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CRITERIA FOR THE ASSESSMENT AND REMEDIATION OF CLANDESTINE METHAMPHETAMINE LABORATORIES

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1.0 PURPOSE

This guidance document has been developed to provide uniform procedures for the assessment and remediation of clandestine methamphetamine manufacturing sites within Butte County. As drug labs for other than methamphetamine production are rarely 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 state laws in accordance with California Health and Safety Code (HSC) Chapter 6.9.1.

Further, this document communicates the expectations of the County of Butte 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 by and work plans developed under the supervision of a Certified Industrial Hygienist, with demonstrated experience in environmental remediation. Remediation tasks are to be conducted by a licensed Hazardous Materials contractor.

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2.0 INTRODUCTION

Clandestine laboratories (Clan Labs), which illegally manufacture methamphetamine are frequently discovered in Butte County and subsequently seized by law enforcement personnel. While officials arrange for the removal of chemicals and process equipment for evidence, portions of, or the entire property may be highly contaminated with both precursor chemicals and the final drug products.

If the Butte County Environmental Health Division (EHD) determines that the property is contaminated per HSC Section (§) 25400, the property is found “unfit for occupancy”. Then the property owner is responsible for assessing the level of contamination and, if required, cleaning up (decontaminating) of the property.

An effective remediation process requires coordination and cooperation between the property owner, the property owner's environmental consultant and remediation contractor and EHD. EHD's role is to conduct an inspection of the property, make a determination of contamination and occupancy, order remediation if necessary, review the preliminary site assessment and remediation results, and clear the property deed when contamination is no longer present.

This document provides information necessary for planning and implementing an effective site assessment and remediation process. This information represents best practices in Clan 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. EHD's role is to ensure that processes are applied that are consistent, and comply with the requirements of HSC Chapter 6.9.1.

In using this document, property owners and their consultants should be mindful of the variation among both Clan Labs and the processing methods. Currently, the primary method used for the illegal manufacture of methamphetamine in Butte County is the Red Phosphorus Method; however, the Ammonia ("Nazi" or "Birch") Method is also in use, and others may come into play. The health and physical hazards between manufacturing methods vary significantly, and assessment and remediation methods will similarly vary.

As required by HSC §25400.35, this guidance document has been developed to establish procedures for the assessment and remediation of clandestine methamphetamine manufacturing sites with Butte County. These procedures are to be followed by authorized contractors 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.

This Plan has been peer-reviewed by other County health and environmental agencies within the State of California, as well as technical experts in the Clan Lab remediation industry and is consistent with HSC Chapter 6.9.1, Article 6.

3.0 AUTHORITY

Pursuant to HSC Chapter 6.9.1, § 25400.17(b), the Butte County Health Officer has delegated authority for the regulatory oversight of these contaminated properties to the EHD Certified Unified Program Agency (CUPA).

4.0 DETERMINATION OF CONTAMINATION AND NOTIFICATION PROCEDURES

Upon notification from law enforcement or a property owner that a Clan Lab has been discovered, EHD will:

1. Respond and post the property in a conspicuous location within 48 hours after notification. EHD may not limit posting to the room where the cooking occurred (e.g., bedroom, kitchen) within the occupancy; experience has indicated that contamination is rarely limited to the specific area of the cooking process. Depending upon the apparent extent of contamination, EHD may post adjacent units of apartment, hotels, and other proximal building units. If the clan lab activity has been limited to outbuildings such as sheds and garages, these may be posted without impacting the residence. Anyone disturbing or destroying the posted notice is subject to a civil penalty in an amount of up to five thousand dollars ($5,000).

2. Perform an inspection of the property and surrounding area within five (5) days after notification. The inspection will include, but not be limited to: obtaining evidence of hazardous chemical use or storage and documentation of evidence of any chemical stains, cooking activity and release or spillage of hazardous chemicals used in the production of methamphetamine.

If EHD determines that the property is not contaminated, EHD will complete the following action:

1. Within three (3) working days of making the determination, remove all notices posted to the property and prepare written documentation that includes findings and conclusions.

2. Within ten (10) working days after preparing written documentation that the property is not contaminated, send a copy of this document to the property owner and to the local code enforcement agency that has jurisdiction.

If EHD determines that the property is contaminated, EHD will complete the following actions within ten (10) working days after making the determination.

1. Issue an Order to all known occupants of the property and to all persons who have a recorded right, title, estate, lien, or interest in the property prohibiting use or occupancy of the property.

