GUIDELINES

FOR THE CLEANUP OF

CONNECTICUT

METHAMPHETAMINE

LABS

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TABLE OF CONTENTS

I. INTRODUCTION

The purpose of these guidelines is to provide information about cleanup of clandestine drug laboratory (clan lab) sites, after bulk chemical removal, and prior to reoccupation. They were largely adapted from guidelines from the states of Washington, Minnesota, Colorado, and Alaska. This document is based on the cleanup of methamphetamine labs. Contractors working on remediation of non-methamphetamine labs may contact Connecticut Department of Public Health (DPH) for advice on sampling and cleaning those labs. Other drugs that have been made in illegal labs include: Phenlyl-2-Propanone (P2P), lysergic acid diethylamide (LSD), phenylcyclohexylpiperidine (PCP, angel dust), 3,4 Methylene-dioxy-N-methylamphetamine (MDA/MDMA, ecstacy), Methaquaalude, Methcathinone (Cat) and GHB (gamma-hydroxybutyrate). There is no statewide law that requires cleanup of clan labs in residential settings, but if the lab existed in a "licensed facility" such as a hotel, motel, restaurant, etc., or if the DPH Commissioner determines that the site consititutes a "public health threat," the state would have the authority to require a cleanup. DPH strongly recommends that clan labs be cleaned by contractors who are trained and equipped to conduct hazardous chemical remediation. Some clan lab cleanups may be considered an "uncontrolled hazardous waste site" and require the use of Hazwoper[1]-certified personnel. Additionally, Occupational Safety and Health Administration (OSHA) standards and other applicable requirements should be observed by workers engaged in clan lab remediation.

II. POTENTIAL HEALTH EFFECTS AND CLEANUP TARGET LEVELS

Several processes and many different combinations of chemicals ("recipes") are used to manufacture ("cook") methamphetamine (See Appendix A). Each process produces gas or vapor at some point(s) during the cooking operation. The release of these vapors presents an exposure hazard for cooks, residents, and future occupants of the lab structure (MDH 2003). The distribution of gases and aerosols is often extended by a building's heating, ventilation, and air conditioning (HVAC) system. A forced air system can distribute the vapors throughout a single or multi-dwelling complex.

Both acute (short term) and chronic (long term) health hazards result from the manufacturing of methamphetamine. Acute exposure hazards come from direct contact with product or waste, and inhalation of product or waste. Burns, tissue irritation, and rashes can result from chemical spills and skin contact. Headaches, dizziness, nausea, and other health effects can result from inhalation of vapors (MDH 2003).

The vapors produced by methamphetamine manufacture are deposited on surfaces. Methamphetamine particles carried with the vapors are also deposited. Levels of methamphetamine vapor and particle residue are used as an indicator of surface chemical

[1] Refers to Hazardous Waste Operations and Emergency Response Standard training that is required for the safety and health of the employees involved in clean-up operations at uncontrolled hazardous waste sites, employees engaged in certain hazardous waste sites, employees engaged in certain hazardous waste treatment, storage, and disposal operations, and in any emergency response activities involving hazardous substances.

contamination in this guidance document. Cleanup levels for methamphetamine are consistant across most states and range from 0.05 to 0.1 µg/100 cm^2.

The potential for exposure to methamphetamine lab residue on surfaces and porous articles depends upon:

Accessibility of residue and frequency of direct contact. How a contaminated area is used is an important factor in estimating frequency of contact. For example, residue in a kitchen or bathroom of a house will likely be contacted more frequently than residue in a non- residential outbuilding.

Ability of volatile residues to become airborne. For example, residue in ventilation systems may be dispersed throughout a building.

Characteristics of the inhabitants or users of the contaminated site. For example, toddlers who crawl on contaminated carpet or floors will have a high frequency of skin contact with toxic residues over a considerable area of skin. These residues may directly irritate the skin and may also be absorbed into the body through the skin. If hand-to-mouth behavior occurs when hands have been in contact with toxic chemicals, they will be ingested into the body. Hand-to-eye behavior will introduce toxic material to the eyes. Toddlers are at greatest risk for hand-to-mouth and hand-to-eye behaviors, but all people exhibit them.

