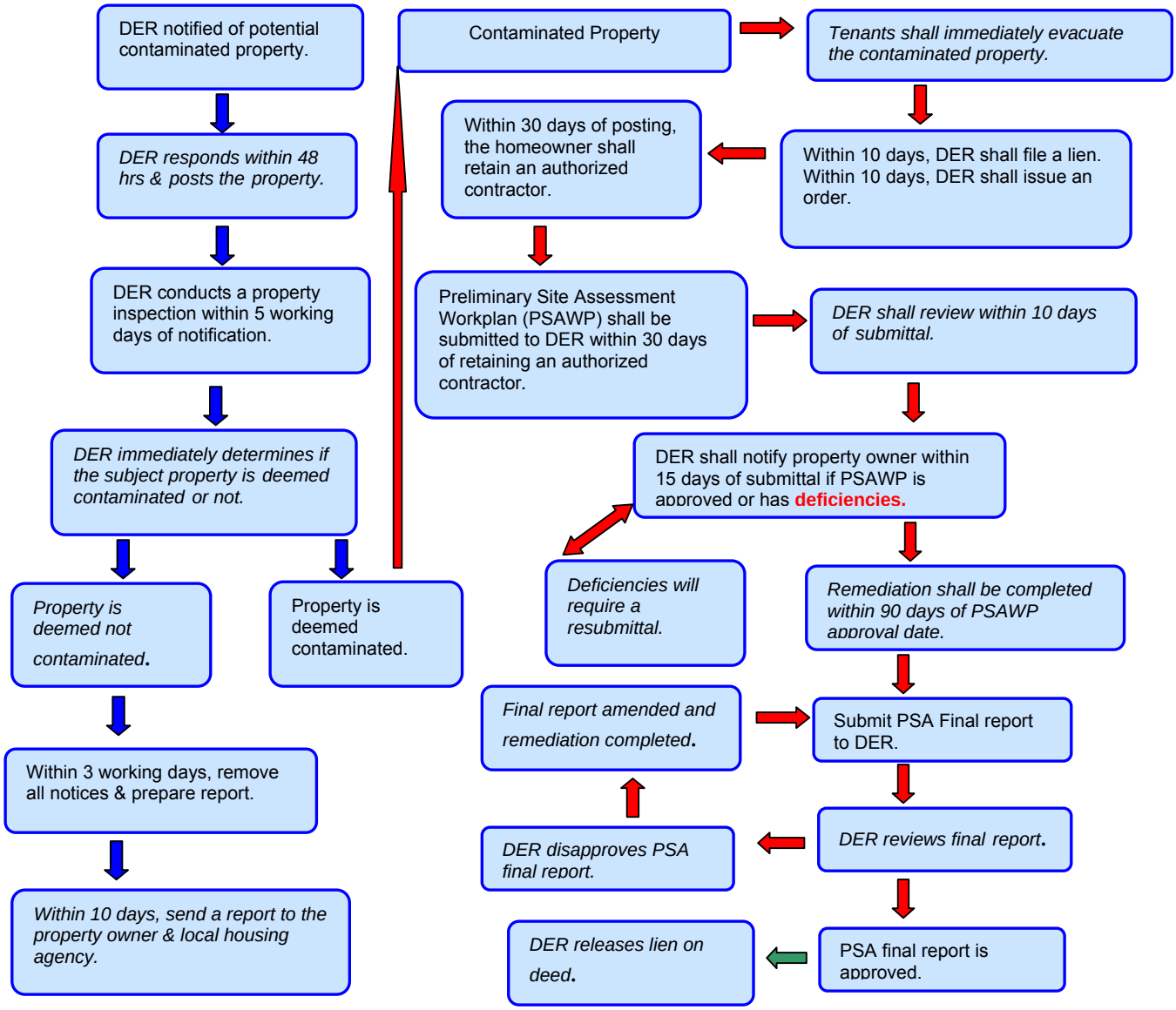
An effective remediation process requires coordination and cooperation between the property owner, the property owner's environmental consultant and remediation contractor, local Law Enforcement, Code Enforcement personnel, and the DER. DER's role is to provide technical assistance regarding public health and contamination issues to the public and other agencies.

This document provides information necessary for planning and implementing an effective site assessment and remediation process. This information represents best practices in Meth Lab remediation as described in documents promulgated by a variety of State and Federal agencies, as well as peer-reviewed articles. The practices described herein represent best management practices in environmental science and industrial hygiene. DER's role is to see that the processes applied are consistent, reflect practices required by other regulatory agencies, and, of greatest importance, are protective of public health and the environment.

It is noted that this document borrows a significant amount of information from "Guidelines For Contamination Reduction And Sampling At Illegal Drug Manufacturing Sites," developed by the Washington State Department of Health (WDOH), Office of Toxic Substances and from the "Criteria for the Assessment and Remediation of Clandestine Methamphetamine Laboratories", developed by Sacramento County Environmental Management Department, as well as other resources listed in Attachment III.

In using this document, property owners and their consultants should be mindful of the variation among both Meth Labs and the processing methods. At this writing, the primary method used for the illegal manufacture of methamphetamine in Stanislaus County is the Red Phosphorus Method; however, the Ammonia ("Nazi" or "Birch") Method is also in use, and others may come into play. As noted throughout the literature there are no absolute guarantees that chronic health effects will be completely eliminated by remediating these impacted sites.

3.0 PROCESS FLOWCHART



4.0 REMEDIATION PROCESS

4.1 WHY REMEDIATION IS NECESSARY

Properties used as Meth Labs will typically be found with a lab-like setting, including containers of chemicals and manufacturing equipment commonly known to be used in the methamphetamine production process. During the initial response to a meth lab law enforcement or the DER will contact the Department of Toxic Substances Control (DTSC). DTSC will dispatch a contractor to remove all identified chemicals and lab equipment. However, DER experience indicates that, until proven otherwise, contamination from the drug manufacturing process remains present even after removal of the lab itself.

The potential health effects from long-term exposure to low levels of the chemicals used and produced in the Meth Lab processes remain under study. Some state health departments have proposed risk-based remediation levels for precursor chemicals in air that are extremely low. It is DER's position that many of these levels are controversial, based upon unrealistic exposure scenarios, and potentially unachievable, even in a non-drug lab environment. DER believes that the remediation criteria promulgated in this document are reasonable and achievable, representing a consensus from the published remediation levels, and should be protective of human health for most foreseeable occupancy situations.

4.2 WHAT ARE THE CONTAMINANTS OF CONCERN?

Each type of methamphetamine manufacturing process involves chemicals specific to the process. As previously noted, the Red Phosphorus Method is the most common method found in Stanislaus County. Some labs using the Ammonia Method (also known as the Birch or Nazi method) have been found. Information regarding process-specific chemicals is provided in Attachment II.

4.3 WHO DOES THE WORK?

DER Specialists respond to Meth Lab scenes, gather information, and coordinate the removal of any Meth Lab waste with the Department of Toxic Substances Control (DTSC). DER Specialists will conduct an inspection to determine if there is a need for further site assessment to remediate the property.

It is critical to have the assessment and remediation work directed by skilled, experienced professionals. DER requires tasks such as preliminary assessments, work plan development, and post-remediation assessments to be signed and notarized by a Certified Industrial Hygienist (CIH) and the contractor who will implement the PSA. This requirement is stated in Chapter 6.9.1 Section 25400 of the California Health and Safety Code. If soil and/or groundwater investigation is required, a State of California PG or RCE must also sign the document.

A licensed contractor holding the Hazardous Substance Removal Certification (HAZ), as issued by the Contractors State License Board, must implement the approved remediation plan. In this Document, the remediation contractor will be referred to as **"the Contractor."** All personnel working on the remediation must meet the training and

medical surveillance requirements of the Cal/OSHA Hazardous Waste Operations and Emergency Response Standard, Title 8, California Code of Regulations, Section 5192. If soil and/or groundwater assessment or remediation is required, it must be overseen by a State of California PG or RCE.

DER may not accept report of findings and refuse to review any documents pertaining to a site where remediation work has occurred without the approval of DER.

DER personnel are not in a position to direct the work of the property owner's consultants. Available information regarding the Meth Lab will be provided; consultants are expected to utilize their professional expertise in preparing the work plans described below.