2. If the property is real property, record with the Butte County Clerk Recorder's office a lien on the property.

3. Provide a copy of the Order to local code enforcement that has jurisdiction.

4. Within one working day of the issuance of the Order, post a copy in a conspicuous place on the property.

5.0 PROPERTY USE

The property that housed the Clan Lab will have a "Warning Notice" posted by the EHD Hazardous Material Specialist responding to the scene. The EHD is acting as the authorized agent of the Butte County Health Officer. This Notice will prohibit occupancy until a determination is made by EHD that it is safe to enter. The Noticed property is, 'Unfit for Occupancy' under HSC §25400, and the EHD will place a lien on the property Title. **No personal belongings, furniture, or other items should be removed from the noticed property until released by the EHD Hazardous Material Specialist.** Such release is not likely to occur until the Preliminary Site Assessment (see below) has been completed.

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

6.0 REMEDIATION PROCESS

6.1 WHY REMEDIATION IS NECESSARY

Properties used as Clan Labs will typically be found with a lab-like setting, including containers of chemicals and manufacturing equipment. Although the containers and equipment will be removed by the DTSC contractor, the contamination from the drug manufacturing process will remain. Typical areas of contamination include sinks, toilets, bathtubs, floors, walls, ceilings, carpets, drapes, furniture, and ventilation (heating and air conditioning) systems.

The potential health effects from long-term exposure to low levels of the chemicals used and produced in the Clan Lab processes remain under study.

6.2 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 Butte 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 Appendix I.

6.3 WHO DOES THE WORK?

While EHD Hazardous Material Specialists respond to Clan Lab scenes and gather information, they do not conduct the site assessment.

It is critical to have the assessment and remediation work directed by skilled, experienced professionals as defined in HSC § 25400.4. EHD requires tasks such as preliminary assessments, work plan development, and post-remediation assessments to be overseen by a Certified Industrial Hygienist (CIH) with demonstrated experience in environmental remediation. In this Document, this professional will be referred to as **"the Consultant."** All documents produced in association with the site remediation including the PSA work plan and PSA report, shall be signed and notarized by the contractor responsible for the completion of the preliminary site assessment and by a certified industrial hygienist for sufficiency and completeness.

The approved remediation plan must be implemented by a licensed contractor with a Hazardous Substance Removal Certification (HAZ), as issued by the Contractors State License Board and complying with the requirements of HSC §25400.40. 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.

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

6.4 PRELIMINARY SITE ASSESSMENT (PSA)

For all Clan Lab seizures, the operating assumption is that the illicit drug manufacturing process (cooking) will lead to some level of chemical contamination, at a minimum in the immediate area around the 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, EHD will waive sampling requirements for those items or materials that will be removed and properly disposed (see Section 9.0). Note that the disposal facility may

require sampling of these items or materials, an action over which EHD 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 sheet rock, cabinets, appliances and linoleum rather than to spend money on sampling only to affirm that the materials are in fact contaminated. Or it may be decided to surface wash (Section 5.8.4) and encapsulate (Section 5.8.5) 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 shall be disclosed in the PSA Work Plan (see below).

6.4.1 PSA WORKPLAN

A written PSA work plan will be developed by the Consultant to be submitted to EHD. The PSA shall not commence until EHD has reviewed and approved the PSA work plan. The property owner shall hire a Consultant within 30 calendar days from when EHD issues the Order. The PSA work plan shall be submitted to EHD for review within 30 calendar days of the date that the property owner has hired a Consultant.

Per HSC §25400.36, the PSA work plan shall include:

(a) The physical location of the property.

(b) A summary of the information obtained from law enforcement, EHD, 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):

(1) Duration of lab operation and number of batches cooked or processed.

(2) Hazardous chemicals known to have been manufactured.

(3) Recipes and methods used.
.

(4) Chemicals and equipment found (by location).

(5) Location of contaminated cooking and/or storage areas.

(6) Visual assessment of the severity of contamination inside and outside of the structure where the lab was located.

(7) Assessment of contamination of adjacent rooms, units, apartments, or structures.
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(8) Disposal methods observed at or near the site (e.g., dumping, burning,

burial, venting, and/or drain disposal).

(9) A comparison of the chemicals on the manifest with known methods of manufacture in order to identify other potential contaminants. (see Attachment II)

(10) A determination as to whether the methamphetamine manufacturing method included the use of chemicals containing mercury or lead (e.g., lead acetate, mercuric chloride, mercuric nitrate).

EHD will make reasonable attempts to obtain and provide relevant documents from law enforcement, and environmental agencies. However, EHD does not have the authority to compel the timely release of this information, and not every request will be successful.

(c) A description of the areas to be sampled and the basis for the selection of these areas. This element of the PSA work plan shall also document the decision process used in determining not to sample particular areas. The PSA work plan shall consider both primary and secondary areas of concern.

(1) Typical **primary areas of concern** would include:

(A) Any area that has obvious staining caused by the use or manufacture of hazardous chemicals.