The toxicity of methamphetamine lab residues will depend upon the amount of the residue and the chemicals in the residue. The amount of residue will depend upon the size of the methamphetamine lab, the length of time it operated, methods of chemical storage and disposal, occurrence of chemical spills, as well as on the physical characteristics of the structure in which the methamphetamine lab occurred. The chemicals in the residue will vary with the method of methamphetamine manufacture (Appendix A).

Because of the great uncertainties involved in estimating the risk posed by chemical residues from methamphetamine laboratories, the cleanup target that will be used in Connecticut is the detection limit of 0.1 µg/100cm^2 of surface area sampled unless a lower detection limit can be achieved. This approach is based upon removal of any contamination that is detected to ensure safety of future building occupants. Table 1 presents cleanup targets for methamphetamine and related contaminants that may be found at these labs.

The level and extent of contamination, and the type of material contaminated determines the cleaning methods necessary and the likelihood that cleaning activities will be successful. Conclusions from a Minnesota study of cleaning methods (MDH 2003) indicate that a single cleaning event may not achieve a guideline level of < 0.1 µg/100 cm^2) when pre-cleaning samples are above 10 µg/100cm^2. Removal rates of 70-90% were typically achieved with each wash-and-rinse cleaning event. This study and subsequent contractor experience suggest that it may often be more cost effective to discard porous

furnishings (e.g., upholstery, carpet, draperies) rather than trying to clean them and to paint or paper walls after a single wash.

Table 1. Indoor Target Cleanup Levels for Use in Remediation of Former Methamphetamine Labs in Connecticut

Chemical	Remediation Level or Action Taken
Corrosives	Surface pH 6-8
Volatile Organic Compounds (VOCs)/ Solvents	Total VOCs in air (<1ppm^)
Methamphetamine	<0.1 µg/100 cm^2
Ephedrine/Pseudoephedrine	<0.1 µg/100 cm^2
Red Phosphorus	Removal of Stained Material
Iodine Flakes, crystal, prill	Removal of Stained Material 22µg iodine/100 cm^2
Tincture of Iodine	Removal of Stained Material
Mercury	Mercury <1 µg/m^3
Lead	<40 µg/ft^2 wipe sample

^Parts per Million

III. CLEANUP GUIDANCE

A. Overview

This guidance involves a combination of ventilation, removal of chemical wastes and bulk building materials, cleaning surfaces, and limited testing. The basic elements of the protocol are as follows. More details are provided in subsequent sections.

a. Area contacts:

1. Upon discovering a clan lab in your town, immediately contact the Connecticut branch of the Federal Drug Enforcement Administration (DEA) that is closest to your area: Hartford: 860-240-3233; New Haven: 203-497-5200; Bridgeport: 203-579-5591.
2. Other key contacts are: Public Safety (Statewide Narcotics Task Force, which is part of the State Police) (800-44-DRUGS), Department of Environmental Protection (DEP) Emergency Response Division (866-DEP-SPILL), Department of Public Health (DPH) Environmental and Occupational Health Assessment Program (860-509-7742), and other local responders.
3. Next Steps are DEA inspection, crime scene investigation, chemical analysis, and removal operation
4. Consult with DEA and other on-scene responders to determine areas of known high-level contamination. These are areas where chemicals were stored, handled, disposed of, and used in the cooking of methamphetamine. Areas with obvious spills or staining are also likely to be highly contaminated. If possible, determine where contamination may have been at a moderate level (e.g., adjoining rooms)

and at a low or minimal level (areas distant from any clan lab operation and where there is no evidence of handling of chemicals or waste).