4.4 PROPERTY USE

The property that housed the Meth Lab will be posted by the DER Specialist responding to the scene. This posting will effectively prohibit all occupancy unless authorized directly by the DER. The posted property is considered unfit for occupancy under the Health and Safety Code, and the DER will place a "cloud" on the property title. Entry into the posted areas is prohibited until such time that a DER representative authorizes entry. **No personal belongings, furniture, or other items should be removed from the posted property until released by the DER Specialist.** Such release is not likely to occur until the Preliminary Site Assessment (see below) has been completed.

As a general rule, if a Meth Lab is discovered in a residence, apartment, hotel room or similar occupancy, entrance to the entire unit will be prohibited until the DER Specialist conducts an inspection. The DER Specialist may not post only one room where the cooking occurred (e.g., bedroom, kitchen) within the occupancy due to fact that experience has indicated that contamination is rarely limited to the specific area of the cooking process. Depending upon the apparent extent of contamination, the DER Specialist may post adjacent units of apartments, hotels, and other proximal building units. Outbuildings, such as sheds and garages, may be posted without impacting the residence if appropriate.

4.5 PRELIMINARY SITE ASSESSMENT (PSA)

For all Meth Lab seizures, the operating assumption is that the illicit drug manufacturing process (cooking) will lead to some level of contamination, at a minimum in the immediate cooking area. The goal of the PSA is to determine the level and extent of contamination in order that an effective remediation work plan can be developed.

In the case of surfaces that are obviously or highly suspected to be contaminated, the DER will waive sampling requirements for those items or materials that will be removed and properly disposed (see Section 8.0). Note that the disposal facility may require sampling of these items or materials, an action over which DER has no control.

For example, if cooking was conducted in a kitchen and staining is evident, the property owner may decide that it is more cost-effective to remove and dispose of sheet rock, cabinets, appliances and linoleum rather than spend money on sampling only to confirm that the materials are in fact contaminated. Alternatively, it may be decided to surface

wash (Section 4.8.4) and encapsulate (Section 4.8.5) all surfaces in a room that appear to have been impacted; assessment sampling would not be required for these surfaces, but post-remediation sampling would be. Such plans should be disclosed in the PSA Workplan (see below).

4.5.1 PSA WORKPLAN

A written PSA Workplan will be developed by the Consultant to be submitted to the DER. **The PSA shall not commence until DER has reviewed and approved the PSA Workplan. The PSA work plan shall be submitted to the DER for review within 30 calendar days of the date that the property owner retains an approved contractor.**

The PSA work plan shall include:

- The physical location of the property.
- A summary of the information obtained from law enforcement, DER, Code Enforcement, and other knowledgeable sources. The summary will include a discussion of the information's relevance to the contamination, including areas suspected of being contaminated. Relevant information would include (as available):
    - Duration of lab operation and number of batches cooked or processed.
    - Drugs known to have been manufactured.
    - Recipes and methods used.
    - Chemicals and equipment found (by location).
    - Location of contaminated cooking and/or storage areas.
    - Visual assessment of the severity of contamination inside and outside of the structure where the lab was located.
    - Assessment of contamination of adjacent rooms, units, apartments or structures.
    - Disposal methods observed at or near the site (e.g., dumping, burning, burial, venting, and/or drain disposal).
    - Compare chemicals on the manifest with known methods of manufacture in order to identify other potential contaminants (see Attachment II).
    - Determine whether the drug manufacturing method included the use of chemicals containing mercury or lead (e.g., lead acetate, mercuric chloride, mercuric nitrate). If these contaminants are found, remediation protocols will deviate from the generic remediation guidelines, remediation planning and remediation will be more stringent.

DER will make reasonable attempts to obtain and provide relevant documents from Law Enforcement, Code Enforcement, and other agencies. However, the DER does not have the authority to compel the timely release of this information, and not every request will be successful.

- A description of the areas to be sampled and the basis for the selection of the areas. This section shall also document the decision process used in determining not to sample particular areas.
- Consideration should be given to:
    - Disposal methods observed at or near the site (e.g., dumping, burning, burial, venting, and/or drain disposal).

- Obviously stained areas.
- Immediate cooking area(s).
- Areas where chemicals were found.
- Adjacent rooms.
- Locations typically accessible for contact by occupants, particularly children.
- High traffic areas outside of the cooking area.
- Ventilation systems.
- Hard and soft surfaces, walls, floors, ceilings, appliances.
- Areas of potential waste disposal, such as sinks, floor drains, bathtubs, showers, and toilets.
- If the area is served by a septic system, observation and/or sampling of the septic tank, at a minimum, should be done (see the section 9.0 on Septic Tanks for more information).

Potential areas of contamination can be divided into primary and secondary areas.

Typical primary areas would include:

- Processing or "cooking" areas. Areas affected may include floors, walls, ceilings, working surfaces, furniture, carpeting, drape, plumbing fixtures and drains, heating and air conditioning vents.
- Disposal areas. Indoor areas include sinks, toilets, bathtubs, plumbing traps and floor drains, vents, vent fans, and chimney flues.
- Storage areas. Contamination may be caused by spills, leaks or open containers.

Secondary areas of contamination may include:

- Locations where contamination may have migrated, such as hallways or high traffic areas.
- Common areas in multiple dwellings, and adjacent apartments or rooms, including floors, walls, ceilings, furniture, carpeting, light fixtures, blinds, draperies and other textile products.
- Common ventilation or plumbing systems in hotels and multiple dwellings.

❖ Sampling protocols (see Section 4.6), analytical methods (see Section 6.0), laboratories to be used and their relevant certifications/accreditations (see Section 7.0). During each phase of sample collection, identical methods must be used to provide a basis for comparing results.

❖ A description of areas and items that will be remediated in lieu of sampling, if any (see Section 4.5).

4.5.2 PSA REPORT

If the PSA determines that there are levels of contamination at the site that warrant remediation as required by this document, a PSA Report shall be prepared and submitted to the DER. If results suggest that no action be taken, the PSA Report shall be prepared in accordance with Section 4.5.3.

Components of the PSA Report shall include:

- Location – Street address and mailing address of the contaminated property, owner of record and his/her mailing address, legal description, and clear directions for locating the property.
- Site map – A diagram of the contaminated property, including floor plans of affected buildings, local drinking water wells and nearby streams (if potentially impacted) drawn to a scale of 1/4" to 1', unless otherwise directed by the DER Specialist. The diagram shall show the location(s) of contamination and the location(s) of sampling points used in the PSA; the sampling point locations shall be keyed to the sampling results and remediation recommendations.
- A description of the sampling methods and analytical protocols used in the assessment.
- A description of the sampling results. If providing a narrative, group results by location rather than by analyte.
- Information regarding the background samples and results obtained (see Section 5.0).
- Specific recommendations, including methods, for remedial actions required to meet the State of California re-occupancy Criteria (see Section 5.0).
- A plan for the Post Remediation Site Assessment, including specific sampling requirements and methodologies, and locations at which samples are to be obtained.

The report shall be signed and notarized by the contractor responsible for the completion of the PSA and by a Certified Industrial Hygienist (CIH) for sufficiency and completeness. If soil and/or groundwater investigation is required, the document must also be signed by a State of California PG or RCE.

The PSA report must be thorough and specific in reporting findings and recommendations. If areas or items are contaminated, the report must be specific enough that the cleanup contractor doesn't have to guess at the action required. Therefore, a recommendation such as "The stove and all adjacent impacted areas must be thoroughly washed" are insufficient, for it raises the question of what constitutes an "adjacent impacted area" It is incumbent upon the Consultant to design the PSA sampling program to provide sufficient data to make specific, rather than vague, recommendations.

4.5.3 PSA SUGGESTS "REMEDIATED" SITE

While experience indicates that it is unlikely, sample results from the PSA may show that the Meth Lab activities did not leave areas of contamination at the property. If this is the case, the Consultant shall prepare a report to DER based on the analytical results, requesting that the property be declared "Remediated" and that a recommendation be made to remove the portion of the lien from the property title that addresses restrictions in habitation. Property owners and consultants are cautioned that until DER reviews and accepts a report, no re-occupancy of the property is to take place.

4.6 SAMPLING PROTOCOL

4.6.1 WIPE SAMPLES AND RESULT REPORTING

Wipe samples are, at best, an imprecise sampling technique for which there is little agreement on the "best" method. It is noted that the literature indicates that wipe

samples do not collect all of the contaminant from a specific sampling area, and that it takes at least three wipes to collect the majority of the surface contamination. To control variables, the Consultant shall use a consistent wipe sample technique throughout the project, and describe the specific wipe sample process in the reports. DER expects Consultants to follow the sample collection methodology described in Attachment I.