(B) Processing or "cooking" areas. Contamination in these areas may be caused by spills, boil-overs, explosions, or by chemical fumes and gases created during cooking. Areas affected may include floors, walls, ceilings, glassware, containers, working surfaces, furniture, carpeting, draperies and other textile products, plumbing fixtures and drains, heating and air conditioning vents.

(C) Any disposal area. Areas inside may include: sinks, toilets, bathtubs, plumbing traps and floor drains, vents, vent fans, and chimney flues. Areas of contamination outdoors may be caused by: dumping; or burning on or near soil, surface water, groundwater, sewer systems or storm systems, septic systems, and cesspools.

(D) Chemical Storage areas that may be contaminated by spills, leaks or open containers.

(2) **Secondary areas** of concern shall include all of the following:

(A) Any locations where contamination may have migrated, such as hallways or high-traffic areas.

(B) Common areas in multiple dwellings, and adjacent apartments or rooms, including floors, walls, ceilings, furniture, carpeting, light fixtures, blinds, draperies and other textile products.

(C) Ventilation or plumbing systems serving hotels and other multiple family dwellings.

(D) Sampling protocols (see Section 5.6), analytical methods (see Section 7.0), laboratories to be used and their relevant certifications/accreditations (see Section 8.0). During each phase of sample collection, identical methods must be used to provide a basis for comparing results.

(E) A description of areas and items that will be remediated in lieu of sampling, if any (see Section 5.4).

6.4.2 PSA REPORT

A PSA Report shall be prepared and submitted to EHD. The PSA report shall be thorough and specific in reporting findings and recommendations and shall include all of the following in accordance with HSC §25400.37.

1. 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.

2. 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 EHD Hazardous Material Specialist. The diagram shall show the location of damage and contamination and the location of sampling points used in the PSA; the sampling point locations shall be keyed to the sampling results and remediation recommendations.

3. Description of the sampling methods and analytical protocols used in the preliminary site assessment.

4. A description of the sampling results. If providing a narrative, group results by location rather than by analyte.

5. Information regarding the background samples and results obtained (see Section 6.0).

6. Specific recommendations, including methods, for remedial actions required to meet the human occupancy standards specified in HSC §25400.16, including, but not limited to, any required decontamination, demolition, or disposal.

7. A plan for the post remediation site assessment, including specific sampling requirements and methodologies, and locations at which samples are to be obtained.

8. Per HSC §25400.38, the 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 for sufficiency and completeness.

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 cleaned" is insufficient, for it begs 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.

6.4.3 PSA SUGGESTS "CLEAN" SITE

While experience indicates that it is unlikely, sample results from the PSA may show that the Clan Lab activities did not leave areas of contamination at the property. If this is the case, the Consultant shall prepare a report to EHD based on the analytical results, requesting that the property be declared "clean," and that the lien be removed from the property Title. Property owners and Consultants are cautioned that until EHD reviews and accepts a report, and EHD determines to declare the property Fit for Occupancy, no re-occupancy of the property is to take place. The Consultant shall review Section 5.9, "Remediation Workplan", to determine appropriate contents for this report.

6.5 SAMPLING PROTOCOL

EHD has reviewed a number of sampling methods from a variety of sources, and has determined that a standard method based on the "Proposed Surrogate Method" devised by Bruce Lazarus, CIH, will be the benchmark for evaluating sampling protocols. Lazarus' paper describing this method was published in the Journal of Clandestine Laboratory Investigating Chemists, Volume 10, Number 2. A brief review of Lazarus' perspective, taken from the article, as well as the "Surrogate Method" sampling protocol required by EHD is at Appendix II.

6.5.1 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 anywhere near 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. The EHD expects Consultants to follow the sample collection methodology described in Appendix II.

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. Therefore, all wipe samples shall use methanol as the wetting/collecting solvent. Consultants are cautioned to use appropriate personal protective equipment when using methanol.

EHD 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 6.0 for exceptions). A common investigation practice is to take several swipes of unknown and inconsistent surface areas for a composite sample; such practices will not be accepted, even if only to substantiate that contamination exists in a particular area.

Lazarus recommends a one square foot surface area sample be obtained (see Appendix II). For general wipe sampling, the literature and regulatory agencies require a surface area of either 100 cm^2 or 1 ft^2.. EHD requires a surface sample area of 100 cm^2, as this is consistent with other regulatory agencies for Clan Lab investigations.

Sample containers shall be bottles, as described in Appendix II. 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.

6.5.2 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 may 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, in the Consultant's judgment, that are anticipated not to be contaminated.

Each sample area composited 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 (see Note to Appendix II), with compositing accomplished by the lab in the extraction process. **The maximum number of wipe samples that may be composited is four**.