5. The building owner or cleanup contractor should develop a workplan that summarizes the inspection of the premises and includes the elements described below. This workplan should be reviewed by the local health department.

b. Cleanup of low, moderate and high areas

1. Moderate and High Level Areas: Discard everything including all furniture, household furnishings, carpeting, and all porous building materials (e.g., ceiling tiles, but be aware of potential asbestos issues in ceiling tiles). Hard, non-porous building elements such as walls, floors, pipes, etc. can be thoroughly cleaned and recoated (e.g., paint on walls, new finish on floors). If all hard surfaces have been thoroughly washed and resurfaced and if all porous materials have been removed, final clearance testing is not necessary although is still recommended. Clearance testing can help document successful decontamination and suitability of the unit for new occupants. A final inspection of the premises by a local health or buildings department official is highly recommended.

2. Cleanup of Low Level Areas: The ideal situation is to have these areas mitigated as described above for high level areas. The rationale is that it is difficult to guarantee that methamphetamine or related chemicals were not at some point taken into portions of the building remote from the operation for the purposes of storage/concealment or personal use. Additionally, air handling systems and foot traffic may have transported contamination into distant areas. However, it may not be practical to discard carpeting and other furnishings throughout a large building. If it is possible to identify areas that are unlikely to be contaminated, a round of cleaning of walls, floors, carpeting, and other furnishings should still be conducted. Wipe sample testing of walls and floors can help document whether a remote area has received contamination and needs cleaning or more aggressive measures.

B. Cleanup Guidance Details

a. Removal of Bulk Contaminants from Building: The DEA or DEP will typically removed the bulk contaminants and equipment from the property.

b. Ventilation of the Structure Before and Throughout Cleanup: During a criminal investigation or gross chemical cleanup, the lab site is generally vented for the safety of onsite personnel. However, it may be sealed for security reasons when law enforcement and HazMat crews leave the scene. Air out the building for 3-5 days. Sometimes is it necessary to raise the temp to 90º F and close up the building and then air it out. After the building is aired out, it is necessary to check for odors. Ventilation should continue throughout the cleanup except where cleanup may impede the assessment. Care must be taken that vented contaminants are exhausted to the outdoors and not to the air intakes of adjacent structures. Short-term venting may not be sufficient to clear all contaminants

from the air inside the structure. Note that venting will not remove residue and is not a cleanup method.

Use of respirators may be required, if adequate ventilation cannot be obtained.

c. Areas of Moderate to High Contamination (based upon physical inspection and/or sampling)

1. Handling of Furnishings and Porous Materials

Absorbent materials can accumulate vapors that are created and dispersed during the cooking process or can collect dust and powder from chemicals used in drug manufacture. Disposal of all carpeting, furnishings and porous building materials is recommended. However, depending on the type of chemicals used and the extent of the contamination, these materials may be determined to be hazardous waste. If so, it is necessary for the owner to have these items tested for contaminant levels and then handle the material accordingly (appropriate licensed hazardous waste handler). Be aware that certain porous building materials such as ceiling tiles may contain asbestos. These materials need to be tested and handled appropriately to avoid dispersal of asbestos throughout the structure.

Non-porous household goods (washable household items made out of glass, hard plastics, metals, and ceramics can generally be cleaned (twice-washed) with hot water and soap. Anything used in the cooking process needs to be discarded.

2. Household items made of wood and wood-like composites

Disposition of these generally porous items may be dependent on the finish and ability of the item to be detergent washed, as well as on the consideration of value, and assessed potential contamination. Such items, if considered cleanable, should be twice-washed, rinsed, and if possible, coated with an oil-based finish depending on the degree of contamination.

3. Household books and paper items

Paper goods are extremely porous. Any paper items near the area of a known lab should be discarded. Paper goods stored in file cabinets, closed bookcases, or cupboards in rooms where wipe samples show non-detectable levels of contamination should be salvageable. Given the uncertain history of most labs, disposition of such porous material should err on the conservative side.

4. Detergent washing of contaminated hard surfaces

Hard interior surfaces such as walls, tile and wood flooring, sheetrock ceilings and paneling, and hard furniture (e.g., metal chair) or appliances (wood or porcelain) can also retain contamination from the methamphetamine cooking process. These surfaces should

generally be twice scrubbed using a standard detergent solution and then rinsed with water. If a surface has visible contamination or staining, cleaning methods may not work and complete removal and replacement of that surface section may be required. This may involve removal of wallboard, floor coverings and counter tops; stained and etched furniture and plumbing fixtures.