Recent work by the Washington Department of Ecology suggests that de-ionized water is not effective in lifting methamphetamine from sampled surfaces. Samples obtained using methanol as a solvent have shown much better recovery.

DER will not accept sample results for which the area of the sample is not recorded. All wipe sample results shall be reported as weight/surface area, in mass/100cm^2 (see Section 5.0). A common investigation practice is to take several swipes of unknown and inconsistent surface areas for a composite sample; such results will not be accepted, because the mass per 100 square cm correlation is not available.

For general wipe sampling, the regulations require a surface area of 100 cm^2. Sample containers should be bottles, as described in Attachment I. The literature suggests that the use of plastic bags presents a greater opportunity for the contaminant to transfer from the wipe to the bag than would be the case with a bottle. In most instances, the laboratory will prepare the samples for analysis in the sample containers, allowing any sample transferred to the container wall to be collected. DER will allow the use of sampling containers from the accredited laboratory.

4.6.2 COMPOSITE SAMPLES

Compositing of samples is a popular means of minimizing analytical costs. However, appropriate sampling and result reporting methods must be followed. In addition, care must be taken when deciding to composite, for a positive lab result will require individual re-sampling of all surfaces represented by that composite sample. Therefore, it is highly recommended that composite samples be reserved for those areas, that in the consultant's judgment, are anticipated not to be contaminated.

Each sample area composite must be 100 cm^2. For example, to composite wipe samples of four discrete wall areas in a kitchen, there must be four-100 cm^2 wipes. Each wipe sample will be done with a #40 Whatman Filter Paper or similar, with compositing accomplished by the lab in the extraction process. **The maximum number of wipe samples that may be composited is four**.

DER requests that common sense be used when compositing. The consultant should not composite an area or item that is likely to be contaminated (e.g., obvious staining) with areas unlikely to show contamination (e.g., remote from known cooking areas). This type of sampling may cause DER to suspect an attempt to dilute the sample from the likely contaminated areas to below instrument detection limits. Composite like to like surfaces, such as walls with walls, doors to doors, etc.

There should be no between-appliance compositing (e.g., stove AND refrigerator AND

microwave). The Consultant may consider compositing samples within an appliance (e.g., in a stove: burners, oven, handles, knobs, surface, etc.), but defining 100 cm^2 sample areas will be difficult.

4.7 GROSS REMEDIATION

The DTSC cleanup contractor should have removed materials associated with the operating Meth Lab at the time the lab was seized. If the consultant finds any such materials during the site assessment process, the material should be left in place and the DER Specialist notified immediately.

4.8 RESIDUAL REMEDIATION

A number of processes are associated with making the property suitable for re-occupancy, as determined by the DER. Note that the degree to which areas adjoining a space used for cooking activities are significantly contaminated is difficult to predict; long-term or high volume activities are likely to have impacted adjoining areas. As a result, it is generally most cost effective to assume low-level contamination by non-volatile materials and rid these and other areas of all potentially contaminated porous materials or items. Such decisions are to be reflected in the remediation Work Plan.

All material disposal associated with the site remediation process shall be in accordance with Section 8.0, "Waste Disposal."

4.8.1 "AIRING-OUT/VENTING"

"Airing-out" is typically conducted by law enforcement personnel during initial lab processing. Several agencies have advocated the airing-out of a structure during the remediation process as a means to reduce the concentration of volatile solvents and similar materials by volatilization; some have suggested increasing the air temperature within the structure to 85°F while increasing the ventilation rate for several days prior to remediation. While this practice may well reduce the airborne concentration of solvents and minimize the risk to remediation personnel, DER does not accept it as a substitute for removing and disposing those items such as porous furnishings and wallboard that have been contaminated.

4.8.2 AIR MONITORING

Several references and jurisdictions suggest the use of air monitoring for both evaluation of a property and for final clearance. DER supports the use of air monitoring to evaluate a property for contamination; however, it does have many drawbacks listed below.

- For many precursor and waste materials, validated analytical methods do not exist. For materials that have appropriate analytical methods, industrial hygiene sampling methods may not yield a low enough detection limit for evaluation against suggested exposure limits, requiring the use of expensive ambient air monitoring equipment. Direct reading instruments are generally non-specific and have relatively high detection limits.
- Exposure limits for residential occupancies are problematic. Exposure limits established for occupational settings (e.g., PELs, TLVs, RELs) are inappropriate, as they are designed to protect, to some limited extent, the working population, not the more sensitive members of the population.

- The materials that air monitoring would detect are mostly volatile solvents, and most with vapor pressures above 10 torr. As long as the building has reasonable ventilation, the concentrations should decrease to negligible in a fairly short period of time.
- Air monitoring may suggest that there is a problem, but it does not provide a specific identification in many cases. The effort may be better placed in additional wipe and bulk samples.

4.8.3 REMOVAL

- Visibly contaminated (etched or stained) sinks, bathtubs, toilets and similar fixtures shall be removed and properly disposed. In most cases, the cost of analytical testing, cleaning and post testing exceeds the cost of replacement of these articles.
- Porous materials (e.g., carpeting, suspended ceiling panels, wallpaper, etc.) that can absorb dust, powder, aerosols and vapors from the cooking process shall be removed and properly disposed. In most cases, the cost of analytical testing, cleaning and post-testing exceeds the cost of replacement of these articles. While the DER strongly recommends that this apply to furniture and clothing, DER has no authority to require the disposal of property contents.
- "Popcorn" spray-on ceiling coatings may contain asbestos and should not be disturbed unless there is gross staining; any such work must be directed by a Cal/OSHA Certified Asbestos Consultant. A sealant, of the type typically used for asbestos-containing spray-on finishes, should be applied to the ceiling if low concentrations of contaminants are detected.
- Some nonporous and semi-porous surfaces (e.g., floors, countertops, tiles, walls and ceilings) can hold contamination from the cooking process, particularly in those areas where cooking and preparation was performed and chemicals were stored. If a surface has visible contamination or staining, complete removal and replacement of that surface is required. This could include removal and replacement of wallboard, floor coverings, concrete slabs, and countertops. If this is not possible, intensive cleaning (see below) could be attempted. Circumstances that prohibit removal and replacement should be described in the Remediation Workplan.
- Appliances that were in the room in which cooking was conducted must be properly disposed of (too many surfaces to show sufficiently clean for food preparation or storage). All other appliances associated with food preparation or storage, located outside the cooking area, must be sampled for analytical testing.
- Areas underlying removed surfaces (wall board, tile etc.) usually will not need confirmation samples unless contamination is evident in those underlying areas.

4.8.4 SURFACE WASHING

Surface washing takes many forms, including pressure washing, detergent-washer washing, solvent (alcohol) washing, steam cleaning, and others. The objective is to reduce contaminants to below the State of California criteria by an efficient and cost-effective method that generates a minimal waste stream. Note that all wash solutions and rinsate must be effectively collected for disposal (see Section 8.0). Confirmation methamphetamine samples will be required on areas that are washed.

4.8.5 ENCAPSULATION

In cases where porous or semi-porous surfaces (e.g., walls, wood flooring, panels, ceiling and concrete) have levels of contamination that permit in-situ cleaning instead of removal and replacement, such surfaces shall be encapsulated with an oil-based paint, varnish, or similar sealant. Water-based latex paints appear to have a greater tendency to permit "bleed through" than oil-based coatings. The sealant is to be applied after surface washing has been completed. After the sealant has cured in accordance with the manufacturer's instruction, sampling and analysis must be conducted to assure that any remaining contamination is below the State of California criteria.

4.8.6 VENTILATION SYSTEM

Ventilation systems tend to collect fumes, vapors and dust, and redistribute them throughout a structure. The vents, stove hoods, ductwork, filters and even the walls and ceilings near the ventilation ducts can become contaminated. All air filters in the system shall be replaced, ventilation registers removed and cleaned, and surfaces near inlets and outlets cleaned. Cleaning of system ductwork should be considered, although the efficacy of duct cleaning is subject to debate; US EPA's article on duct cleaning is at the following link: http://www.epa.gov/iaq/pubs/airduct.html.

In motels, apartments, row-houses or other multiple-family dwellings, a ventilation system may serve more than one unit or structure. These connections must be considered when evaluating remediation and testing procedures. One strategy is to take samples from adjacent or connected areas/rooms/units, working outward from the lab site until samples show results below the State of California re-occupancy criteria.