The use of common sense is strongly encouraged, especially when compositing. Don't 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), if for no other reason than that EHD will assume an attempt to dilute the sample from the likely contaminated areas to below instrument detection limits. Composite like surfaces, such as walls with walls.

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.

6.6 GROSS REMEDIATION

Materials associated with the operating Clan Lab, such as containers of chemicals and lab equipment, should have been removed by the law enforcement cleanup contractor 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 EHD Hazardous Material Specialist notified immediately.

6.7 RESIDUAL REMEDIATION

A number of processes are associated with making the property suitable for re-occupancy, as determined by the EHD. 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 9.0, "Waste Disposal."

6.7.1 "AIRING-OUT"/VENTING

"Airing-out" is typically conducted by law enforcement personnel during 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 suggesting 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, EHD does not accept it as a substitute for removing and disposing those items such as porous furnishings and wallboard that have been soaked or otherwise degraded/impacted by solvents.

6.7.2 AIR MONITORING

Several references and jurisdictions suggest the use of air monitoring for both evaluation of a property and for final clearance. EHD neither supports nor encourages the use of air monitoring, for the following reasons.

1. For many precursor and waste materials, validated analytical methods do not exist. For materials which have appropriate analytical methods, industrial hygiene sampling methods may not yield a low enough detection limits 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.

2. 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.

3. Exposure limits for ambient air, such as California OEHHA's Toxic Hot Spot limits and the draft Clan Lab clearance limits developed by the Colorado Department of Health, are based on assumptions that make them far too low for practical use. For example, Colorado assumes occupancy 350 days a year, 24 hours a day, for 30 years. Implicit here is the assumption that the vapor source is steady-state, which would require it to be renewed. The lab is gone, chemicals removed, so a steady-state assumption fails.

4. 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.

5. Air monitoring may suggest that there is a problem, but provides no idea where to look for it. The effort may be better placed in additional wipe and bulk samples.

6.7.3 REMOVAL

A Clan Lab will contaminate a variety of surfaces and materials. Therefore, the following may need to be removed and disposed of in accordance with Section 9.0, "Waste Disposal" if contaminated above the State criteria.

1. Visibly contaminated (etched or stained) sinks, bathtubs, toilets and similar fix-

tures are to be removed and properly disposed.

2. 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 EHD strongly recommends that this apply to furniture and clothing, however EHD has does not have the authority to require that property contents be disposed.

3. "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.

4. 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 Work plan.

5. Appliances that were in the room in which cooking was conducted must be disposed (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.

6.7.4 SURFACE WASHING

Surface washing takes many forms, including pressure washing, detergent-washer washing, solvent (alcohol) washing, steam cleaning, and others. The objective is to remove contaminants to below the State 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 9.0).

Bay West, a consultant to the Minnesota Department of Health, conducted limited research on the efficacy of several cleaning methods. The process and results can be found in the material at http://www.health.state.mn.us/divs/eh/meth/sideclean.html.

6.7.5 ENCAPSULATION

In cases where porous or semi-porous surfaces (e.g., walls, wood flooring, panels,

ceiling, concrete) have had levels of contamination that permitted 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 "bleedthrough" 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 criteria.

6.7.6 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. Absence of evidence to the contrary, 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 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, EHD 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 Work plan.

6.7.7 IMPACTED SOIL AND GROUNDWATER

Evidence that Clan Lab operations may have impacted soil or groundwater moves some aspects of the Clan Lab remediation process out from the direct oversight of EHD. Such potential impacts shall be investigated and remediated under normal regulatory criteria for hazardous waste sites. Oversight for hazardous waste site remediation will be conducted by the California Department of Toxic Substances Control; if groundwater may be impacted, oversight may be shared with the Regional Water Quality Control Board. Agencies may, under certain circumstances, transfer oversight responsibility to EHD. Responsible parties may have the option of requesting EHD to provide oversight of the voluntary remediation of the hazardous waste site component of the property; such oversight would be provided on a fee-for-service basis.

The variables associated with hazardous waste site remediation are numerous, and

will not be discussed in this Guidance Document. In the event that the Preliminary Site Assessment report identifies potential impacts to soil and/or groundwater, EHD will work with the property owner and Consultant to determine the appropriate path for further assessment and mitigation activities and associated regulatory oversight.

A property owner with soil contamination can request EHD to oversee the soil cleanup if the soil will be cleaned up to background levels. EHD will simply let DTSC know that the property owner has requested EHD oversight, and request DTSC approval. If the property owner has a more complex remediation, and wishes to utilize risk-based cleanup levels, the site will likely go to DTSC.