Methanol cleaning has been shown to be more effective in some situations, such as on countertops and stoves which will not be painted. Only a licensed waste handler should be authorized to use methanol for cleaning purposes. Staff using methanol must always wear appropriate PPE; and remove methanol traces completely. However, only a licensed waste handler should be authorized to use methanol. Generally, wastewater may be sewered, but if it contains decanted or spilled chemicals (e.g., methanol), it should not be disposed of in a septic system.

5. Evaluation and remediation of chemical spills and residues

If any liquid or powder residues remain after DEA removal, contact the DEA to determine if it is their responsibility. If not, use the following guidance:
Powders and liquids throughout the structure should be tested to determine their corrosivity, toxicity, and flammability. pH paper with de-ionized water should be used in all suspect locations. An accurate record of findings should be made. (See Evaluation of Corrosives, below.)

Acids should be neutralized with sodium bicarbonate (baking soda); and bases with weak acid wash solutions (e.g., vinegar, citric or acetic acid). Solids can be scooped up and packaged for proper waste disposal. Liquids can be adsorbed with clay or another non-reactive material and packaged for proper waste disposal. As stated previously, only a licensed waste handler should be authorized to perform this task. Working with corrosives can be dangerous for staff unfamiliar with their properties. pH paper should be used to check a surface after neutralization.

6. Encapsulation

Detergent or solvent scrubbing of walls and floors is a necessary first step to removing contamination. When completed, these hard surfaces should be recoated with a new layer of paint (walls) or floor treatment (wax or other floor finish). This is an added protective measure, creating a barrier against any residual contamination. When paint or another physical barrier is applied, the encapsulant should be allowed to dry for the time stipulated by the manufacturer. Complete coverage may require more than one coat. These areas should be monitored and the barrier maintained to assure that the contamination is contained. If staining, odors or discoloration appear after the coating dries, removal and replacement of that surface section may be necessary.

d. Areas of Low Contamination:

In portions of the structure away from cooking areas where no visible staining or contamination is present, and which were unlikely to have received contamination via foot traffic or air flow, consideration should still be given to complete cleaning of hard surfaces and removal of porous materials. However, if removal of porous materials is not practical, these materials should still be thoroughly cleaned. Fabric furniture, carpeting, and other porous furnishings can be cleaned with detergent as appropriate for that type of item. Cleaning of porous materials will usually consist of vacuuming using a machine equipped with a HEPA filtration system followed by (at least one) hot water detergent scrubbing and extraction. For non-washable materials such as lined curtains, when those materials are not heavily contaminated, dry-cleaning is permissible. Porous drop ceilings in these areas should be HEPA-vacuumed. Popcorn ceilings may contain asbestos and should be left undisturbed and a sample collected to determine the level of contamination.

An area far from the drug cooking area that has been cleaned or determined to be free of contamination can serve as a storage area for any portable items cleaned during remediation. The doors or openings to these areas should be cordoned off with heavy mil plastic sheeting (4-6 mil) to avoid recontamination during further cleaning of the site.

Note: Special care should be taken throughout the assessment process to note and mitigate high-traffic areas and pathways such as hallways to and from cooking areas and between chemical storage and cooking areas. High-traffic floors and carpeting often reveal high levels of contamination even when distant from cooking area.

e. Evaluation and Cleaning of Building Mechanical Systems and Miscellaneous Items

1. Heating and ventilation systems:

Heating and air conditioning systems tend to collect vapors and dust and redistribute them throughout the structure. The vents, ductwork, filters, walls and ceilings near ventilation ducts can become contaminated. If assessment information or visible contamination indicate the ventilation system is compromised, consideration should be given to hiring a specialty duct-cleaning contractor. The contractor should replace all filters in the system, remove and clean vents, clean the surfaces near system inlets and outlets, and clean ductwork.

In motels, connected 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 writing the workplan. One strategy is to take samples from adjacent or connected areas/rooms/units, working outward from the lab site until samples show low levels or no contamination.