Anecdotal evidence indicates that rooms adjacent to the cooking area may be impacted by active or passive ventilation (distributing fumes and vapors) or by poor chemical handling and hygiene practices. As is the case with other jurisdictions, DER will require evaluation and possible decontamination of areas adjacent to the cooking area. Such areas may include hallways and other high traffic areas, as well as adjacent rooms. The Consultant shall consider this in the PSA Workplan.

4.8.7 IMPACTED SOIL AND GROUNDWATER

If soil and groundwater investigation becomes necessary, it will be overseen by the DER Site Assessment and Mitigation program as part of the PSA. The variables associated with hazardous waste site remediation are numerous, and will not be discussed in this document. In the event that the Preliminary Site Assessment report identifies potential impacts to soil and/or groundwater, the DER will work with the property owner and consultant to determine the appropriate path for further assessment and mitigation activities and associated regulatory oversight. The property owner or the consultant should contact the Hazardous Materials Specialist for the DER Site Assessment and Mitigation Program for direction regarding soil and/or groundwater contamination.

DER can handle straight-forward remediation in a timely manner. A property owner with soil contamination can request DER to oversee the soil cleanup if the soil will be cleaned up to background levels.

4.9 REMEDIATION WORKPLAN

If the results of the PSA show that the property requires remediation of contamination before re-occupancy can be permitted, the property owner's representative must develop a remediation workplan for review by DER. While it is anticipated that the consultant will prepare the Remediation Workplan, it may also be prepared by the contractor. **The remedial activities shall not commence until DER has reviewed and approved the Remediation Workplan.**

The written remediation work plan must include:

- Timeline – The timeline should identify the key work elements, indicate the estimated time to complete each element, and show start-end time estimates for each element. The remediation workplan shall be completed within 90 days from the DER approval.
- Location – Street address and mailing address of the contaminated property, owner locating the property.
- Site Map – A diagram of the contaminated property, including floor plans of affected buildings, local drinking water wells and nearby streams (if potentially impacted) drawn to a scale of 1/4" to 1', unless otherwise directed by the DER Specialist. The diagram shall show the location of contamination and the location of sampling points used in the PSA; the sampling point locations shall be keyed to the sampling results.
- PSA Summary – A summary of the information and sampling results obtained in the PSA, and the basis for remedial actions (or lack thereof) as proposed in the Remediation Workplan.
- Post Remediation Assessment - A plan for the Post-Remediation Assessment (see below), including sampling and analysis protocols.
- Remediation Procedures – Specific remediation procedures will include a list of any and all materials to be removed, removal procedures and any proposed remediation processes.
- Waste disposal plan – Provides information on waste disposal as described in the Waste Disposal section (Section 8.0) of this document. Identify the site(s) selected for disposal of waste generated during the remedial activities. Provide evidence that Clan Lab debris (e.g., wallboard, carpets, appliances) has been properly disposed.

4.10 POST-REMEDIATION ASSESSMENT

The purpose of the Post-Remediation Assessment is to establish that the property has been remediated up to the point at which residual contamination is below the State of California re-occupancy criteria. The assessment should be conducted by the consultant after remediation has been completed and/or the encapsulant has cured. Sampling protocols for the post-remediation assessment will have been defined in the approved work plan. In general, those areas of the property for which the PSA sampling showed levels above the State of California re-occupancy criteria and were not removed and replaced (e.g., were cleaned, or cleaned and encapsulated) are to be sampled in the same manner proposed in the PSA. If all sample results fall below the State of California re-occupancy criteria, the remediation work is considered complete and the Consultant can prepare the final report. Any areas that fail the post-remediation sampling are to be re-cleaned/re-encapsulated and then re-sampled, or removed.

4.11 FINAL REPORT

There are two options for the Final Report of Remediation. First, if the remedial action consisted solely of removal of contaminated surfaces, such as cabinets, floor coverings, sheetrock and similar materials, post-remediation sampling and assessment is not required by DER. The contractor must provide to DER a signed written documentation establishing in detail that the remediation work has been completed in accordance with the approved work plan. This documentation shall include proof of proper disposal of contaminated items and building materials removed from the property as part of the remediation process. Second, where the work plan includes actions other than removal of contaminated surfaces (e.g.,removal of some surfaces, cleaning of others), the Final Report of Remediation should contain two components; one to address the removal and another to address any other actions. The Contractor must provide the Consultant signed documentation establishing, in detail, that the remediation work has been completed in accordance with the approved workplan. This documentation shall include proof of proper disposal of contaminated items and building materials removed from the property as part of the remediation process. Note that any remediation activity other than removal of contaminated surfaces requires post-remediation sampling and assessment.

The consultant will include the contractor's documentation as an attachment to the Final Report. The consultant's Final Report of Remediation will focus on the process and results of the post-remediation sampling and analysis, and will reference the contractor's documentation as necessary to establish that the remediation has been completed in accordance with the approved workplan.

The Final Report must be signed by the CIH (and PG if soil or groundwater investigation is required) who conducted or reviewed the Preliminary Site Assessment and the Post Remediation Assessment. The DER will review the Final Report in a timely manner.

If the Final Report is not satisfactory to the DER, it will be returned to the consultant and/or contractor with comments for clarification, additional information, or other items that may remedy report deficiencies. The consultant and/or contractor shall resolve, in a timely manner, the report's deficiencies and resubmit the report to the DER for evaluation.

When DER determines that the Final Report meets the requirements of the approved work plan and the State of California re-occupancy criteria, the DER will approve re-occupancy and remove the cloud from the property title.

The Final Report is a technical document, summarizing the work performed under the workplan and presenting the data collected during the Post Remediation Assessment.

Components of the Final Report shall include:

- Case narrative.
- Site description.
- Summary of PSA findings and recommendations.
- Summary and documentation of remedial actions.
- Post-remediation assessment with detailed description and documentation, including lab reports and scaled site map keyed to sample locations.

- Post-remediation assessment results, with consultant's analysis and recommendation.

Note: Data must be reported as µg/100cm^2 for surface samples, and ng/m^3 for air samples unless otherwise noted. Analytical methodology must reference standard U.S. EPA methods or equivalent established methods as used to analyze the samples.

5.0 REOCCUPANCY CRITERIA

The State of California requires the following criteria to be met for all samples prior to recommending the property be cleared for re-occupancy. The State of California re-occupancy criteria are listed below and represent best estimates of minimal health risk from exposure to remaining contamination.

- Methamphetamine on any indoor surface is less than, or equal to, 0.1 µg/100 cm^2
- Total level of lead is less than, or equal to, 20 µg/ft^2
- Level of Mercury is less than, or equal to, 50 ng/m^3 in air

DER assumes that any property may, at some point in time, be occupied by members of the general population susceptible to contamination associated with Meth Lab operations; such groups include the very young, the very old, and individuals with compromised immune systems. DER therefore rejects as occupancy criteria those occupational exposure limits (OELs) as promulgated by Cal/OSHA (PELs), ACGIH (TLVs), and NIOSH (RELs). OELs are designed to protect members of the workforce, the healthiest members of the population, from harm associated with chemical exposure, and are not sufficiently protective for more susceptible populations.

6.0 ANALYTICAL AND SAMPLING METHODS

Analytical methods are driven by the analyte, and sampling methods are frequently driven by the analytical method. DER expects that sampling methods will follow criteria for wipe and bulk sampling presented in Attachment I. Exceptions to this can be specific methods proscribed by the laboratory, or alternative methods in general use in environmental and occupational health practice. Examples include methods from US EPA SW-846, OSHA Sampling and Analytical Methods, NIOSH Analytical Methods, and, in the case of lead, HUD guidelines.

Analytical methods for wipe and bulk samples are expected to be from US EPA SW-846 or the 600 Series in Appendix A of 40 CFR 136. Environmental Laboratory Accreditation Program labs (ELAP see below) may modify these methods as appropriate for the analyte.

Methamphetamine samples shall be analyzed by modified EPA Method 8270. According to Washington Department of Ecology-accredited labs, modified EPA **Method 8015 is prone to false positives**. As indicated above and in Attachment I, wipe samples are to be obtained with 11 cm #40 Whatman Filter Paper (p/n 1440-110) or similar paper wetted with methanol, and stored and shipped in appropriate sampling containers.

DER will not accept field analyses for clearance samples. This includes the use of colorimetric detector tubes, real-time direct reading instruments (such as flame ionization and photo ionization detectors), any type of Haz-Cat evaluation, and Marquis/Meth reagents, pH paper, or similar techniques.