6.8 REMEDIATION WORKPLAN

If the results of the PSA show that the property requires remediation of chemical contamination before re-occupancy can be permitted, the Property Owner's representative must develop a remediation work plan for review by EHD. While it is anticipated that the Consultant will prepare the Remediation Work plan, it may also be prepared by the Contractor. **The remedial activities shall not commence until EHD has reviewed and approved the Remediation Work plan.** The written remediation work plan must include:

1. 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.

2. 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.

3. 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 EHD Hazardous Material Specialist. The diagram shall show the location of damage and contamination and the location of sampling points used in the PSA; the sampling point locations shall be keyed to the sampling results.

4. PSA summary – A summary of the information and sampling results obtained in the PSA, and basis for remedial actions (or lack thereof) as proposed in the Remediation Work plan.

5. Post Remediation Assessment - A plan for the Post-Remediation Assessment (see below), including sampling and analysis protocols.

6. Remediation Procedures – Specific remediation procedures will include a list of any and all materials to be removed, removal procedures, any proposed reme-

diation processes.

7. Waste disposal plan – Provides information on waste disposal as described in the Waste Disposal section (Section 9.0) of this document. Identify the site(s) selected for disposal of waste generated during the remedial activities.

8. Propose a means to provide evidence that Clan Lab debris (e.g., wallboard, carpets, appliances) has been properly disposed.

6.9 POST REMEDIATION ASSESSMENT

The purpose of the post-remediation assessment is to establish that the property has been cleaned up to the point at which residual contamination is below the State 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 criteria and were not removed and replaced (e.g., were cleaned, or cleaned and encapsulated) are to sampled in the same manner used for the PSA. If all sample results fall below the State criteria, then the remediation work is completed and the Consultant can prepare the final report. Any areas that fail the post-remediation sampling are to be re-cleaned/re-encapsulated, then re-sampled.

6.10 FINAL REPORT

There are two options for the Final Report of Remediation. If the remedial action consisted solely of removal of contaminated surfaces, such as cabinets, floor coverings, sheetrock and similar materials, and post-remediation sampling and assessment is not required by EHD, then the Contractor must provide to EHD 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. Note that any remediation activity other than removal of contaminated surfaces requires post-remediation sampling and assessment.

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 will have two components. The Contractor must provide to the Consultant, 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.

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 Con-

tractor's documentation as necessary to establish that the remediation has been completed in accordance with the approved work plan.

The Final Report must be signed and sealed by the CIH who conducted the Preliminary Site Assessment and the Post Remediation Assessment. EHD will conduct a timely review the Final Report.

If the Final Report is not satisfactory to EHD, it will be returned to the Consultant and/or Contractor with comments for clarification, additional information, or other items that may remedy Report deficiencies. Consultant and/or Contractor shall resolve the Report's deficiencies and resubmit the Report to EHD for evaluation.

When EHD determines that the Final Report meets the requirements of the approved work plan and State clearance criteria, EHD will approve re-occupancy. After EHD regulatory oversight fees have been paid, EHD will remove the lien from the property Title.

The Final Report is a technical document, summarizing the work performed under the work plan and presenting the data collected during the Post Remediation Assessment. Components of the Final Report shall include:

1. Case Narrative.

2. Site Description.

3. Summary of PSA findings and recommendations.

4. Summary and documentation of remedial actions.

5. Post-remediation assessment with detailed description and documentation, including lab reports and scaled site map keyed to sample locations.

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

Note: Data must be reported as $\mu g/100cm^2$ 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.

7.0 REOCCUPANCY CRITERIA

EHD requires State of California criteria be met for all samples prior to determining that the property be cleared for re-occupancy. These criteria are currently in use by several state health agencies throughout the United States, and represent best esti-

mates of minimal health risk from exposure to remaining contamination. EHD assumes that any property may, at some point in time, be occupied by members of the general population susceptible to injury from exposure to chemicals associated with Clan Lab operations; such groups include the very young, the very old, and individuals with compromised immune systems.

The following criteria assume wipe sampling conducted in accordance with Appendix II, or as otherwise directed by the analytical laboratory.

Methamphetamine: 1.5 µg/100cm^2
Lead: 20 ug/ft^2
Mercury: 50 ng/m^3

8.0 ANALYTICAL AND SAMPLING METHODS

Analytical methods are driven by the analyte, and sampling methods are frequently driven by the analytical method. EHD expects that sampling methods will follow criteria for wipe and bulk sampling presented in Appendix II. 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. ELAP labs (see below) may modify these methods as appropriate for the analyte.

Methamphetamine samples shall be analyzed by the modified Method 8270. According to Washington Department of Ecology-accredited labs, modified 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 (see Note to Appendix II) wetted with methanol, stored and shipped in appropriate sampling jars.