2. Evaluation and decontamination of plumbing, septic and sewer:

Solid wastes from labs are frequently burned or dumped outside the structure but most liquid chemical byproducts are dumped into laundry and bathtubs, sinks, drains, and toilets. Chemicals and contaminated wastes can collect in drains, traps and septic tanks. If staining or presence of volatile organic compounds (VOCs) indicate dumping into municipal sewer systems, household plumbing should be aggressively flushed. The appropriate wastewater management authority should be contacted and advised of the presence of an illicit drug laboratory.

Inspection by a plumber is recommended to ensure that caustic chemicals have not damaged plumbing and that such chemicals do not remain in pipes and traps. Porcelain and stainless steel, unless pitted or damaged can be successfully cleaned of they are not permanently affected by acid etching or other chemical damage.

In rural areas septic tanks and drinking water wells can become contaminated. The extent and magnitude of the contamination problem is often determined by the size of the cooking operation and/or how long cooking has been taking place. The larger or longer an operation has been running the more waste is produced.

If the dwelling is served by a septic system and the tank liquid is believed to be contaminated, the contractor should contact DEP, DPH, and the Local Health Department. The contractor must never enter a septic tank for assessment or sample collection.

If the contents of a septic tank are determined to be contaminated with chemical byproducts, a DEP licensed hazardous waste hauler must pump, haul, and dispose of the contents at a DEP approved disposal location. DPH licensed septic system pumpers are **not** authorized to do such work. Testing of the contents (septage) of the septic tank may be needed to determine if the wastewater is contaminated.

If septic system contamination is suspected, the leaching system must also be evaluated to determine if additional contaminated wastewater can be recovered. Many leaching systems, especially hollow structures such as leaching galleries or pits, can store significant volumes (i.e., 1000 plus gallons) of liquid.

Locating septic systems can be accomplished by using the as-built drawing, which is typically on file with the local health department. The property owner also usually has a copy. If no as-built drawing can be found, the septic system can also be located by other methods such as probing, use of metal detectors to find metal handles on manhole covers, or with flushable beacons. DPH licensed septic system installers or cleaners can assist in locating septic systems.

3. Evaluation of other household appliances:

Appliances, such as refrigerators and stoves that have insulation or other inaccessible parts that are suspected or likely to be contaminated should be removed and discarded. Appliances can be evaluated on a case-by-case basis, with attention to: 1) site type (e.g., residence or licensed facility their proximity to lab activity, 2) use during drug manufacture (e.g., chemicals stored in refrigerators, or cooked on stoves); 3) use in the home (e.g., washer/dryer vs. refrigerator); 4) ability to be cleaned (hard metal vs. porous material); and 5) cost/benefit of disposal vs. cleaning.

f. Exterior Contamination:

Please contact the DEP Emergency Response Division (866-DEP-SPILL) for advice on how to cleanup contamination outside of the residence.

The exterior of the structure should be inspected for evidence of contamination. Liquid and solid waste materials are often dumped into the toilet, bathtub, or floor drain; dumped outside of the structure, buried, or burned. Where waste materials are dumped, soil and ground water contamination threats exist.

Burial of waste is not very common but does occur. Burn pits or barrels are fairly common and are used to reduce the volume of waste liquid and solids. Additionally, chemical containers are often stockpiled on the property because discarding them in the common trash may arouse suspicion. These stockpiles of containers may also prove to be a source of contamination.

g. Indoor Ambient Air Quality Sampling

In cases of heavy contamination, indoor air sampling may be recommended before and after cleaning for VOCs with a photo ionization detector (PID), flame ionization detector (FID) or similar instrument to determine that the lab has been cleaned to reasonable background levels (concentration similar to ambient outdoor air). A sweep through the entire building should be made with an accurate record kept of all readings in every room. Additionally, each septic system drain (floor, tubs, sinks) should be probed to determine if any chemicals have accumulated in the drain trap—requiring removal. Field screening will provide information regarding the concentration of total VOCs in the structure, which is important for monitoring exposures for worker protection. Field screening may also provide information regarding the severity of contamination and the areas to focus cleanup efforts. If there is sufficient concern about residual vapor concentrations after cleanup, indoor air may be tested to determine the concentrations of specific chemicals. In most cases, indoor air testing may not be necessary as long as an adequate cleanup has been performed. Due to the possibility of detecting background levels of commonly used household chemicals, the presence of residual methamphetamine lab related chemicals may be hard to distinguish.