7.0 LABORATORY REQUIREMENTS

All analyses are to be conducted by analytical laboratories which are accredited (Fields of Testing E114-E117) by the California Dept. of Health Services Environmental Laboratory Accreditation Program; a list of such labs is available at http://www.dhs.ca.gov/ps/ls/ELAP/default.html . Note that this list is not limited to labs in California, as California has ELAP reciprocity with several states, and California's ELAP list includes many out-of-state labs. A sample list of accredited laboratories is located at Attachment V.

8.0 WASTE DISPOSAL

All materials removed from a Meth Lab property as a result of having been impacted/ contaminated by Meth Lab activities (operation, storage, spills, disposal) must be properly disposed. In general, those items cleaned first (e.g., washed with Simple Green or similar and triple-rinsed) have historically been disposed at a Class III landfill. Always contact the landfill to check the current status for acceptance of these materials. For information on landfills, see Attachment IV for a list provided by the Regional Water Quality Control Board.

For any disposed items, DER will require an inventory, as well as a waste disposal receipt, to be submitted with the final clearance report. For items that are required to be disposed as hazardous waste, a copy of the Uniform Hazardous Waste Manifest is required.

DER does not regulate the types of wastes accepted by any landfill; each facility has its own permit requirements, and will likely review Meth Lab debris on a case-by-case basis. It is up to the Contractor to contact the landfill to determine if a specific material removed from a Clan Lab property will be accepted, and the conditions under which it will be accepted.

9.0 SEPTIC SYSTEMS

If the site is served by a septic system, an investigation will be required. This investigation, at a minimum, involves a visual inspection of sinks, drains, bathtubs, toilets etc. If any staining is apparent, a visual must also be made of the interior/contents of the septic tank. Finally, a statement must be made regarding these observations of the sinks, drains, bathtubs, toilets and septic tank contents. If the contractor is confident that there is no impact, they must make a statement to the effect that, based on the general conditions (ie lack of stains, reasonable evidence that tank has not been impacted etc.) it appears that there has been no impact to the septic system.

If the contractor does not wish to make that claim (i.e suspect stains, witness statements of past dumping into drains. etc), the case cannot be closed until samples have been taken from the outflow (effluent) pipe to prove, conclusively that there is no significant

contamination or threat to groundwater. It is recommended to analyze the effluent sample, at a minimum, for VOC's, SVOC's, pH or any other compounds found to be used for methamphetamine production at this site.

If the effluent sample reveals very high levels of contaminants (such as benzene, methylene chloride, mercury, lead or any deleterious substance clearly associated with the particular methamphetamine manufacturing process for that site), then assessment and remediation of the leach line, seepage pit etc. may be required. A fish bioassay may also be performed in order to determine whether the effluent is considered hazardous waste and requires additional site assessment.

If it has been established that the P2P method was used and/or there is evidence of lead or mercury precursor compounds on site (that clearly are part of the methamphetamine manufacturing process), the septic tank effluent (outflow) pipe will need to be analyzed for lead and mercury. Elevated levels of lead or mercury in the effluent could require leach field assessment / remediation. The contents of the septic tank should eventually be pumped out in all cases.

- **GROUNDWATER**
  - Although unlikely, if groundwater impact does occur, the assessment and subsequent remediation (if necessary) will need to be overseen by a State of California PG or RCE.
- **SUPPLY WELLS**
  - If there is any possibility of impact to a well, a sample from the well or water distribution system should be required. The water samples should be analyzed, at a minimum, for VOC's, SVOC's, and methamphetamine.
  - It is recommended that a five-minute purge be performed unless the well is continually in use.
  - If it has been established that the P2P method was used and/or there is evidence of lead or mercury precursor compounds on-site (that clearly are part of the methamphetamine manufacturing process), the supply well will need to be tested for lead and mercury. Elevated levels of lead or mercury in the effluent could require groundwater assessment / remediation.
- **SOIL SAMPLING**
  - If there is any evidence of burning and/or burial of methampatamine manufacturing chemicals, assessment and proper disposal of that soil should be done. Generally, soil excavation and disposal at an appropriate facility is the best means of remediating impacted soil.
  - Confirmation soil samples should be analyzed for VOC's, SVOC's, methamphetamine, total lead, iodine, phosphorus, mercury or any other substance associated with the particular methamphetamine manufacturing process for that site. Levels less than the EPA Preliminary Remediation Goals (PRG's) are considered acceptable as adequate remediation for soil.
  - A minimum of four lateral (wall) and one bottom sample will be required. More samples may be required depending on the extent of contamination, geology etc.

- A background sample will be required for comparison, unless all of the samples are less than PRG's.
- If soil investigation is required, the document must also be signed by a State of California PG or RCE.
- If a reconnaissance of the exterior of the property indicates that there is no contamination, the consultant can make a statement indicating that there appears to be no outdoor evidence of methamphetamine impact
- A copy of the PRGs can be found on the EPA website:http://www.epa.gov/region09/waste/sfund/prg/index.html
- If a reconnaissance of the exterior of the property indicates that there appears to be no methamphetamine-related impact, the consultant can make a statement indicating that there appears to be no outdoor evidence of methamphetamine impact.

ATTACHMENT I

The Surrogate Method

In the Surrogate Method, a limited number of laboratory samples are taken from judgmentally selected locations throughout the clandestine laboratory site and analyzed for the target analytes. This design method attempts to balance the necessary cost burden of assessment activities against the public health need to ensure that no significant residual contamination is unknowingly allowed to persist uncorrected. The surrogate approach is based on the following concepts:

A. There is a lack of test methods and reference standards for many of the substances, and especially some of the organic drug compounds, which are associated with clandestine lab activities. In short, one can't feasibly test for all hazardous materials associated with the cooking process, and even if test methods were available, it would be prohibitively expensive to do so.

B. Contamination can be persistent in the environment, both in porous media and on non-porous surfaces, allowing for latent detection.

C. The presence and concentration variability of target contamination assessed at laboratory sites is assumed to be representative of similar conditions for the remaining clan lab chemicals not specially analyzed for owing to the reasons outlined above. The premise assumes that if the target analytes are detected in significant concentration, then other clan lab method specific chemicals not analyzed for are also present in concentrations of public health interest. Conversely, if the target analytes are not detected, or detected in very low concentrations, it may be inferred, following this presumption, that chemical not analyzed for are also likely to be not present, or present in concentrations low enough not to be of public health concern.

It is understood that these assumptions define a data gap suitable for future study. However, absent an alternative method that concurrently minimizes the cost of investigation while providing adequate information to indicate potential public health risk, the Surrogate Method is the minimum level of site investigation acceptable to DER.

DER Criteria under the Surrogate Method follow.

A. Sample Types
   A combination of wipe and bulk samples should be taken utilizing this protocol. Wipe samples should be taken of non-porous surfaces, whereas bulk samples should be taken of porous materials.
   1. Wipe samples should be taken of sealed concrete (garage floors), vinyl flooring, sealed wood surfaces, tile, Formica, bathroom fixtures, appliance surfaces, painted surface of good condition, etc.

2. Bulk samples should be taken of unsealed or poor condition concrete and wood surfaces, dry wall, painted surfaces of poor condition, carpeting, carpet padding and upholstery.

In some cases, particularly with painted surfaces, a decision must be made if a wipe sample or bulk sample would be more appropriate to recover and identify potential contamination. To address error associate with mass loading of bulk samples, particularly from painted surface and drywall, it may be appropriate to obtain bulk samples using a surface scraping technique.

B. Sample Locations and Quantities

Take one bulk or wipe sample from the following as associated with each major area of the location suspected by history and/or visual observations as being potentially affected by contamination:

1. Each major floor surface.
2. Each major wall surface.
3. Each major ceiling surface.
4. Each major home appliance (e.g., refrigerator, oven, microwave, dishwasher, washing machine, dryer, etc.).
5. Each major cabinet, counter, and/or built-in feature (e.g., kitchen cabinets, counters, vanities, etc.).
6. Each bathroom and/or kitchen fixture or grouping of fixtures.
7. Each major furniture grouping.

In establishing the number and location of samples at individual property sites, sampling of some locations or items may not be necessary if the need for remediation is apparent by observation or agreement of parties. Examples include fire-damaged surfaces, apparent direct staining or damage, and/or obvious physical damage of an item or feature necessitating removal.