EHD 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.

9.0 LABORATORY REQUIREMENTS

All analyses are to be conducted by analytical laboratories accredited (Fields of Testing E114-E117) by the California Dept. of Health Service Environmental Laboratory Accreditation Program; a list of such labs is available at:

http://www.dhs.ca.gov/ps/ls/elap/html/LablistStart.htm .

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.

EHD strongly recommends that analyses for methamphetamine be conducted by laboratories accredited for such analyses by the Washington State Department of Ecology; these labs have historically had reciprocity under California ELAP as Washington ELAP labs. A list may be found at:

http://www.doh.wa.gov/ehp/ts/CDL/CDLAnalyticalLabs.htm .

10.0 WASTE DISPOSAL

All materials removed from a Clan Lab property as a result of having been impacted/ contaminated by Clan Lab activities (operation, storage, spills, disposal) must receive special handling at the disposal or recycling facility. Examples of such materials are kitchen appliances, drapes, carpets, and building materials. Items such as appliances and furniture must be rendered unusable prior to disposal.

In general, those items which are first cleaned (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 in the Central Valley, see Appendix III for a list provided by the Regional Water Quality Control Board. These cleaned items are to be taken directly to the landfill for special handling, not to a transfer station. The landfill may request lab results for these cleaned items.

Materials and debris which have not been cleaned are typically disposed at a Class II landfill. A Class III may take these items on a limited basis. Contact the landfill for specific information.

For any disposed items, EHD 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.

EHD does not regulate the types of wastes accepted by any landfill; each facility has its own permit requirements to meet, and will likely review Clan 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. Anecdotal information indicates that building materials and furnishings typically do not have to be disposed of as hazardous waste.

11.0 SEPTIC SYSTEMS

If there is evidence that waste were dumped down a drain, the Consultant will need to work through a process to determine whether a septic system was impacted. The following process is illustrated by the flowchart on the following page.

1. Evaluate tubs, sinks, toilets and similar for evidence of waste disposal. Staining from hydroiodic acid (red/orange) would be a good visual indicator.

    a) If there is no evidence of disposal, the task is complete.

    b) If there is evidence of disposal, continue to element 2.

2. Assuming evidence of disposal, determine whether the property is on septic or sewer system. Local water quality agencies, such as City of Chico Sewer Agency, SCOR, LOAPUD, Town of Paradise , or the Butte County Division of Environmental Health can assist in this determination. Contact numbers, current in 2006, include:

    - Butte County Environmental Health – 530-538-7281
    - City of Chico – 530-894-4301

    a) If the property is on a sewer system, the task is complete.

    b) If the property is on a septic system, continue to element 3.

3. Obtain a representative sample of the material in the septic tank. Have the sample analyzed for hazardous waste characteristics. Use an ELAP-accredited laboratory appropriate for the analysis.

    a) If analysis indicates that the sample is non-hazardous, the task is complete.

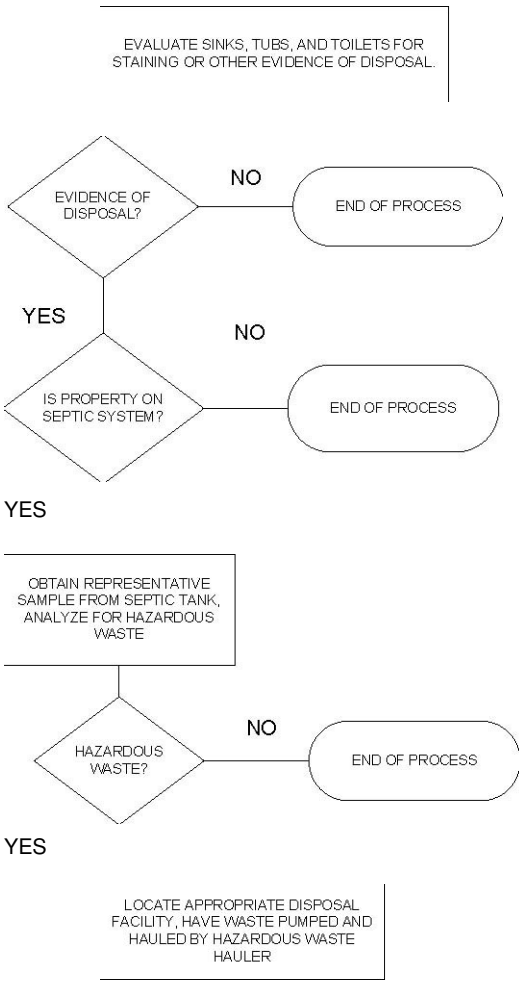
    b) If analysis indicates that the sample is hazardous, continue to element 4.