Because of the potential problem of background interference, and the relatively high cost associated with collecting and analyzing indoor air samples, the use of indoor air testing may not be the most practical way to evaluate the effectiveness of a cleanup. Sampling surfaces for methamphetamine may be a more practical tool to gauge the effectiveness of cleanup. If indoor air sampling is conducted, it should be performed by an environmental professional, familiar with indoor air sampling techniques, that is capable of interpreting the data and evaluating the potential for background interference. Prior to collecting an indoor air sample for VOCs, the indoor air temperature should be maintained at 70º F or above for a minimum of 24 hours.

Indoor air should be sampled for chemicals determined to be part of the lab site chemical inventory (developed as part of the preliminary assessment) and in consultation with the local health department, or other oversight agency. Sampling and testing should be performed using recognized standards and written procedures designed to ensure accuracy, reproducibility, and relevance to onsite contamination.

h. Potential for Lead and Mercury Contamination

Some states require more extensive cleanup and testing if lead and mercury were used in the drug manufacture method. However, the processes which involve these heavy metals, phenyl-2- propanine precursor (P2P, also called amalgam method), have been abandoned in favor of simpler methods using lithium or sodium metal in many areas.

If the amalgam (P2P) method was used, testing should also include airborne mercury and lead, and surface sampling for lead. Risk-based exposure limits for lead and mercury are provided in Table 1. Bear in mind that the possibility of obtaining false positives for lead and mercury exists because these materials used to be commonly added to paints. Homes built before 1978 may test positive for lead and homes built before 1990 may test positive for mercury.

C. POST CLEANUP ASSESSMENT FOR STRUCTURES

Cleanup and sampling of former methamphetamine labs should be conducted under the supervision of a properly qualified person such as a Certified Industrial Hygienist with oversight from local health and building inspection authorities. Decisions regarding the workplan can be made based on the preliminary assessment information, chemicals used and duration of lab operation, the apparent extent and severity of contamination, and degree to which cleanup has progressed.

After complete cleanup, small amounts of residual chemicals may remain. If post-cleanup sampling is deemed necessary, it should involve wipe sampling for methamphetamine residues on hard surfaces. The procedure for collecting a wipe sample is included in Appendix B. This procedure is in accordance with the OSHA Technical Manual (http://www.osha.gov/dts/osta/otm/otm_ii/otm_ii_2.html).

Written documentation showing that the cleanup has been completed should be submitted to the local health department or other agency overseeing the cleanup. The final report should summarize the inspection, work performed and data collected, and be prepared by a Certified Industrial Hygienist or other qualified environmental professional. The report should be reviewed by appropriate local authorities (local health department or building inspector), who should make a final inspection of the premises to ensure that the property is suitable for re-occupancy.

D. CLEANUP PROCEDURES FOR SOIL, GROUNDWATER AND SURFACE WATER

If areas of soil, surface water or groundwater contamination are present, characterization and cleanup of these areas should be conducted by a professional environmental contractor, in consultation with the CT Department of Environmental Protection, Emergency Response Division (866-DEP-SPILL).

IV. REFERENCES

ADEC 2004. Guidance and Standards for Cleanup of Illegal Drug-Manufacturing Sites. Alaska Department of Environmental Conservation, Spill Prevention and Response Division, Prevention and Emergency Response Program, November 2004.

CDPHE 2003. Cleanup of Clandestine Methamphetamine Labs Guidance Document. Colorado Department of Public Health and Environment, July 2003.

MDH 2003. Clandestine Drug Labs General Cleanup Guidelines. Minnesota Department of Health, September 2003.