C. Collection Procedures

1. Wipe Samples should be obtained using the following protocol unless otherwise instructed by the analytical laboratory. Note that these instructions differ from Lazarus' paper, as lab requirements have been refined.
    a. Use eight-ounce, wide mouth, borosilicate glass jars having phenolic screw top lids with Teflon liners.
    b. Prepare each sample by placing a 11 cm #40 Whatman Filter Paper (p/n 1440-110) or similar (see Note) into each sample jar. Add 5 ml of methanol to each pad and close the jar. Use appropriate personal protective equipment when using methanol.
    c. Select the surface location to be sampled.
    d. Squeeze excess methanol from the pad (back into the open jar) before wiping the sample area.
    e. Wipe a one hundred square centimeter (100 cm^2) surface area, using a consistent wipe or blot pattern technique (i.e., concentric square pattern starting in the upper left corner and ending in the

center of the area). Use a 10-by-10 cm square template (usually made of Teflon or other material that will not contaminate the sample and is resistant to the solvent).

f. Without allowing the filter to contact any other surfaces, fold the filter with the exposed side in, the fold it again. Return the filter to the glass jar and replace the lid.
g. Wear disposable Nitrile or PVC gloves for each sample taken. Change gloves between samples.
h. Obtain separate wipe samples (separate jar and pads) for each individual analyte, to be analyzed by the laboratory unless the laboratory explicitly states that multiple analytes can be tested from one pad. Otherwise, if multiple analytes are to be tested, then all wipe samples from a selected location should be of adjacent, contiguous surfaces. Do not re-wipe the same surface.
i. Preservation of the samples for inorganic analysis is not normally required unless otherwise specified by the analytical laboratory.
j. When appropriate, submit a sample blank consisting of a prepared sample jar taken to the field and returned to the laboratory for analysis.
k. Label the jar, attach custody seal, and prepare sample for transport to the laboratory.
l. See Section 4.6.2 for information on compositing samples.

NOTE: In some cases, specific to the surface being sampled, it may be preferable to use sterile gauze pads.

2. Bulk samples should be obtained using the following protocol unless otherwise instructed by the analytical laboratory:
    a. Use four- or eight-ounce, wide mouth, borosilicate glass jars having phenolic screw top lids with Teflon liners.
    b. Select the media to be bulk sampled.
    c. Using an appropriate sampling tool/device, obtain a minimum of 30 grams for each bulk sample unless the analytical laboratory specifies a different quantity of sample.
    d. Wear disposable Nitrile or PVC gloves for each sample taken. Change gloves between samples.
    e. Unless otherwise specified by the analytical laboratory, multiple analytes, may be analyzed from single bulk sample representing each medium to be evaluated.
    f. Sampling tools/device should be cleaned and triple-rinsed with de-ionized water between each bulk sample or otherwise cleaned following a laboratory-recommended protocol between samples.
    g. For scrape samples of paint, etc., a polyethylene tray (or similar capture device) may be taped to the wall surface below the surface area to be scraped. Collect the sample in the tray and then transfer it to the sample container.
    h. Preservation of the samples for inorganic analysis is not normally required unless otherwise specified by the analytical laboratory.

i. Bulk samples for organic analysis should be preserved at 4°C (usually applies to septic waste and subsurface soil samples recovered for volatile and semi-volatile hydrocarbon analysis).

ATTACHMENT II

Chemicals of Concern

Taken from the CSTI Clandestine Drug Laboratory Chemical Identification training manual, the following is a less than exhaustive list of typical lab chemicals. Methamphetamine Methods of Production and Chemicals Typically Used

Ephedrine Reduction Method (With Hydriodic Acid)	**Sodium Metal Method (Nazi or Birch)**
Hydriodic acid Ephedrine Red phosphorous Sodium hydroxide Hydrochloric acid Freon	Ephedrine Pseudoephedrine Anhydrous ammonia Sodium (metal) Lithium (metal) Hydrochloric acid
Phenyl-2-Propanone Method (P-2-P)	
Phenyl-2-Propanone Methylamine Methyl Alcohol Mercuric chloride Aluminum Ether Sodium hydroxide	

ATTACHMENT III

Resources

Materials used the development of this criteria document include:

Guidelines for Cleaning Up Former Methamphetamine Labs
Missouri Department of Health and Senior Services
http://www.health.state.mo.us/ResourceMaterial/meth.pdf

Guidelines for Contamination Reduction and Sampling at Illegal Drug Manufacturing Sites
Washington State Department of Health, Office of Toxic Substances
http://www.doh.wa.gov/ehp/ts/CDL.HTM

Clandestine Laboratory Contaminated Properties: Assessment and Remediation Strategies,
Bruce Lazarus, CIH
Journal of Clandestine Laboratory Investigating Chemists, V. 10, No.2, April 2000

Illegal Methamphetamine Laboratories
University of Arizona College of Public Health
http://www.publichealth.arizona.edu/organization/divisions/division3/methlab/index.html

Clandestine Drug Lab Cleanup Program
Oregon Public Health Services, Environmental Services and Consultation
http://www.ohd.hr.state.or.us/esc/druglab/welcome.htm

Cleanup of Clandestine Methamphetamine Labs (draft)
Colorado Department of Public Health and the Environment
http://www.gcgllc.com/LEPCHandbook/methlabcleanup.pdf

Meth and Clandestine Drug Labs
Minnesota Department of Health
http://www.health.state.mn.us/divs/eh/meth/index.html

Surface and Dermal Monitoring for Toxic Exposures
Ness, Shirley A. 1994. Van Nostrand Reinhold, New York.

California Code of Regulations
Section 5192 Hazardous Waste Operations and Emergency Response

ATTACHMENT IV

Stanislaus County Disposal Facilities

The following list was compiled by the Regional Water Quality Control Board, and was current in July 2002. For an updated version, go to the Regional Board's website at http://www.swrcb.ca.gov/cwphome/land/docs/wal_r5.xls. or the State Water Resources Control Board's site, which has tables for facilities in all nine regions, at http://www.swrcb.ca.gov

CENTRAL VALLEY REGIONAL WATER QUALITY CONTROL BOARD (5) WASTE ACCEPTANCE LIST

S = SACRAMENTO OFFICE	Sacramento Watershed -- Steve Rosenbaum (916-464-4631)
	San Joaquin Watershed -- Victor Izzo (916-464-4626)
F = FRESNO OFFICE	Landfills -- Dane Johnson (559-445-5525)
	Surface Impoundments -- Shelton Gray (559-445-5508)
R = REDDING OFFICE	Karen Clementsen (530-224-4852)

FACILITY NAME	OFFICE	FACILITY PHONE NUMBER	COUNTY	CLASS	TYPE	ASBESTOS	AUTO SHRED	DRILLING MUDS	WASTE WATER SLUDGE	ASH	SEPTAGE	DESIGNATED SOLIDS	DESIGNATED LIQUIDS	SOILS WITH PETROLEUM	PESTICIDE CONTAINERS
ALTAMONT SANITARY LANDFILL	S	925-449-6349	ALAMEDA	II	LF	+	+		+	+		+	+	+	
ALTURAS LANDFILL	R	530-233-6403	MODOC	III	LF						+				
ANDERSON SOLID WASTE INC.	R	530-347-5236	SHASTA	III	LF	+			+	+					
AQUA CLEAR FARMS, INC	S	707-374-2559	SOLANO	II	LF, SI			+							
AUSTIN ROAD LANDFILL	S	209-446-4482	SAN JOAQUIN	III	LF										
AVENAL LANDFILL	F	559-386-5766	KINGS	III	LF										
BILLIE WRIGHT LANDFILL	F	209-385-7388	MERCED	III	LF										
BLACK BUTTE	R	530-842-8250	SISKIYOU	III	LF										
BUENA VISTA	S	209-223-6375	AMADOR	II	LF, SI	+			+	+		+		+	
CALAVERAS ASBESTOS MONOFILL	S	209-785-2201	CALAVERAS	U	LF	+									
CHEM WASTE MANAGEMENT - KETTLEMAN	F	800-843-3604	KINGS	I	LF	+	+	+	+	+	+	+	+	+	+
CHEM WASTE MANAGEMENT - KETTLEMAN	F	800-843-3604	KINGS	I	SI			+	+		+		+		
CHESTER LANDFILL	R	530-283-6268	PLUMAS	III	LF										
CLOVIS CITY LANDFILL	F	559-297-2376	FRESNO	III	LF										
COLUSA COUNTY NO 2, STONYFORD	S	916-458-5186	COLUSA	III	LF										
EAST LAKE LANDFILL	S	707-994-5888	LAKE	III	LF										
FINK ROAD LANDFILL	S	209-837-4800	STANISLAUS	III	LF	+									
FINK ROAD LANDFILL	S	209-837-4800	STANISLAUS	II	LF					+					
FLORIN PERKINS ROAD LANDFILL	S	916-383-2660	SACRAMENTO	U	LF										
FOOTHILL SANITARY LANDFILL	S	209-468-3066	SAN JOAQUIN	III	LF, LT										