4. Using resources such as the SWRCB tables of disposal facilities (Attachment III), determine which facility will accept the mixed septic/hazardous waste. Use an appropriately-permitted hazardous waste transporter to pump the tank and transport the contents to the accepting facility.

5. Information regarding the positive analysis for hazardous waste characteristics shall be provided to the EHD Hazardous Materials/CUPA, which will evaluate whether remediation action will be required for the leachfield (see section 5.8.7).

PROCESS FOR REMEDIATING SEPTIC SYSTEM DISPOSAL AT CLAN LAB PROPERTIES

MAY 2003



END OF PROCESS

Clan Lab Assessment and Remediation - County of Butte EHD

APPENDIX I - 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

Hydriodic Acid Method (Ephedrine)

a. Ephedrine
b. Hydriodic acid
c. Red phosphorous
d. Sodium hydroxide
e. Hydrochloric acid
f. Freon

Sodium Metal Method (Nazi or Birch)

a. Ephedrine
b. Pseudo-ephedrine
c. Anhydrous ammonia
d. Sodium (metal)
e. Lithium (metal)
f. Hydrochloric acid

Phenyl-2-Propanone Method (P-2-P)

a. Phenyl-2-Propanone
b. Methylamine
c. Methyl Alcohol
d. Mercuric chloride
e. Aluminum
f. Ether
g. Sodium hydroxide

APPENDIX II – THE SURROGATE METHOD

As noted in Section 5.5, the Environmental Health Department has reviewed a number of sampling methods from a variety of sources, and has determined that a standard method based on the "Proposed Surrogate Method" devised by Bruce Lazarus, CIH, will be the benchmark for evaluating sampling protocols. Lazarus' paper describing this method was published in the Journal of Clandestine Laboratory Investigating Chemists, Volume 10, Number 2. Most of the material in this Appendix is taken from this article.

It should be noted that few individuals outside of the law enforcement community have Lazarus' experience in Clandestine Laboratory health risks and assessments. His background as a Certified Industrial Hygienist in the environmental remediation and emergency response industry, as well as his extensive work with Clan Lab investigation and remediation, provide him with a unique perspective for designing a cost-effective investigation process.

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. Some target chemicals tend to be more 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 chemicals 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 EHD.

EHD 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, upholstery, septic waste, and soils.

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 chemical staining or damage, and/or obvious physical damage of an item or feature necessitating removal.

C. Collection Procedures

1. Wipe Samples 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 circle 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, then 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 indi-

vidual analyte, including pH, 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 5.5.2 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

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, including pH, may be analyzed from single bulk sample representing each medium to be evaluated.

f) Sampling tools/device should be cleaned and triple-rinsed with deionized 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).

D. Target Analytes

Analytes specified for analysis should be selected based on individual association with specific Clan Lab manufacturing processes, expected persistence in the environment, usefulness of data interpretation, application of available testing methods, laboratory capabilities, and cost of analysis. The table on the following page provides selected target analytes and test methods appropriate for the most common Methamphetamine synthesis routes typically encountered in the United States. This table should be used as a guide only, as it may not be necessary nor appropriate to sample and analyze for every analyte listed.

Target Analytes for Three Common Methamphetamine Manufacturing Methods

Manufacturing Method	Methamphetamine[1]	Precursor	Hydrochloric Acid (Chloride)	Essential Chemicals (or by-products)[2]
Red Phosphorous	Modified EPA Method 8270	Ephedrine by Modified EPA Method 8270	EPA Method 300	Total Phosphorous by EPA Method 6010[3] Iodide by EPA Method 300
Ammonia	Modified EPA Method 8270	Ephedrine by Modified EPA Method 8270	EPA Method 300	Total Lithium or Total Sodium by EPA Method 6010[3] Total Ammonia by EPA Method 350
Mercuric Chloride	Modified EPA Method 8270	Phenyl-2-Propanone by Modified EPA Method 8270	EPA Method 300	Mercury by EPA Method 7471A Total Lead by EPA Method 6010

NOTE: approved labs (e.g., ELAP labs) may select methods other than those listed in this table.

[1] Results for Modified EPA Method 8270 may be semi-quantitative depending on analytical laboratory capabilities.

[2] Select one or more analytes for sampling and analysis, based on property data and assessment needs.

[3] Metals analysis may also be performed by EPA Method 6020.