WSDH 2004. Guidelines for Sampling of Illegal Drug Manufacturing Sites. Washington State Department of Health, January 2004.

APPENDIX A

SUMMARY OF THREE COOKING METHODS
(ADEC 2004)

1) **Red phosphorus**-Substances commonly associated with this method include:

hydrochloric acid
hydriotic acid
sulfuric acid
sodium hydroxide (lye)
sodium chloride (salt)
red phosphorus
iodine
isopropyl alcohol
ethyl alcohol
hydrogen chloride gas
chloroform
charcoal lighter fluid (mineral spirits, petroleum distillate)
methanol
hydrogen peroxide
naphtha (Coleman fuel)
acetone
benzene
toluene
ethyl ether (starter fluid)
freon

Also included may be: acetic acid
Methyl-ethyl-ketone (MEK)
Hypophosphorus acid

Waste generated may include:
Potentially flammable extraction process sludges
Phosphine gas
Hydriotic acid
Hydrogen Chloride Gas
Phosphoric Acid
White or Yellow Phosphorus

2) Birch Method

Also called the "Ammonia" or "Nazi" method. The method relies on a plentiful supply of anhydrous ammonia that is most commonly found in commercial freezers and agricultural applications. Substances associated with this method include:

Anhydrous ammonia
Lithium metal
Sodium metal
Isopropyl alcohol
Ethanol
Methanol
Hydrogen chloride gas
Freon
Ethyl ether
Chloroform
Methyl-ethyl-ketone (MEK)

Hydrochloric acid
Sulfuric acid
Sodium chloride
Toluene
Naphtha

Wastes generated include:

Potentially flammable extraction process sludge
Hydrogen Chloride Gas

3) Amalgam or P2P Methods

This method uses phenyl-2-propanone (P2P) and methylamine as precursors. Other substances used are mercuric chloride, lead acetate, and many other substances. However, this method is much less common and has not been seen in many states.

APPENDIX B

COLLECTION OF NON-POROUS SURFACE SAMPLES (WIPE SAMPLES)
(WSDH 2004)

To determine the extent of contamination on non-porous surfaces (tile, linoleum and Formica), a technique known as "wipe" sampling is used. On porous areas, such as carpet or drapes, this sampling technique is only satisfactory for a qualitative (absence or presence) identification of the chemical.

Paper filters are generally used for collection of metals. Mixed cellulose ester filter discs (AA filters) or smear tabs, or their equivalent, are most often recommended. Polyvinyl chloride filters are available for substances that are unstable on paper-type filters. Squares of a gauze material may be used for many organic substances, and have the advantage of being more durable than filter media, especially when wiping rough surfaces. They may be used dry, or wetted with water or solvent to enhance collection efficiency.
The following procedure is recommended for collecting wipe samples:

1. If multiple samples are to be taken at the worksite, prepare a rough sketch of the area to be wipe sampled.

2. A new set of clean, impervious gloves should be used for each sample to avoid contamination of the filter by previous samples (and the possibility of false positives) and to prevent contact with the substance.

3. Withdraw the filter from the vial with your fingers or clean tweezers. If a damp wipe sample is desired, moisten the filter with distilled water (lead samples) or other solvent (methanol for methamphetamine samples) as recommended.

4. Depending on the purpose of the sample, it may be useful to determine the concentration of contamination (e.g., in micrograms of agent per area). For these samples, it is necessary to record the area of the surface wiped (e.g., 1 ft_2). This would normally not be necessary for samples taken to simply show the presence of the contaminant.

5. Firm pressure should be applied when wiping.

6. Start at the outside edge and progress toward the center of the surface area by wiping in concentric squares of decreasing size.

7. Without allowing the filter to come into contact with any other surface, fold the filter with the exposed side in. If possible, use the same filter to repeat the sampling of the same area, then fold it over again. Place the filter in a sample vial, cap and number it, and note the number at the sample location on the sketch. Include notes with the sketch giving any further description of the sample.

8. At least one blank filter treated in the same fashion, but without wiping, should be submitted for each sampled area.