FORWARD, INC	S	209-466-4482	SAN JOAQUIN	II	LF	+	+		+	+		+		+	
FRESNO COUNTY - COALINGA LANDFILL	F	559-262-4295	FRESNO	III	LF										
FRESNO COUNTY AMERICAN AVENUE	F	559-262-4295	FRESNO	III	LF				+						
FULTON RECLAMATION	S	530-865-3680	GLENN	III	SA			+							
GLENN COUNTY LANDFILL	S	530-934-6530	GLENN	III	LF										
GOPHER HILL	R	530-283-6268	PLUMAS	III	LF										
H.M. HOLLOWAY GYPSUM MINE RECL.	F	661-797-2320	KERN	U	LF		+	+		+					
HAY ROAD LANDFILL	S	707-678-4718	SOLANO	II	LF	+				+		+		+	
HIGHWAY 59 LANDFILL	F	209-285-7388	MERCED	III	LF				+						
KERN COUNTY - ARVIN SANTARY LANDFILL	F	661-862-8900	KERN	III	LF										
KERN COUNTY - BAKERFIELD METRO	F	661-862-8900	KERN	III	LF	+	+		+						
KERN COUNTY - SHAFTER-WASCO LANDFILL	F	661-862-8900	KERN	III	LF				+						
KERN COUNTY - TAFT LANDFILL	F	661-862-8900	KERN	III	LF										
L & D LANDFILL	S	916-383-9420	SACRAMENTO	III	LF	+									
MADERA COUNTY - FAIRMEAD LANDFILL	F	559-665-3099	MADERA	III	LF					+					
NEAL ROAD	R	530-538-7681	BUTTE	III	LF	+			+		+				
NORTH COUNTY LANDFILL	S	209-468-3066	SAN JOAQUIN	III	LF										
ORANGE AVENUE DISPOSAL COMPANY	F	559-233-1158	FRESNO	III	LF										
OSTROM ROAD LANDFILL	S	530-743-6321	YUBA	II	LF										
PORTOLA LANDFILL	R	530-283-6268	PLUMAS	III	LF										
RED BLUFF LANDFILL	R	530-528-1102	TEHAMA	III	LF										
ROCK CREEK LANDFILL	S	209-754-6403	CALAVERAS	II	LF				+	+		+			
SACRAMENTO COUNTY - KIEFER LANDFILL	S	916-481-1816	SACRAMENTO	III	LF										
SAFETY-KLEEN - BUTTONWILLOW	F	800-544-7199	KERN	I	LF, SI			+	+			+	+	+	
SANIFILL INC. - McKITTRICK SITE	F	805-762-7607	KERN	II	LF, SI			+	+		+	+	+	+	
SIERRA COUNTY LOYALTON LANDFILL	S	209-289-3251	SIERRA	III	LF					+					
TULARE COUNTY - TEAPOT DOME SITE	F	559-733-6634	TULARE	III	LF					+					
TULARE COUNTY - VISALIA LANDFILL	F	559-733-6634	TULARE	III	LF					+					
TULARE COUNTY - WOODVILLE DISPOSAL	F	559-733-6634	TULARE	III	LF					+					
WEST CENTRAL LANDFILL	R	530-225-5661	SHASTA	III	LF				+						
WESTERN REGIONAL LANDFILL	S	916-645-5180	PLACER	III	LF	+			+						
WESTWOOD LANDFILL	R	530-252-1273	LASSEN	III	LF										
YOLO COUNTY CENTRAL LANDFILL	S	530-666-8729	YOLO	II	SI				+				+		
YOLO COUNTY CENTRAL LANDFILL	S	530-666-8729	YOLO	III	LF				+						

LF = Landfill
LT = Land Treatment Unit
SA = Soil Amendment
SI = Surface Impoundment
U = Unclassified

ATTACHMENT V

METHAMPHETAMINE CONTAMINATED PROPERTY CLEANUP ACT OF 2005

PARTIAL LIST OF ACCREDITED LABRATORIES

- Below is a listing of Accredited laboratories and Certified Industrial Hygienists. This list is provided for information only to assist you in complying with the Methamphetamine Contaminated Property Cleanup Act of 2005. Appearance on this list is not an endorsement by Stanislaus County, nor does the County warranty the work performed by the listed firms. Firms not included on this list may also provide satisfactory work.

Accredited Laboratories To Test For Methamphetamine Residue		
Alturas Analytics, Inc. Robin Woods 1282 Alturas Drive Moscow, ID 83843 208.883.3400 Fax 208.882.9246	**DataChem Laboratories, Inc** 960 West LeVoy Drive Salt Lake City, UT 84123 (801)266-7700	**Green Country Testing, Inc.** Brian Duzan 6825 E 38th Street Tulsa, OK 74145 918.828.9977 800.324.5757 fax 918.828.7756
Analytical Chemistry, Inc. Mia Sazon 4611 S 134th Place Suite 200 Tukwila, WA 98168 206.622.8353 fax 206.622.4623	**Friedman and Bruya** Charlene Morrow 3012 16th Avenue W. Seattle, WA 98119-2029 206.285.8282 fax 206.283.5044	**Legacy MetroLab** Chadrick Morse 1225 NE 2nd Avenue Portland, OR 97232 918.828.9977 800.324.5757 fax 918.828.7756
MDE Forensic Laboratories 700 S. Industrial Way Seattle, WA 98108-5231	**S and N Laboratory** Mr. Neil Spingarn 2021 East 4th Street, Suite 112 Santa Anna, CA 92705 Phone:(714) 543-2211	

CERTIFIED INDUSTRIAL HYGIENIST (CIH) COMPANIES
THAT PROVIDE ILLEGAL DRUG LAB CLEANUP CERTIFICATION

Note: This list is not to be interpreted as a complete listing or an endorsement of any particular group or firm by Stanislaus County, Department of Environmental Resources

Environmental Compliance Services, Inc.
2538 Mercandile Drive, Suite G
Rancho Cordova, CA
916-852-2590
916-228-2747 (fax)

Atlantic Pacific Environmental Inc.
PO Box 41082
Sacramento, CA 95841
Mark Pheatt, MS, CIH
916-991-6426 (phone)
916-991-7173 (fax)
916-768-6246 (cell)

Bovee Environmental Management
13201 Valley Crest Drive
Oakdale, CA 95361
PO Box 4816
Modesto, CA 95352
209-847-3800

Environmental Science Services, Inc.
PO. Box 1106, Lodi, CA 95241
209-333-6157, 209-333-0492 (fax)
209-520-9916 (24 hour #)

Environmental Science Services, Inc
1133 Kansas Avenue, Modesto CA 95351
209-544-6313, 209-544-6314 (fax)
24-hour emergency service
Email: ENVSS1@aol.com

Parc Specialty
1400 Vinci Avenue
Sacramento, CA 95838
916-992-5405
916-992-6177 (fax)

RGA Environmental
948 11th Street
Modesto, CA 95354
800-776-5696

San Joaquin Environmental
7257 N. Maple Suite 108
Fresno, CA 93720
559-298-8500
800-564-8200

Collier Environmental
3882 Pinecrest Drive
Mariposa, CA 95338
Phone: 209-742-6622
Fax: 209-966-7149
billcollier@sti.net

Geological Technics Inc.
1101 Seventh Street
Modesto, CA 95354
209-522-4119
209-522-4227 (fax

ATTACHMENT VI

PSA Guidance Document

Most contaminated sites can be assessed and remediated by the **two-document** procedure, which involves a PSA workplan and PSA Report (see 3.0 Process Flowchart). However, the more involved process with **four documents**, listed below, can be performed for complicated sites involving extensive cleanup and/or areas where the estimated sample results cannot easily be predicted.

The main difference between the two-document and four-document procedure is that with the **two-document** procedure the work plan addresses sampling to assess the contamination *and* the subsequent cleanup after which time the PSA is submitted.