APPENDIX III – CENTRAL VALLEY DISPOSAL FACILITIES

The list on the following page was compiled by the Central Valley Regional Water Quality Control Board, and is current as of December 2004 for Region 5. For an updated version, go to the Regional Board's website at:

http://www.waterboards.ca.gov/water_issues/programs/land_disposal/docs/wal_r5.xls

Or go to the State Water Resources Control Board's site, which has tables for facilities in all nine regions, at:

http://www.waterboards.ca.gov/water_issues/programs/land_disposal/walist.shtml

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	ASB-ESTOS	AUTO SHRED	DRILLING MUDS	WASTE WATER/ SLUDGE	ASH	SEPTAGE	DESIG-NATED SOLIDS	DESIG-NATED LIQUIDS	SOILS WITH PETROLEUM	PESTICIDE CONTAINERS	COMPOSITE LINED CELL(S)	COMMENTS AND REMARKS
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			+									DRILING MUDS & CUTTINGS ONLY
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												IN-COUNTY WASTE ONLY
BUENA VISTA	S	209-223-6375	AMADOR	II	LF, SI	+			+	+		+		+		+	CLOSURE EXPECTED BY 2005
CALAVERAS ASBESTOS MONOFILL	S	209-785-2201	CALAVERAS	U	LF	+											
CHEM WASTE MANAGEMENT - KETTLEMAN	F	800-843-3604	KINGS	I	LF	+	+	+	+	+	+	+	+	+	+	+	FULLY PERMITTED CLASS I
CHEM WASTE MANAGEMENT - KETTLEMAN	F	800-843-3604	KINGS	I	SI			+	+		+		+			+	LIQUID HAZARDOUS WASTE
CHESTER LANDFILL	R	530-283-6268	PLUMAS	III	LF												INACTIVE, FOR EMERGENCY USE ONLY
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					+						+	WASTE-TO-ENERGY PLANT ASH ONLY
FLORIN PERKINS ROAD LANDFILL	S	916-383-2660	SACRAMENTO	U	LF												INERT CONSTRUCTION DEBRIS AND SOIL
FOOTHILL SANITARY LANDFILL	S	209-468-3066	SAN JOAQUIN	III	LF, LT											+	
FORWARD, INC	S	209-466-4482	SAN JOAQUIN	II	LF	+	+		+	+		+		+		+	NON-HAZARDOUS SOLID WASTE
FRESNO COUNTY - COALINGA LANDFILL	F	559-262-4295	FRESNO	III	LF												
FRESNO COUNTY AMERICAN AVENUE	F	559-262-4295	FRESNO	III	LF				+							+	DRIED WW SLUDGE OVER SUB D LINER
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												IN-COUNTY WASTE ONLY
H.M. HOLLOWAY GYPSUM MINE RECL	F	661-797-2320	KERN	U	LF		+	+		+							ALSO: LIME CAKE, SULPHUR, CONC. RUBBLE,
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 LANDFIL	F	661-862-8900	KERN	III	LF				+							+	DRIED WW SLUDGE OVER SUB D LINER
KERN COUNTY - TAFT LANDFILL	F	661-862-8900	KERN	III	LF												MONOFILL: WATER SOFTENING WASTES ONLY
L & D LANDFILL	S	916-383-9420	SACRAMENTO	III	LF	+										+	NO PUTRESCIBLE MSW; NONFRIABLE ACM OK
MADERA COUNTY - FAIRMEAD LANDFILL	F	559-665-3099	MADERA	III	LF					+						+	WASTE BALE OPERATION
NEAL ROAD	R	530-538-7681	BUTTE	III	LF	+			+		+						ASBESTOS - NON-COMMERCIAL
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												CITY OF PORTOLA WASTE ONLY
RED BLUFF LANDFILL	R	530-528-1102	TEHAMA	III	LF												IN-COUNTY WASTE ONLY
ROCK CREEK LANDFILL	S	209-754-6403	CALAVERAS	II	LF				+	+		+				+	NOT CURRENTLY ACCEPTING PETRODIRT
SACRAMENTO COUNTY - KIEFER LANDFILL	S	916-481-1816	SACRAMENTO	III	LF											+	
SAFETY-KLEEN - BUTTONWILLOW	F	800-544-7199	KERN	I	LF, SI			+	+			+	+	+		+	CLASS I SOLID WASTE, CLASS II LIQUIDS
SANIFILL INC. - McKITTRICK SITE	F	805-762-7607	KERN	II	LF, SI			+	+		+	+	+	+		+	PETROLEUM SALINE, PH=5 TO 11
SIERRA COUNTY LOYALTON LANDFILL	S	209-289-3251	SIERRA	III	LF					+							ACCEPTS ASH FROM SIERRA-PACIFIC INDUSTRIE
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												OPEN 3 DAYS PER WEEK
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

DATED 12/29/04

APPENDIX IV - RESOURCES

Materials used in the development of this guidance document include:

Criteria for the Assessment and Remediation of Clandestine Methamphetamine Laboratories, Sacramento Environmental Management Department

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.