The **four-document** procedure involves an initial workplan to address sampling to assess the contamination, a PSA combined with a second workplan, *after the sample results are received,* to address cleanup based on those sample results, and then a final report.

The choice of which system to use is up to the contractor. Generally, if there is little need to rely on sample results for decision-making (i.e. one already has enough data, extensive removal will take place etc.) then the **two-document** system will most likely suffice. If more guidance is necessary, the DER SAM caseworker can be contacted for assistance / recommendations.

Even if the two document procedure is used, portions of the below attachment can be used for information and suggestions.

Guidelines, suggestions and examples for PSA workplan, PSA, Contamination Workplan and Final Report Preparation.

GUIDANCE DOCUMENT TEMPLATE

I. PSA Work Plan

Introduction. Property Description / History.

- Describe the property
- Type of methamphetamine lab
- Methods used (i.e. Red Phosphorus, Birch, P2P etc.)
- Chemicals used, and what parts of the house they were located
- Indicate the sources of this information (visual, police, witness statements, etc.)

Visual Observations to be conducted.

- If further inspection is still required for certain areas then describe what will be visually inspected (i.e. counter tops, HVAC system, etc.)

Sampling Methodology

- Describe all sampling techniques to be used (scrape, wipe etc)
- Provide details. This is an example of the level of detail that would be appropriate: '*surface samples will be collected using sterile 4" diameter Whatman filter paper wetted with 5 ml of methanol per the recommendations of the laboratory. After wiping the areas of concern, the filter paper will be placed into a uniquely numbered chemically cleaned glass jar. A 100* cm^2 *sampling template will be used.*'
- Indicate all of the general sampling locations (i.e. kitchen floor, HVAC)
- A diagram with proposed sampling locations should also be enclosed. In lieu of certain portions of sampling/inspection, samples, inspection reports from the initial visit of DER HIRT may be used

Sample analyses

- List the parameters and the technique used to sample it; for example, *Methamphetamine: High Performance Liquid Chromatography/Mass spectrometer*, etc.

Septic Tank

- If the facility is served by a septic tank, then an initial investigation should be performed. This is basically a visual of the sinks, toilets, bathtubs, drains and interior of septic tank. The contractor should then provide either a statement that the septic tank has not been impacted, or the intent to sample the tank's contents to verify that there has been no impact by methamphetamine-producing compounds. This would consist of sampling the water in the effluent (outlet) pipe or T-junction. The PSA Workplan should indicate the compounds to be sampled. It is recommended that samples be analyzed volatile and semi-volatile solvents.. Lead and mercury should also be analyzed if the P2P method was used.

Exterior Soil Survey.

- An overview of the exterior of the property is generally required as part of the PSA. The PSA workplan should first indicate how this relates to a particular property. For example, a lab in a multifamily building with minimal setback and the entire exterior asphalted/concreted over would most likely not need a soil survey. This would need to be made clear in the PSA workplan. If the exact conditions of the exterior are unknown (most cases), the workplan should make a statement indicating the intent to conduct a reconnaissance of the entire exterior to look for any stained soils, stressed vegetation, evidence of burning, empty containers of precursor chemicals etc. If observed, then a soil investigation could be required, unless it can *clearly* be demonstrated that the soil impact is due to causes other than the methamphetamine production.

II. PSA Report

Summary

- Give property address and purpose of work.
- Indicate the submittal of PSA workplan, date of implementation, and brief description of areas sampled.
- Describe results (ranges) and provide discussion tying the results into past activities on site (cooking, smoking of drug, spillage etc.).
- Provide a statement declaring that based on the results of this investigation, what would be the next course of action. Examples would be a request for re-occupancy, further work etc.

Property Description / History

- Describe the property, type of methamphetamine lab, methods used (i.e. Red Phosphorus), chemicals used, and what parts of the house they occurred.
- Indicate sources of this information (visual, police, witness statements etc.)
- Discuss past research, information, site visits, sampling, report preparation, etc.

Visual Observation

- Discuss the condition of the house during the PSA.
- Note stains. Photos would be recommended.

Sampling Methodology

- Describe all sampling techniques used (Scrape, Wipe etc). Provide detail. This is an example of the level of detail that would be appropriate:, '*surface samples were collected using sterile 4" diameter Whatman filter paper wetted with 5 ml of methanol per the recommendations of the laboratory. After wiping the areas of concern, the filter paper was placed into a uniquely numbered chemically cleaned glass jar. A 100* cm^2 *sampling template was used*.' Indicate all of the general sampling locations (i.e. Kitchen floor). Any samples, reports etc. taken by the DER during their inspection may be included.

Sample analyses

- List the parameters and the technique used to sample;

Results

- List results in tabulated form. At this time, only methamphetamine is required for indoor analysis unless P2P method is used (lead and mercury will also be required in this case and the PSA will be more stringent).

Discussion of results

- Provide a detailed discussion for levels of the contaminant, locations, and the likely cause of it being there.

Exterior grounds

- If the survey of the outside reveals impacted soils that are probably related to the methamphetamine production, then soil remediation could be required.
- This will require a separate document overseen by a State of California Professional Geologist (PG) or Registered Civil Engineer (RCE). For more information regarding soil remediation, please refer to Stanislaus County Site Assessment and Mitigation (SAM) manual. (http://www.sdcounty.ca.gov/DER/lwq/sam/manual_guidelines.html). If no soil impact is noted then a statement must be made indicating that no soil impact was noted. If soil impact is noted but it can *clearly* be related to activities *other* than the methamphetamine production, (i.e. waste oil, leaking vehicles, pesticide containers, burning of trash, etc) then a statement must be made indicting this in the PSA. Proof of *other* use may be required

Septic Tank

- If consultant is confidant that there is no impact to the septic system, they should make a statement indicating so.
- If samples were taken, the results must be furnished.

Conclusion

- Summarize what happened at this site (where cooking occurred, how etc), the levels of contaminants found and the next proposed action for this site (no further action, further clean up etc.)
- If further remediation is warranted, then the methods should be indicated in the Property Contamination Workplan.
- Submit, Field worksheets, site diagrams and laboratory analyses reports.

III. Site Contamination Work Plan (In conjunction with the PSA).

Remediation Procedures.

- Discuss actions to be taken to remediate the property. Here is an example:
  - *All remaining furniture, personal items and rugs will be removed and disposed at an appropriate facility .*
  - *The following items will also be disposed:*
    - *Kitchen appliances (stove, hood, refrigerator).*
    - *Kitchen cabinets .*
    - *Flooring in kitchen and bathroom. HVAC registers and filters.*
    - *All remaining items (floors, walls, ceilings, sinks, toilets, Etc) will be triple cleaned and rinsed with an appropriate cleaner.*
    - *Walls and Ceilings will then be encapsulated with an oil based paint.*

Waste disposal

- Statement indicating which landfill will accept the waste and what the waste classification will be. Proof of proper disposal will be required.

Septic Tank

- If facility on septic tank, pumping of the contents of the tank is recommended.

Timeline and confirmation samples (for methamphetamine)

- Indicate the time required to complete the above work and when the Final Report will become available. Generally, if items are to be removed (dry wall, cabinets, flooring, etc.) confirmation samples *will not* be necessary but documentation of proper disposal will.

- Removed contaminated carpeting may require a resample on the underlying floor if stains are noted on the floor. Any items cleaned will have to be sampled at the same location in which they were originally sampled in (even if they are encapsulated).

Unforeseen changes.

- Any changes that occur during remediation (i.e. surfaces that are more difficult to remove than anticipated and thus appear a better idea to keep and clean) should be brought to the attention of the DER case worker as soon as possible.

IV. Final Report.

The final report discusses all of the remediation preformed.

Introduction / Summary

- Give property address and basic summary of all events that have occurred.

General items

Any items disposed at an approved landfill will need to have documentation of receipt of said items.

- Confirmation results (methamphetamine) for any areas washed/encapsulated instead of removed. If all contaminated surfaces/items were removed, confirmation sample results will usually not be necessary.
- If location is served by septic tank, documentation by septic tank hauler that the contents were removed.

Final Statement

- A statement indicating that based on all of the preceding, no further action is requested for this site.
- If soil, leachfield and/or groundwater assessment/remediation is required a separate document overseen by a PG or RCE would be required. In this case, the PSA portion (Overseen by the CIH) can be given a no further action required.

Sample site diagram below

Sample Site Diagram